

Gender roles in cocoa sustainability programs

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Submission date: 29-Jun-2021 09:26AM (UTC+0700)

Submission ID: 1613557199

File name: ulkis_2020_IOP_Conf._Ser._Earth_Environ._Sci._575_012086_1.pdf (804.44K)

Word count: 4351

Character count: 22685

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1 To cite this article: S Bulkis *et al* 2020 *IOP Conf. Ser.: Earth Environ. Sci.* **575** 012086

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Abstract. The Cocoa Sustainability Program is a program accepted by cocoa producers to develop and improve the quality and quality of cocoa. This is due to the low quality of cocoa in the international market caused by pests and the age of very old plants. Cocoa products generally involve men and women. The objective of this study is: 1) Analyze the roles of men and women in terms of time allocation and decision making with the existence of sustainability programs of cocoa, 2) Analyze the relationship of changes in the allocation of time between men and women with family income; and 3) Analyze exchange relations. Male and female time allocation for decision making on the use of household finances. This research is an analysis of qualitative-quantitative descriptive analysis methods. The results of the study concluded that: 1) The average time allocation of men and women in the crop before participating in the cocoa sustainability program was 162.68 hours and 51.61 hours and after the program of 166.63 hours and 54.44 hours. The average time allocated for men and women in the harvest and post-harvest before participating in the sustainability program of cocoa was 27.70 hours and 33.68 hours, after taking the program of 26.31 hours and 32.80 hours. The average time allocation of men and women in cocoa marketing before participating in the cocoa sustainability program is 0.27 hours and 0.07 hours, after participating in the cocoa sustainability program that is 0.26 hours and 0.09 hours. Decision-making on cocoa farming, husbands dominate aquaculture activities, harvest and post-harvest activities and marketing are decided together equally, 2) There is a significant relationship between time allocation and household income, and 3) There is no significant relationship between the allocation of time and retirement decision on the use of household finances.

1. Introduction

The price of Indonesian cocoa beans is relatively low and subject to discounted prices compared to the same product prices from other producing countries. The main problem of the low quality value of Indonesian cocoa in the international market is caused, among others, by pests, postharvest handling (fermentation) and the age of plants that are very old [1,2]. In the world market, especially Europe, the quality of Indonesian cocoa is considered low because it contains high acidity, low flavor precursor compounds, and low fat content, so that the price of Indonesian cocoa always gets quite high discounts about 15% of the average world cocoa price [3]. Several cocoa sustainability programs are implemented to improve the quality and quality of cocoa. The cocoa sustainability programs are cocoa rejuvenation, intensification and rehabilitation programs. In addition, the government supports the cocoa certification program to improve the quality and quality of cocoa.

Several driving factors in agricultural development are needed in order to meet these expectations. The driving factors in agricultural development are: natural resources, human resources, technology,



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and institutions. All four factors support each other. If one of these factors does not exist or is not suitable then the activities carried out cannot give the expected results. Highly competitive agribusiness products can be produced through technology support, an integrated agribusiness structure, a workforce that has knowledge and skills, and strong capital. Human resources as one of the driving factors of agricultural development have a very important role, including women [4].

Women farmers are central to the sustainability of the cocoa supply chain and cocoa growth. Although often ignored and unknown, women farmers and women workers make a significant contribution to the amount of cocoa produced, which is experiencing an increase in demand. Across all crops, buyers have found that women often produce higher quality products than men when given the support they need. Luwu Regency is the largest cocoa producing district with a total production of 18,549 tons with an area of 34,290 Ha, North Luwu Regency is also the largest cocoa producer after Luwu with a total production of 15,317 tons with an area of 36,213 Ha [5]. This research is aimed at analyzing the role of men and women in terms of time allocation and decision making with the existence of cocoa sustainability programs, analyzing the relationship of time allocation of men and women with household income, analyzing the relationship of time allocation of men and women by making decisions on the use of household finances.

