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CONTRIBUTION OF THE DEVELOPMENT OF CACAO BEANS TO ELEVATING EMPLOYMENT, WELFARE OF SOCIETY AND FOOD SECURITY IN SOPPENG, WEST SULAWESI

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Abstract

The selection of seeds is the first step to get focused to increase cacao production. Providing seeds with quality is vital from not only the quantity but also the ability to produce. This research wants to analyze the government contribution to the potential Cacao seeds in Soppeng in order to enlarge the working opportunity, increase the people's welfare, and ensuring food security, as well as to identify the impending factors. To achieve these intentions, furthermore, qualitative research procedures stand applied. The data get collected through observations, interviews, and documentation. Based on the analysis, this study finds that the budget of the local government for providing seeds cannot cover society's demands. Moreover, the impending factors are the financial limitations of farmers and pests and vascular streak dieback.

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INTRODUCTION

Cacao (*Theobroma cacao* L) is one of the plantation crops classified into family Sterculiaceae from Central America, the region between the Amazon to the Orinoco river, came to Indonesia in the 19th century carried by the Spanish (Sunanto, 2002). To increase the production of the cacao plant, according to Siregar, Riyadi, & Nuraeni (Siregar et al., 2007), the seed selection is the first required step. At this step, the perfect

treatment during breeding is mandatory to obtain healthy seedlings. For growing the seedlings without residual effect, Harjadi (Harjadi, 1993) explains the utilization of the leaves as the fertilizer can be an alternative way because it has no impact on the soil pH and does not disturb the nutrition absorption from the soil. Besides, the farmers need to achieve sufficient education to nurture cacao well (Abankwah et al., 2010).

Sulawesi has the largest area of the

cacao plantation in Indonesia (Manalu, 2018), and Soppeng is one of the regencies in South Sulawesi, where the farmers produce cacao beans (Ristanti et al., 2016) and one of the trans-Sulawesi areas, where the plan of railways exist (Syam, 2017) (see the red line in Figure 1). Furthermore, these railways are useful to connect many cities in Sulawesi from Makasar to Manado with a distance of 2,000 km. Consequently, this circumstance cause Soppeng to be a vital and strategic area.

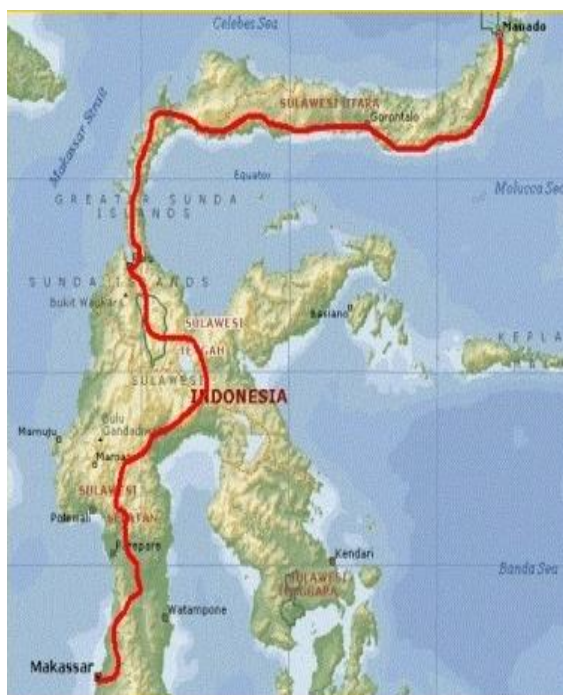


Figure 1. The Trans-Sulawesi Path
Source: Google Map, 2020

Topographically, Soppeng has an area of 1.500 km², consisting of eight sub-districts, i.e., Citta (40 km²), Donri Donri (222 km²), Ganra (57 km²), Lalabata (278 km²), Liliraja (96 km²), Lilirilau (187 km²), Marioriawa (320 km²), and Mariowiwawo (300 km²) (see Figure 2).

Based on the Central Bureau of Statistics of Soppeng (Central Bureau of Statistics, 2018), the length of the road in the Soppeng Regency in 2017 was 882 km. It got classified into four criteria.

a. The good one covered 289,859 km length.

b. The medium one covered 109,715 km length.

c. The damaged one covered 125,559 km length.

d. The highly damaged one covered 373,748 km length.

