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Minority households' participation in farm economy development: evidence from the Central Highlands of Vietnam

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Abstract. Previous studies have highlighted relationships between socioeconomic factors and farmers' participation in agricultural development program but have not found it under minority people contexts. **The aim of the study** is to quantify the participation levels of minority households and identify the determinants of their participation in farm development policies and programs (FDPAP). **Methods.** To achieve this, both primary and secondary sources of data are used. The data are gathered through survey 438 farmers from the 5 most populous ethnic groups (namely Jarai, Bahnar, E De, Tay, and Nung) in 10 communes and towns in 8 districts of study area by a questionnaire that was designed on a five-point Likert scale. Content analysis is used to determine the participation extent to which the research model includes five groups of factors (Perception of the householder about the farm economy; Mechanisms and policies of the government/state agency on agriculture; Household characteristics; Economic benefits; Production capacity) corresponded to the identified 24 criteria. **Results.** The findings indicate that their participation is only at a manipulative or passive level. The main factors tending to deter their participation are households' characteristics and production capacity. In contrast, specific policies and tangible economic benefits are the factors that motivate them to participate more deeply. **Scientific novelty** lies in reliable information on the livelihoods and culture of minority farmers based on these results, plays an extremely important role in the success of agricultural policies as public officials push to integrate them into the national agenda.
Keywords: participation, minority household, factor, Likert scale, FDPAP, Central highlands, Vietnam.

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Участие домохозяйств этнических меньшинств в развитии фермерского хозяйства: свидетельство Центрального нагорья Вьетнама

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Аннотация. Предыдущие исследования подчеркивали взаимосвязь между социально-экономическими факторами и участием фермеров в программах развития сельского хозяйства, но не обнаружили эту взаимосвязь в контексте этнических меньшинств. **Цель** исследования состояла в том, чтобы количественно оценить уровень участия домохозяйств этнических меньшинств и определить детерминанты их участия в политике и программах развития фермерских хозяйств (FDPAP). **Методы.** Для достижения цели используются как первичные, так и вторичные источники данных. Данные были собраны путем опроса 438

фермеров из 5 самых густонаселенных этнических групп (а именно Джараи, Бахнар, Эдэ, Тай и Нунг) в 10 коммунах и городах 8 районов изучаемой территории с использованием вопросника, составленного по 5-балльной шкале Лайкерта. Содержание анализа используется для определения уровня участия. Модель исследования включает 5 групп факторов (восприятие фермерского хозяйства домохозяйством; государственный механизм и политика в области сельского хозяйства; оценка домохозяйства; экономические выгоды; производственный потенциал), соответствующих 24 выявленным критериям. **Результаты.** Результаты показали, что их участие было либо манипулятивным, либо пассивным. Основными факторами, препятствовавшими их участию, были характеристики домохозяйств и производственный потенциал. Именно конкретная политика и ощутимые экономические выгоды побуждают их к более активному участию. **Научная новизна** заключается в достоверной информации о средствах к существованию и культуре фермеров из числа меньшинств, основанной на этих результатах, что играет жизненно важную роль в успехе сельскохозяйственной политики, поскольку сельскохозяйственные государственные учреждения способствуют их включению в национальную повестку дня.

Ключевые слова: участие, домохозяйство этнического меньшинства, фактор, шкала Лайкерта, FDPAP, Центральное нагорье, Вьетнам.

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Introduction

In the context of international cooperation and economic integration, Vietnam's economy has entered a new stage with a qualitative transformation, a change in the growth model, the transformation of the economic structure, the promotion of comparative advantages, increased efficiency and competitiveness to ensure stable development [32]. By implementing this policy, some farmers are successfully developing their farms, accumulating capital, hiring more workers, applying scientific achievements in production and business; their farms are becoming more and more profitable in terms of capacity, results and production efficiency compared to other households. The economic development of farms therefore leads to diversification of the scale and level of production [10; 22].

The Central Highlands of Vietnam includes Kon Tum, Gia Lai, Dak Lak, Dak Nong and Lam Dong provinces and covers 54,508.3 sq km (accounting for 16.46 % of the country's area) with over 5,93 million inhabitants (accounting for 6.1 % of the total population), an average population density of 109 people per sq km (GSO 2022). It also includes a large percentage of ethnic minorities, about 38 percent of the population. The Jarai, Bahnar, E De, Tay and Nung are the largest minority groups [35; 38].

