

*Full Length Research Paper*

# Investigation of factors associated with the size of receipt reinvestment cocoa farming in Luwu district

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## Abstract

This research aimed to find out the factors that have a relationship to the size of farm receipts reinvestment cocoa farmers do. This research implemented in Luwu district for six months from August 2013 to January 2014. The research method used was quantitative method (Chi square analysis). The results showed that factors related to the size of farm receipts reinvestment cocoa farmers did, are: motivation, land area, the amount of production, household income, attention, perception, cocoa farming experience, the ability to accept risks, the ability to save, the response of farmers advanced to farmers and the price level.

**Keywords:** Reinvestment, acceptance, cocoa farming

## INTRODUCTION

One of the sub-sectors that are expected to give an important contribution in the development of agriculture is plantation. Plantation is a subsector that has contributed to the national economy through employment, national income, foreign exchange and tax revenues.

The main production centers of Cacao Indonesia in 2011 found in 6 (six) provinces in South Sulawesi, Central Sulawesi, Southeast Sulawesi, West Sulawesi, North Sumatra and East Kalimantan with a contribution with 74.59% of the total Indonesian cocoa production. South Sulawesi is ranked first with a contribution with 21.88% of the total cocoa production in Indonesia, while other provinces contributed less than 15%, Anonymous (2013).

Luwu is one of the centers development cocoa in South Sulawesi province with total area 36.762 ha and production 23169.73 tons involving farmers as much as 31 702 households, Anonymous (2012). Facts on the

field indicate that the growth of farmer's cocoa production generally has increased in early cultivated but over time, the production has decreased quite dramatically, and resulted in farmers suffered losses eventually forced some farmers to switch to another farm. This happens, allegedly because of the farmers behavior in managing farming tend to expect at the mercy of nature so that the greater part of farm income earned, used and invested for outside cocoa farming needs. Investment in agriculture is an important policy issue because agricultural production is a function of several inputs, including current capital level, which depends on the investment decisions on the past. Annual investment decisions affect production today and future. Thus, any policy that increased investment will affect agricultural output for the next few years.

The lack of investment in agricultural *inputs* such as fertilizers, hybrid seeds, or employment is expected to

encourage low yields. Several factors may help explain why farmers fail to invest in potentially lucrative as the input, among others:

First, the possibility who the farmers aware of the various risks adopting methods or new farming tools, if they invest and their plants still fail, they will have less money than if they do not invest at all. Karlan research results (2012) showed that the risk of encouraging a lack of investment in agriculture in northern Ghana is not a lack of capital. It is evident when the farmer is given by insurance; they spend more on *inputs* such as chemicals, tillage, and labor.

Second, farmers also do not have necessary capital to buy the inputs, and disable to obtain finance credit their investment in agriculture, because the cost to use the new technology is quite high, but use of the technology package, can improve the farmer's welfare. Therefore, financial institutions and policy makers need to understand first, what factors really relate to investment in agriculture.

The farmer's behavior in investing acceptance of farming is influenced by several factors, including of individual characteristics and environment, Azwar (2000). According to Robbins in Bahrin, (2008) suggests that there are several variables which underlie behavior at the individual level, including the characteristics of biography; ability, personality and learning. Further research Osaka, JI (2006), Oluwasola O., *et al.* (2011) and Amu, M.E.K (2012) found that the factors that provide a positive and significant effect on the savings level and investment behavior include income, the savings amount, the savings knowledge, family size, loans, insurance, and land. Consistent with the above results, Musshoff, O. (2013) also found that socio-demographic characteristics and specific socio-economic influence the farmers behavior to invest.

Research about factors which affect farmers in investing, has been carried out by several researchers, including: Qiang (1997), Schurle (2004), Osaka (2006), Oluwasola (2011), Olsen (2011), Issahaku (2011), Widayat (2011), Girma (2012), Karlan (2012), Tubetov (2012) and Musshoff (2013). The research, examine purpose and reason or motivation household's decision to invest their income in various sectors and factors that influence decision of investment options. While research by the author, in substance terms, focus on the cocoa plantations of people and in terms method, there are some additional variables that are not observed by previous researchers and differences in the use of data analysis.