2. Methods

This research is a combination of descriptive and quantitative descriptive analysis methods. The study was conducted in Batu Alang Village, Sabbang District, North Luwu Regency. Site selection is done by purposive sampling, which is direct selection on the basis of the consideration that North Luwu Regency is one of the largest cocoa producing centers in South Sulawesi, besides Batu Alang Village is a cocoa village in North Luwu Regency. Data collection techniques used were interviews using questionnaires and direct observation to the location. The covers in this study were 40 households or 20% of 200 households.

In the first objective, concerning the roles of men and women in terms of time allocation and decision making with a cocoa sustainability program. Data were analyzed with descriptive qualitative. For the second purpose, the relationship between changes in the time allocation of men and women with household income is analyzed with quantitative descriptive and chi square analysis. For the third purpose, the relationship between changes in the time allocation of men and women with the decision making on household financial use is analyzed with quantitative descriptive and chi square analysis. The form of the equation from the chi square analysis can be seen as follows:

$$X^2 = \sum \frac{(f_o - f_h)^2}{f_h} \quad (1)$$

Information: X^2 = Chi Kuadrat
 f_o = Observed frequency
 f_h = Expected Frequency

The analysis technique is done by Chi-Square analysis using 95% confidence level with α 5% ($\alpha = 0.05$) with the following criteria:

1. If the value of $p < 0.05$ then H_0 is rejected, meaning there is a relationship between the dependent and independent variables.
2. If the value of $p > 0.05$ then H_0 is accepted, meaning there is no relationship between the dependent and independent variables.

3. Results and discussion

3.1. Cocoa Sustainability Program

Cocoa sustainability programs are programs from the government for cocoa production sustainability. The Cocoa Sustainability Program is a continuation of the Cocoa National Movement Program. Cocoa Sustainability Program Supports increased production and supports cocoa.

Some of the Cocoa Sustainability Programs that have been carried out in Batu Alang Village have reportedly been cocoa certification and cocoa rehabilitation programs. The average cocoa farmer in Batu Alang Village is currently in a cocoa rehabilitation and certification program. There are several private companies that carry out cocoa certification in Batu Alang Village, reportedly, PT. Mars Symbioscience Indonesia and PT. Olam.

3.1.1. Cocoa Rehabilitation Program. Cocoa rehabilitation in Batu Alang Village began in 2008 at the time of the entry of Germas Takwa (Quality Cocoa Mass Rehabilitation Movement) which was later adopted as the Cocoa National Movement (Gemas) in 2009. Cocoa rehabilitation in Batu Alang was carried out using side-grafting techniques. Side grafting technique is a technique to improve the quality of cocoa plants without replanting, by connecting the entress stem from good cocoa to the side surfaces of the main stem of the plant to be rehabilitated.

3.1.2. Cocoa Certification Program. Certification means verification by a third party or an independent certification body at the request of the consumer to the producer to ensure the production process of certain products produced complies with certain standards while the certificate means a written guarantee given by an independent certification body stating that a production process has complied with certain standards. These standards focus on environmental issues (soil conservation, water protection, pesticide use and waste management), social (labor protection, child labor, health and safety) and food safety [6].

Batu Alang Village, there are 2 companies that carry out cocoa certification, namely PT. Olam and PT. Mars Symbioscience Indonesia. PT. Olam entered Batu Alang Village in 2011, while PT. Mars Symbioscience Indonesia entered Batu Alang Village in 2012. Currently the average community in Batu Alang Village has participated in the cocoa certification program.

Private companies that carry out certification in Batu Alang Village conduct a variety of cocoa farming training in accordance with predetermined policy rules and standards. Both companies are Rainforest Alliance (RA) certifications which are certifications used to certify crops and livestock.

The cocoa certification program helps farmers to do cocoa farming properly. The adoption of best plantation practices in certification is an ideal cocoa plantation management package not only for farmers but for the future of agriculture and the world as a whole. The management of cocoa farms, known as Best Plantation Practices, requires farmers to apply fertilizing, pruning, frequent harvesting and sanitation practices to control cocoa plant pests while increasing the quantity and quality of farmers' production. The use of chemicals, especially fertilizers and pesticides, is recommended with provisions as needed and is not excessive or in other words the practice is the right dosage, the right way, on time and on target so that it does not have a negative impact on the health of farmers and does not pollute the environment in the short and long term. In order to reduce the use of excessive chemicals while preserving the environment, farmers are invited to farm/garden organically.