In recent years, the socio-economic situation of the Central Highlands in general and the life of minorities in the region in particular has improved significantly thanks to the policy of developing large-scale agricultural production [33], the farm economy has been formed and developed both qualitatively and quantitatively. Earlier studies have shown that the development of farms is an inevitable trend that contributes to an increase in the area of cultivated land, creating more jobs, reducing poverty, increasing the production of goods, and transforming the economic structure of agriculture [23; 24]. There is no doubt about the presence, potential and role of farms in the Central Highlands. As can be seen, the farm economy has been discovered to be a poverty-reduction strategy. However, a number of restrictions (informed, price, customs, investment, resource, management, etc.) hinder the development of a productive farming economy, reduces its stability and competitiveness [22].

In line with the actual situation, local authorities have launched many farm development programs and policies (FDPAP) has a history of more than thirty years, and is entrusted to bring about meaningful change to farmers, especially minorities. For instance, through encouraging small business diversification [27]; providing technology and extension, such as access to improved seeds [25] or developing output markets for agricultural products [28; 29]; building programs of new rural construction, poverty reduction and infrastructure development [33] and resolving job difficulties, allocating land for production to minorities, settling land disputes, educating and training minority human resources [34]. According to data from the General Statistics Office, the Central Highlands region has 439,892 minority households, with the agricultural production scale greater than 0.5 ha [36]. This is really the core force, a division that will thrive and become farms.

However, life of minority households continues to be challenging, with 35.5 percent of poor and near-poor households, which has significantly affected the socio-economic development of the Central Highlands region [35]. This is because the farmer, as the owner-manager, makes the final strategic choice to grow the farm which creates a relatively independent position in decision-making [30]. The poor adoption and failure of agricultural programs/projects is the result of the lack

of target group participation in all phases of the projects [9]. Accordingly, it is impossible not to emphasize the importance of farmers' participation in agricultural development.

Participatory approaches to strategy formulation, agricultural program development and new technology implementation for smallholder farmers have been widely advocated over the past decade [14; 15; 26; 37; 39]. The advantages of this approach have been demonstrated in B. Haverkort's study: "The outcome of participatory technology development is twofold: locally adapted improved technologies and improved experimental capacities of farmers. Practical field experiences reveal that impressive results can be achieved when farmers and outsiders join hands" [14]. This is also a method of assisting disadvantaged people and women in gaining access to and control over resources or services such as training, farmer visits, inputs, information, and other services that are required to maintain and develop their livelihoods [37]. Although participatory farmer research is a promising idea, but assessing its effectiveness is difficult as they are context sensitive [19]. Farmers' lack of knowledge, confidence, time, and attitudes are only some of the challenges that make active involvement so challenging [5]. Farmers' capacity to completely govern their participation in agricultural growth is hampered by a lack of land ownership, capital, skills, knowledge, and resources [26]. Farmers' engagement in agricultural initiatives and projects is hampered by a lack of information. Lack of incentives for participants, a lack of regulatory procedures, and a lack of competent organizations are all issues that lead to farmer involvement being limited in terms of planning and decision-making [1]. Thus, farmers with their own knowledge, experience and indigenous cultural traditions are resources for the development of agricultural activities. The decision of farmers to participate or not to participate in, support or oppose agricultural activities greatly affects the sustainability of the local agricultural development program [31].

Therefore, this study seeks to provide real evidence on the participation of ethnic minority households in farming activities and its possible implications. This research would contribute to the ongoing policy debate by identifying a research model of minority households' participation in FDPAP in the Central Highlands. It also provides insights into the understudied the characteristics of minority households in the Central Highlands. The results of the participation assessment and identification of the determinants of minority household participation in the FDPAP will assist policymakers in discovering how their best implementation practices can be effective to increase income and improve livelihoods for minority farmers.

