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# DETERMINANTS OF FORMAL CREDIT ACCESSIBILITY OF VIETNAMESE FARMERS: A CASE STUDY IN DAK NONG PROVINCE.

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## ABSTRACT

Farmers are facing a credit constraint which limits them to reinvest on their farming activities. In this context, formal credit plays a major role in their production. This study employs mixed methodology including quantitative and qualitative analysis. Theoretical models have been tested by using analysis of reliability Cronbach's Alpha, EFA factor analysis, and multiple linear regression analysis. The findings suggest eight factors which significantly impact the accessibility to credit of farmers in Dak Nong province. Asset ownership appears to be an important factor as collateral for their loan applications.

**Keywords:** Dak Nong, credit accessibility, farmers, Tay Nguyen.

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## 1. BACKGROUND

Dak Nong is a province located in the southwestern region of the Central Highlands, at the end of the Truong Son range, in the development triangle region of Vietnam - Laos - Cambodia. With a population of over 636,000 people, the ethnic structure is diverse, mainly the Kinh, M'Nong, Tay, Thai, Ede, Nung, Kinh account for about 65.5%, M'Nong 9.7%, other ethnic groups make up a small percentage. The provincial capital is the city. Chi Nghia. The natural area of 650,927 ha is mainly agricultural land. Therefore, Dak Nong agriculture has made certain contributions to changing the economic face of the whole province. Production in agriculture has shifted from self-sufficiency to commodity production. However, Dak Nong agriculture has not yet developed commensurate with its inherent potentials such as the growth rate of the provincial economy (GRDP) in the period 2016-2018 reaching 10.3% / year. By 2018, the average income per capita is 3.39 million VND / person / month, the economic structure of the agricultural sector accounts for 42.67%.

There are many reasons leading to low income of farming households such as low education level, lack of capital for production, low investment efficiency ... etc. But a relatively important reason is that farmers do not succeed in accessing and using effectively credit sources to expand production, improving the level of competition of agricultural products with localities. another way.

Therefore, this study will assess the current situation of factors affecting the ability to access formal credit and the barriers that limit access to credit. Since then it is extremely necessary to find solutions to improve the access to credit of farmers in Dak Nong province in order to solve practical problems being raised here.

## **2. THEORETICAL BASIS OF THE PROBLEM OF RESEARCH**

### **2.1 Basic Concepts**

Farmer households are households that have a means of earning a living from the land, use mainly family labor to produce, households are always in a large economic system, but are basically characterized by greed. The level of completeness in the market is not high (Olayide S, Eweka A, Osagie B, 1980).

Farmers are households that mainly operate in a broad sense, including forestry, fishing and rural non-agricultural activities (Dao The Tuan, 1997).

In summary: Farmers are farm households living in rural areas whose main production line is agriculture, a basic economic unit, both as a production unit and a consumer unit (Dao The Tuan, 1997).

Credit accessibility: The probability that borrowers are able to receive or not receive credit loans. Access to credit means how much credit the borrower can get (Saifullahi Sani Ibrahim and Haruna Mohammed Aliero, 2012).

### **2.2 Factors affecting farmers' ability to access formal credit**

Farmers' education: The higher the level, the easier it is to access and understand credit information and credit terms. The head of a household with a high education has many opportunities to work, which has created conditions for them to have a good social relationship and to easily access formal loans. The higher the education level, the higher the probability of getting loans from formal credit institutions. Education makes borrowers wiser not to borrow credit from informal sources at higher interest rates. (Anjani Kumar, Dhiraj K. Singh and Prabhat Kumar, 2007).

*Hypothesis H1: Educational attainment has a positive impact with farmers' ability to access formal credit (expectation sign +).*

Age of household head: Age also plays an important role in explaining access to formal credit in rural areas (Sabopetji and Belete, 2009; Kaino, 2005). Adults often avoid borrowing from informal sources (Anjani Kumar, Dhiraj K. Singh and Prabhat Kumar, 2007).

*Hypothesis H2: The age of the household head has a positive impact with the ability to access formal credit (expectation sign +).*

Assets owned by farmers as collateral: Collateral is a factor that indicates the wealth and financial ability of the household head. It was recognized that in order for a bank to disburse, sufficient collateral was required for the lender (Sacerdot, 2005). For poor households, they do not own assets that are accepted as collateral for loans, which hinders access to credit for the rural poor (Basu, 2006; Fleising and De la Pena, 2003).

