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Performance of agricultural cooperatives led by women in Vietnam

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Abstract---Vietnamese women are equal with men in participating in economic activities, including in agricultural cooperatives. The government has also issued quite a few support policies to facilitate women and cooperatives start-up. This study analyses women's participation in the management and administration of cooperatives as well as the size, operation and performance of women-led cooperatives compared with men-led cooperatives. Based on the survey data of 271 agricultural cooperatives conducted in 2021, the analysis shows that women are involved in the leadership of agricultural cooperatives but at a lower rate than men. The study shows that women-led cooperatives have fewer members and a higher ratio of equity to total asset value. The study also shows that there is no statistically significant difference between women-led cooperatives and men-led cooperatives in terms of business operation, performance and benefits of state support policies.

Keywords---agricultural cooperatives, women, performance, operation size, capacity.

Introduction

Vietnam's agricultural production is characterized by small and fragmented land resource. In 2020, Vietnam has 99.8% of agricultural production units as small-scale households with an average area of 0.57ha (GSO, 2021). Agricultural labour force accounts for 33.06% of the total social labour force. Women play an important role in the agricultural development of Vietnam. Agriculture is the sector with the highest proportion of female employees, accounting for 48.2% of the total agricultural labour force. In many regions, agricultural production is mainly carried out by female workers (IPSARD, 2020).

In addition to its small scale, Vietnamese agriculture is facing with major challenges from climate change (Khoi and Chi, 2017) and global competition. Small-scale farmers are having many difficulties and challenges in adoption of science and technology, accessing outside services and as a result will find it difficult to compete with large-scale production units. In that context, agricultural cooperatives are considered as a relevant model to support small farmers to overcome challenges and increase the competitiveness of their agricultural products in the market. Many studies around the world have shown that agricultural cooperatives can facilitate small farmers to adopt science and technology, access credit and reduce investment risks (Abebaw and Haile, 2013; Zhang *et al.*, 2020; Ma and Abdulai, 2019; Chagwiza *et al.*, 2016).

The Vietnamese government has many support policies to encourage the development of agricultural cooperatives in general (Quang, 2021), as well as to support women in start up business and developing cooperatives (Prime Minister, 2017). Many provincial Women's Unions have developed schemes to support women in the development of the cooperatives (Vietnam Women Union, 2021). Many women-led agricultural cooperatives established over the years have demonstrated the relevance of the cooperative model for women's participation in agribusiness as well as the leadership of women in leading agricultural cooperatives. The topic of women and cooperatives has been mentioned by a number of studies around the world such as factors affecting women's participation in agricultural cooperatives women's influence on the development of agricultural cooperatives (Esayas and Gecho, 2017; Wanta and Augustine, 2021; Harwiki, 2013).

Women have more fear of failure than men (Koellinger *et al.*, 2013), therefore women have a higher level of trust in cooperatives (Meador and O'Brien, 2019) and prefer doing business with a cooperative model rather than an enterprise as they perceive the cooperative model as less risky than the enterprise model and the principles of the cooperative are aligned with their values, perceptions, work and life (Anthopoulou, 2010; Bock, 2004; Okechukwu and Agbodike, 2016). As a result, the cooperative business model can help women develop entrepreneurial activities (Bastida *et al.*, 2020), Cooperatives with the participation of more women have higher returns and lower debt amounts (Hernández-Nicolás *et al.*, 2019) or have a positive impact on the organization and operation of cooperatives (Aikaterini, 2015). Women members have improved their skills and capacity when they are members of the cooperative (Ferguson and Kepe, 2011), and the social status of women are improved as well (Somayeh *et al.*, 2014).

In Vietnam, up to this moment, there has been no research on the participation of women in agricultural cooperatives as well as the management and leadership capacity of women in agricultural cooperatives. This paper presents research results on the participation of women in the management of agricultural cooperatives in Vietnam as well as compares the scale, operation and performance of women-led agricultural cooperatives compared to agricultural cooperatives are led by men.