Table 1

Comparison of scales of farmer participation in agricultural development policies/programs

Participation scale	***Types***	***Characteristics***	***Types***	***Characteristics***
Author	*Arnstein S. R. [2]*		*Pretty J. N. [31]*	
Origin and meaning of typology	*Participation takes the form of an eight-tiered ladder, each corresponding to a citizen's level of decision-making responsibility or authority in determining desired outcomes*		*A typology upon participation has developed where seven clear types of participation are mentioned that can neutralizes the possible questions to be posed upon the participation*	
Manipulative participation / Non-participation	*Manipulation*	*Allow the government and project management committee to "educate" or "cure" participants*	*Manipulative participation*	*Participate in pretense as well as unelected and powerless manner*
	Therapy		*Passive participation*	*Only receiving unilateral information from authorities and project management*
Symbolic participation	*Inform*	*Participate as a listener and their views may go unnoticed*	*Participation by consultation*	*Provide information by answering questions*
	Consultation		*Participation for material incentives*	*Participate by leasing resources like land and labor, etc.*
	Placation	*Participate by agreement of the government and management committee*	*Functional participation*	*Participate by forming teams to meet predefined goals related to the project*
Genuine participation	*Partnership*	*Allow them to negotiate and engage in trade-offs with traditional power holders*	*Interactive participation*	*Participate in analysis, development of action plans, and establishment or strengthening of local institutions*
	Delegated power	*Participants are only given a part of decision-making and management power*	*Self-mobilization*	*Participate by proactively changing the system, independent of external organizations*
	Citizen control			

Source: compiled by the author.

The remainder of the work is structured as follows: Section 2 discusses the data and empirical methods, while the results and their discussion are devoted in Section 3, as well as conclusions of the paper summarized in section 4.

Methods

Research model

Therefore, the study applied Pretty's model to classify participation levels of minority households in the FDPAP in the Central Highlands. The specific criteria for Pretty's 7-level model are as follows:

− criteria for level 1 (Manipulative): Farmers who are informed about agricultural development will change their livelihoods by large-scale production (farm);

− criteria for level 2 (Inform): Farmers provide information or answer questions related to local farm economic development when consulted by agencies and organizations;

− criteria for level 3 (Consultation): Farmers participate in meetings related to changing traditional livelihoods to developing local farm economy;

− criteria for level 4 (Incentive): Farmers participating in agricultural cooperatives; provide goods and food for businesses;

− criteria for level 5 (Functional): Farmers participate in agricultural functional groups (management group, distribution group, extension service group, production and processing group) under the supervision of the government authority or outside organizations;

− criteria for level 6 (Interactive): Farmers own agribusiness enterprises, participate in the analysis, planning process, contribute to decision making related to the development of the farm economy locally;

− criteria for level 7 (self-mobilization): Farmers take their own initiative and actively contact to seek outside support, keep control, make decisions, invest on their own and expand agribusiness activities.

In order to analyze the factors affecting the participation of ethnic minority households in the FDPAP, the authors have conducted interviews with representatives of organizations and conducted a sociological survey by questionnaires on ethnic minority households have engaged in farming activities, incorporating the application of previous research models [1; 5; 26; 37], the study has drawn out the factors that have a strong impact on the level of household participation in farm activities. The process of building the content of the questionnaire and the scale will remove the unnecessary elements and add or change the names of the factors to match the actual situation.

Therefore, the results will be the basis for adjusting the research model. The qualitative research results agree on the following factors: Perception of the householder about the farm economy; Mechanisms and policies of the government/state agency on agriculture; Household characteristics; Economic benefits, Production capacity has a great influence on the interest of ethnic minority households in developing the local farm economy. The research model to assess the level of factors affecting ethnic minority households' participation in the FDPAP is presented in Fig. 1.

Sampling procedure

The study is a survey with a correlation design that aims to describe how minority households feel about farm economic development and identify factors that determine their level of participation on a basis of the outstanding characteristics of minorities.

Based on the analysis of qualitative data through reports on "socio-economics of 53 minority groups" from the General Statistics Office, the report on minorities in the Central Highlands of the People's Committee provinces including Kon Tum, Gia Lai, Dak Lak, Dak Nong, Lam Dong and statistics of the Committee for Minority Affairs to identify areas with a large concentration of minorities and select minorities group according to specific areas which have normal communication ability, agricultural land and income from selling agricultural products. The survey sample selection was carried out by stratification combined with randomization in June 2022. The authors collect data by collaborating with the Department of Agriculture and Rural Development in Kon Tum, Gia Lai, Dak Nong visited the surveyed households when participating in a program to disseminate new agricultural extension support services, which was implemented in 10 communes and towns in 8 districts in the Central Highlands. The survey sites are presented in Table 2.