The study of factors related to the size of reinvestment of cocoa farm receipts to be important, remind that cocoa is one of the main export commodities. Nationally, cocoa the third largest foreign exchange earner after oil palm and rubber, Anonymous (2013). The prospect of cocoa

commodity markets is very promising for the world market demand is higher than production and potential resource as well as quite a lot of land to support people who depend on this farm. But the fact that the production of cocoa farming farmers who have achieved today, is still far from potential production so that the expected results of this research contribute to efforts to increase production of cocoa farming.

## MATERIALS AND METHODS

The research was conducted in Luwu with consideration that Luwu is a center of cocoa development by land area and higher productivity than some other districts in South Sulawesi province. Then selected four districts with consideration with farmer's number and high productivity and easily accessible, among others: Larompong District, Bupon District, Kamanre District and Bajo District. Each district selected one village and cocoa farmers as a sample in each village as much as 10 percents of the total population.

On this research, the population are farmers in the village of Batulappa District, South Larompong as many as 378 heads families, Noling Village, Bupon District with 510 heads families, Kamanre Village, District of Kamanre as many as 428 heads families, and Sumabu Village, Bajo District with 205 households. Of the four Villages, taken as many as 10 percent of the total population. The respondents were purposively selected was cocoa farmers who have cocoa plant production already. Data collection technique in this research using interview, observation and documentation.

The data used in this research consisted of primary data include data on: the characteristics of cocoa farmers biography, personality cocoa farmers, farmer learning cocoa, cocoa farmers capability, cocoa farmers external factors, and the size reinvestment of cocoa farm receipts and secondary data.

Descriptive data were analyzed quantitatively (Percentage, Frequency, and Chi-Square). *Chi-Square* analysis techniques used to analyze the relationship between the characteristics of the biography, personality, learning, ability, and farmers external factors with size of reinvestment by farmers in cocoa farming.

## RESULTS AND DISCUSSION

### Relationship between Characteristics Biography by the size Reinvestment

Chi-Square analysis results show that there are four (4) variable biography characteristics of respondents had a significant relationship with the size of reinvestment in cocoa farming. The fourth sub-

**Table 1:** Results of Chi-Square Analysis Relationship Between Characteristics of Respondents by The size Biography Reinvestment Cocoa Farming in Luwu, South Sulawesi, 2013.

Biography Characteristics of Respondents	The size of the Reinvestment		
	Chi-Square Calculate value	Value of Chi-Square Table ( $\alpha = 5\%$ , df 1)	Asymp value. Sig. (2-sided)
Age (Years)	2,051	3,841	0,152
Education	0,298	3,841	0,585
Motivation	8,207	3,841	0,004
Land area (ha)	74,105	3,841	0,000
Total Production (kg ha/thn)	17,184	3,841	0,000
Household income in 2012 (Rp)	42,897	3,841	0,000
Total Family Dependand (People)	0,270	3,841	0,603

Source: Primary Data after being processed, in 2014

variables include: motivation, land area, the amount of production and household respondents income can be seen on Table 1.

Table 1 show that the relationship between motivations to the size of reinvestment is "unidirectional". This means that, the higher tendency of motivation, the greater reinvestment. *Output Cross tabulation* shows the distribution of respondents in low motivation levels, generally (82%) has small reinvestment amount. While the distribution of respondent's motivation on a high level, as much as 43% of respondent's large amount reinvestment.

Farmers, who have high motivation, are generally farmers who do farming to achieve success or to gain / level higher returns. Therefore, farmers are high motivation, willing to invest a greater acceptance of cocoa farms, hoping to obtain a higher yield of the production of cocoa farming. This is in line with *Keynes's* theory of *investment*, which is essentially that investment demand is highly dependent on the level of the expected net gain.