Research methodology

Number of cooperatives in the survey

The primary data used in this paper are collected from agricultural cooperatives in the monitoring and feedback system for policy formulation of agricultural cooperatives established by the Department of Cooperative and Rural Development, starting from the second half of 2021. Cooperatives participating in this system must meet two criteria: a typical cooperative representing the flagship product of the province and be classified as good or better. Each province chooses from 5 to 8 cooperatives depending on the available number of agricultural cooperatives in the province. The selection of cooperatives to join the system is selected by the agricultural cooperative management unit of the Department of Agriculture and Rural Development. The cooperative structure in the system ensures that there is a correspondence in the number of cooperatives between regions and sectors. Due to the COVID-19 pandemic, the first data collection in August-September 2021 only got information from 287 cooperatives of 56 provinces. However, only 271 cooperatives have sufficient information on the gender of the cooperative leader, so this paper only uses data from 271 agricultural cooperatives. The number of cooperatives in the sample calculated by territory and agro-forestry-fishery sector is presented in the Table 1.

Table 1: Number of cooperatives in the samples by region and sector

Sector	Red Delta region	Northern Mountain region	Central Coast region	Highland region	South East region	Mekong Delta region	Total
Crop production	23	32	26	13	16	31	141
Livestock production	9	16	3	1	2	1	32
Forestry	0	1	5	0	0	0	6
Aquaculture	9	5	2	0	2	16	34
Integrated agriculture	12	9	25	3	3	6	58
Total	53	63	61	17	23	54	271

Methodology of data collection and analysis

Data related to each cooperative is filled in by the cooperative manager and sent to the Department of Cooperative and Rural Development. The indicators in this paper are calculated by two groups of cooperatives: the group of cooperatives led by men and the group of cooperatives led by women. A women-led cooperative is a cooperative with a woman who is the chairman of the Board of Directors or the

Executive Director of the cooperative. A total of 45 cooperatives (16.6%) are led by women. Descriptive statistics were used to calculate the indexes two tests T-student (ttest) and square (chi2) were used to compare the average value and the ratio between the two groups of cooperatives. Before performing the T-student test, the variance test is performed. Due to the data used from the field surveys conducted by many cooperative officers, the tests accept a standard error of 10%. STATA 16 software is used to calculate the indicators and perform the tests.

Result of the study

Current status of women participating in management of agricultural cooperatives

Cooperative managers include members of the Board of Directors, Executive Director and Deputy Directors, members of the Supervisory Board of the cooperative. Among the surveyed cooperatives, there are 55.7 agricultural cooperatives whose managers are women; 16.6% of cooperatives have a female leader; 15.5% of cooperatives have a female supervisory board head; and 62.0% of cooperatives have female chief accountants.

On average, each agricultural cooperative has 1 female manager/cooperative. However, in men-led cooperatives, only 46.9% of cooperatives have female cooperative managers, and the number of female managers is less than in women-led cooperatives. In women-led cooperatives, the proportion of female cooperative staff members accounts 29.7% of the total number of managers, much higher than 9.2% in male-led cooperatives.

Table 2: Women participating in management of Agricultural Cooperative

Target	General	Men-led	Women led	Prob (chi2/ttest)
Ratio of Cooperative with female manager	55.7	46.9	100.0	0.000
Average number of female staff of the Cooperative	1.0	0.7	2.4	0.000
Percentage of female manager in total management staff of the Cooperative	12.6	9.2	29.7	0.000

Source: calculation of the author from surveyed data in 2021.

Note: Prob (chi2) is the probability value of Chi square test; Prob(ttest) is the probability value of T-student test.

Capacity of female manager of the Cooperative

Capacity of women as cooperatives' leader

The capacity of cooperative managers is assessed by professional qualifications, years of experience working with cooperatives and training in cooperative management. The results presented in the Table 3 show that there is no statistically significant difference between the group of cooperatives led by women

and the group of cooperatives led by men in terms of professional qualifications, number of years of experience in working with cooperatives and the percentage of leaders trained in cooperative management. As a result, it can be seen that women led cooperatives are also equal to men-led ones in being provided training in knowledge and skills of cooperative management.