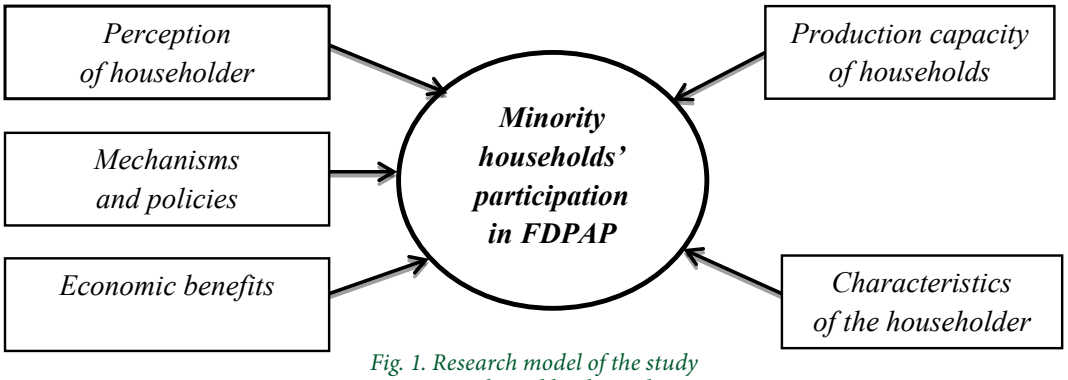

Fig. 1. Research model of the study
Source: adapted by the author

Table 2

Survey sites

No.	*Provinces*	*Districts*	*Communes and Towns*
1	*Đak Lak*	*Ea H'leo*	*Cu Amung*
		Krong Nang	*Đliêya*
			Ea Ho
		Cu M'gar	*Cu M'gar*
2	*Gia lai*	*Kbang*	*Kroong*
			Son Lang
		Phu Thien	*Chu A Thai*
3	*Kon Tum*	*Dak Ha*	*Đak Hring*
		Sa Thay	*Sa Nhon*
		Kon Tum City	*Đak bla*
Total	***3 provinces***	***8 districts***	***10 communes***

Source: compiled by the author.

Table 3

Surveyed minority households

No.	*Minority groups*	*Production types*				*Total*	*%*
		Cultivation	*Animal husbandry*	*Aquaculture*	*Others*		
1	*Gia Rai*	*83*	*27*	*0*	*14*	*124*	*28.18*
2	*Ede*	*53*	*17*	*1*	*7*	*78*	*17.73*
3	*Ba Na*	*66*	*32*	*3*	*6*	*107*	*24.32*
4	*Tay*	*58*	*22*	*4*	*0*	*84*	*19.09*
5	*Nung*	*28*	*14*	*2*	*1*	*45*	*10.23*
6	*Invalid responds*					*2*	*0.45*
Total						***440***	***100.00***

Source: compiled by the author.

Table 3 shows that the survey was conducted with 5 minorities namely Jarai, Bahnar, E De, Tay, and Nung. These are the most populous ethnic groups in the Central Highlands of Vietnam.

On a basis of the established research model, the authors have set up a survey of 438 minority farmers. To validate the content, a panel of three experts from the Faculty of Economics of the University of Danang-Campus in Kontum, the Central Highlands Institute of Social Sciences and the Minority Committee of Dak Lak province evaluated the questionnaire. After collecting the survey questionnaire, data correction and unsatisfactory questionnaire removal are conducted by the statistical analysis method using SPSS 22.0 software. The author uses the five-point Likert scale to quantify the participation levels of minority households.

Results

Characteristics of minority households in the Central Highlands of Vietnam

Promoting the advantages of appropriate land use, resources and climate in the Central Highlands, all minority farmers participate in agricultural production (mainly cultivation and animal husbandry) to satisfy their needs and increase household income.

While gender plays an important role in mediating access to information and agricultural development program [3; 12]. The analysis results show that 76.7 % of households belong to male-headed households and 23.3 % are female (described in Table 4).

This finding coincides with A. D. Beyene's study [3], who found that agricultural projects are mostly male-headed. He said that the gender of the householder affects the participation of the household because the householder is male. As male – headed households have more opportunities to access than the female-headed households, they are more involved in agricultural projects. Recognizing the inequalities and disproportionate house working burdens that limit women's ability to participate in agricultural projects more than men [11]. The average family size of each minority household is above 5 people. This is considered the main agricultural labor force of households in particular and rural areas in general.

