KEY DETERMINANTS OF YOUNG HORTICULTURE FARMERS' AGRIBUSINESS ACTIVITIES IN PURBALINGGA

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Abstract

The low involvement of young farmers in the agricultural sector poses a challenge to the sustainability of horticultural agribusiness, including in Purbalingga Regency, which is one of the major highland vegetable production centers. This study aims to analyze the influence of entrepreneurial capacity, farm sustainability, external support, and climate change on the agribusiness activities of young horticultural farmers. The research employed a descriptive quantitative approach involving 100 young farmer respondents from Kutabawa and Serang Villages in Karangreja District, Purbalingga Regency. The research instrument was a questionnaire that had been tested for validity and reliability. Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM). The results show that entrepreneurial capacity, farm sustainability, and understanding of climate change have a positive and significant effect on agribusiness activities. Conversely, external support does not have a significant effect, indicating that the existing assistance and facilitation have not fully addressed the real needs of young farmers. Overall, the findings highlight the importance of strengthening entrepreneurial capacity, enhancing climate adaptation strategies, and improving sustainable farming practices to reinforce horticultural agribusiness in mountainous areas.

Keywords: Agribusiness Activities, Horticulture, Young Farmers, Farming

INTRODUCTION

Data from the Central Bureau of Statistics (2024) indicate that the distribution of young farmers in Indonesia varies across provinces. East Java has the highest number, with 971.10 thousand young farmers, followed by Central Java with 625.81 thousand, and West Java with 543.04 thousand. Although these figures show a concentration of young farmers in the Java region, the overall numbers remain insufficient to meet the national demand for farmer regeneration. Therefore, comprehensive strategies are needed, including strengthening the agribusiness ecosystem, expanding access to technology, and enhancing policy support to attract and increase the participation of young generations in the agricultural sector.

Purbalingga Regency is one of the regions in Central Java Province with a relatively large number of young farmers, reaching 37,613 individuals, or approximately 20.66 percent of the total farming population (Central Bureau of Statistics, 2024). In addition, the number of agricultural household enterprises in the regency amounts to 172,819, indicating that agriculture remains the primary source of livelihood for a majority of the local population (Central Bureau of Statistics, 2024). Among its districts, Karangreja stands out as one with a notably high proportion of residents working as farmers, accounting for 21.30 percent in 2023, although this figure represents a decline of 1.6 percent compared to the previous year (Central Bureau of Statistics, 2024). This decline suggests emerging challenges in sustaining public interest particularly among younger generations in agricultural occupations. Karangreja District is characterized by its leading commodities in horticultural vegetable production, with various crops cultivated such as mustard greens, carrots, cabbage, and leeks. Nevertheless, horticultural production in Purbalingga Regency faces significant challenges related to market uncertainty and climate variability. Climate unpredictability affects crop yields and production systems, compelling farmers to become more innovative and adaptive. For instance, farmers with access to adaptive technologies and timely climate-related information are better equipped to manage their agricultural enterprises sustainably. Wheeler & Von-Braun (2013) emphasize that effective adaptation to climate change requires systemic support from multiple stakeholders, including extension agents and external institutions, to ensure the long-term sustainability of agribusiness activities

Based on preliminary field surveys, agribusiness activities in Purbalingga Regency still face several constraints, including: (1) the absence of high-quality subsidized seeds provided by the government; (2) the availability of government-subsidized fertilizers, although in limited quantities, resulting in some farmers not receiving their fertilizer allotment; (3) government assistance in the form of agricultural tools and machinery, yet limited in number, requiring farmers to use them alternately and obtain permission from the head of the farmer group; and (4) capital sources that rely primarily on the turnover of agricultural yields. Given these challenges, an empirical study focusing on agribusiness activities particularly among young farmers engaged in horticultural commodities is considered necessary