Table 3: Capacity and working experience of the cooperatives' leader

Criteria		Unit	General	Male-led	Women-led	Prob (chi2/ttest)
Qualification	Untrained	%	14.3	13.4	19.5	0.170
	Primary vocational training	%	24.4	26.7	12.2	
	Intermediate training/vocational training	%	26.4	24.9	34.2	
	Undergraduate and higher	%	34.9	35.0	34.1	
Total number of working experience		Year	8.6	8.9	7.4	0.561
Percentage of staff trained on Cooperative management		%	69.2	70.3	63.6	0.384

Source: calculation of the author from surveyed data in 2021.

Capacity of the Head of Supervisory Board of the Cooperative as a woman

The results presented in the Table 4 show that there is no statistically significant difference between the female and male Heads of Supervisory Board in terms of professional qualifications and the percentage of Heads who are trained in cooperative management. However, there is a significant difference in the number of years of experience working with the cooperative. Specifically, the female head of the Supervisory Board has an average of 4.4 years working with the cooperative while the male Head of the Supervisory Board has 7.5 years. Compared with the leader of the cooperative, the qualification of the Head of the Supervisory Board is lower. Specifically, the percentage of Heads of Supervisory Board with intermediate or higher qualifications is lower than that of cooperative leaders. This is reasonable as cooperatives will prioritize the selection of staff with higher professional qualifications to take on the positions of Chairman of the Board of Directors and Executive Director of the Cooperative.

Table 3: Capacity and experience of the Head of Supervisory Board

Criteria		Unit	General	Men-led	Women-led	Prob (chi2/ttest)
Qualification	Untrained	%	29.6	30.0	27.5	0.117
	Primary vocational training	%	21.1	22.2	15.0	
	Intermediate training/vocational training	%	28.3	29.5	22.5	
	Undergraduate and higher	%	21.1	18.4	35.0	
Total number of working experience		Year	7.0	7.5	4.4	0.023

Percentage of staff trained on Cooperative management	%	49.4	49.5	48.8	0.930
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Source: calculation of the author from surveyed data in 2021.

The size of the cooperative led by women

In this study, the size of the cooperative is measured through three indexes: the number of members, the value of assets and the revenue from the sale of products and services in a year. The results presented in the Table 5 show that there is a statistically significant difference in the average number of members in a women-led cooperative, which is 116, lower than the number of members in a male-led cooperative, 324. However, there is no statistically significant difference in 1-year revenue and asset value between the two groups of cooperatives. In other words, the average turnover of a member of a female-led cooperative is higher than that of a male-led cooperative.

The results also show that the equity of cooperatives led by women is not statistically different from that of cooperatives led by men. However, because the number of members in women-led cooperatives is much smaller than in men-led cooperatives, the average equity of a member is higher in women-led cooperatives than in men-led cooperatives. In addition, the equity-to-asset value ratio of women-led cooperatives of 86.5% is much higher than that of men-led cooperatives of 38.6%. The high equity-to-asset ratio reflects the low-risk nature of the cooperative with regard to loans. The low loan rate of women-led cooperatives may be because women have more fear of failure than men, so they behave more cautiously when doing business (Koellinger et al., 2013; Block et al., 2013; Block et al., 2013). al., 2015) and reducing debt can be a way to minimize the risks of cooperatives, especially when agribusiness activities are subject to many risks measuring the characteristics of agricultural products and agricultural production.

Table 5: Scale of Agricultural Cooperatives led by women

Criteria	General	Men-led	Women-led	Prob (ttest / chi2)
Number of members	290	324	116	0.019
Revenue per year (billion dong)	7.2	7.6	5.6	0.429
Assets value (billion dong)	7.2	7.7	4.8	0.245
Equity (billion dong)	3.1	3.0	4.2	0.262
Equity/asset value ratio (%)	43.2	38.6	86.5	0.040
Equity Vốn chủ sở hữu/TV (million dong)	10.8	9.1	36.0	0.087

Source: calculation of the author from surveyed data in 2021.