Sub variable farming land area to size reinvestment, has a relationship "unidirectional". Cross tabulation output shows that the distribution of respondents with a narrow field / low ( $\leq 1$  ha), in general (97%) has small reinvestment. While the distribution of respondents by large land/high ( $> 1$  ha), in general (70%) has big reinvestments. This suggests that there increasingly widespread tendency of land, the greater reinvestment. Facts on the ground also show that the vast land inputs require more production and thus require greater investment. As well as small area requires production inputs less, so that the investment required is also smaller.

Furthermore, the relationship between the amounts of production to the size of reinvestment is "unidirectional". This shows that there is a tendency the higher amount production of cocoa seeds, the greater reinvestment and otherwise lower production, the smaller reinvestment, as

seen in the output cross tabulation, respondents distribution with low production number ( $< 700$  kg / ha / yr), in general (74%) has small reinvestment. While the distribution of respondents with high production levels ( $\geq 700$  kg / ha / yr), in general (62%) has big reinvestment. It can be explained that the high cocoa farm production, have a direct impact on the reception so the farmers have sufficient funds for basic household needs and also to invest in cocoa farming. Otherwise, if the production of cocoa farming is low, then the revenue that is also low and the acceptance priority to household basic needs for farmers, so that a small amount of reinvestment.

Likewise, the relationship with household size income reinvestment is "unidirectional". This can be seen in respondents distribution with lower household income levels ( $< \text{USD } 18$  million / year), in general (94%) has small reinvestment. While respondents distribution with higher levels of household income ( $\geq \text{Rp } 18$  million / yr), in general (68%) has major reinvestment. This means that there is a trend higher household income, the greater reinvestment of cocoa farming, and otherwise, the lower household income, the less reinvestment cocoa farming. Household income consists of a cocoa farm income added by outside income earned farm cocoa farmers and their family members. Higher household incomes will affect farmers have sufficient funds to fulfill main family needs and also for cocoa farming investment needs.

The sub-variable characteristic biography that does not correspond to the size of reinvestment are: age, education, and number of dependents. *Output Cross tabulation* showed that distribution respondents at various levels of **age, education and number of dependents**, are generally reinvested in the category of "small". The result of this analysis is in line with the results Issahaku (2011) and Oluwasola (2011) that does not determine the age of the investment. But not in line with the results of Amu (2012) that there is a direct positive correlation between age, family size with the knowledge and households behavior in investment.

**Table 2:** Chi-Square Results Analysis of the Relationship Between Personality Reinvestment Respondents with a size of Cocoa Farming in Luwu, South Sulawesi, 2013.

Respondents personality	The size of the Reinvestment		
	Calculate the value of Chi-Square	Value of Chi-Square Table ( $\alpha = 5\%$ , df 1)	Asymp value. Sig. (2-sided)
Knowledge cultivation of cocoa	3,382	3,841	0,066
Attention Farmers to plant cocoa	7,733	3,841	0,005
Perception of farmers on plant cocoa ability to meet household basic needs of farmers.	31,931	3,841	0,000

Source: Primary Data after being processed, in 2014

**Table 3:** Results of Chi-Square Analysis of the Relationship Between Learning Respondents with The size Reinvestment Cocoa Farming in Luwu, South Sulawesi, 2013.

Learning Respondents	The size of the Reinvestment		
	Chi-Square Arithmetic	Value of Chi-Square Table ( $\alpha = 5\%$ , df 1)	Nilai Asymp. Sig. (2-sided)
Farming Experience	6,166	3,841	0,013
Extension Frequency	3,542	3,841	0,060
Training Frequency	0,143	3,841	0,705

Source: Primary Data after being processed, in 2014

### Relationship between Personality by the size Reinvestment

Of the three sub personality variables analyzed, there are two (2) sub-variables had a significant relationship with the size of reinvestment in cocoa farming, they are: **the attention of farmers** to plant cocoa and **perception**, this can be seen in [Table 2](#):

[Table 2](#) shows that based on the *cross tabulation table*, it can be said that direction of the relationship is "unidirectional". This is shown by the distribution of respondents with low attention; in general (79%) has small reinvestment. While the distribution of respondents with high attention, large reinvestment by 45% of respondents. Likewise, respondent's distribution with a low perception / bad, in general (98%) has small reinvestment. While the distribution of respondents with high perception / well, in general (51%) has big reinvestment. This shows that there is a tendency, the higher the attention of farmers to plant cocoa and better perception of farmers to plant cocoa as a source of income that can meet the household basic needs, then the greater reinvestment.

