Factors that influence the decision of coffee farmers to take credit in North Sumatra

S Hotmarida, S F Ayu* and Rahmanta

Master of Agribusiness, Faculty of Agriculture, Universitas Sumatera Utara, Medan, Sumatera Utara, Indonesia.

E-mail: *srifajar.ayu@gmail.com

Abstract. Coffee is a national plantation commodity which plays an important role in the Indonesian economy. Capital is a significant issue for smallholder plantations in North Sumatra. The increase in capital is expected to increase coffee production. Capital obtained through credit will meet the need for funds for land preparation, planting, maintenance and harvesting. This study selected 50 respondents consisting of 25 who took credit and 25 farmers who did not take credit. Respondents were chosen purposively, information obtained by interview and using a questionnaire. Logistic regression analysis is used to determine the relationship of the factors analysed in this study and their influence to increase the likelihood of farmers to take credit. The results of the regression analysis showed that the nature of coffee plants, the nature of credit and credit services had a significant effect on the decision of coffee farmers to take credit in North Sumatra, while the personal aspects of farmers did not significantly influence the decisions of coffee farmers in taking credit in North Sumatra.

1. Introduction

Coffee is one of the national plantation commodities that play an important role in the Indonesian economy. The development of coffee farming which is an annual crop is very potential, especially for export purposes. The characteristics of estate crops which are annual crops differ from seasonal crops. Annual crops are commercial and export commodities, require huge production costs and have a relatively large profit [1]. Efforts to develop the agricultural sector, especially the plantation sub-sector, have various obstacles. One of the problems faced by smallholder farmers as actors in the sector is the capital aspect.

Capital is an important issue for smallholder plantations in North Sumatra. The increase in capital is expected to increase coffee production. Capital obtained through credit is expected to meet the needs for land preparation, planting, maintenance and harvesting. In addition to the need for production, funds are also needed for farmers’ consumption during the period when the coffee plantations were not yet harvested. The availability of credit makes it possible for a better production and consumption process to be carried out, increasing the welfare of farmers so as to provide better production results. The decision to take credit made by the community to solve problems in the economic field is one of the objectives, namely to develop business or venture capital. To be able to decide to take credit, the community must have considered the factors used to take credit and become one of the customers for the company providing the source of funds.
2. Materials and methods

2.1. Location and period of study
This research was conducted in Dairi Regency and Karo Regency, North Sumatra. Based on the consideration that this area is a coffee-producing centre, the population is all coffee farmers who use credit or not. The sampling method is done by purposive sampling of coffee farmers using credit and not using credit as many as 50 respondents. Primary data collection is done through interviews and questionnaires, namely farmers who use cooperative credit and farmers who do not. Secondary data were obtained from related institutions such as BPS.

2.2. Data analysis
Analysis of the factors that influence credit taking is done by logistic regression analysis. This is because the data analysed to have binary dependent variables or have two categories, which in this study are farmers between taking credit and not taking credit [2]. The model used for this analysis is as follows:

\[
\begin{align*}
\text{Logit}(P_i) &= Y = \ln \left( \frac{p}{1-p} \right) \\
&= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e
\end{align*}
\]

\(Y\) = Dependent variable
\(P\) = Odds
\(\beta\) = Regression coefficients
\(X_1\) = The nature of coffee
\(X_2\) = Individual characteristics of farmer
\(X_3\) = The nature of credit
\(X_4\) = The service of credit

3. Result and discussion
Factors that influence credit collection are analysed by logistic regression analysis. There are three factors that influence credit taking, namely the nature of coffee plants, the nature of credit and credit services. Any farmers who take credits are represented by \((Y = 1)\) and not taking credit \((Y = 0)\).

Based on Table 1, the percentage of model accuracy in classifying observations is 92.0 percent. This means that out of 50 observations, there were 46 observations that were classified correctly by the logistic regression model. The correct number of observations for classification can be seen in the main diagonal.

| Observed Status | Predicted Status | Percentage Correct |
|-----------------|------------------|--------------------|
| Not taking credit | 23               | 2                  | 92.0               |
| Taking credit    | 2                | 23                 | 92.0               |

Table 1. Binary logistic parameters based on the classification table

Based on the Log Likelihood value Table above the value before entering the variable is 69.315 while the value after entering the variable is 34.912 then the difference in value before and after entering the variable is 34.403. then the value of 34.403 compared to the k square table is 7.814728. So, it's 34.403 > 7.814728. It can be concluded that this model is suitable to be continued.
Table 2. Binary logistic parameter based on Omnibus Test

| Step | Initial -2 Log Likelihood | -2 Log Likelihood |
|------|---------------------------|------------------|
| 6    | 69.315                    | 34.912           |
|      |                           | 34.403           |

Table 3. Results of analysis of decision making of coffee farmers who take credit

| Variable                          | Coefficient (B) | S.E  | Sig    | Exp(B) |
|-----------------------------------|-----------------|------|--------|--------|
| The nature of coffee plant (X1)   | 0.975           | 0.485| 0.044  | 2.651  |
| Individual characteristics of farmer (X2) | 0.111           | 0.468| 0.812  | 1.118  |
| The nature of credit (X3)         | 1.248           | 0.638| 0.049  | 3.484  |
| The service of credit (X4)        | 1.949           | 0.771| 0.011  | 7.023  |
| Constant                          | -14.345         | 3.793| 0.000  | 0.000  |