In 2017, the most utilized transportation mode was the own motorcycle (36,168 units). The second was the motorcycle for serving the public (1,333 units). Finally, the bus and the car are the third positions (789 units).

By referring to the Central Bureau of Statistics of Soppeng (2018), Soppeng gets surrounded by five regencies, i.e., Barru in the west; Bajo and Bone in the east; Sidenreng Rappang in the north; as well as Bone in the south. Also, it stands flowed by five rivers named Langkemme, Soppeng, Lawo, Paddangeng, and Lajaroko. Besides, the highest mountain is Nene Conang (1,463 meters).

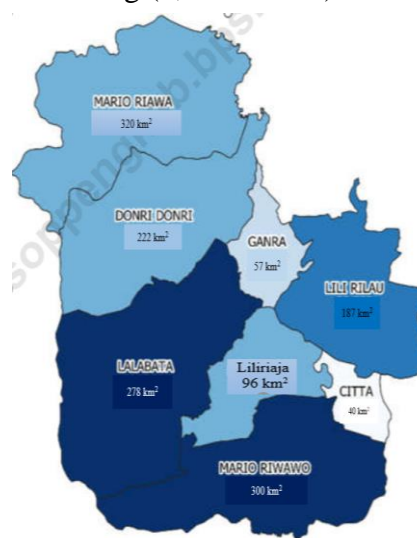


Figure 2. Map of Soppeng Regency
Source: Central Bureau of Statistics, 2018

By denoting the Central Bureau of Statistics of Soppeng (Central Bureau of Statistics, 2018), agricultural land in 2017 was 97,972 hectares, consisting of 29,083.7 hectares of paddy fields, and 68,888.3 hectares of non-paddy fields. Of paddy fields area, 24,708.3 hectares depended on the irrigation, and the 4,809.4 depended on rain. Meanwhile,

non-agricultural areas were about 52,028 hectares.

Indonesia's cacao beans are not attractive to foreign buyers, such as from Singapore and Malaysia, because of the decrease in quality. Instead, they import cacao beans from Ivory Coast and Papua New Guinea (Kurniawan, 2013). The decreasing quality before export is due to two conditions. Firstly, the cacao beans fermentation is only partial (Akiyama & Nishio, 1997). Secondly, they do not get unfermented at all so that these products have a terrible smell, low fat, and gross content is 4%, exceeding the impurity of international standard of 2% (Kurniawan, 2013).

Persistently, the local government in Soppeng attempt to improve the quality of cacao seeds. To implement it, the government investigates other information. Based on the analysis of the observation from the data of the Central Bureau of Statistics of Soppeng (Central Bureau of Statistics, 2018), pests become the problem because they harm the number of cacao production, as the data of the Department of Forestry and Plantation Soppeng (2018) displays in Table 1.

Table 1. The average production results based on the types of crop (Kg/Ha) between 2016 and 2018

No.	The name of crop	2016	2017	2018
1.	Cacao	899.07	732.37	430.03
2.	Deep coconut	884.30	761.94	761.95
3.	Hybrid coconut	324.84	299.79	299.70
4.	Robusta coffee	277.82	275.35	275.35
5.	Clove	-	433.27	433.27
6.	Cashew	67.18	185.92	185.98
7.	Pepper	265.51	255.46	255.46
8.	Candlenut	258.68	348.45	348.45
9.	Sugar palm	154.00	107.13	107.13

Source: Data from the Department of Forestry and Plantation in Soppeng

The research about the cacao beans development in Indonesia obtains the

attention of some foreign scholars, for instance, (Akiyama & Nishio, 1997), as well as Neilson (Neilson, 2007), and Indonesian scholars, for example, Limbongan, Lologau, Nappu, Gaffar, & Lade (Limbongan et al., 2012), Manistasari & Nurhadi (Manistasari & Nurhadi, 2013), and Emelda, Asrul, & Mapiggau (Emelda et al., 2014), Ikhsan, Arida, & Fauzi (Ikhsan et al., 2016), Mulyono (Mulyono, 2016), Nasser (Nasser, 2017), Manalu (Manalu, 2018), Rusdin & Abidin (Rusdin & Abidin, 2018) as well as Managanta, Sumardjo, Sadono, & Tjitropranoto (Managanta et al., 2019).