Based on interviews and observations results, the authors can explain that, a high attention to farmer's means farmers have more time in the garden look cocoa crop conditions so that farmers can accurately determine the condition of the plant and the various actions required of the plant, which would act requires costs. Similarly, the

perception of a good farmer to plant cocoa as a source of income that can meet the basic needs of farmer households, will lead to high confidence for the success of farming cocoa farmers, thus farmers dare to invest in a cocoa farm receipts greater amount. Otherwise, a bad perception caused farmers are reluctant to invest the revenue in large numbers. These findings concur with Teshome (2012), that the perception of a significant effect on the probability of the use of capital for investment.

Sub personality variables do not have a relationship with; the extent of the reinvestment of cocoa farming is their knowledge of cocoa cultivation techniques. *Output Crosstabulation* show that respondent's distribution, both with low knowledge level and with a high level of knowledge, in general, small reinvestment. That is, the farmer who has a level of knowledge about the different cultivation techniques, the size can be done reinvestment same cocoa farms or farmers whose knowledge could also low but high reinvestment and vice versa. So despite the high knowledge, but if funds owned limited, then the amount invested cocoa farm receipts will be small.

### Learning relations with the size of Reinvestment

Chi-Square analysis results showed that of the three (3) sub learning variables analyzed, there is a sub-variables that are related to the size of reinvestment, is sub-variables cocoa farming experience, this can be seen in [Table 3](#).

**Table 4:** Results of Chi-Square Analysis of the Relationship Between Respondents Reinvestment Ability with a size of Cocoa Farming in Luwu, South Sulawesi, 2013.

Respondents Ability	The size of the Reinvestment			
	Chi-Square Arithmetic	value	Value of Chi-Square Table ( $\alpha = 5\%$ , df 1)	Asymp value. Sig. (2-sided)
Accepting Risks Ability	12,401		3,841	0,000
Savings Ability	50,847		3,841	0,000

Source: Primary Data after being processed, in 2014

**Table 5:** Results of Chi-Square Analysis of the Relationship Between Factor Eksternal Respondents With Reinvestment size of Cocoa Farming in Luwu, South Sulawesi, 2013.

Respondents External Factors	The size of Reinvestment			
	Chi-Square Arithmetic	value	Value of Chi-Square Table ( $\alpha = 5\%$ , df 1)	Asymp value. Sig. (2-sided)
Information Access	0,069		3,841	0,793
Market Access	1,442		3,841	0,230
Farmers Advanced Response	12,471		3,841	0,000
Price Level	5,028		3,841	0,025

Source: Primary Data after being processed, in 2014

Table 3 shows that respondents with lower levels of farming experience, in general (83%) has small reinvestment and respondents with high farming experience, as much as 41% has major reinvestment. The results of this analysis showed that the lower tendency of farming experience, the reinvestment also small.

The sub-variables of learning that has no significant relationship with the size of reinvestment, there are extension frequency and training frequency. In *Cross tabulation* table shows that the respondents to rate the frequency of counseling and training frequency levels are low and high, are generally small reinvestment. This suggests that farmers with frequency extension and differences training frequencies, but to reinvest are same.

### Ability relationship with the size of Reinvestment

Of the two sub-variables analyzed capabilities, both have a significant relationship with reinvestment size of cocoa farming. Based on the distribution of respondents in *Cross tabulation table*, it can be said that the relationship between the ability to accept risk and ability to save the size reinvestment is "unidirectional". This is shown by the distribution of respondents with the ability to accept a low risk; in general (87%) has small reinvestment. While the distribution of respondents with the ability to accept high risk, as much as 44%. Has big reinvestment. Otherwise, the distribution of respondents with low saving ability, in general (89%) has small reinvestment. While the distribution of respondents with high saving ability, in general (67%) major reinvestment. This shows that there is a tendency, the higher the respondent's ability to accept risk and the ability to save, the greater reinvestment.