*Hypothesis H3: Collateral has a positive impact with farmers' ability to access formal credit (expectation sign +).*

Farmers' income: is the source for debt repayment, including income from agricultural and non-agricultural production. This source of income will be assessed and verified by bank staff to determine the customer's ability to pay debts. The majority of high-income households are those with effective production and business plans and large scale production. Their demand for capital for production is high, and their ability to repay debts is also higher. Hence, it is easier to access credit than low-income households (Xia Li, Christopher Gan, Baiding Hu, 2011).

*Hypothesis H4: Farmers' income has a positive impact with the ability to access formal credit (expectation sign +).*

The amount of loans from farmers: When deciding to borrow, farmers are interested in the amount of loans that they often have little collateral, especially for poor households, which limits farmers. poor ability to expand production and improve living conditions (Gale, Lohmar and Tuan, 2005). Access to credit is widely considered to be a major factor in improving productivity and increasing income (Okurut et al, 2006).

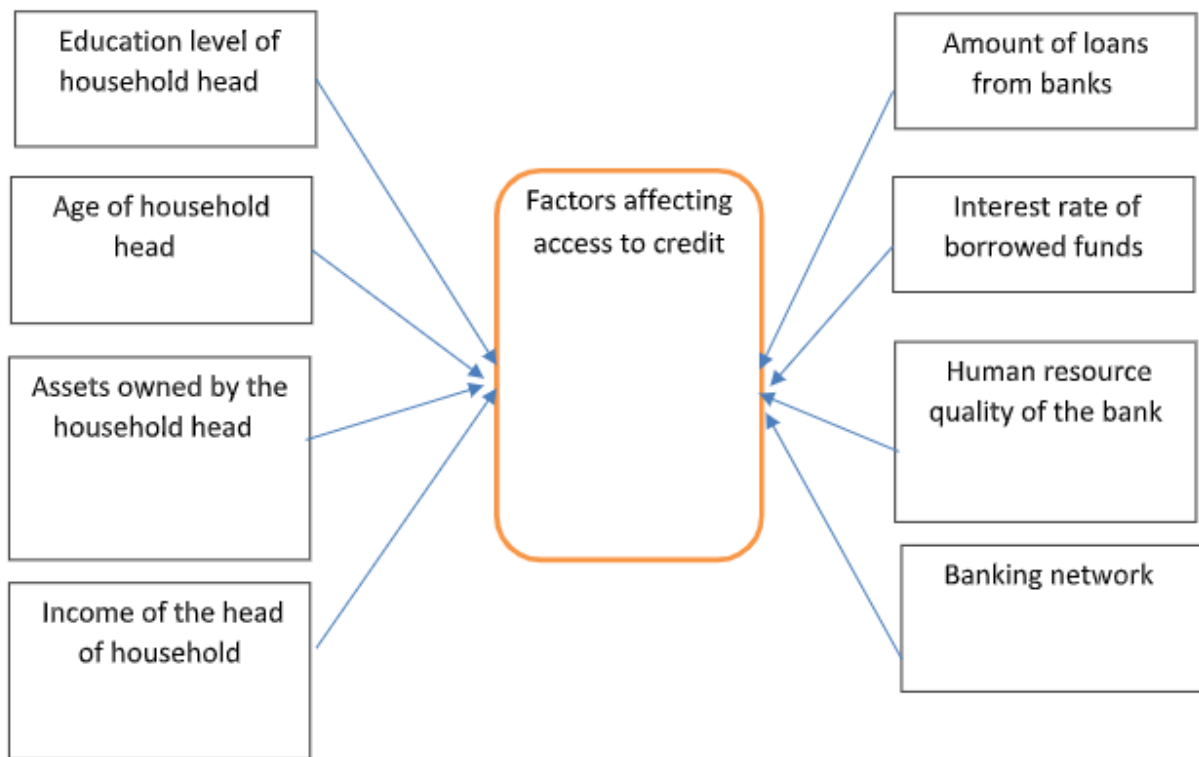
*Hypothesis H5: The amount of loan borrowed by farmers has a positive impact with the ability to access formal credit (expectation sign +).*

The bank's lending rate: This is the first factor influencing a customer's loan decision to the bank, as it is a cost in production especially for a low margin industry like agriculture. Karma. Therefore, higher interest rates will reduce the efficiency of capital and discourage the rural poor to increase access to credit (Sacerdot, 2005).

*Hypothesis H6: The higher the interest rate will have a negative impact on the household's ability to access formal credit (expectation sign -).*

The quality of the bank's personnel: Human resource quality is the professional qualifications, communication ability, the enthusiasm of the work of the staff, creating a good image of the bank in the eyes of customers. This is also an important factor in the relationship between credit institutions and individual borrowers. Helping borrowers to have confidence in credit institutions to increase their accessibility (Saifullahi Sani Ibrahim and Haruna Mohammed Aliero, 2012).