A prominent characteristics of households is the old age of administrators (average age is 50.64). The majority of farmers are male (239 or 71.1 %) and female (71 or 69.6 %) in the age group of 41 to 59. The mean age of male and female farmers is 51.46 and 47.91 years respectively.

Out of five educational status categories, the majority of male farmers (75.6 %) were in the "untrained" category, followed by 10.7 % in the "Primary, intermediate" category and 5.7 % in the "Primary and Intermediate" category. As for female farmers, more than 80.6 % belong to the group of "untrained" and "trained but not yet certified". Therefore, the low level of education in ethnic minority areas, especially among female farmers, is also a prominent feature in the Cen-

tral Highlands. This implies that most householders depend on the local language to access farm information, especially through their own farmers. Several studies have reported the importance of farmer education for extension effectiveness. Farmers' education level is positively correlated with participation in decision-making due to the assumed link between education and knowledge [13]. H. S. Korgitet and M. W. Biru argue that the higher the education level of the head of household, the stronger is their ability to accept and master new things or new technologies [17]. In addition, education may have a positive impact on participation, as well-educated farmers are more likely to make better use of agricultural advisory services and agricultural production activities [7].

Table 4

Some selected characteristics of minority households

Characteristics	Sex disaggregated values					
	Male		Female		Total	
	Frequency	%	Frequency	%	Frequency	%
Housholder	336	76.7	102	23.3	438	100.0
Household scale (person)						
Mean	5.74		5.04		5.58	
Std Deviation	1.33		0.96		1.287	
Age (year)						
15–20	0	0.0	0	0.0	0	0.0
21–40	42	12.5	13	12.7	55	12.6
41–59	239	71.1	71	69.6	310	70.8
60 and above	55	16.4	18	17.6	73	16.7
Mean	51.46		47,91		50.64	
Std Deviation	9.59		9,34		9.63	
Educational status						
Untrained	141	42.0	69	67.6	210	47.9
Trained but no certificate	149	44.3	17	16.7	166	37.9
Beginner, Intermediate	33	9.8	14	13.7	47	10.7
College	2	0.6	1	1.0	3	0.7
University	11	3.3	1	1.0	12	2.7
Production experiences (year)						
1–10	12	3.6	4	3.9	16	3.7
11–20	85	25.3	27	26.5	112	25.6
21–30	137	40.8	46	45.1	183	41.8
31–40	79	23.5	19	18.6	98	22.4
41–50	14	4.2	6	5.9	20	4.6
51 and above	9	2.7	0	0.0	9	2.1
Mean	27.24		21.81		25.98	
Std Deviation	10.16		8.86		10.13	
Production scale (ha)						
≤ 1	42	12.5	61	59.8	103	23.5
1–5	153	45.5	38	37.3	191	43.6
5–10	90	26.8	2	2.0	92	21.0
> 10	51	15.2	1	1.0	52	11.9
Mean	6.93		1.26		5.61	
Std Deviation	10.73		1.95		9.74	
Revenue per year (million VND)						
≤ 500	56	16.7	41	40.2	97	22.1
500–1000	121	36.6	26	25.5	147	33.6
1000–1500	94	28.0	17	16.7	111	25.3
1500–2000	24	7.1	10	9.8	34	7.8
> 2000	41	12.2	8	7.8	49	11.2
Mean	1183.24		910.14		1119.64	
Std Deviation	1037.21		933.55		1017.55	

Source: calculated by the author.

Table 5

Access to information on farm development programs and policies

	Frequency	***Percentages***
Programs and policies of farm development		
Known	*352*	*80.4*
Unknown	*86*	*19.6*
Source of information		
Television	*89*	*20.32*
Radio	*43*	*9.82*
Newspaper	*32*	*7.31*
Internet	*19*	*4.34*
Other farm owners	*136*	*31.05*
Agricultural extension officer	*119*	*27.17*

Source: calculated by the author.