Factors that influence credit taking

1. Credit Services (X4)
   Based on the binary logistic parameter test in the above Table, credit services have the greatest significant effect on the dependent variable Y (decision to take credit) with a significance value of 0.011 <0.10 and an effect coefficient of 1.949. This is because farmers avoid complicated things, farmers take credit distribution procedures that are not straightforward and credit information easily accessed by farmers. Distance to sources of credit also affects farmers in taking credit, in research [3] the distance between farmers and sources of credit affect's farmers in taking credit because the closer the distance the more easily accessible by farmers in taking credit. The results from this study are the same as those conducted [4] the closer the distance or location of the business to a micro finance institution, the easier access so as to facilitate lending.

2. The nature of coffee plant (X1)
   Based on the binary logistic parameter test the nature of coffee plants has a significant influence on the dependent variable Y (decision making credit) with a significance value of 0.044<0.10 and the coefficient of influence of 0.975. This is because the coffee plant is a plant that has a long life that requires a lot of capital costs to increase the productivity of the commodity, so in these case farmers really need loan costs from credit. In research [5] also the greater the area of farmers' land, the more encouraging coffee farmers to take credit, coffee farmers tend to add capital in a narrow area of land with the aim to increase production

3. The nature of credit (X3)
   Based on the test of binary logistic parameters the nature of credit gives a significant influence on the dependent variable Y (decision making credit) with a significance value of 0.049 <0.10 and the coefficient of influence of 1.248. This is relevant, because credit is often based on interest rates. Low interest rates, make farmers consider adding credit loans. This theory is not in accordance with research [6] which states that loan interest rates are negatively related to the total debtor loans from creditors where the higher the loan interest rate, the debtor will reduce the loan. The repayment period also affects farmers in taking credit, because loans that do not require collateral that burden coffee farmers will encourage farmers to take credit

4. Individual characteristics of farmer (X2)
   Based on the binary logistic parameter test, the personal aspect of the farmer does not have a significant influence on the dependent variable Y (decision to take credit) with a significance value of 0.812> 0.10 and an effect coefficient of 1.111. This is because the number of dependents, age factors

3
and income levels are not the main considerations in making decisions using credit [7]. Farmers are almost the same age, the number of dependents that are not much different and the level of income that is almost the same cause farmers do not make the choice to take credit based upon these variables.

4. Conclusions

Factors of the nature of coffee plants, the nature of credit and credit services have a significant effect on credit decision making by coffee farmers. While the personal aspects of the farmer factor do not significantly influence the decision of coffee farmers in taking credit.

References

[1] Raharjo P 2012 Kopi: Panduan Budidaya dan Pengolahan Kopi Arabika dan Robusta [Coffee: Guide to Cultivation and Processing of Arabica and Robusta Coffee] (Jakarta, Penebar Swadaya)
[2] Charlie S 2018 Faktor yang mempengaruhi pengambilan kredit dan pengaruhnya terhadap kinerja usahatani di Desa Ciaruteun Ilir Kabupaten Bogor [Factors affecting credit taking and its effect on farm performance in Ciaruteun Ilir Village Bogor Regency] (Bogor, Institut Pertanian Bogor)
[3] Etonihu KI, Rahman SA, Usman S 2013 Determinants of access to agricultural credit among crop farmers in a farming community of Nasarawa State Nigeria J Dev Agric Econ 5 5 192-6
[4] Ajagbe FA, Oyelere BA, Ajetomobi JO 2012 Determinants of small-scale enterprises credit demand evidence from Oyo State Nigeria American Journal of Social and Managements Sciences 3 1 45-8
[5] Wati DR 2015 Akses dan Dampak Kredit Mikro Terhadap Produksi dan Pendapatan Usahatani Padi Organik Di Kabupaten Bogor [Access and Impact of Micro Credit on Organic Rice Farm Production and Income in Bogor Regency] (Bogor, Institut Pertanian Bogor)
[6] Kausar A 2013 Factors Affect Microcredit’s Demand in Pakistan International Journal of Academic Research in Accounting Finance and Management Science 3 4 11-7
[7] Dena M 2015 Faktor- Faktor yang Mempengaruhi Keputusan Petani dalam Menggunakan Credit Union (CU) sebagai Lembaga Pembiayaan dalam Usahatani [Factors That Influence Farmers’ Decisions in Using Credit Union (CU) As a Financing Institution in Farming] (Medan, Universitas Sumatera Utara)

Acknowledgments

We would like to thank the DRPM Ministry of Research, Technology and Higher Education (KEMENRISTEKDIKTI) as an institution that has been funding in this research through the 2019 Masters Thesis Research scheme with contracts No.52/UN5.2.3.1/PPM/KP-DRPM/2019. In addition to Research Institute (Lembaga Penelitian) of Universitas Sumatera Utara, which has contributed morally and materially in the conduct of this research.