

Analysis Of The Impact Of Internal Control On The Performance Of Agricultural Cooperatives In Vietnam

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ABSTRACT— The literature emphasizes the importance of internal control in the performance of economic organizations. However, limited research focuses on the impact of internal control on the performance of agricultural cooperatives in developing countries like Vietnam. Using Exploratory Factor Analysis (EFA) and Ordinary Least Squares (OLS), this study analyzes the effect of internal control on the performance of agricultural cooperatives in Vietnam, with revenue per cooperative member considered a key measure of performance. The results indicate that most components of internal control significantly influence agricultural cooperative revenue. These findings suggest that agricultural cooperatives in Vietnam should prioritize strengthening their internal control systems. This includes several suggestions: (1) Enhancing Awareness and Training; (2) Risk Management Support; (3) Promoting Digital Transformation and (4) Strengthening Supervisory Boards.

KEYWORDS: Internal control, agricultural cooperative, agricultural cooperative performance, Vietnam

1. INTRODUCTION

Agricultural cooperatives (ACs) in Vietnam are collective economic models formed voluntarily by members to enhance production and business efficiency. These organizations operate on principles of autonomy, accountability, equality, and democracy. Despite their modest contribution of 4% to Vietnam's GDP in 2019, ACs—especially those in rural and agricultural areas—play crucial roles in sustainable economic growth, rural development, poverty alleviation, and environmental improvement.

Participation in ACs benefits member households by reducing transaction costs, enhancing quality control, accessing markets and government support policies, and mitigating risks faced by individual households. ACs in Vietnam have evolved through distinct phases. From 1955 to 1986, ACs were one of the two primary economic structures (alongside state-owned enterprises), leveraging collective strength for farmers' benefit. However, this traditional model proved inefficient during the economic transition. The 2012 Cooperative Law marked a shift toward market-oriented management, leading to increased AC numbers and voluntary membership. By 2019, Vietnam had over 23,900 ACs, employing 2.5 million workers with an average annual income of 45 million VND per person. Agricultural cooperatives comprised 15,300 of these. Despite this growth, only 55% of ACs were deemed effective.

Internal control systems (ICS) within ACs ensure members adhere to standardized production processes, facilitating product certification and marketability. The Committee of Sponsoring Organizations [6] defines ICS as a process implemented by an organization's board and management to provide reasonable assurance of operational effectiveness, reliable financial reporting, and regulatory compliance. In this context, ICS is vital for ensuring the sustainable and efficient operation of ACs, supporting their role as a protective

mechanism for members against risks and enhancing their competitiveness in a challenging economic environment. Studies in Malaysia, Indonesia, and Nigeria demonstrate a strong relationship between ICS effectiveness and cooperative performance. Similarly, ICS contributes positively to the efficiency of small and medium enterprises, including agricultural ones. A robust ICS enhances financial reporting accuracy, compliance, and risk mitigation, aligning activities with strategic goals.

Within ACs, ICS monitors members' adherence to quality standards and external certification requirements. Effective ICS enables ACs to maintain high operational standards and reduce financial misstatements, which could otherwise hinder their competitiveness.

With the aim of enhancing the operational efficiency of agricultural cooperatives, this study seeks to analyze the impact of IC activities on the performance of agricultural cooperatives in Vietnam.

2. LITERATUTRE REVIEW

Research on internal control (IC), internal control systems (ICS), and internal control activities has been conducted by numerous authors worldwide and in Vietnam across various fields, such as banking and insurance [24], food processing (Phan Thị Thanh Loan, 2021), and other sectors [5]. These studies have been carried out in organizational models such as corporations, listed companies [9], as well as in SMEs (Bilgi, Mihaylova, & Papazov, 2017), universities, public service units, and other organizational forms (L. Tran, 2015). Research ranges from theoretical studies [6] to empirical studies.

Most studies approach IC using the COSO model, which includes five components: control environment (CE), risk assessment (RA), control activities (CA), information and communication (IC), and monitoring activities (MA). Based on the theoretical framework of COSO IC (2013), with its five components and 17 principles, researchers have developed detailed measurement scales tailored to the organizational and industry-specific characteristics of the enterprises or units under study.