Issues within agribusiness activities encompass various interrelated aspects, including supply chain fragmentation, limited market access, price volatility, inadequate infrastructure, and environmental impacts. First, fragmentation in the supply chain leads to logistical inefficiencies, loss of product value during distribution, and the inability of smallholder farmers to compete with larger market actors (Adamsone-Fiskovica & Grivins, 2024; Wang et al., 2024). Furthermore, small-scale farmers often rely on traditional markets with limited outreach, making it difficult for them to sell their products in large quantities or obtain competitive prices (Basnet, 2015). Price fluctuations in agribusiness commodities also pose significant challenges. Factors such as climate change, trade policies, and global market volatility make it difficult for farmers to plan production and manage financial risks (Geza et al., 2021). The lack of adequate rural infrastructure such as roads, storage facilities, and irrigation systems further exacerbates these issues, often resulting in product damage before reaching the market. In the context of Purbalingga Regency, one of Indonesia's agrarian regions, this study is particularly relevant for providing a deeper understanding of the factors influencing agribusiness activities. It examines the effects of entrepreneurial capacity, external support, farm sustainability, and climate change on agribusiness operations in Purbalingga Regency

METHODOLOGY

This study is a quantitative descriptive research. A descriptive approach aims to depict existing phenomena using numerical data (Ghozali, 2014). The research was conducted in Kutabawa Village and Serang Village, Karangreja District, Purbalingga Regency, with respondents being young horticultural farmers. The sample size was determined using the Lemeshow formula, resulting in a total of 100 young farmers. Data were collected through interviews using structured research instruments. The research instrument consisted of a questionnaire containing a series of questions and statements related to the study variables. The instrument was tested for validity and reliability, with results indicating that it was both valid and reliable. The independent variables in this study are entrepreneurial capacity, external support, farm sustainability, and climate change, while the dependent variable is agribusiness activities. This study employed both descriptive and inferential analysis techniques. The collected data were analyzed using Structural Equation Modeling (SEM) with the Partial Least Squares (PLS) approach to examine the relationships among variables and determine the magnitude of their effects within the research model.

RESULT AND DISCUSSION

The data description in this section illustrates the research data from the dependent variable (Entrepreneurial Capacity) and the independent variables (Farmer Characteristics, External Support, Extension Agents' Role, and Climate Change).

Table 1. Results of Descriptive Analysis

Variable	Mean	Description
Entrepreneurial Capacity (EC)	3.74	Good
Farm Sustainability (FS)	3.54	Good
External Support (ES)	3.41	Good
Climate Change (CC)	3.57	Good
Agribusiness Activities (AA)	3.36	Fairly Good

Source: Processed data, 2025

Based on the descriptive analysis presented in Table 1, all research variables fall into a relatively good assessment category. Entrepreneurial capacity has the highest mean score of 3.71, which is classified as good. Farm sustainability, external support, and climate change variables are also categorized as good, with mean scores of 3.54, 3.41, and 3.57, respectively. Agribusiness Activities obtained a mean score of 3.36, falling into the fairly good category, indicating that agribusiness activities still require improvement. Overall, these results reflect a positive condition of the variables, though strengthening is particularly needed in the aspect of agribusiness activities. The Outer Model analysis is a stage used to evaluate the validity and reliability of a construct, which includes tests for convergent validity, discriminant validity, and construct reliability.

Table 2. Results of Convergent Validity Analysis

Variable	Indicator	*Standardized Loading Factor* (SLF)	*Average Variance Extracted* (AVE)
Entrepreneurial Capacity (EC)	EC.1	0.831	0.648
	EC.2	0.754	
	EC.3	0.818	
	EC.4	0.808	
	EC.5	0.774	
	EC.6	0.865	
	EC.7	0.775	
	EC.8	0.813	
External Support (ES)	ES.1	0.848	0.747
	ES.2	0.865	
	ES.3	0.876	
	ES.4	0.896	
	ES.5	0.836	
Climate Change (CC)	CC.1	0.935	0.832
	CC.2	0.846	
	CC.3	0.928	
	CC.4	0.936	
Farm Sustainability (FS)	FS.1	0.891	0.820
	FS.2	0.925	
	FS.3	0.870	
	FS.4	0.952	
	FS.5	0.887	
Agribusiness Activities (AA)	AA.1	0.914	0.638
	AA 2	0.931	
	AA3	0.715	
	AA.4	0.680	
	AA.5	0.818	
	KA.6	0.695	

Source: Processed data, 2025

Based on the data presented in Table 2, all indicators have a Standardized Loading Factor (SLF) above

0.50 and an Average Variance Extracted (AVE) above 0.50. Therefore, it can be concluded that all indicators measuring the variables in this study are valid.