- a. In their study, Akiyama & Nishio (1997) investigate the factors behind the expansion of cacao beans. They conclude that the climate, the soil, and the attitude of farmers in Sulawesi become the contributing factors. However, the local government interventions are so weak that local buyers of cacao beans strongly determine their purchasing price, no marketing boards, no involvement from the national logistic agency to market and import. Additionally, the chemical pesticide to destroy pod-borers is expensive and effective if it gets used in the larger area.
- b. In his research, Nielson (2007) declares that in the beginning, the cacao is a prospective business in Indonesia under a free market in Sulawesi. After the market imperfection and the pests destroying harvest, this business becomes unattractive. To make the development of cocoa, furthermore, the Indonesia cocoa commission (ICC) gets established in 2006 by the decree of the Minister of Agriculture. In the same year, the partnership between private and public got formed as the initiative of local government to coordinate and facilitate the studies and farmer development.
- c. In their investigation, Limbongan et al. (Limbongan et al., 2012) try to analyze

two ways to multiply the number of cacao beans vegetatively for the smallholder plantation: grafting and somatic embryogenesis in Luwu, a regency in South Sulawesi. They prove the grafting on the old cacao tree is more effective than the somatic embryogenesis in the success rate of the seedbed, the growth for three years ahead. Furthermore, they calculate and get the benefit to the cost ratio from the grafting method of 1.4. It means this method is favorable. Hence, the people owning the plantation should use this technique. Moreover, it gets recommended for the firms, as the plantation owner, to select the somatic embryogenesis technique because of sufficient knowledge.

- d. In their study, Manistasari & Nurhadi (Manistasari & Nurhadi, 2013) attempt to identify the physical and non-physical factors affecting the cacao business, to know the determining factors of the decreasing productivity of cacao, and to analyze the way to raise beans. Furthermore, these scholars find that physical factors consist of climate, topography, soil. They are suitable for supporting the cacao business. Meanwhile, non-physical ones are capital, labor, transportation modes, marketing system, credit facility, and technology. The factors becoming a barrier are the plant of cacao getting old, pests, disease, the limited capital, the lack of water in the dry season. To increase the cacao beans, the superior seeds selection, sanitation, regular picking the result are technically essential, and the following the training meeting from the experts, joining the farmer club, and reading books relating cacao are the vital non-technical efforts.
- e. In their research, (Emelda et al., 2014) try to measure the competitive and comparative advantages owned by the cacao farming locations in North Luwu, a regency in South Sulawesi, measured

by the coefficient of DRC and PRC, individually, and to investigate the independence of the farmers on the cacao collector traders. After calculating them, they find the DRC and PRC coefficients are 0.03 and 0.04. The DRC of 0.03 shows a comparative advantage gets already achieved because of the cheap cost of labors and the available transportation modes. Meanwhile, the PRC of 0.04 displays a competitive advantage exists. The dependence of farmers on the cacao collector traders is so high that they do not own the bargaining position. Based on these findings, moreover, Emelda (Emelda et al., 2014) give recommendations to local government for keeping these two advantages, such as fixing infrastructure and cacao marketing systems, as well as controlling product quality. To strengthen the bargaining power, the farmers have to get involved in the association to determine the competitive price of cacao beans.

- f. In his investigation, Ikhsan et al. try to identify the factors behind the cacao productivity in Pidie Jaya Regency, Aceh (Ikhsan et al., 2016). From six determinants used, they locate four significant explanatory variables; they are capital, the number of growing stems, the use of fertilizer made of nitrogen, potassium, calcium, and the utilization of urea fertilizer.
- g. In his study, Mulyono stabs to exhibit why the decreasing production of the cacao beans since 2003 happens and to explain some policies related to the development of cacao cultivation and regulation to support this business (Mulyono, 2016). In his manuscript, Mulyono explains that the decline in cacao beans production occurs because of the cacao trees becoming old, the pests, and vascular streak dieback. Upturning the yield, some policies associated with the cacao industry have to formulate, i.e., the provision of

superior seeds, the cacao certification for the producers to make the product suitable for an international standard to export, the reinforcement of cacao sustainable partnership. Regulating the processing of cacao, the central government applies some rules, i.e., the fermentation cacao beans to generate a reasonable selling price, the regulation of export price, and tax allowance of capital inflow to developing cacao industry, as well as the correct information delivery of consuming chocolate for society.

