The Roles of Farmers in Agricultural Development

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ABSTRACT

To study the factors affecting people's participation in the development of agricultural value chains, the research team collected information from 230 samples in some northern mountainous provinces of Vietnam. The article uses the EFA model and Probit model to conduct the analysis. By using the EFA model and the Probit model to assess the factors affecting farmers' participation in the development of the value chain, our findings show factors: income, natural conditions, loan capital, market have a great impact on the level of people's participation. The article has suggested some solutions to improve people's participation in agricultural value chain development.

Keywords: agricultural products, value chain, production link.

JEL: Q12, Q17

1. Introduction

Linking production with the consumption of agricultural products plays a very important role in agricultural development, helping to improve the benefits of value chain actors, especially farmers. Farmers are the leading force in product innovation, the subject of the chain linking the production and consumption of agricultural products. In the link chain, the role of the producer is very important - determining the success. Their initiative in participating in building chain links is important, which contributes to increasing the scale of goods production, applying modern production processes, and improving management capacity. All these factors are to avoid the situation of "good season, devaluation".

Farmers in the northern mountainous provinces have begun to participate in the value chain of local agricultural products. Due to the differences in qualifications, capacity, capital, and scale, the level of participation in the value chain and success is not the same, therefore, farmers must equip themselves with knowledge about production, market, gradually converting to large-scale production… At the same time, farmers need to equip themselves with legal knowledge to protect their interests in the process of association. In particular, farmers need to have a strategy and jointly bear the risks with the associated object. The assessment of the influence of factors on the participation of farmers in the development of agricultural value chains in the Northern mountainous region will help people and authorities to have appropriate orientations and solutions. This is to increase the level of people's participation in the value chain contributing to sustainable agricultural development.

2. Research literature review

First, "value chain refers to the activities required to bring a product or service from conception, through various stages of production to distribution to the final consumer and disposition after use" (Kaplinsky, 1999). Renewing linkages in production and consumption of agricultural products among actors under the market mechanism to enhance added value along the agricultural product value chain (Tran Gia Long, 2013).

Alice (2016) said that in the agricultural production sector, the accessibility of agents faces many difficulties due to

the lack of collateral; lack of guarantors, lack of customer information and unclear business plans, high loan interest rates. Therefore, actors often hesitate before deciding to borrow capital. This greatly affects the production plan. Kalunda's study (2014) also showed that age and gender greatly influence the decision to borrow. In addition, agricultural production is often distributed in places where the industrial economy is less developed. The most difficult infrastructure is communication. Therefore, credit services, especially microcredit, which provides preferential credit to the people, need to be developed. Attention should be paid to customers in areas where there are many difficulties in the production and consumption of products, Tshabangu (2013).

Wang, X et al. (2021) The value chain comprises several factors and activities useful for strengthening production and distribution by connecting producers with suppliers, intermediaries, and marketplaces and collaboratively creating added value for products or goods. However, the values of agricultural products mostly depend on various factors and actors, which should be linked together for fostering added values. Thus, there may be strong ground for facilitating a smooth transition of the agricultural value chain (AVC) within the prospects of emerging countries. It could be a key means of promoting a profound connection between smallholder farmers and modern agriculture facilities. It could be especially crucial for highly perishable and high-value products such as fruits. Fruit farmers' gender, total household expenditure, housing value, planting scale, planting years, degree of specialization, days of family labor input, and total days of employment have significant effects on their participation in AVC activities. (2) Fruit farmers' usage of improved fertilizers and organization participation supports a higher yield and net income per acre. (3) Participating in two kinds of AVC can significantly improve the yield per acre and net income per acre compared with only using one type of AVC (improved fertilizer). Policymakers should improve the existing policy by eliminating institutional barriers and enhancing human factors for farmers to participate in high-value chain activities. Governments should extend technical support, and enhance training facilities, and comprehensively promote the AVC among smallholder farmers.

Finally, farmers' organizations (e.g., cooperatives and credit organizations) should come forward to help facilitate the effectiveness of AVC.

And Kumari et al (2021) showed agriculture value chains (AVCs) have experienced unprecedented disruption during the COVID-19 pandemic, with lockdowns and stringent social distancing restrictions making buying and selling behaviors complex and uncertain.

3. Research Methods

In the study, the authors used the EFA model and the Probit model to assess the factors affecting farmers' participation in the development of the value chain.

The research team used the non-randomly selected sampling survey method, the sample size determination was consistent with the data analysis method. The article uses the method of Tabachnick & Fidell (2005) to calculate the appropriate sample size, according to which the sample size must satisfy the formula $n \geq 8m + 50$. With 20 observations in the survey, the minimum sample size is 210 With 14 provinces in the region, the authors will choose to investigate 3 provinces with specific economic characteristics, agricultural development resources, and development levels, including Bac Kan, Son La, Tuyen Quang.