*Hypothesis H7: Good quality of human resources will have the same impact with farmers' ability to access formal credit (expectation sign +).*



**Figure 1: Proposed research model**

*Source: The author's data processing results*

Operation network of the bank: It is shown that the transaction offices of credit institutions are mainly located in the district center while the farmer households mainly live in remote areas far from the district center. kilometers, roads are difficult to travel, loans are often small, so people do not want to borrow from formal organizations (Beck and la Torre, 2006; Sacerdoti, 2005).

*Hypothesis H8: The Bank's network has a positive impact with farmers' ability to access formal credit (expectation sign +).*

From the proposed research model, the author has proposed multiple regression equations to test the following research hypotheses:

$$Y = \beta (0) + \beta (1) * X1 + \beta (2) * X2 + \beta (3) * X3 + \beta (4) * X4 + \beta (5) * X5 + \beta (6) * X6 + \beta (7) * X7 + \beta (8) * X8 + \epsilon_i$$

In which: Y is the dependent variable (Credit accessibility); X1 Education level of household head; X2 Age of head of household; X3 Property owned by the head of household; X4 Income of head of household; X5 Loan amount of the head of household; X6 Interest rate of the loan source; X7 The quality of human resources of the bank; X8 Banking operations network;  $\epsilon_i$  is the error;  $\beta_0$  is a constant;  $\beta_1$ ;  $\beta_2$ ;  $\beta_3$ ;  $\beta_4$ ;  $\beta_5$ ;  $\beta_6$ ;  $\beta_7$ ;  $\beta_8$  is the regression coefficient.

### 3. RESEARCH METHODS

Collecting secondary data: Through the credit report of production households and individuals of the Bank for Agriculture and Rural Development Dak Nong. Provincial policies for

agricultural development and poverty alleviation. The development orientation of agricultural credit capital in the province.

Collecting primary data: By using prepared forms to directly survey farmers in the province. The sample is selected according to the convenient non-probability method.

To ensure the reliability and appropriateness of research results, sample sizes were collected based on the formula of Green (1991) with a minimum sample size  $N = 50 + 8 * p$  where: N is the sample ruler, p is the number of independent variables. According to Hair & cs (2006),  $N = 5 * m$  where N is the sample size, m is the number of observed variables, from the above formulas, the minimum number of votes to be survey is 220. Since then, the authors have conducted a survey of 390 farmers, the number of votes collected is 376 votes (96.4%), after screening and cleaning the data, the number of valid votes for analysis is 359 votes. (92.1%). The survey period was from February 2020 to March 2020.

## 4. RESULTS AND DISCUSSION

### 4.1 Evaluate the reliability of the scale in the research model

The results of testing the scale by the reliability of Cronbach's Alpha for 359 questionnaires showed that Cronbach's Alpha coefficients were all greater than 0.6 (from 0.649 to 0.848) in Table 1, but the correlation coefficients of the total variables Observe TSSH1 = 0.286; LSVV1 = 0.259; LSVV5 0.065; MLNH3 = 0.152 are all less than 0.3, so they are disqualified (Nguyen Dinh Tho, 2011). The remaining 40 observed variables were satisfied to include in the EFA analysis.

**Table 1: Results of testing the reliability of the Cronbach's Alpha scales**

No.	Cronbach's Alpha scale	Cronbach's Alpha	Number of tested observations	Number of rejected	Observations
1	Education level of household head	0,836	6	0	6
2	Age of household head	0,802	5	0	5
3	Assets owned by the household head	0,717	5	TSSH1	4
4	Income of the head of household	0,848	7	0	7
5	Amount of loans from banks	0,802	5	0	5
6	Interest rate of borrowed funds	0,649	5	LSVV1 LSVV5	3
7	Human resource quality of the bank	0,810	6	0	6
8	Banking network	0,695	5	MLNH3	4

*Source: The author's data processing results*

EFA analysis results show that the observed variables have factor load coefficients ranging from 0.535 to 0.910 (> 0.5) Table 2 and there is no disturbance of the components. Thus, all scales

reach convergence values and stops when extracting factors with Eigenvalue is  $1,132 > 1$ , showing that the factor analysis results are appropriate (Nguyen Dinh Tho, 2011).

