

Strategic Role of Input Access in Poverty Reduction of Robusta Coffee Farmers

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Abstract: *In farming, there are coffee farmers who live below the poverty line due to lack of income because farmers are faced with difficulties in gaining access to agricultural management in the form of inputs such as seeds, fertilizers, limited land, and labor. This study aims to analyze the role of input access in increasing income (decreasing poverty) of robusta coffee farmers. The results showed that the percentage of farmers living under the poverty line was 49% with a poverty gap index of 0.05. Significantly, land input access (0.564) affected the increase in income (decreasing poverty) of robusta coffee farmers.*

Keywords: Access to input, poverty reduction, robusta coffee farmers

1. Introduction

Indonesia's farmers, most of them are poor, have common characteristics, ie, land tenure of less than 1 ha or even 0.5 ha, weak knowledge and information about agricultural progress, weak capital when starting production process in farmland, weak technology due to lack of information and lack of access to credit, because of the far-reaching formal financial institutions of their dwellings, the absence of collateral owned as required by banks, and laymen for the procedure of credit granting, the lack of governmental attention to them, especially in the era of truly peasant reform and Indonesian agriculture is stagnant if they do not want to be called setbacks, the prices of farmers' products are very volatile and never move from around that alone (Antara, 2009).

Limitations of farmers in access to capital, land tenure, access to farm inputs (seeds, fertilizers, pesticides), bargaining position on the market, skills, knowledge and accessibility of market information and technology media will influence decision making process in determining commodities to be cultivated and utilization of technology to improve its standard of living (Kementerian Komunikasidan Informatika, 2015).

There is a relationship between access and income levels of farmers. If access is improved, it means that the potential for increasing individual income also increases so that the poverty rate will decrease. Increased access means time savings and consequently more time spent on economic activities, including farming activities (MagribidanSuhardjo, 2004).

2. Review of Literature

2.1 Poverty

Poverty originally the cause is divided into 2 kinds. First is the cultural poverty, namely poverty caused by the existence of customary or cultural factors of a certain region that bind a person or a group of certain communities so that makes him stick with poverty. Such poverty can be eliminated or

can be reduced by ignoring the factors that prevent it from making a change toward a better level of life. Second, is structural poverty, that is poverty that occurs as a result of the powerlessness of a person or a group of people against an unfair system or social order, so they are in a very weak bargaining position and have no access to develop and free themselves from the poverty trap or in other words "a person or a group of people becomes poor because they are poor" (BadanPusatStatistik, 2016).

The indicator in measuring poverty that is common and will be used in this research is the monetary approach by looking at individual income per capita. Regarding the relationship of poverty and income, Rowntree which was quoted by Salam (Muslim, 2015) explains that "Families as being in "primary poverty" if their total earning are insufficient to obtain the minimum necessities for the maintenance of merely physical efficiency".

2.2 Access to Input

2.2.1 Land

According to Bahrin, et al (2008), land for farmers is a very important production factor. Land is a source of income for survival. Land ownership and tenure is one of the main factors in determining income level of a family or farm household. Therefore, the absence or lack of ownership and control of land is the beginning of poverty in rural areas.

Large land, if not managed or cultivated properly then can't provide optimal results for the owner, if left untouched, not cultivated. On the other hand, broad mastery if not as owner but tenant or profit sharing also can't gain optimal benefit, because part of the proceeds must be allocated to pay rent or handed over to the land owner, especially with expensive rent or profit sharing system which less reflect the element of justice between the tenants and the landowners. Therefore, a land can provide a result to a family or household if the land is self-owned or self-cultivated.