Table 1. Components and Principles of Internal Control in Agricultural Cooperatives

Component		Indicators	Source of References
Control Environment (CE)	CE1	Commitment to Integrity and Ethical Values	[8], [24], [6], [13]
	CE2	A Board of Directors Independent of the Director/Management Team, Overseeing the Establishment and Operation of Internal Controls	
	CE3	Organizational Structure Aligned with the Scale of Operations of the Cooperative and in Compliance with the Cooperative Law	
	CE4	Clear and Specific Division of Authority and Responsibilities Among Positions and Departments	
	CE5	Establishment of Human Resource Policies, Including Standards for Recruitment, Evaluation, Promotion, Compensation, and Allowances to Motivate Employees, as Specified in Charters and Regulations	
	CE6	An Internal Control Department Operating in Compliance with the Requirements and Principles of Internal Control	

Component		Indicators	Source of References
	CE7	Focus on Employee Competency and Qualifications, Encouragement for Participation in Training and Workshops, and Support for Continuous Learning	
Risk Assessment (RA)	RA1	Defining clear and specific objectives	[8], [24], [6], [13]
	RA2	Identifying potential risks related to all activities of the cooperative	
	RA3	Analyzing and assessing potential risks associated with the cooperative's overall operations	
	RA4	Considering major changes (internal and external) and potential fraud risks that may impact the cooperative's activities	
	RA5	Developing procedures, plans, or methods to respond to risks	
Control activities (CA)	CA1	The cooperative fully applies the principles of approval and authorization.	[8], [24], [6], [13]
	CA2	The cooperative applies control procedures using technology (software, IT systems, etc.)	
	CA3	The cooperative applies cross-control activities cross-control activities among members.	
	CA4	Assigning responsibilities appropriately, ensuring segregation of duties among functions: approval, execution, custody, and record-keeping.	
	CA5	Controlling physical assets (inventory, reconciliation, verification, evaluation, etc.).	
	CA6	The cooperative applies control activities through accounting processes.	
	CA7	The cooperative applies control activities through a system of indicators.	
Information and communication (IC)	IC1	The cooperative collects, communicates, and utilizes appropriate, high-quality information to support other components of internal control.	[8], [24], [6], [13]
	IC2	Information and reports are provided comprehensively, promptly, and with quality to assist the Board of Directors (BoD) and the Board of Management (BoM) in decision-making.	
	IC3	Reports and information regarding the cooperative's activities and internal control operations are fully and timely provided to relevant departments and members within the cooperative.	
	IC4	Financial statements and operational reports are prepared and submitted fully, promptly, and in compliance with regulations to external	

Component		Indicators	Source of References
		stakeholders (e.g., tax authorities, regulatory agencies, customers, partners, etc.).	
	IC5	The cooperative establishes a hotline and channels for receiving feedback from stakeholders, encouraging employees and members to report findings.	
Monitoring activities (MA)	MA1	Monitoring internal control activities by the management board.	[8], [24], [6], [13]
	MA2	Monitoring internal control activities by the control board.	
	MA3	Supervision and evaluation of internal control by internal audit, independent audit, or an external agency/organization.	
	MA4	Timely reporting of internal control deficiencies to relevant departments for remediation.	

3. METHODOLOGY

Data collection

Primary data was collected through surveys and interviews with relevant stakeholders, including representatives of cooperative management boards such as the Board of Directors, Board of Management, Supervisory Board, and accountants, using questionnaires.

Initially, the questionnaire was developed based on a literature review and previous studies on internal control and internal control activities in organizations and businesses in general, and cooperatives in particular. It also incorporated foundational theories (agency theory, stakeholder theory, and institutional theory) tailored to the specific characteristics and development context of agricultural cooperatives in Vietnam.

Subsequently, the survey form was reviewed and refined through discussions with a group of four experts (lecturers with expertise and experience in agricultural cooperatives, internal control, and accounting) to assess the relevance of each item in the questionnaire.

The revised questionnaire was then pilot-tested with two cooperatives to evaluate the appropriateness of its contents before being officially adjusted and used for interviews and surveys with cooperatives.

The total number of active cooperatives nationwide by the end of 2020, according to data in the Vietnam Cooperative White Paper published by the Ministry of Planning and Investment in 2022, was 15,306, of which approximately 50.8% (equivalent to about 7,700 cooperatives) were operational agricultural cooperatives. According to the Ministry of Agriculture and Rural Development, by the end of 2022, the total number of agricultural cooperatives nationwide had increased to 17,462.

Based on Yamane's (1967) formula for sample size calculation:

$$n = \frac{N}{1 + N * e^2}$$

If the confidence levels are 90% and 95%, the selected sample sizes will be 99 and 390 agricultural

cooperatives, respectively.