Method of investigation: face-to-face interview. The number of tickets given out was 250, the number of valid votes collected was 230.

Proposing a research model

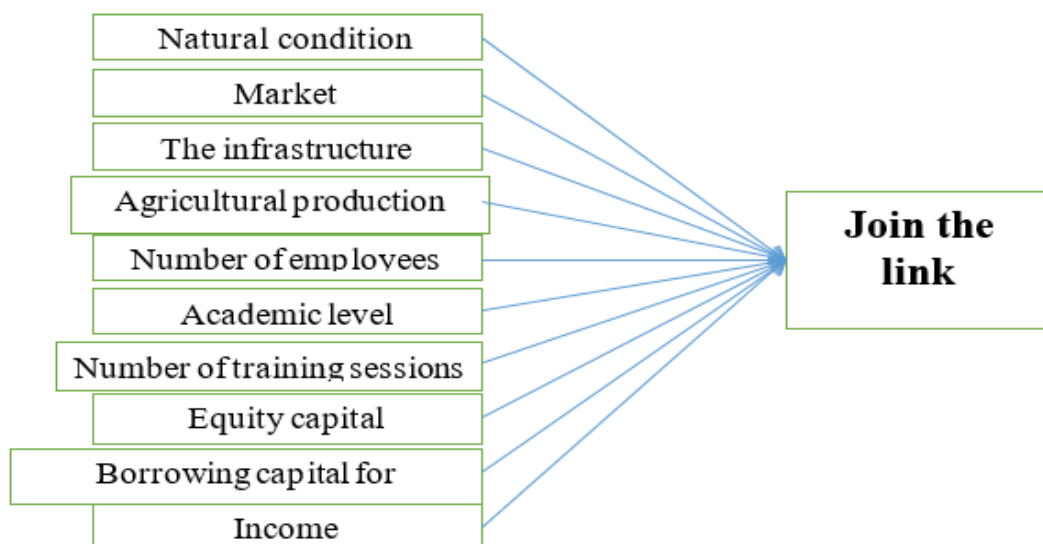**Figure 3.1. Factors affecting the level of people's participation in value chain linkage**

Source: Synthesis of the research team, 2020

Table 3.1. Interpretation of observed variables in the research model

Variable nam		Expectation sign
Natural conditions (TN) are used Liket scale from 1 to 5		
TN1	Weather conditions (rain, humidity, temperature)	
TN2	Natural disaster	+
TN3	Due to insect pests	
Market (TT) is used Liket scale from 1 to 5		
TT1	Precarious prices	
TT2	No big market yet	
TT3	Little information about the market	+
TT4	Simple transaction method	
Infrastructure (HT) is used Liket scale from 1 to 5		
HT1	Difficult travel conditions	
HT2	Limit contact information	
HT3	Small market system	+
HT4	Limited production auxiliary grid power system	
Area: measured in m^2 the number of agricultural production areas of households		+
Labor: Number of employees involved in production of the household		+
Education level: years of schooling of the household head (years)		+
Number of training sessions: measured by the number of times the household head or member attended (times)		+
Financial capacity: own capital to participate in agricultural production (million VND)		+
Borrowing: The author uses dummy variables. 0: if no bank loan, 1: bank loan to serve production		
Income: Income situation of farmer households		+

Source: Synthesis of the research team, 2020

4. Research results

Cronbach's Alpha test results

The research results show that the Cronbach's Alpha coefficient for the scale of the largest components is 0.858 and the smallest is 0.734. Thus, all Cronbach's Alpha coefficients are greater than 0.6 and the variables have total correlation coefficients less than 0.3. Thus, the variables ensure the requirements for conducting exploratory factor analysis (EFA).

Result of factor analysis (EFA)

The KMO coefficient is 0.811, which indicates that the data are suitable for conducting EFA analysis. Besides, we have the P-value of Bartlett's test equal to 0, the variables are correlated with each other in terms of the population.

By exploratory factor analysis EFA, the extracted variance reached 62.025%, which means that the extracted factor explained 64.131% of the variation.

Table 3.2. Result of factor rotation

	Component		
	1	2	3
HT2	,883		
HT1	,876		
HT3	,847		
HT4	,682		
TT4		,794	
TT1		,746	
TT2		,734	
TT3		,717	
TN1			,819
TN2			,786
TN3			,648

Source: Synthesis of the research team, 2020

After using the EFA model to group factors, the results are as follows:

The first group of factors includes observed variables HT2, HT1, HT3, HT4. The infrastructure factor is relatively concentrated in the assessment (Denoted as HT).

The second group of factors includes the observed variables TT4, TT1, TT2, TT3. The market factor is relatively concentrated in the assessment (denoted by TT).