2.2.2 Seeds

If using vegetative seedlings, the seedlings should be around eight months old. Seeds used have been tested for several

generations. The goal is to predict the results of production that will be obtained. Therefore, do not use seeds that have not been tested in environmental conditions or areas to be planted, even if the seeds to be used include superior seeds. Meanwhile, if the seeds to be used come from the seedlings (generative), should be one year old (Panggabean, 2011). Ease of access to superior coffee seedlings will have an impact on farm production. Superior seeds used are vegetative and generative seeds. The use of varieties of good and superior coffee seedlings can obtain high yields. Thus, the income of farmers will also increase so that the poverty level decreases. Conversely, if the seed varieties used are not good or not superior, then the production of coffee farming will also be reduced and the income will also decrease. Thus, it is suspected that access to coffee seedlings influences coffee production activities and indirectly affects the poverty of robusta coffee farmers.

2.2.3 Fertilizer

Andyana (2011) suggests that the proper use of fertilizers (types, doses, times and ways) will be profitable economically so that the production of coffee farming can increase and benefit the farmers in order to increase their income and the poverty of farmers decreases. In an effort to develop coffee farming, farmers usually meet the needs of fertilizer through traders who also buy the production of farming. The ease of obtaining the supply of fertilizer will greatly assist farmers in improving the production of farming which will have an impact on increasing farmers' income.

2.2.4 Labor

Efforts to maximize the utilization of local resources by involving governments, businesses, local communities and community organizations to develop economies in a region to create better conditions for economic growth and job creation that prioritize increased employment and household income, poverty reduction and unemployment. The purpose of local economic development is to stimulate local employment opportunities in certain sectors to improve the welfare of the people, using existing human, natural and institutional resources with priority job creation and poverty reduction.

According to Sunarti and Ali (2009), the problem of poverty is related to the low quality of human resources or labor as a factor of production. The better the available labor, the poverty level will also decrease. On the contrary, the lower the quality of labor used in farming activities, the higher the poverty. Thus, a high economic development strategy will be able to create good conditions in addressing the problem of poverty.

3. Materials and Methods

This research was conducted in Lembang Sub-district, Pinrang District, South Sulawesi Province. The timing of the research is from December 2017 to February 2018 with sample of 100 people.

To analyze the poverty indicators of robusta coffee farmers in Pinrang District based on the percentage of the Head Count Index and the Poverty Gap Index, as defined by

Foster-Greer-Thorbecke as follows:

$$HCI = \frac{A}{N}$$

Where:

HCI = Percentage of poverty line (Head Count Index - P0)

A = Number of households that are below the poverty line

N = Total households

$$PGI = \frac{A}{N} \sum_{i=1}^A \left[\frac{Z - I_i}{Z} \right]$$

Where:

PGI = Poverty Gap Index - P1 Index

A = Number of households that are below the poverty line

N = Total households

Z = Poverty Line

I_i = Average income per capita of farmers who are below the poverty line

Furthermore, linear regression analysis is used to see the effect of input access to the impoverishment of robusta coffee farmers, with the equation model as follows:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e$$

Where:

Y = Poverty of Robusta Coffee Farmers

X_{1,2,3,4} = input access (land, seed, fertilizer, labor)

b_{0,1,2,3,4} = regression coefficient

e = error variable

4. Results

4.1 Characteristics of Farmers Respondents

1) Age

A person's age can affect his or her daily activities. So even with farmers. Age affects the ability of work and thinking in accepting and creating new innovations. Generally a person who is young and healthy has a stronger physical ability compared with the old age. A young person is quicker to accept new things, take more risk and be more dynamic.

Table 1: Characteristics of Respondent Farmers by Age Group in Lembang Sub-district, Pinrang District, 2018

No.	Age Group (Year)	The Number of Farmer's Respondents (People)	Percentage (%)
1	0 – 14	0	0
2	15 – 60	94	94.00
3	> 61	6	6.00
Total		100	100

Table 1 shows that 94 respondent farmers with 94% percentage are in productive age with range of age 15 years to 60 years. Meanwhile, farmers of respondents who are less productive (> 61 years) as many as 6 people. This indicates that the farmers of respondents in Lembang Sub-district, Pinrang District are mostly farmers who are at productive age. This is in accordance with the opinion Mantra (2007) which states that the productive age is the age where someone can work. The productive age begins at age 15 up to > 60 years. With age we can see the quality of human labor. In the field of agriculture the age level is an important factor, the younger the age then the power to produce maximum or better production.