Table 3. Results of Discriminant Validity Analysis Using the Heterotrait-Monotrait ratio

	ES	EC	FS	AA
EC	0.414			
FC	0.557	0.510		
AA	0.259	0.393	0.429	
CC	0.155	0.200	0.310	0.415

Source: Processed data, 2025

Based on the HTMT measurements presented in Table 3, all HTMT values are below 0.85. This indicates that discriminant validity has been satisfied. Therefore, it can be stated that, according to the discriminant validity test, each indicator is capable of measuring its corresponding latent variable.

Table 4. Results of Construct Reliability Analysis

Variable	*Cronbach's alpha*	*Composite reliability*
Entrepreneurial Capacity (EC)	0.923	0.936
External Support (ES)	0.916	0.937
Climate Change (CC)	0.932	0.952
Farm Sustainability (FS)	0.946	0.958
Agribusiness Activities (AA)	0.883	0.912

Source: Processed data, 2025

The results in Table 4 indicate that all Cronbach's alpha values are greater than 0.6, and all construct reliability values are greater than 0.7. Therefore, it can be concluded that all variables have good reliability. Structural model analysis is a stage used to ensure the accuracy and robustness of the constructed model through the analysis of the coefficient of determination, predictive relevance, and hypothesis testing.

Table 5. Results of the Coefficient of Determination (R^2)

Dependent Variable	R Square	R Square Adjusted
Agribusiness Activities	0.299	0.270

Source: Processed data, 2025

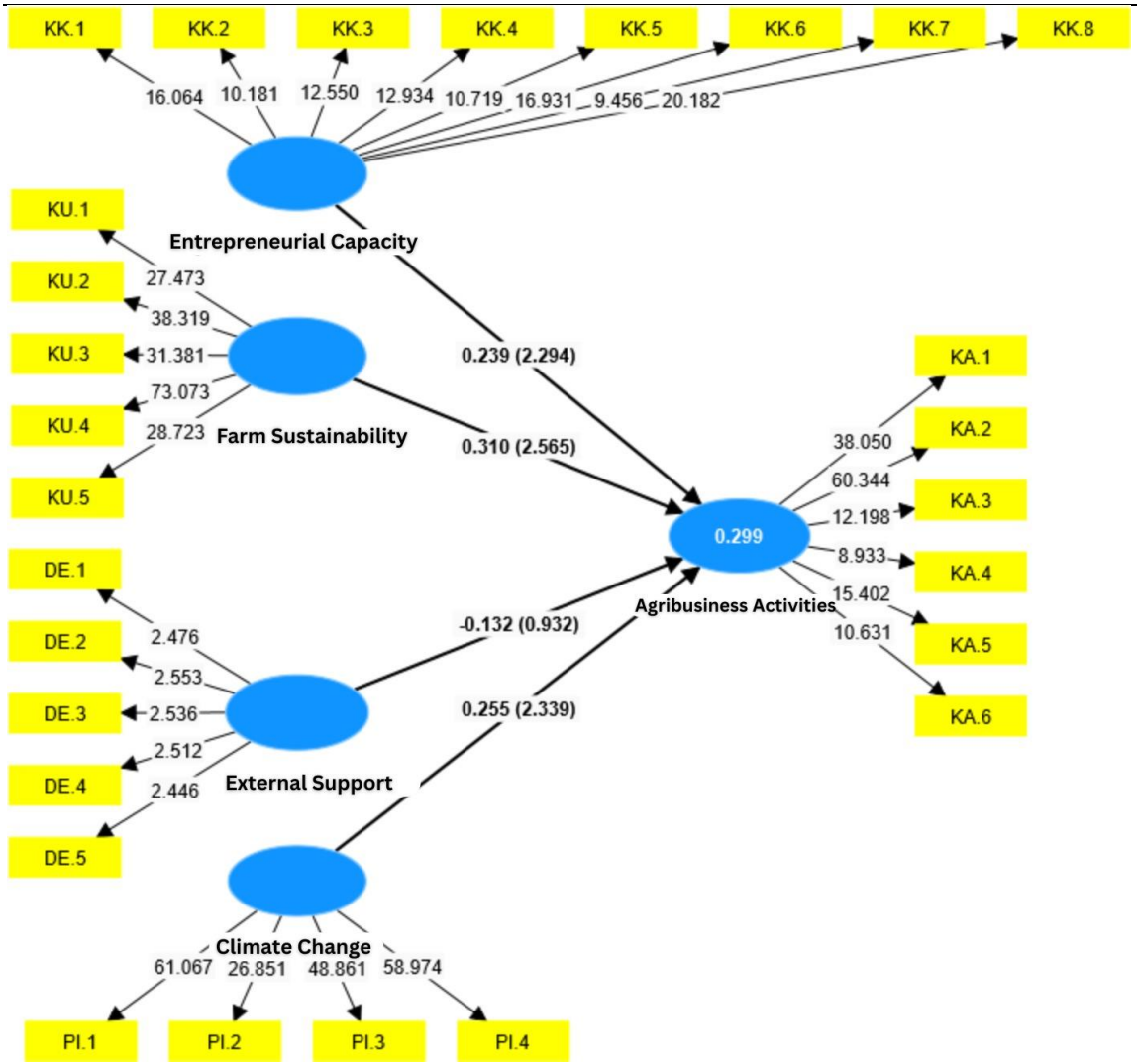
Table 5 shows that the R-square value for the Agribusiness Activities variable is 0.299. This indicates that the combined influence of entrepreneurial capacity, farm sustainability, external support, and climate change contributes 29.9% to agribusiness activities, while the remaining 70.1% is attributed to other variables not examined in this study.