- h. In her research, Nasser highlights the importance of the website to market the superior cacao seeds in the regency plantation office in North Luwu (Nasser, 2017). The application based on the website is successful in detecting the inventories, organizing them, and displaying them; therefore, the customers can choose, order, and buy them by their smartphone.
- i. In his investigation, Manalu (Manalu, 2018) emphasizes the importance of the cacao fermentation in South Sulawesi to upraise the selling price of beans. Because of unfermented beans, the price set by the collector to buy is entirely under the market price. This situation does not occur if the farmers ferment the beans. Besides, from the fermentation process, the farmers can result in the residuals that are useful to be the animal feeds.
- j. In their study, Rusdin & Abidin (Rusdin & Abidin, 2018) want to test nine determinants, of cacao productivity by side-cleft grafting in Konawe, a regency in Southeast Sulawesi. After testing them, they find that potassium chloride fertilizer and land area only have a positive effect on cacao productivity.
- k. In their research, Managanta et al. (Managanta et al., 2019) try to prove the impact of the farmer's features and the role of the trainer on the cacao farmer's competency in Central

Sulawesi. Farmer competency gets reflected by cultivating ability, harvestability, performance after harvest, processing ability, marketing ability. The role of the trainer gets reflected by communicator, facilitator, advisor, motivator, educator, organizer, dynamic person. Farmer feature gets indicated by formal education, cosmopolitan, need fulfillment, business duration. After testing the data, they conclude that the farmer competency is positively affected by trainer roles and farmer features.

After describing the previous research evidence and considering the phenomenon in Soppeng, this research aims to analyze the government contribution to the potential Cacao seeds in Soppeng in order to enlarge the working opportunity, increase the people's welfare, and ensuring food security, as well as to identify the impending factors.

CONCEPTUAL FRAMEWORK

Cacao is a plant having yields after three until four years. If the management gets correctly done, this plant can stand available for 25 years (Nasser, 2017). To make the excellent beans, furthermore, according to Nasser (Nasser, 2017), three ways exist as follows.

- a. The farmers choose the grafting method by selecting the best scion wood. After that, they stick it in the rootstock. This technique can yield many beans.
- b. The farmers utilize seedlings by growing seeds from the cacao beans in a vegetative or generative manner.
- c. The farmers apply the side-cleft grafting on the stems of the cacao tree. This technique is valuable to produce clones of superior cacao.

Cacao development in Indonesia began in the early 1980s and is currently speedy. In line with this situation, the local government facilitates the farmers to improve the cultivation techniques to be

efficient, get superior seeds, manage the planting space, protect their cacao from pests and diseases (Zaenudin & Baon, 2004).

The district community in Soppeng is dominantly a farmer; most of them are a cacao farmer. In 1995, interestingly, Soppeng became the largest cacao producer in Indonesia in 1995 and could improve welfare. Unfortunately, the cacao produced tends to decrease because of pests. By this research, the condition in 1995 gets expected to repeat at this time so that the work field and community welfare will be available. Thus, regional economic resilience will stand reshaped. This logical framework is in Figure 3.

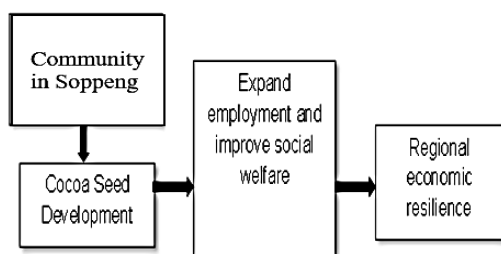


Figure 3. Conceptual Framework

Source: Proceed by Author, 2020

Generally, based on its management, the plantation in Indonesia can get classified into three kinds (Hanafie, 2010):

1. Small shareholder plantation. This plantation is the business of persons to cultivate plants, where the yields intend to sell in the limited area of the concession.
2. Large plantation. This plantation is the business of large firms to cultivate plants, where the results are to trade in the vast area of the concession commercially. This estate usually belongs to the state-owned companies and the national or foreign companies.