Business operation of women-led agricultural cooperatives

The business activities of agricultural cooperatives are divided into 8 groups, including: supply of production inputs (plant varieties, animal breeds, fertilizers, animal feeds, veterinary drugs, plant protection drugs, etc.); services for agro-

forestry-fishery production (land preparation, tree planting, irrigation, veterinary medicine, plant protection, etc.); harvesting, transportation; preliminary processing (cleaning, packaging); agricultural processing; internal credit; and rural services (electricity, domestic water, sanitation, market, etc.). The results presented in the Table 6 show that women-led cooperatives have a statistically significant lower percentage of cooperatives providing internal credit and rural services than men-led cooperatives. As for other services related to production, processing and trading of agricultural products, there is no difference in the proportion of cooperatives providing services between men-led cooperatives and women-led cooperatives. This result shows that women are also equally capable of leading agricultural cooperatives in implementing production and business activities in the agricultural sector as men.

Table 6: The proportion of Cooperatives providing services for its members

Activity	General	Men-led	Women-led	P(chi2)
Inputs for production	84.9	86.3	77.8	0.15
Production service	59.4	61.5	48.9	0.12
Harvesting, transportation	47.2	47.3	46.7	0.93
Primary processing	40.6	39.4	46.7	0.37
Agroproduct processing	28.4	28.3	28.9	0.94
Agroproduct trading	38.7	39.8	33.3	0.42
Internal credit	17.0	19.0	6.7	0.01
Rural service	28.0	30.5	15.6	0.04

Source: calculation of the author from surveyed data in 2021.

In the context of keen competition with other actors in providing input materials and production services, to maintain members and attract farmers to join cooperatives, agricultural cooperatives must develop specific activities serving their members such as organizations applying Good Agricultural Practices (VietGAP, GlobalGAP, organic, UTZ, FairTrade, ASC, MSC, etc. collectively referred to as GAP), high technology, production and trading linkage for agricultural products with enterprises and branding development (geographical indications, collective brand, certified trademarks, OCOP product certifications). The results presented in the Table 7 show that there is no difference between the two groups of cooperatives led by men and women in terms of the percentage of cooperatives applying GAP, high technology, participating contract farming and consumption of agricultural products with enterprises. However, there is a statistically significant difference between men-led cooperatives and women-led cooperatives in the percentage of members applying GAP and entering into contracts to associate production and consumption of agricultural products with enterprises. Specifically, the proportion of members in women-led cooperatives participating in GAP application and association is higher than in male-led cooperatives.

Table 7: Proportion of Cooperative with specific activities

Criteria	General	Men-led	Women-led	Prob (chi2)
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GAP application	Proportion of Cooperative applied	65.7	67.3	57.8	0.221
	Proportion of members applied	54.7	52.5	67.3	0.095
CNC application	Proportion of Cooperative applied	36.2	37.2	31.1	0.44
	Proportion of members applied	47.7	46.3	56.2	0.391
Production and consumption linkage	Proportion of Cooperative applied	71.6	73.0	64.4	0.245
	Proportion of members applied	74.3	72.8	82.8	0.062
Proportion of Cooperatives with branding for its agricultural products		52.2	64.4	54.2	0.133

Source: calculation of the author from surveyed data in 2021.

Reception of support policies of women-led agricultural cooperatives

The Table 8 presents the percentage of agricultural cooperatives receiving state support by 8 groups. The results show that there is no statistically significant difference between the group of cooperatives led by women and the group of cooperatives led by men in terms of benefits from policies to support the establishment of new cooperatives, cooperative premises, and machinery and equipment serving for the management of cooperatives; capacity building support of staff and members of cooperatives; risk response support; credit support; linkage and branding development support; land support. However, in the group of cooperatives led by women, 31.1% of cooperatives were supported in applying science and technology (GAP, high technology), higher than the rate of 17.3% in the group of cooperatives led by men. On the contrary, the group of cooperatives led by women had 20.0% receiving investment support in infrastructure and machinery for production, which was lower than that of the male-led cooperative group of 34.5%