2) Education

The level of education owned by the farmers is a factor that affects the management of farming. Although a person has adequate physical ability but is not supported by knowledge, the managed business will not improve. The level of education in question is formal education that has been followed by farmers respondents.

Table 2 Characteristics of Respondent Farmers Based on Education Level in Lembang Sub-district, Pinrang District, 2018

No.	Level Of Education	The Number of Farmer's Respondents (People)	Percentage (%)
1	No School	16	16.00
2	Elementary/ Equivalent	45	45.00
3	Junior High School/Equivalent	19	19.00
4	Senior High School/Equivalent	16	16.00
5	Bachelor degree	4	4.00
Total		100	100

Table 2 shows that the level of education attended by 4 respondent farmers is 4 or 4.00%, senior high or equal to 16 persons or 16.00%, junior high school / equivalent of 19 persons or 19.00%, elementary/equal 45 persons or 45.00% as many as 16 people or 16.00%. The level of education is very important for farmers. Therefore, farmers with higher levels of education will have different ways of managing farming, absorbing new technologies and innovations that have been impacted on farmers' behavior when compared to farmers with lower levels of education.

3) Number of Family Count

Family members have an enormous influence in the business activities undertaken, as they are a source of labor and can also assist in decision making. Based on the results of research that has been done, the characteristics of respondent farmers by Total Family Count can be seen in Table 3.

Table 3: Characteristics of Respondent Farmers Based on Total Family Count in Lembang Sub-district, Pinrang District, 2018.

No.	Total Family Count (People)	The Number of Farmer's Respondents (People)	Percentage (%)
1	< 4	42	42.00
2	≥ 4	58	58.00
Total		100	100

Table 3 shows that the number of dependents of respondent households ranging from less than 4 is 42 persons or 42.00%, and the number of farmers who have the number of dependents of 4 people and above are 58 or 58.00%.

5. Discussions

This study uses a poverty line approach based on income level to determine the poverty conditions of robusta coffee farmers in Pinrang District. The standard per capita income per month is Rp 294,385. Robusta coffee farmers who are poor farmers who have average income to meet per capita spending per month below the poverty line. The percentage of poverty farmers robusta coffee can be seen in Table 4.

Table 4 Percentage of Poverty of Robusta Coffee Farmers in Lembang Sub-district, Pinrang District, 2018

No.	Average Revenue (Per Capita / Month)	The Number of Farmer's Respondents (People)	Percentage (%)
1	<Rp 294.358	49	49
2	>Rp 294.358	51	51
Total		100	100

Percentage of poverty of farmers respondents based on poverty line. Respondents with income less than Rp 294,358 per capita / month are 49 people (49%) are classified as poor due to income level below the poverty line, and respondents with income level above Rp 294.358 per capita / month or in other words have income above the line poverty of 51 people (51%) are not poor.

Robusta coffee farmers' poverty gap index is 0.05. This means that average income among robusta coffee farmers belonging to the poor is not far below the poverty line or tends to approach the poverty line and the income inequality of the poor is also narrowed.

Revenue from robusta coffee farming results strongly contributes to household incomes of farmers, but has not been able to meet overall household needs due to narrow land, low yield even sometimes only part of robusta coffee plant that produces, and many types of necessities of life which must be met. By that, some robusta coffee farmers are trying to find other jobs that are expected to help to increase household income.

To know the influence of a number of variables of input access to poverty of coffee farmer robusta linear regression analysis with independent variable that is input access consist of land (X1), seed (X2), fertilizer (X3), and labor (X4) (can be seen in Table 5).

Table 5 Influence of Input Access Variables on Poverty of Robusta Coffee Farmers, 2018

Variable	Standardized Coefficients	t	Sig.
	Beta		
Land	.564	6.130	.000
Seeds	.028	.464	.644
Fertilizer	.034	1.106	.272
Labor	-.043	-.913	.364

a. Land (X₁)

The significant value of land for the decline in poverty of robusta coffee farmers by 0.000. Significantly greater than the 0.05 significance level, H₀ conclusions are rejected and H₁ accepted, indicating that there is a statistically significant relationship between land area and poverty reduction (increase in income) of robusta coffee farmers. The magnitude of the effect of land area with the poverty of robusta coffee farmers is 0.564.