As explained by Syamsudin (Syamsudin, 1996), the development of plantations exists to attain some purposes.

1. To increase the production of commodities in quantity and quality for keeping the supply to encourage an increase in social consumption, to meet

domestic industrial raw materials, and to increase non-oil exports;

2. To upsurge the productivity of land, labor, and capital;
3. To raise the income of farmers, employees and the welfare of entrepreneurs' plantation;
4. To elevate the added value of plantation commodities;
5. To boost job and business opportunities;
6. To participate in the transmigration program;
7. To support regional development and reduce economic growth disparities among regions;
8. To increase the use of land resources, climate, and human resources while at the same time maintaining the preservation of nature and the environment;
9. To strengthen the position of the archipelago and to improve national defense.

To make the society involved to reinforce the national defense, furthermore, the government launches the partnership program. This program has three patterns: nucleus plantation of people, the main credit of the cooperative to its members, plantation revitalization (Direktorat Jendral Bina Produksi Pertanian, 2004).

- a. Nucleus Plantation of People is the program, where the big plantation as the nucleus opens news estate and lead the shareholders as the plasma around the location in the favorable, integral, and sustainable cooperations.
- b. The main credit of cooperative to its members is the second pattern. According to Sari (Sari, 2017), in this program, the cooperatives get money from banks. Furthermore, the unions channel it to their members to finance their productive business.
- c. Plantation Revitalization is the acceleration program to develop smallholder plantations through expansion, rejuvenation, and

rehabilitation of crops supported by investment banking loans and interest subsidies by the government by involving companies in the plantation business as partners in the development of plantations, processing, and marketing of products (Minister of Agriculture Regulation No. 33/Permentan/OT.140/7/2006).

RESEARCH METHOD

The research method utilized is qualitative. According to Cresswell, this method is useful to explore and understand the meaning of individuals or groups of people (Cresswell, 2013). To achieve it, moreover, this research uses primary and secondary data.

- The primary data get collected by interview with the relevant informants and observation in the field. Furthermore, the researcher makes the note based on the collected data.
- The secondary data get collected by the notes from the local government in Soppeng.

To take the samples, additionally, the theoretical sampling method gets utilized. This method aims to unveil the features related to the topic (Neuman, 2014) by interviewing the accountable persons for the development of cacao seeds for the farmers in Soppeng. Furthermore, their identity is available in Table 2.

Table 2. The name of the interviewee as the samples

No.	The name of the interviewee	Position
1.	Makmur Heryal, S.Hut, M.P.	Head of Horticulture and Plantation Division in Soppeng
2.	Sudirman, S.P.	A civil Administration Servant of Horticulture and Plantation in Soppeng
3.	Fajar, S.P.	A civil Administration Servant of Horticulture and Plantation in Soppeng

4.	Andi Awaluddin, S.E.	Section Head of Central Bureau of Statistics Balance in Soppeng
5.	Anwar	A cacao farmer in Soppeng
6.	Nur Jannah	A developer of the cacao seed in Soppeng

Source: Researcher database

RESULT AND DISCUSSION

The contributions of the cacao seed development in Soppeng

In Soppeng, cacao seedling cultivation plays an inspiring role in the economy of Indonesia. Besides creating employment, this cultivation supports economic growth. This situation gets affirmed by some interview results displayed below.

- Based on the interview result with Makmur Heryal, the Head of Horticulture and Plantation in Soppeng, on August 15th, 2019, the community in Soppeng was under the poverty line before 1980 until they knew cacao in 1985. From 1995 until 2000, the local government developed the nursery of the cacao tree. After 2020, the production of cacao will go down because of the tree age above 17 and the spread of pests.
- According to the result of the interview with Sudirman, a civil administration servant in Soppeng, on June 15th, 2019, the cacao seedling cultivation brings prosperity to the people because their income per capita increases every year. By considering the lands could produce 8,000 tons annually in the past and are still fertile now, the government keeps assisting the people.
- By indicating the result of the interview with Fajar, a civil administration servant in Soppeng, on June 16th, 2019, society needs aid from the local government in providing seeds and pesticides so that the seeds can grow well until the harvest time.
- By referring to the result of the interview with Andi Awaludin, the section head of the central bureau of

statistics balance in Soppeng, on June 17th, 2019, the economic growth in Soppeng shows the increasing trend, 5.11% in 2015, 8.14% in 2016, and 8.34% in 2017, and get highly contributed by the plantation, farming, and construction fields. In the estate, cacao has the most dominant position. To support cacao marketing, moreover, the road is vital for the local government to provide.