Table 6. Results of Predictive Relevance (Q^2) Test

Dependent Variable	SSO	SSE	Q^2 (=1-SSE/SSO)
Agribusiness Activities	612.000	503.863	0.177

Source: Processed data, 2025

The results in Table 6 indicate that all variables have a Predictive Relevance (Q^2) value greater than 0, suggesting that the independent variables in the model are capable of explaining and predicting the variability in the dependent variable effectively.



Source: Processed data, 2025

Figure 1. SEM-PLS Construct with Path Coefficient Values

Table 6. Hypothesis Testing Results

The effect	Coefficient	T-Statistics	P-value
Entrepreneurial Capacity-> Agribusiness Activities	0.239	2.294	0.022
Farm Sustainability-> Agribusiness Activities	0.310	2.565	0.010
External Support-> Agribusiness Activities	-0.132	0.932	0.351
Climate Change-> Agribusiness Activities	0.255	2.339	0.019

Source: Processed data, 2025

The Influence of Entrepreneurial Capacity on Agribusiness Activities

The results of the study show that the p-value for entrepreneurial capacity is 0.022, which is smaller than the alpha value of 0.05. In addition, the coefficient of entrepreneurial capacity is positive at 0.239. This indicates that entrepreneurial capacity has a significant positive effect on agribusiness activities. The entrepreneurial capacity of young farmers plays a crucial role in enhancing the effectiveness and sustainability

of agribusiness operations. Within the agribusiness system framework proposed by Davis & Goldberg (1957), agribusiness is described as a system comprising four main subsystems: the input supply subsystem, the agricultural production subsystem, the processing and marketing subsystem, and the supporting institutional subsystem. These four subsystems are interrelated and require strong managerial and entrepreneurial capabilities to operate efficiently. In this context, the entrepreneurial capacity of young farmers which includes the ability to identify opportunities, innovate, take risks, manage resources, and build market networks becomes a strategic factor influencing the successful management of the overall agribusiness subsystems.