3.2. The Roles of Men and Women in Time Allocation

Role is a form of behavior expected from someone in certain situations. The role is influenced by social conditions both inside and outside and is stable. When someone has carried out their rights and obligations in accordance with their position means that they have carried out a role.

3.2.1. Cocoa Cultivation Time Allocation. Farmers in Batu Alang Village work in the garden every day and do their farming activities. Farmers often do light pruning every time they come to the garden

and clean the garden to make it easier for farmers to fertilize. The farmer's wife also helped her husband in pruning and cleaning the garden.

Table 1. Average time allocation for husband and wife before and after participating in the cocoa sustainability program in cocoa farming activities for a month.

Cultivation Activity Group	Before Joining the Cocoa Sustainability Program		After Following the Cocoa Sustainability Program	
	Husband	Wife	Husband	Wife
	n	n	n	N
Pruning and Cleaning the Garden				
Low (20 - 80 hours / month)	0	38	0	37
Medium (80.1 - 140.1 hours / month)	11	2	11	3
High (140.2 - 200 hours / month)	29	0	29	0
Average Time Allocation (hour / month)	13	13	13	13
Pest and Disease Control				
Low (0 - 4 hours / month)	1	40	2	40
Medium (4.1 - 8.1 hours / month)	24	0	26	0
High (8.2 - 12 hours / month)	15	0	12	0
Average	13	13	13	13
Fertilization				
Low (0.5 - 1.3 hour / month)	8	17	8	17
Medium (1.4 - 2.2 hours / month)	26	22	26	22
Height (2.3 - 3 hours / month)	6	1	6	1
Average	13	13	13	13

Table 1 shows the average total time allocation of husband and wife respondents before joining the cocoa sustainability program in the three groups of cocoa farming activities for a month was 162.68 hours and 51.61 hours. While the average total time allocation spent by husband and wife respondents after participating in the cocoa sustainability program in the three groups of cocoa farming activities for a month was 166.63 hours and 54.44 hours. Eliana, and Ratina [7] said, there are several factors that influence the outpouring of farm woman working time in the agricultural sector including age, number of dependents, education level and family income. The time available to farm women is a factor related to the level of farm women in farming. This is consistent with the opinion of Rinaldi [8] factors that affect production and have a positive effect are labor, pesticides and land area. Increased cocoa production can be increased by increasing the flow of labor in maintaining cocoa plants such as pruning.

3.2.2. Time and Post Harvest Allocation. Before the existence of the cocoa sustainability program, more cocoa pods were produced. This is because the condition of cocoa is still very good. Wife respondents play a very important role during harvest and post harvest. When harvesting, the respondent's wife helps her husband collect the cacao that has been picked and clean the cacao that has been peeled. Husband respondents are more likely to do fruit picking and cocoa stripping.

Table 2. Average time allocation for husband and wife before and after participating in the cocoa sustainability program in harvest activities and post harvest for a month.

Harvest Activity Group and Post Harvest	Before Joining the Cocoa Sustainability Program		After Following the Cocoa Sustainability Program	
	Husband	Wife	Husband	Wife
	n	n	n	n
Harvest				
Low (10-18 hours / month)	22	29	28	33
Medium (18.1 - 26.1 hours / month)	17	10	12	7
High (26.2 - 34 hours / month)	1	1	0	0
Average	13	13	13	13
Post-harvest				
Low (0 - 6.7 hours / month)	11	0	11	0
Medium (6.8 - 12.5 hours / month)	23	0	25	0
High (12.6 - 20 hours / month)	6	40	4	40
Average	13	13	13	13

Table 2 shows the average total time allocation before joining the cocoa sustainability program in harvest and post-harvest activities, the number of husband respondents who allocate the most time for a month is in the range of 27.70 hours / month, while for the highest number of wife respondents allocating time for a month is in the span of 33.68 hours / month. After participating in the cocoa sustainability program in plantation harvest and post-harvest activities, the number of husband respondents who allocated the most time was in the range of 26.31 hours, while for the number of respondents the wife who allocated the most time for a month was in the time span of 32.8 hours.