Table 8: Percentage of cooperatives receiving benefit from state support policies

Support policies	General	Men-led	Women-led	P(chi2)
Support for establishment of new cooperatives, premises, machinery and equipment for management of cooperative	24.7	25.2	22.2	0.67
Support for capacity building of staff and members	64.6	66.4	55.6	0.166
Support for application of science and technology (GAP, CNC)	19.6	17.3	31.1	0.032
Support for risks response	14.8	14.2	17.8	0.532
Support for infrastructure, machinery and equipment for production	32.1	34.5	20.0	0.057
Credit	15.1	15.0	15.6	0.93
Support for linkage and branding	29.2	29.2	28.9	0.966

development				
Land support	10.7	10.2	13.3	0.532

Source: calculation of the author from surveyed data in 2021.

Performance of women-led agricultural cooperatives

Agricultural cooperatives are established with the main purpose of serving the needs of its members in agricultural production. However, as an economic entity, agricultural cooperatives also need to be financially efficient. Therefore, the performance of cooperatives is evaluated on two aspects, serving members and financial efficiency. The performance of serving members of the cooperative is assessed on three indicators, including the rate of members using the cooperative's services. The cooperatives with competitive price and meeting the needs of members will be used by many members.; preferential prices for production materials and services (lower) for members compared to prices for customers outside the cooperative; incentives to buy products from members compared to customers outside the cooperative. The results presented in the Table 9 show that there is no statistically significant difference between the group of cooperatives led by women and the group of cooperatives led by men on 3 indicators on serving members of the cooperatives.

Similarly, the analysis results presented in the Table 9 show that there is no statistically significant difference between the group of women-led cooperatives compared with the group of men-led cooperatives on 3 indicators reflecting financial efficiency, i.e. the profit after tax per member, return on sales (ROS) and return on cooperative's assets. In short, agricultural cooperatives led by women completely achieve the same efficiency of serving its member and financial performance as men-led cooperatives.

Table 9: Operational performance of agricultural cooperatives

Criteria		Total	Men-led cooperatives	Women-led cooperatives	Prob (ttest/chi2)
Serving member	Proportion of members using services of cooperative	87.2	87.3	86.5	0.852
	Proportion of cooperative providing preferential price for input material and services	61.3	62.8	53.3	0.232
	Proportion of cooperatives with incentives to buy products of its members	59.0	59.7	55.6	0.603
Financial efficiency	After tax profit /member	25.4	27.4	13.1	0.155
	Return of Sale (ROS)	13.4	10.6	29.3	0.226
	Return of Asset (ROA)	15.7	15.8	15.4	0.969

Source: calculation of the author from surveyed data in 2021.

Conclusion

Based on the analysis of surveyed data from 271 cooperatives, the research has shown that the percentage of female managers of cooperatives is still low, accounting for 12.6% of the total number of staff who are members of the Board of Directors, Management Board and Supervisory Board. However, in women-led cooperatives, the number and percentage of women participating in management of cooperatives is higher than that of men-led cooperatives. There is no difference in qualifications between women leaders compared to male leaders. However, regarding the number of years of experience working with cooperatives, women leader has a lower time than male leaders of cooperatives. Women leaders have the same percentage of cooperative management training as male leaders. Similarly, the percentage of female supervisors who are trained is similar to the percentage of male supervisors.

Women-led cooperatives have 116 members, lower than men-led cooperatives with 324 members. Regarding other indicators reflecting the size of the cooperative such as the value of the cooperative's assets, equity and revenue, there is no statistically significant difference between cooperatives led by women and cooperatives led by men. Women-led agricultural cooperatives also have production and business activities similar to men-led cooperatives and enjoy the same state support policies as male-led cooperatives. Due to the similarity in the qualifications of cooperative leaders, financial size, production activities and beneficiaries of support policies, women-led cooperatives and male-led cooperatives effectively serve their members and similar financial performance.

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