Aryal et al. (2020) emphasize that young farmers with an entrepreneurial orientation tend to be more innovative in the use of modern agricultural technologies, thereby enhancing productivity and the efficiency of the agribusiness supply chain. In line with this, a study by Mulyana et al. (2023) in West Java found that the entrepreneurial abilities of young farmers particularly in terms of innovation, decision-making, and market orientation significantly influence the sustainability of the agribusiness enterprises they manage. This strengthens the argument that enhancing entrepreneurial capacity is a key strategy in developing a competitive and adaptive business-oriented agricultural sector. Furthermore, Chikezie et al. (2021) assert that young farmers with entrepreneurial skills are better able to adapt to changes in markets and technology and actively contribute to innovation-based business development. This aligns with Abebe et al. (2022), who note that entrepreneurship development in the agricultural sector directly contributes to rural economic growth and improved food security. Therefore, strengthening the entrepreneurial capacity of young farmers not only enhances individual performance but also reinforces the agribusiness system as a whole through improved efficiency, innovation, and enterprise sustainability.

The Influence of Farm Sustainability on Agribusiness Activities

The results of the study show that the p-value for farm sustainability is 0.010, which is smaller than the alpha value of 0.05. In addition, the coefficient of farm sustainability is positive at 0.310. This indicates that farm sustainability has a significant positive effect on agribusiness activities. According to the agribusiness system theory proposed by Davis & Goldberg (1957), the agribusiness sector consists of the input supply subsystem, primary agricultural production subsystem, processing and marketing subsystem, and supporting institutional subsystem. These four subsystems are interconnected, meaning that farm sustainability supports the smooth operation and efficiency of the entire agribusiness system. Young farmers who implement sustainable farming practices that consider economic, social, and environmental aspects not only maintain current production but also preserve production capacity for the future, thereby strengthening the agribusiness value chain and enhancing competitiveness.

The empirical studies by Lediana et al. (2023) indicate that young farmers who adopt sustainable farming strategies experience improvements in both the quality and continuity of their agribusiness activities. Lediana et al. (2023) found that sustainable entrepreneurship among young agricultural generations is driven by positive attitudes, subjective norms, and behavioral control, suggesting that long-term thinking and sustainability are critical factors. Similarly, Syamsiah et al. (2024) found that external support, learning processes, and social capital of young farmers significantly contribute to agribusiness sustainability across economic, social, and environmental dimensions. Both studies suggest that when young farmers internalize sustainability principles including resource efficiency, environmentally friendly technology adoption, and business diversification their agribusiness activities become more resilient and adaptive to changing environmental and market conditions.

In the context of applying agribusiness theory, young farmers practicing sustainable farming directly strengthen the primary production subsystem by improving efficiency, minimizing resource degradation, and maintaining production continuity. This positively impacts the downstream subsystem (processing and marketing) because raw materials are more stable and of higher quality, as well as the input supply subsystem, as incentives emerge for seed, fertilizer, and technology providers to innovate according to sustainable agribusiness demands. Thus, the sustainability of young farmers' farming activities is not merely about achieving high production levels but also encompasses management quality, market network development, and integration within the overall agribusiness system.

The Influence of External Support on Agribusiness Activities

The results of the study show that the p-value for external support is 0.932, which is greater than the alpha value of 0.05. This indicates that external support does not have a significant effect on agribusiness activities. The findings suggest that various forms of external support, whether in the form of government assistance, institutional guidance, or access to agricultural resources, have not been able to meaningfully enhance agribusiness activities. Conceptually, external support only has an impact when farmers possess internal capacity, readiness for adoption, and a conducive business environment (Gunawan et al., 2019). If such support is not appropriately targeted, not optimally utilized, or fails to address the technical and managerial needs of farmers, its mere presence does not automatically increase agribusiness activities. According to Indraningsih & Swastika (2021), this situation can occur when assistance is more administrative than practical, guidance is not continuous, or program access is not accompanied by improvements in farmers' business management capabilities. Therefore, the absence of a significant effect can be understood as an indication that existing external support is not yet sufficiently relevant, intensive, or integrated to strengthen agribusiness activities at the farmer level.