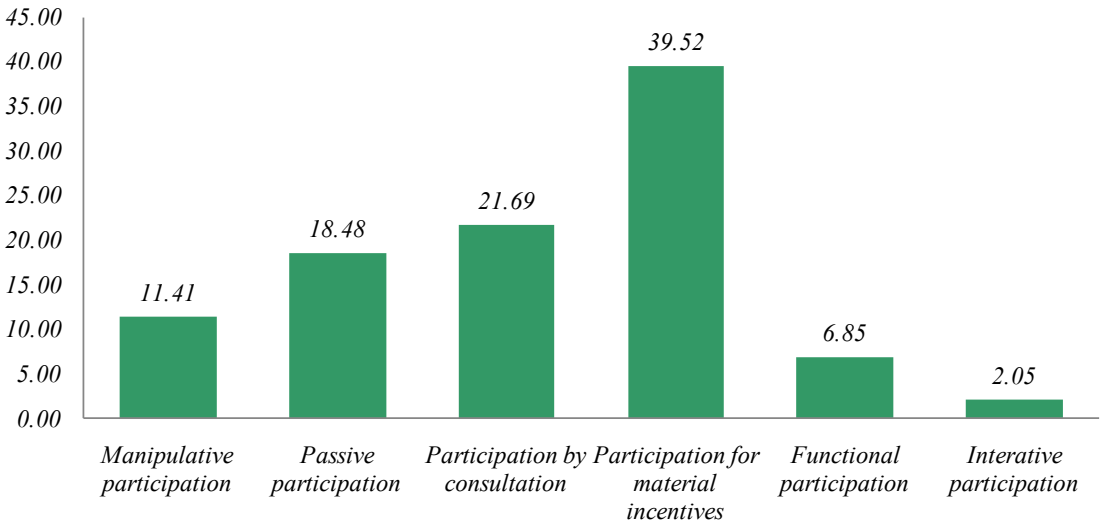

Fig. 2. Participation level of minority households in FDPAP
Source: calculated by the author

In this regard, women farmers are more disadvantaged in the study area. In addition, the study by B. N. Wasihun and orthers [41] showed that younger farmers were better engaged in consultation than older farmers because of their flexibility. In terms of farming experience, the majority of male and female farmers are between the ages of 11–20 and 21–30. The average agricultural experience is 27.24 years for male farmers and 21.81 years for female farmers. This shows that in the study area, female farmers have less farming experience than male farmers.

On the other hand, ethnic minority households often live in high mountains, face language and cultural barriers and ethnic inferiority. These are the reasons for people's accessibility of minorities in the production of agricultural commodities, including farms, took place more slowly, with a low level [40]. Among the 438 surveyed minority households, 103 households have a land size of less than 1 hectare and 244 households have a revenue of less than 1 billion VND/year. However, according to the provisions of Circular No. 02/2020/TT-BNNPTNT dated February 28, 2020 on criteria and procedures for granting certificates of farm economy must meet both criteria on the value of goods (from 1–2 billion VND/year) and on the production scale of the farm (from 1 hectare/farm) [6]. The results show that only 193 minority households are eligible for the certificate of farm economy (accounting for 44.06 %). Other households will be the main drive for farm development if there is an appropriate management mechanism and government policy.

Participation level of minority households in the FDPAP

The survey results in Table 5 show that 80.4 % of respondents know about programs and policies to develop farm economy. This shows that most farmers are now aware of the benefits they can get from participating in agricultural projects such as capacity building, exposure to new technology and empowerment which helps them to increase their productivity and hunger eradication and poverty alleviation.