The more bold / high ability of farmers to accept the risk, the greater reinvestment cocoa farm receipts, otherwise the fear / lower ability of farmers to accept risk ability, the smaller the reinvestment of cocoa farming. Farmers ability to accept the risk, will affect the selection of the type *input* used. Farmers who dared to accept the risk (*risk takers*) will invest in *inputs* that can deliver results even though the risk is great variation but the opportunity to earn profits bigger. Instead farmers are afraid to accept the risk (*risk aveter*), will avoid the *inputs* that cause variations in the results and prefer other input is not expected to cause large variations results. The result of this analysis is in line with Karlan results (2012) that the risk is one that encourages a lack of investment in agriculture.

The higher ability to save is bigger reinvestment of cocoa farm receipts, whereas the lower ability to save is less reinvestment cocoa farming. Farmers with high saving ability, of course, have funds at any time can be used for main needs so that cocoa farm receipts can be used on cocoa farming investment needs. This is in line with Issahaku results (2011) and Girma (2012) that one of the encouraging investment is savings

### Relationship Between External Factors with the size Reinvestment

Results of Chi-Square analysis showed that of the four sub-variables analyzed in respondents external variable factors, there are two sub-variables had a significant relationship and "unidirectional" with the size of reinvestment they are: a response to advanced farmer and the price level, it can be seen in Table 5

Table 5 shows that there is a higher tendency of farmers to farmers' response developed and the higher

level of prices is bigger reinvestment. This is shown by the distribution of respondents with low response; in general (74%) has small reinvestment. While the respondents distribution high response, in general (58%) has big reinvestment. Otherwise, the distribution of respondents with a low price level (IRD 14000-18000), in general (74%) has small reinvestment. While the distribution of respondents with a high price level (IRD 22000-24000), as much as 44% has big reinvestment, while sub external variable has no relation to the size of reinvestment of cocoa farm receipts are: access to information and access to markets. In *Cross tabulation table*, it appears that distribution of respondents on both level of access to information and access to the market, in general, lower reinvestment. This indicates that respondents who have access to information or access to the market at different levels, could have been the size of reinvestment done is same.

Results of Chi-Square analysis, generally indicates that the factors that have a relationship to the size of reinvestment of cocoa farm receipts are: motivation, land area, total production, household income, cocoa crop attention, farmers' perceptions on the cocoa plant as a income source can meet the household main needs, cocoa farming experience, the accept risk ability, saving capabilities, farmers developed response, and the price level. While the factors that do not have a relationship are: age, education, number of dependents, knowledge cultivation techniques, extension frequency, training frequency, resources access, and markets access. These findings are consistent with the findings by Schurle, B., et al (2004), Osaka, JI (2006), Oluwasola, et al (2011), Issahaku (2011), Karlan (2012), Teshome (2012) that the behavior investment have a relationship with income, land area, perception, savings, and risk while age and education do not have a relationship.

In general, factors associated with the size of cocoa farm receipts reinvestment of research findings is an economic aspect, while social and demographic aspects, in general do not have a relationship. The author may explain based on interviews and observations, that cocoa farming in general (54% of respondents) is the only source of income of farmers. So the farm household main needs filled by cocoa farm receipts, or in other words that the cocoa farm receipts preferred to meet consumer needs while reinvestment needs are met when there is consumption nothing left. However, based on the results of previous studies include: Olsen, JV, (2011), Widayat (2011), Amu (2012), and Mushoff (2013), that social characteristic, demographic and economic, associated with investment behavior.

## CONCLUSION

The factors that have a relationship to size of the reinvestment of cocoa farm receipts, namely: motivation, land area, the

amount of production, household income, farmers' attention to the cocoa crop, perception, experience, ability to accept risks, Savings ability, the response of farmers to farmers developed and the price level. In formulating policies for agricultural development, particularly cocoa plantation investment policy of the people's cacao farm, should pay attention to the farmer's economic aspects because dominant factors related to the size of reinvestment by the farmers is the economic aspect.

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