The researcher combines various methods for conducting the survey, including both direct and online methods (via email, Zalo using Google Docs), sending hard copies of the survey forms, and conducting phone interviews for cases where information on the forms is missing or needs verification, or if the interviewee schedules a follow-up.

The survey content focuses on: General information about the characteristics of the industry, business activities, and fields of operation of agricultural cooperatives (industry, business fields, business organization, benefits for members); Characteristics of the cooperative's resources (organizational structure, characteristics of human resources in the leadership team, number of members, assets, revenue); The current state of internal control activities in organizing, managing, and operating the business activities of the cooperative; Evaluation of the internal control activities of agricultural cooperatives by component and the factors affecting their internal control activities.

Finally, 398 completed questionnaires with full data were collected and used for analysis in this paper.

Data analysis

The indicators were designed using a Likert scale (from 1 as Strongly Disagree to 5 as Strongly Agree), so the average values were used in the descriptive statistical method. Additionally, The ICs variables were extracted from the Exploratory Factor Analysis (EFA) using SPSS 20.0 software. Since the dependent variable was revenue per cooperative member per year in the form of continuous variable, so the quantitative model used was the Ordinary Least Square (OLS) linear regression model. However, the revenue variable does not have a normal distribution, so it is transformed into a logarithmic form to be suitable for running the OLS model. The equation for the econometric model is as follows.

$$\log(Y_i) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + \epsilon_i$$

where:

$\log(Y_i)$ is the natural logarithm of the revenue variable for cooperative i ,

β_0 is the intercept,

$\beta_1, \beta_2, \dots, \beta_5$ are the coefficients of the ICs variables

ϵ_i is the error term for cooperative i ,

$X_1, X_2, \dots, X_k$ are the independent variables (ICs variables) that influence the dependent variable Y_i .

4. RESULTS AND DISCUSSION

Agricultural Development Situation in Vietnam

Table 2. Performance of agricultural cooperatives in Vietnam from 2016 to 2021

No	Indicators	Unit	2016	2017	2018	2019	2020	2021	Average growth rate (%)
1	Total number of agricultural cooperatives	cooperative	10,726	11,686	13,856	15,363	17,462	18,340	11.4

2	Agricultural cooperatives with successful production and business activities	cooperative	6,611	6,678	7,033	7,418	7,775	8,407	4.9
3	Percentage of agricultural cooperatives with successful production and business activities	%	61.6	57.1	50.8	48.3	44.5	45.8	-5.6
4	Number of workers in the cooperative	person	85,386	79,966	78,461	77,697	72,555	75,251	-2.4
5	Capital of the cooperative	Billion VND	12,784	23,426	20,654	26,372	17,479	40,077	38.9
6	Revenue of the cooperative	Billion VND	7,063	8,829	10,183	17,186	9,634	12,485	19.0
7	Pre-tax profit of the cooperative	Billion VND	513	551	57	401	303	(103)	72.6
8	Income per regular worker	Thousand VND per month	1,291	1,543	1,672	2,393	1,576	2,335	17.0

Source: GSO, 2020, 2021, 2022, 2023

According to the report from the Ministry of Planning and Investment (2020-2023), the number of agricultural cooperatives in Vietnam holds a significant proportion, continuously increasing over the years, with an average growth rate of over 11.4% during the period 2016-2021. However, the number of agricultural cooperatives operating with successful production and business results only accounted for an average of 51.4%, and this rate has shown a decreasing trend (-5.6%) (Table 3.1). Although agricultural cooperatives attract labor, with the labor force representing over 45% of the total labor in cooperatives nationwide in 2021 (General Statistics Office, 2024), the number of workers in agricultural cooperatives also showed a slight decline during the 2016-2021 period. The total capital and revenue in agricultural cooperatives have tended to increase (Table 2), but this increase is not proportional to the growth in the number of agricultural cooperatives and their scale compared to the total number of cooperatives across the country. The proportion of capital and revenue in agricultural cooperatives accounted for only over 10% of the total capital and revenue of all cooperatives nationwide in 2021, while the number of agricultural cooperatives accounted for 51.1% of the total number of cooperatives in the country (General Statistics Office, 2024).