The ownership status of all robusta coffee farmers in Lembang Sub-district, Pinrang District is self-owned. Thus, farmers have the ability to control their land. This is in accordance with the opinions found Bahrin, et al (2008) that broad mastery is not the only one that determines the poverty level of a family or household. If not as owner but tenant or profit sharing also can not obtain optimal profit, because some of the result must be allocated to pay rent or

handed over to landowner, especially with expensive rent or profit sharing system that less reflect element of justice between in tiller and owner land. Therefore, a land can provide a result to a family or household if the land is self-owned or self-cultivated.

b. Seeds (X_2)

The significant value of seedlings to decrease the poverty of coffee farmers robusta of 0.644. Significantly greater than 0.05 ($0.644 > 0.05$), H_0 conclusions are accepted and H_1 is rejected, indicating that there is no statistically significant relationship between access of seedlings to poverty reduction (income increase) of robusta coffee farmers. The magnitude of the effect of seed availability with the poverty of robusta coffee farmers is 0.028.

To get robusta coffee seedlings, farmers do not need to spend because the type of seed used is generative. Nevertheless, farmers should optimize the use of superior seeds to obtain high yields in order to increase robusta coffee production income. This is in line with the results of research that has been done by Burana (2016) that one of the input factors that affect the increase of income (decreasing poverty rate) of farmers is the improvement of quality and productivity of agricultural production with the use of superior seed.

c. Fertilizer (X_3)

Significant value of fertilizer to the decrease of poverty of coffee farmer robusta equal to 0,272. Significantly greater than 0.05 ($0.272 > 0.05$), H_0 conclusions are accepted and H_1 is rejected, indicating that there is no statistically significant relationship between access of fertilizer to poverty reduction (income increase) of robusta coffee farmers. The magnitude of the effect of fertilizer availability with the poverty of robusta coffee farmers is 0.034.

Fulfillment of fertilizer needs for Robusta coffee plant is done by farmers through collectors who buy directly the production of robusta coffee farmers. Although at a more expensive price compared to buying directly in farm shops, this is a choice due to the relatively long distance that must be taken to meet the needs of fertilizer in order to increase the production output which is expected to have an impact to increase the income of farmers so as not to live on the poverty line.

d. Labor (X_4)

Significant value of labor to decrease poverty of coffee farmers robusta of 0.364. Significantly smaller values than significant 0.05 ($0.364 < 0.05$) H_0 conclusions are accepted and H_1 is rejected, indicating that there is no statistically significant relationship between labor access to poverty reduction (income increase) of robusta coffee farmers. The magnitude of the effect of labor availability with the poverty of robusta coffee farmers is -0.043.

Based on the research that has been done, it is known that most farmers use labor outside the family members, especially at harvest time. The amount of labor used for 1 to 5 people employed for 1 - 3 days (as needed) with wages to be paid ranges between Rp 60,000 to Rp 75,000 / person / day. Thus, it will directly affect farmers' income. The more

wages of labor, the income of robusta coffee farmers will also decrease and will affect the poverty of farmers.

6. Conclusions

Robusta coffee farmers poverty profile based on the percentage of poverty line is 49% of farmers who live below the poverty line with index poverty depth of 0.05 which means that there is no imbalance of income far between coffee farmers robusta. Significantly, land input access (amounting to 0.564 influences the income increase (decreasing poverty) of robusta coffee farmers.

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Author Profile



Hasnah was born in Buttu Sappa, Pinrang District, South Sulawesi, Indonesia on December 28, 1992. She got her bachelor degree (S.P) in 2014 at faculty of Agriculture of Hasanuddin University, Indonesia. From 2016 up to present, she continued her study to

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