**Table 2: Results of factor rotation of factors affecting credit access**

	component							
	1	2	3	4	5	6	7	8
TDHV1	.765							
TDHV2	.849							
TDHV3	.784							
TDHV4	.752							
TDHV5	.778							
TDHV6	.769							
TCH1		.578						
TCH2		.627						
TCH3		.680						
TCH4		.713						
TCH5		.759						
TSSH2			.839					
TSSH3			.751					
TSSH4			.910					
TSSH5			.909					
TN1				.717				
TN2				.909				
TN3				.839				
TN4				.751				
TN5				.910				
TN6				.876				
TN7				.637				
LVV1					.641			
LVV2					.673			
LVV3					.535			
LVV4					.614			
LVV5					.658			
LSVV2						.680		
LSVV 3						.713		
LSVV 4						.759		
CLNL1							.619	
CLNL2							.566	
CLNL3							.609	
CLNL4							.717	

CLNL5							.664	
CLNL6							.680	
MLNH1								.713
MLNH2								.759
MLNH4								.619
MLNH5								.680

*Source: The author's data processing results*

Tests on multicollinearity violation assumptions: The results of the Variance Inflation Factor (VIF) show that the association between the predicted factors does not violate the multicollinearity assumption because of all the coefficients are  $<2$ , within the acceptable range, so the analysis can be continued (Tho, Nguyen Dinh, 2011), Table 3.

Test of variance ANOVAa showed that Sig value of F-test in the model is  $<0.05$ . Thus, the construction linear regression model is consistent with the whole, Table 3.

**Table 3: Regression results**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.061	.200		5.303	.000		
TDHV	.229	.037	.234	-.782	.000	.679	1.474
TCH	.156	.040	.166	-1.399	.000	.572	1.749
TSSH	.507	.039	.519	-.185	.000	.576	1.738
TN	.452	.037	.498	1.409	.000	.757	1.320
LVV	.290	.027	.334	3.331	.000	.801	1.249
LSVV	-.434	.046	-.437	.747	.000	.536	1.865
CLNL	.304	.030	.325	.137	.000	.906	1.103
MLNH	.446	.047	.479	13.620	.000	.519	1.928

*Source: The author's data processing results*

Appropriateness of the model: Coefficient  $R = 0.741$  and adjusted coefficient of determination (Adjusted R Square)  $R^2 = 0.538$ , meaning that the built linear regression model is suitable for the data set and it 53.8% of the variation can be explained, while 46.2% is explained by the variables that have not been included in the model, Table 4.

Durbin-Watson statistical quantity ( $d = 2,159$ ) ( $1 < d < 3$ ) (Hoang Trong, Chu Nguyen Mong Ngoc, 2008), so the residues in the sample are not correlated with each other, the independence of the residue is guaranteed. Bao, Table 4.



**Table 4: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.741 <sup>a</sup>	.549	.538	.472	2.159

*Source: The author's data processing results*

From the above results, we can rewrite the equation of access to credit from the Bank for Agriculture and Rural Development of households in Dak Nong province as follows:

$$\begin{aligned} \text{Credit skills} = & 0.234 * \text{education level} + 0.166 * \text{age of household head} \\ & + 0.519 * \text{owned assets} + 0.498 * \text{income} + 0.334 * \text{loan amount} \\ & - 0.437 * \text{interest rate} + 0.325 * \text{quality of resources} \\ & + 0.479 * \text{banking network.} \end{aligned}$$

#### 4.2 Explain the effects of variables in the model

Educational attainment level of household head (X1) with regression coefficient of + 0.234 has a positive relationship with the variable of CI of farmer households Table 4 and the sign of the estimated parameter is true to the initial expectation. The higher level of education the household head has, the higher the CIs will increase. The research results are consistent with those of Anjani Kumar, Dhiraj K. Singh and Prabhat Kumar (2007).

Age of household head (X2) has a regression coefficient of +0,166 with the same sign as expected. Thus, the factor "Age of the head of household" has a positive relationship with the amount of official credit capital and in terms of other factors remains constant. Research shows that often older householders are more responsible for loans and more importantly, that they have accumulated wealth. This regression result is consistent with research of Kaino, (2005); Anjani Kumar, Dhiraj K. Singh and Prabhat Kumar, (2007).

Value of collateral (X3) has a regression coefficient of +0,519 with the same sign as expected. Thus, the factor "The value of collateral" has a positive relationship with the official CIs and in terms of other factors unchanged. This regression result is consistent with research by Sacerdot, (2005); Fleising and De la Pena, (2003). Thus, it can be seen that the value of a household's collateral affects the ability to access formal credit.