The third group of factors includes TN1, TN2, TN3. This group is also relatively concentrated (Denoted as TN).

Research results

After evaluating the convergence of the variables measured by the Likert scale through the EFA model, the authors carried out the regression of the factors according to the Probit model and got the following results.

Table 3.3. Regression results

Independent	Regression coefficient (β)	Marginal impact (dy/dx)	The P-value of the marginal effect factor
TN	0,4328	0,1681	0,002
TT	0,3174	0,1233	0,009
HT	0,2987	0,1160	0,052
DT	0,0017	0,0006	0,002
KN	0,0100	0,0038	0,361
TD	0,1292	0,0502	0,000
TH	0,0681	0,0264	0,002
TC	0,2091	0,0812	0,020
VV	0,3818	0,1478	0,055
IC	0,4637	0,1537	0,047

Source: Synthesis of the research team, 2020

Check the phenomenon of self-multicollinearity: Research using VIF coefficients, the results show that these coefficients are all less than 2. Thus, there is no multicollinearity phenomenon.

Discussion

The factors in the research model have different degrees of influence on people's participation in the development of agricultural value chain production:

Natural conditions: positive effect and statistically significant. From this result, it can be said that when the farmer households tend to be closely linked to being able to consume products, and to limit the risks encountered.

Table 3.4. Assessment of natural conditions

	Minimum	Maximum	Mean	Std. Deviation
TN	4,0	5,0	4,716	,4516

Source: Synthesis of the research team, 2020

Market: farmers in the area face many difficulties in the output of products. Many output agricultural products depend on the Chinese market, so there is price inflation and price pressure. Farmers rely heavily on traders, so the volatile prices do not create people's confidence in the market for agricultural products. This makes it difficult to build specialized farming areas.

Table 3.5. Market Assessment

	Minimum	Maximum	Mean	Std. Deviation
TT	4,0	5,0	4,212	,4372

Source: Synthesis of the research team, 2020

Infrastructure: The infrastructure in the area is still limited due to the lack of diverse terrain and investment capital, so it is difficult to transport goods to the centers of buying and selling agricultural products. Enterprises and traders have conditions for means of transport and have many focal points to consume products, so households often choose these units for consumption. Difficult infrastructural conditions are also the reason for limiting linkages in the consumption of agricultural products.

Table 3.6. Infrastructure Assessment

	Minimum	Maximum	Mean	Std. Deviation
HT	4,0	5,0	4,325	,4163

Source: Synthesis of the research team, 2020

Area: For agricultural products of the Northern mountainous region, the production and expansion of production area still face many difficulties: Production has not yet had a specific plan; People still mainly produce spontaneously, so there is an oversupply or a shortage of supply; The price of agricultural products is volatile, which greatly affects people's income.

Education and training: these are two variables that have a great influence on the application of science and technology to the production of crops and livestock that are suitable for localities. The survey data shows that the educational level of households is at level 1. Many households are illiterate and live in remote areas of the provinces in the northern mountainous region, which leads to the application of Using and deploying science and technology to the people is very difficult. Besides, people still keep traditional production methods, especially outdated production practices. This is also one of the great difficulties for state officials in implementing documents and guiding people to live and produce in modern ways.

Loans: Loans are a very important input source in the production process of households. Loan channels of Bac Kan, Son La, Tuyen Quang farmers are relatively simple. Due to low loans, it is limited in the production of agricultural products in the direction of people's goods.

*Income:* The general level of income of people in the northern mountainous area is low and mainly comes from agriculture. Agriculture is influenced by many objective and subjective factors. Therefore, an increase in people's income will play a role in promoting people's participation in value chain linkages, and the opposite is also true. If increased linkages will help people's incomes increase, from which people will have more motivation to invest and expand production.

6. Conclusion

Conduct an assessment of the factors affecting people's participation in the development of value chains in the Northern mountainous region, Vietnam. The research team found that there are many major influencing factors including income, natural conditions, loans, markets, infrastructure... These factors have a positive impact on mindset change, production habits, and orientations of farmers. Therefore, to improve the level of people's participation in value chain development shortly, the research team suggests many related policies, including Building a market promotion mechanism in the region such as Development of OCOP products; Trade investment promotion; Expanding the regional consumption association market; Introduce agricultural products to international markets…; It is necessary to upgrade and repair the transport system; Build and repair traditional markets and farmers' markets so that people can easily consume products; Expanding loan forms, diversifying loan sources and simplifying loan procedures.

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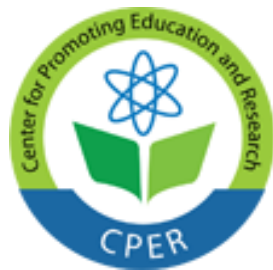
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