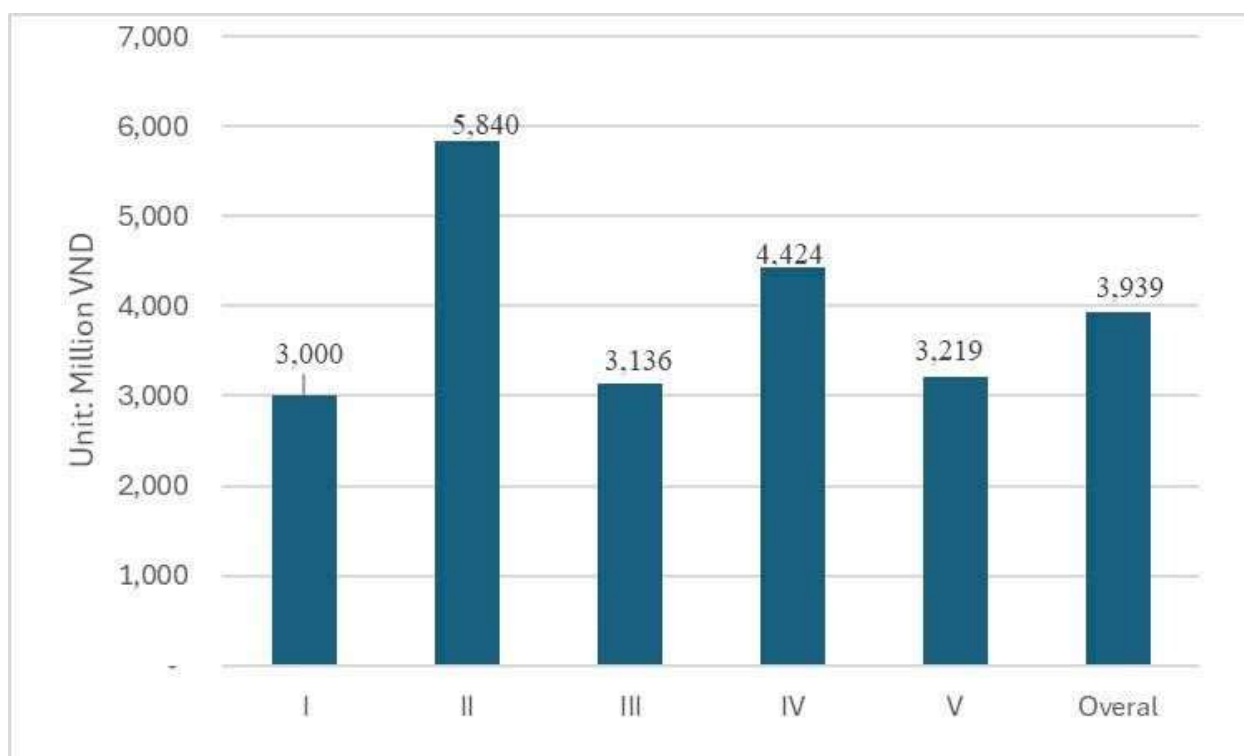


Figure 1. The revenue of agricultural cooperative of Vietnam

Note: The classification of economic geographical regions is as follows: I: Northern Midland and Mountainous Area, II: Red River Delta, III: Central Coast, IV: Central Highlands, V: Mekong River Delta, and Southeastern Region. 1 USD = 25,000 VND.

By region, the average revenue of an agricultural cooperative in 2022 reached nearly 3.94 billion VND. Notably, the Red River Delta and Central Highlands regions recorded the highest average revenues, at 5.8 billion VND and 4.4 billion VND per cooperative, respectively. This is because cooperatives in these regions included in the survey sample are engaged in pre-processing, processing, and export activities, leading to better performance in terms of revenue compared to cooperatives in other regions. Conversely, the Northern Midland and Mountainous Region had the lowest average revenue per cooperative in the sample, at nearly 3 billion VND. Most cooperatives in this region are small-scale, have limited activities, and exhibit a lower proportion of well-performing cooperatives.

How internal control activities effect on the revenue of agricultural cooperatives in Vietnam

The Kaiser-Meyer-Olkin (KMO) measure, which assesses sampling adequacy for exploratory factor analysis (EFA), was found to be 0.79, exceeding the threshold of 0.50, indicating that the dataset is suitable for factor analysis. Additionally, Bartlett's Test of Sphericity was applied to check whether the correlations between the variables are sufficient for EFA. The test yielded a result of 0.00, which is less than the significance level of 0.05, suggesting that the correlations are indeed significant and confirming that factor analysis is appropriate for this dataset. Variables with high loadings on a specific factor are regarded as strongly associated with that factor. Using the pattern of factor loadings, we interpreted and named each factor based on the variables with the strongest loadings. This process involved identifying the underlying constructs represented by the factors. Subsequently, we assessed the factors' reliability using measures such as Cronbach's alpha to determine internal consistency. We also evaluated their convergent and discriminant validity to confirm that the factors are distinct from one another and accurately represent the intended constructs. The two variables examined during the EFA phase are further analyzed as independent variables in the subsequent econometric model.