Household income (X4) has a regression coefficient of +0.498, sign the expected positive regression coefficient. Therefore, the factor "Income of households" has a positive relationship with formal CIs and in terms of other factors unchanged, or the total accumulated income of farmers' households positively affects the CIs of households. This regression result is consistent with the study of Gale, Lohmar and Tuan, (2005).

Loan amount (X5) has a regression coefficient of +0,334 with the same sign as expected. Thus, the factor "Amount of loans is increased" has a positive relationship with the official credit rating system and in terms of other factors unchanged. When people's capital needs are met they



will invest in larger production plans and hopefully bring in more income and vice versa. This regression result is consistent with the study of Okurut et al, (2006).

The loan interest rate (X6) has a regression coefficient of -0.437 with the same sign as expected. Thus, the factor "interest rate of loans" has an opposite relationship with the official CIs in the condition that other factors are unchanged. This regression result is consistent with research by Sacerdot, (2005); Fleising and De la Pena, (2003). Thus, it can be seen that when interest rates rise, people will be more limited in having CIs.

Quality of human resources (X7) has a regression coefficient of +0,325 with the same sign as expected. Thus, the factor "quality of human resources" has a positive relationship with the formal CIs and in terms of other factors unchanged. This regression result is consistent with the study of Saifullahi Sani Ibrahim and Haruna Mohammed Aliero (2012).

Banking network (X8) is the distance from the place of residence to the transaction point of a credit institution. Table 4 shows that the distance variable has a positive relationship with the CI variable of farmer households, and the sign of the estimated parameter is true to the initial expectation. If a household lives closer to the transaction point of a credit institution with favorable travel conditions, the consumer credit rating system will be higher than that of a household living far from the transaction point. This result is similar to the research result of Sacerdoti, 2005; Beck and la Torre, (2006).

#### **4.3 Some solutions to improve the household's access to credit**

Assets used as collateral by the head of the household The valuation of collateral should be at the market price instead of applying the price bracket set by the State, often much lower than the market price, causing disadvantages for borrowers. . This contributes to limit the CIs of farmers.

Raising income for household heads: Increasing production training courses to change the thinking of farmers, improving farmers' confidence capacity to access the market economy. Increased interest in production efficiency. Increase the support of the agricultural extension agency in the production plan

Banking network It is necessary to reduce difficulties in travel conditions by building more credit facilities in remote locations with difficult travel and care, and attention to service quality. Diversifying loan programs to help borrowers be more proactive in using capital in accordance with the cycle and production in agriculture.

Loan interest rates Banks need to make full use of preferential capital sources from domestic and foreign organizations, thereby reducing loan interest rates. On the basis of each borrower, the bank offers appropriate loan terms, reducing pressure on debt repayment. Because if the loan period is not suitable for the production conditions of agriculture, it is difficult for farmers to guarantee repayment of both principal and interest.

Loan amount: The Bank should consider production plans of farmers, thereby giving priority to meeting the capital needs of farmers so that they can expand production to increase income, increase debt repayment ability and have loan repayment conditions are better in the next times.

The quality of human resources in the bank It is necessary to build a staff of enthusiastic, friendly people, credit officers who know the languages of ethnic minorities for easy communication. Strengthening general knowledge for credit officers, with extensive knowledge, knowledge in many fields will bring many useful information, as well as support many aspects for borrowers. Helping borrowers to have confidence in credit institutions, they feel they have companionship and sharing during the loan process and easier to access credit sources.

Education level People need to increase the initiative in finding loan sources. It is necessary to strengthen the role and performance of local socio-political organizations in influencing and changing the customs, practices and perceptions of the local people to help farmers manage capital and production planning, legal support for farmers. In addition, banks need to simplify credit disbursement procedures from official sources so that even illiterate people can increase official CIs.

## 5. CONCLUSION

Research has codified the theory of access to formal credit by farm households. Analysis of factors affecting the ability of farmers to access credit in Dak Nong province. The results obtained have 8 influencing factors including: Education of the household head; Age of household head; Property owned by the head of household; Income of the head of household; Loan amount; Interest rate of the loan source; Human resources for bank staff; Operational network of the bank.

Since then the authors have suggested a number of solutions for farmers as well as credit institutions, state management agencies in the area to help farmers in Dak Nong province access to capital. Officially from Agricultural Bank with low interest rates to be able to improve production capacity and create conditions to improve living conditions. The policies proposed above can only be implemented effectively with the support of the State management agencies, with the harmonious participation of the political and social organizations of Dak Nong province.

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