3.2.3. *Cocoa Marketing Time allocation.* Cocoa marketing time allocation is how long it takes farmers to market cocoa from the farmer's house to the traders.

Table 3. Average time allocation of husbands and wives before and after participating in the cocoa sustainability program in cocoa marketing activities for a month.

Marketing Activity Group	Before Joining the Cocoa Sustainability Program		After Following the Cocoa Sustainability Program	
	Husband	Wife	Husband	Wife
	n	n	n	n
Marketing				
Low (0 - 0.2 hours / month)	19	35	19	33
Medium (0.3 - 0.4 hours / month)	21	4	21	6
Height (0.5 - 0.6 hours / month)	0	1	0	1
Average	13	13	13	13

Table 3 shows the average time allocation of husband and wife respondents before joining the cocoa sustainability program in the cocoa marketing farming activity group for a month is 0.27 hours and 0.07 hours. While the total time allocation devoted by husband and wife respondents after participating in the cocoa sustainability program in the cocoa marketing farming activities group for a month was 0.26 hours and 0.09 hours.

3.3. Household income

Household income is the amount of money received from the results of productive activities, both from agriculture and non-agriculture in the household every month.

Table 4. Average Household Income of Cocoa Farmers Before and After Participating in the Cocoa Sustainability Program in Cocoa Farming Activities for a Month.

Household income (Rp. / Month)	Before Joining the Cocoa Sustainability Program	After Following the Cocoa Sustainability Program
	n	n
Low (IDR 588,000- IDR 2,620,000)	31	19
Medium (Rp.2,620,000,1 - Rp.4,660,000,1)	8	17
High (Rp.4,660,000.2 - Rp.6,600,000)	1	4
Average	13	13

Table 4 shows the average household income of farmer respondents before joining the cocoa sustainability program for a month, which is IDR 1,861,607. Whereas after participating in the cocoa sustainability program, the average household income of the farmer respondents for a month is IDR 2,933,358, -. After participating in the cocoa sustainability program, the income level of farmers' respondents has increased. Cocoa prices which are very volatile affect the income of farmers. This is in accordance with the opinion of Rifin and Nurdiyani [9] that the fluctuation of world cocoa prices has led to fluctuations in domestic cocoa prices, including the price of cocoa in several major centers of Indonesian cocoa, the price of domestic cocoa follows the price of cocoa in the world market, especially prices in the world London Cocoa Terminal Market and New York Board of Trade (NYBOT).

Apart from the fact that cocoa prices affect cocoa farming income, the area of land managed by respondents also influences cocoa farming income. This is in accordance with the opinion of Charisma [10] which states that land area, capital, labor wages and cocoa commodity prices affect household income. However, the area of land managed is a factor that has a greater effect on net income. The more land is managed, the higher the net income owned by farmers.

3.4. Decision Making of Men and Women

Gender awareness can also be measured by looking at the level of decision making in the household. This decision making concerns the ability of each household member, especially husband and wife, to give opinions, participate and organize an activity within the scope of the household.

Table 5. Decision making in cocoa farming activities before and after the cocoa sustainability program for a month.