Several previous studies support the finding that external support does not always have a significant effect on agribusiness activities. Khairunnisa et al. (2021) explain that although external institutions such as government and private organizations provide institutional support, its impact is more noticeable on the structure of farmer groups rather than on the enhancement of individual or commercial agribusiness activities. This suggests that institutional support may be normative or administrative in nature and has not fully reached the operational aspects of agribusiness. Additionally, empirical research by Nurfauziana & Puspaningrum (2023) found that although there is institutional support within the agribusiness system (instrumental, informational, and emotional), this support is still insufficient in terms of providing capital and post-harvest processing for vegetable farmers, which can potentially hinder the improvement of more productive agribusiness activities.

The Influence of Climate Change on Agribusiness Activities

The results of the study show that the p-value for climate change is 0.010, which is smaller than the alpha value of 0.05. In addition, the coefficient for climate change is positive at 0.310. This indicates that climate change has a positive and significant effect on agribusiness activities. Understanding climate change, implementing risk mitigation strategies, and comprehending its impacts have been proven to positively and significantly influence agribusiness activities, particularly in enhancing the resilience and productivity of farming operations. Knowledge of climate change enables farmers and agribusiness actors to anticipate shifts in seasonal patterns, rainfall, and potential extreme events, allowing them to adjust planting schedules, select superior varieties, and implement adaptive land management (Malhi et al., 2021). Furthermore, the application of mitigation strategies such as climate-smart agriculture has been shown to reduce the risk of yield losses and improve resource-use efficiency, ultimately strengthening agribusiness competitiveness (Kabir et al., 2024). A study by Nyambe et al. (2025) also indicates that the combination of mitigation and adaptation enhances the resilience of agricultural systems to climate pressures through improved soil quality, farm diversification, and the use of environmentally friendly technologies.

According to the agribusiness system theory (Davis & Goldberg, 1957), agribusiness activities consist of four subsystems: (1) the input subsystem, (2) the cultivation or production subsystem, (3) the processing/agro-industry subsystem, and (4) the marketing subsystem. Understanding climate change, implementing risk mitigation strategies, and comprehending climate impacts positively influence all these subsystems, thereby enhancing efficiency, productivity, and the sustainability of agribusiness. In the input subsystem, climate knowledge encourages the use of stress-tolerant seeds, efficient fertilizers, and appropriate irrigation technologies, reducing the risk of production failure (Malhi et al., 2021). In the production subsystem, mitigation and adaptation strategies such as climate-smart agriculture have been shown to improve harvest stability and land management efficiency, which directly impacts farm productivity (Kabir et al., 2024). This aligns with agribusiness theory, which emphasizes that production success is highly dependent on farmers'

ability to manage environmental risks.

Findings by Yamin et al. (2025) indicate that the adoption of climate-smart agriculture by farmers significantly enhances productivity and household food security, particularly in rice cultivation and climate-sensitive areas. Furthermore, a solid understanding of climate change impacts enables agribusiness actors to strengthen risk management, including the use of climate insurance, irrigation innovations, and precision technologies, thereby maintaining greater income stability (Zhang et al., 2025). Thus, climate knowledge, mitigation, and adaptation not only help reduce vulnerability but also create opportunities to improve productivity, sustainability, and overall agribusiness efficiency.

CONCLUSION

This study concludes that entrepreneurial capacity, farm sustainability, and awareness of climate change have a positive and significant effect on the agribusiness activities of young horticultural farmers in Purbalingga Regency. These findings emphasize that managerial skills, innovation, and climate adaptation strategies are key factors in enhancing the quality and resilience of agribusiness enterprises. Meanwhile, external support does not have a significant effect, indicating that the current mentoring and assistance programs have not fully addressed the real needs of young farmers. The policy implications of this study highlight the necessity for local governments and relevant institutions to strengthen entrepreneurial capacity development programs, improve access to sustainable agricultural technologies, and provide practical and targeted climate adaptation support. In addition, an evaluation of the external mentoring mechanisms is needed to ensure that assistance programs effectively support the performance of young farmers' agribusiness activities

Further research is also recommended to adopt a longitudinal approach to examine the dynamics of farmers' capacity changes over time, as well as a mixed-methods approach to explore qualitative aspects that cannot be captured by quantitative methods. Thus, future studies are expected to develop a more integrative, adaptive, and sustainable horticultural agribusiness development model, which can serve as a basis for more effective policy-making.

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