Factors Inhibiting Cacao Seed Development in Soppeng

As denoted to the interview result with Makmur Heryal on Augst 15th, 2019, the most fundamental problem for the local government to provide cacao seedlings is the lack of budget. The money budgeted can only purchase 30,000 seedlings per year. However, the demand for seedlings of society reaches 1,000,0000 per year. The lack of providing seeds is in line with the study of Limbongan et al. (Limbongan et al., 2012).

For ongoing business development, money also becomes a barrier for the local government to grow this business besides the research and the management of the cacao seeds by farmers. This situation is due to its limitation to access the funding source. As a result, this fact supports the study of Manistasari & Nurhadi finding that most of the cacao farmers in Bandarharjo do not use the credit from banks in their business, but they borrow money from the local government (Manistasari & Nurhadi, 2013). In line with Zubaedi, the help from the government to overcome the money problem is essential for people with low income (Zubaedi, 2013). If the aids come to these people, the aids will help them to raise their business up.

Based on the result of the interview with Makmur Heryal on Augst 15th, 2019, the pests become another impending reason. Until now, this issue cannot get solved yet. Moreover, Anwar, a cacao farmer in Soppeng interviewed on June

17th, 2019, states that besides the salary of his workers, these uncontrollable pests are his big problem because they fail his harvest. Akiyama & Nishio call them pod-borers (Akiyama & Nishio, 1997). Unfortunately, the chemical pesticide to destroy them is so costly that the farmers cannot buy it. Therefore, this situation is in line with the study of (Akiyama & Nishio, 1997), Neilson (Neilson, 2007), (Abankwah et al., 2010), Limbongan et al. (Limbongan et al., 2012), and Manistasari & Nurhadi (Manistasari & Nurhadi, 2013), stating pests becoming the vital issue to get controlled.

By referring to the interview with Nur Janah, a developer of cacao seed in Soppeng on June 18th, 2019, it gets declared that the lack of salary received by workers will make them quit their job because of the few purchasers of seeds.

Based on the report of the Soppeng Central Bureau of Statistics (Central Bureau of Statistics, 2018), another restricting factor is the trees of cacao getting old. This situation leads to the reducing number of cacao beans. This fact is parallel with the study of Limbongan et al. (Limbongan et al., 2012) and Manistasari & Nurhadi (Manistasari & Nurhadi, 2013), Mulyono (Mulyono, 2016), declaring a negative relationship between the tree age and beans produced.

CONCLUSIONS AND SUGGESTION

Based on the analysis and discussion described in the previous section, this research concludes some points as follows:

1. The people in Soppeng enthusiastically plant the seeds of cacao. This condition gets seen from the increasing demand for cacao from 500,000 seeds in 2018 until 1,000,0000 seeds in 2019; therefore, if the regency government can reach this situation, it will reduce unemployment and make people have income. Unfortunately, the regency government budget can only cover 30,0000 beans each year.

2. The impeding factors for farmers in Soppeng to develop the business in cacao are the incapability of farmers to purchase seeds of cacao and to control pests.

Some suggestions based on the research study are as follows.

1. To overwhelm the gap between the supply for cacao seeds of the local government and the demand of the society in Soppeng, the local government can ask the provincial government for additional money to enhance the production of the cacao beans so that the welfare of society can go up. Alternatively, the smallholders of plantation can utilize the grafting method to multiply the new cocoa tree.
2. The local government should help the farmers by providing cheap chemical pesticides and training them on how to use it to destroy pests. Additionally, the training materials have to cover not only the way to overcome pests but also include all of the aspects related to the cacao cultivation: cultivating ability, harvestability, performance after harvest, processing ability, and marketing ability.

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