Cocoa Farming Activity Group	Decision Making Before Participating in Programs (RT)						Decision Making After Following Program (RT)					
	SS	Elementary school	SSI	The ID	IS	Total	SS	Elementary school	SSI	The ID	IS	Total
Cocoa Cultivation												
Pruning and Cleaning the Garden	36	0	4	0	0	40	32	8	0	0	0	40
Pest and Disease Control	32	3	5	0	0	40	26	5	8	1	0	40

Fertilization	25	6	7	2	40	21	7	10	2	40		
Harvest and Post Harvest												
Harvest	16	7	17	0	0	40	12	7	21	0	0	40
Post-harvest	6	5	20	9	0	40	13	5	20	12	0	40
Marketing												
Marketing	15	11	14	0	0	40	12	9	18	1	0	40
Financial Utilization												
Financial Utilization of RT	0	0	0	15	25	40	0	0	0	10	30	40

Note: Abbreviation for table

- SS : Husband Himself (Husband Who Makes Decisions)
- Elementary school : Dominant Husband (Husband and Wife Who Makes Decisions But Husband Is Dominant)
- SSI : Husband and Wife Equivalents (Husband and Wife Equivalents When Decision Making)
- The ID : Dominant Wives (Husbands and Wives Who Make Decisions But Dominant Wives)
- IS : Wife Alone (Alone Wife Who Makes Decisions)

Table 5 shows the decision making in the cocoa cultivation activity group before and after participating in the cocoa sustainability program, namely the husband himself. Decision making on harvesting and post-harvest activities before and after joining the cocoa sustainability program is equal to husband and wife. Decision making on marketing activities before joining the sustainability program, namely the husband himself and after joining the cocoa sustainability program, which is the equivalent of husband and wife. Decision making on household financial utilization before and after participating in the cocoa sustainability program is the dominant wife. This is in accordance with Meylasari [11] explained that when viewed from the pattern of decision making in farming activities, women always contribute in every decision taken, from preproduction to post-production. Even at the post-harvest management stage, decisions are dominated by farm women, that is, farm women are very instrumental in determining the use of crops, both for consumption and for marketing.

3.5. Relationship of Time Allocation and Household Income

Time allocation in cocoa farming is the amount of time spent by husband and wife in cocoa farming activities. Husband and wife income is how big the contribution of husband and wife in household income.

Table 6. The Relationship between Time Allocation and Household Income Before and After the Cocoa Sustainability Program for a Month

Relationship between Time Allocation and RT Revenue	Coefficient Value	Significance Value
Before Joining the Cocoa Sustainability Program	0.552	0.002
After Following the Cocoa Sustainability Program	0.489	0.015

Table 6 shows that the time allocated by farmers before joining the cocoa sustainability program has a significant relationship with household income with a significance value of 0.002 and a coefficient of 0.552. While the time allocation devoted by farmers after joining the cocoa sustainability program also has a significant relationship to household income with a significance value of 0.015 with a coefficient value of 0.489. Allocation of time devoted by farmers in cocoa farming activities affects their household income. The higher the time allocated, the higher the income earned. This is in accordance with the opinion of Simanjuntak in Wanda [12] that if the wage level is higher the individual will tend to increase the number of hours he has provided for work (substitutions effect).

4. Conclusion

Based on the results and discussion described previously, it can be concluded several things as follows: The average time allocation of men and women in aquaculture activities before participating in the cocoa sustainability program is 162.68 hours and 51.61 hours and after following the sustainability program cocoa 166.63 hours and 54.44 hours. The average time allocation of men and women in harvest and post-harvest activities before participating in the cocoa sustainability program is 27.70 hours and 33.68 hours, while after participating in the cocoa sustainability program is 26.31 hours and 32.80 hours. The average time allocation of men and women in cocoa marketing activities before joining the cocoa sustainability program is 0.27 hours and 0.07 hours, while after participating in the cocoa sustainability program that is 0.26 hours and 0.09 hours. The pattern of household decision making before and after joining the sustainability program in cocoa cultivation activities, namely the husband himself, in the harvest and post-harvest activities equivalent to husband and wife, in marketing activities before joining the cocoa sustainability program, namely the husband himself, whereas after joining the cocoa sustainability program the husband's equivalent and wife and wife's dominant household financial utilization. There is a significant relationship (p value <0.05) between the time allocation of men and women with household income. There is no significant relationship (p value > 0.05) between the time allocation of men and women with decision making on household financial utilization.

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