Table 6

Determinants of minority households' participation in the FDPAP

Factors	*Criteria*	*Mean*	*Sex*	*Age*	*Level of education*
Households' perception	*Farm economy is a form of agricultural production on a large enough land to specialize and apply technology to supply products to the market and save production costs.*	*4.03*	*0.703*	*0.320*	*0.875*
	Resource value for local farm development such as land, climate, water resources, labor, etc.	*4.34*	*0.033***	*0.538*	*0.159*
	Is the exploitation of resources sustainable?	*3.48*	*0.658*	*0.187*	*0.172*
	The locality has many distinct advantages to develop farms in particular and agriculture in general	*3.66*	*0.032***	*0.193*	*0.587*
Mechanism and policy	*Farming development policy in line with local practical conditions*	*3.90*	*0.976*	*0.529*	*0.411*
	Local facilities and infrastructure	*3.87*	*0.456*	*0.243*	*0.104*
	Agricultural management mechanism, administrative procedures for land, credit, etc.	*3.89*	*0.410*	*0.931*	*0.336*
	Organize agricultural extension services	*4.16*	*0.043***	*0.745*	*0.521*
	Organize a cohesive dialogue between stakeholders such as farmers, businesses, extension workers, scientists and managers	*3.28*	*0.040***	*0.100*	*0.200*
	Consulting/solving difficult problems in production	*3.32*	*0.900*	*0.608*	*0.003***
Economic benefits	*Agriculture is a household's livelihood activity*	*4.48*	*0.727*	*0.787*	*0.919*
	Job opportunities for people	*4.37*	*0.652*	*0.810*	*0.301*
	Increase salary	*4.11*	*0.041***	*0,362*	*0.096**
	Farm economy promotes local economic development	*3.06*	*0.763*	*0.398*	*0.014***
Production capacity of the household	*Facilities and production equipment*	*4,17*	*0.772*	*0.597*	*0.905*
	Land size	*4,19*	*0.894*	*0.467*	*0.933*
	Human resources of the household	*4,07*	*0.046***	*0.047***	*0.773*
	Finance	*4,17*	*1.000*	*0.277*	*0.530*
	Access to information, credit and technology application in production	*3,29*	*0.172*	*0.011***	*0.416*
	The ability to manage, plan and make decisions	*3,29*	*0.670*	*0.938*	*0.009***
Characteristics of householder	*Knowledge of agriculture*	*3,51*	*0.082**	*0.673*	*0.000***
	Have experience in agricultural production	*3,44*	*0.065***	*0.561*	*0.001***
	Skilled in managing and operating agricultural production	*3,18*	*0.881*	*0.063**	*0.378*
	Interested in expanding production scale and increasing family income?	*3,01*	*0.150*	*0.812*	*0.002***

Note. 1. For the factor of Perception of households: On a scale of 1 to 5: Totally disagree to Strongly agree.

2. For the remaining factors: On a scale from 1 to 5: Not at all important to Very important.

3. Significance level: $p \leq 0.05$ (**); $0.05 < p \leq 0.10$ (*); Sig. > 0.1: There is no statistically significant difference.

Source: calculated by the author.

Farmers' participation manifests itself primarily in learning and updating sources of information about them. There are 6 main types of means, in which access through other farms is the most with 31.05 %, followed by agricultural extension workers (27.17 %) and just fewer than 10 % use radio and Internet as their source of information. The reason may be that most of them are not properly trained which leads them to not be able to read or access the Internet while they can communicate with other ranchers and extension workers in their own language. On the other hand, stemming from the "community" in the village, from the close relationship between the people of the same village and the same ethnic group, to the fact that they often exchange information about the issues they are interested in, especially problems affecting their own lives [21].

The study uses a Pretty's scale to measure community participation in local farm development policies and programs, going from the lowest level of passive to the highest level. Fig. 2 shows that minority households have the highest participation rate at the encouragement level (level 4) with 39.52 %, followed by the consultation level (level 3) with 21.69 %. It means that households have realized benefits from farm activities such as creating more jobs, increasing income sources, improving rural livelihoods, so the percentage of households mainly participating in this level is relatively higher than other participants. In addition, Interac-

tion and Activeness, which are the two highest levels in terms of participation, achieved the lowest rate (6.85 % and 0 % respectively) as participants at these two levels required must have a high level of education to be able to participate in the strategic planning process and farm development planning of the region.

Determinants of minority households' participation in the FDPAP

Attitudes to participate in farm production are measured by the five-point Likert scale consisting of 24 criteria of the following factors: (1) Perception of households to the farm economy; (2) Mechanisms and policies of the government/state agency on farm economic development; (3) Economic benefits; (4) Production capacity of the household and (5) Characteristics of households (Table 6).

All criteria are above the average score of 3. These findings show that farmers generally have a positive attitude towards participating in farm-oriented agricultural production. However, all five groups of factors above affect their participation in farm activities with different degrees of influence. According to the results of data processing and analysis, the factor "Economic benefits" is the biggest drive and has the strongest impact on the participation of ethnic minority households in the development of the local farm economy (the mean of all criteria is 4.00). Economic benefits are always the top concern of farmers. Next, in turn, it is the influence of factors of mechanisms, policies and production capacity of households.