This approach enables the study to investigate how the latent factors identified through EFA predict the outcomes of interest. After calculation of EFA, five components have been investigated namely: Risk assessment (RA), Control Environment (CE), Control activities (CA), Monitoring activities (MA) and Information and communication (IC).

After that, OLS estimation has been conducted. The results is shown in the Table 3 as follows.

Table 3. Impact of internal control on the agricultural cooperatives' revenue in Vietnam

Internal control Variable	Coef.	t value	P value
Risk Assessment (RA)	0.213	2.06	0.040**
Control Environment (CE)	0.403	3.89	0.000***
Control activities (CA)	0.184	1.78	0.076*
Monitoring activities (MA)	0.219	2.11	0.035**
Information and communication (IC)	0.072	0.70	0.486
<i>Constant</i>	3.25	31.46	0.000***
Prob>F = 0.0001			
R-squared = 0.0656			
Adj R-squared = 0.0537			

Note: ***, **, * significant at 1%, 5% and 10% level.

According to the results in Table 3, all internal control components show a positive relationship with the revenue of agricultural cooperatives. Among them, four variables have a significant impact on the cooperatives' revenue. The findings suggest that if cooperatives focus on internal control components such as the control environment, risk assessment, control activities, and monitoring activities, their revenue is likely to increase.

Suggestion for promoting higher cooperative revenue through internal control activities

Enhance the awareness and understanding of cooperatives, particularly among the leadership board, supervisory board, and controllers, regarding the role of internal control in cooperatives. Provide training and workshops for leaders on control principles and risk-based approaches to developing an internal control system.

Offer guidance and support to cooperatives in identifying and assessing risks as well as in building components of the internal control system to manage these risks. Promote and support the adoption of digital transformation in internal control systems by organizing training courses on related tools, such as accounting software and traceability applications.

Strengthen the role of the supervisory board in internal control activities by empowering the board, encouraging participation in advanced training programs, and implementing appropriate salary, bonus, and benefit policies to incentivize their work.

5. CONCLUSION

This study underscores the critical role of internal control in enhancing the performance of agricultural cooperatives, particularly in developing countries like Vietnam. While prior literature highlights the importance of internal control in economic organizations, research on its specific impact on agricultural cooperatives remains limited. Using Exploratory Factor Analysis (EFA) and Ordinary Least Squares (OLS), this study demonstrates that most internal control components significantly influence cooperative revenue,

with revenue per cooperative member serving as a key performance indicator.

The findings suggest that agricultural cooperatives in Vietnam should prioritize strengthening their internal control systems. Key recommendations include enhancing the internal control environment, conducting rigorous risk assessments, improving control activities, and fostering effective monitoring mechanisms. Recommendations for Policy and Practice: (1) Enhancing Awareness and Training: Increase the understanding of internal control among cooperative leaders, supervisory boards, and controllers. Organize training sessions and workshops on control principles and risk-based approaches to developing internal control systems; (2) Risk Management Support: Provide guidance for identifying and assessing risks. Support cooperatives in building and integrating the components of an internal control system to mitigate identified risks; (3) Promoting Digital Transformation: Facilitate the adoption of digital tools in internal control, including accounting software and traceability systems, through targeted training programs; (4) Strengthening Supervisory Boards: Empower supervisory boards to play a more active role in internal control. Encourage professional development through advanced training. Implement competitive salary, bonus, and benefit policies to attract and retain skilled supervisory board members. By adopting these strategies, agricultural cooperatives in Vietnam can enhance their internal control systems, ultimately improving their revenue and long-term sustainability.

APPENDIX

Appendix 1. Rotated component matrix

	Component				
	1	2	3	4	5
CE1		0.643			
CE2		0.726			
CE3		0.792			
CE5		0.804			
CE7		0.565			
RA1	0.677				
RA2	0.824				
RA3	0.912				
RA5	0.935				
CA1			0.762		
CA4			0.767		
CA5			0.794		
CA6			0.747		
CA7			0.582		
IC1					0.661
IC2					0.722
IC3					0.647
IC4					0.571
MA1				0.909	
MA3				0.935	
MA4				0.890	

Extraction Method: Principal Component Analysis.

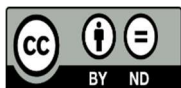
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

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