For the factor of "Mechanism and policy": The results show that farmers highly appreciate the criteria "Farming development policy in line with local practical conditions" and "Agricultural management mechanism and administrative procedures" with mean values of 3.90 and 3.89. Meanwhile, the criteria "Organizing a dialogue among stakeholders" and "Consulting/solving difficult problems in production" were underestimated with average values of 3.28 and 3.32. From the above results, the requirement for the government/state agency in agricultural development is to build a clear legal framework, according to which farmers share difficulties and benefits gained with farmers.

For the factor "Production capacity", most of the criteria are highly appreciated with the average value above 4. Particularly, the two criteria "Access to information, credit and technology application in production" and "The ability to manage, plan and make decisions" was rated the lowest with an average value of 3.29. The cause of this phenomenon is the small and fragmented production habits and practices of farmers, low educational attainment, which greatly affects the efficiency of technology transfer to rural farmers and the application of measures to reduce environmental pollution [22; 40]. People's perception of resource value, economic benefits and production capacity are important factors in forming interest in local farm operations. This enhances the ability to attract more capital for agriculture, develop human resources and increase access to information and science and technology [16; 18; 20].

According to the results of the independent sample student test and one-way analysis of variance, by gender, there is a high difference in the farmer's assessment for the criteria "Resource value"; "Locality has many distinct advantages"; "Organization of agricultural extension services"; "Organizing a dialogue between stakeholders"; "Increase salary"; "Human resources"; "Agricultural knowledge" and "Production experience". The reason is due to the difference in educational attainment, roles, land ownership and specific jobs between men and women participating in the survey. Men are the breadwinners of the family, mainly directly involved in production and management (requiring a high level of education, having a lot of exposure to policies and regimes). In contrast, women in the locality have a low level of education, little land ownership and are mainly engaged in both housework and agricultural production. This is also the cause of the difference in income between them.

The results of comparison between groups show that by age there is a difference in the evaluation of different farmers on the criterion of "Human resources"; "Access to information, credit and technology application in production"; and "Skills in agricultural production management and administration". This difference lies in the fact that opportunities are often given to young people due to their flexibility.

In addition, the criteria "Consulting/solving difficult problems in production"; "Agricultural knowledge"; "Production experience"; "Expanding scale of production" and "Skills in agricultural production management and administration" have a high statistically significant difference when compared between groups by level. Most of the ethnic minorities in rural areas have low educational attainment, leading to a lack of initiative or shyness in the process of enjoying the government's policies. Highly educated people often actively and actively participate in the transfer of science and technology to support agriculture and farmers.

Discussion and Conclusion

Minority households enthusiastically participate in the development of the farm economy (FDPAP) in various forms, including proactive planning and effective investment with the support of local authorities that contributed to the socio-economic development of the locality.

Through reference to the level of participation (according to the Pretty scale), the local community mainly participates at the level of consultation and incentive. The form of participation of ethnic minority households in the Central Highlands is mainly to provide family motivation, participate in production and supply products for agricultural cooperatives and enterprises.

Minority farmers were interested and wanted to expand the farm size, however, different subjects had different needs to participate in.

Most of them have appreciated the value of agricultural resources and the potential of local large-scale agricultural production but tended to be hesitant to scale up production and increase income. The main reasons are low level of education and low production capacity of households such as lack of capital, low technology application and weak management skills. At the same time, there is no consulting and support system to solve difficult problems in their production and business.

Therefore, with specific characteristics, enhancing participation and overcoming identified problems of ethnic minority farmers in FDPAP in the Central Highlands should focus on solving the following tasks:

− enhancement of the quality of human resources – organizing education, training and retraining of staff, improving employment benefits for employees, improving the quality of human resources in rural areas;

− foundations of technical information systems are created by improving and stabilizing of infrastructure communications and Internet connections, introducing of precision agriculture and information technologies into production;

− improvement state-supported investment and financing mechanisms, including strengthening the relationship between minority agricultural enterprises and banks, introducing profit reinvestment tools, finding stable product consumption markets, and developing agricultural service cooperatives.

In addition, there is a need to design development strategies that are contextually appropriate and for the disadvantaged, such as interventions that enable female farmers to become more involved in farm activities by forming groups encouraging women; and recruit more female extension workers, with whom female farmers can freely communicate and promote their participation.

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