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The Effect Of Entrepreneurial Capacity On The Welfare Of Cocoa Farmers In Kulon Progo Regency

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ABSTRACT

This study aims to explore the relationship between entrepreneurial capacity, business performance, and the welfare of cocoa farmers in Kulon Progo Regency. The research focuses on understanding how the entrepreneurial skills and business practices of cocoa farmers impact their economic well-being and productivity. This study uses a quantitative approach with a survey method and snowball sampling technique involving 178 respondents. Data were collected through interviews using a Likert scale-based questionnaire. Data analysis was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the relationship between latent variables. The results of the study indicate that entrepreneurial capacity has a positive and significant effect on business performance and farmer welfare. Business performance proved to be a mediating variable that strengthened the relationship between entrepreneurial capacity and farmers' welfare. Farmers who possess business management skills, good decision-making abilities, and strong cultivation practices are able to maintain an average land productivity of 7.74 tons per hectare, even though their land area is relatively small. The study also found that business diversification and employment outside the agricultural sector are important strategies for maintaining household economic resilience. Based on these findings, the study recommends that local governments and relevant stakeholders strengthen farmer institutions, provide access to capital, and develop marketing partnerships to ensure more stable and sustainable farmer incomes.

Keywords: *Business Performance, Cocoa, Entrepreneurial Capacity, Farmer Welfare, PLS-SEM*

BACKGROUND

The agricultural sector is one of the strategic sectors in national development as it significantly contributes to economic growth and absorbs the largest workforce in Indonesia (Sudarwati & Nasution, 2024). This sector plays a crucial role in reducing unemployment and improving the welfare of the community, especially in rural areas (Sepriani & Yuliawati, 2022). In this context, the

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entrepreneurial capacity of farmers plays a critical role in improving their welfare, as it empowers farmers to innovate, increase productivity, and generate additional income through business ventures (Mas'ud & Wahyuningsih, 2023).

A key part of this sector is the plantation sub-sector, which recorded a trade surplus of USD 34.69 billion (Rp 515.1 trillion), with cocoa as the fourth-largest foreign exchange earner after palm oil, rubber, and coconut, generating USD 1.26 billion, or about 3% of total plantation commodity exports (Utama & Setiawina, 2023). This highlights cocoa's importance not only as a commodity but also as a driving force in non-oil and gas exports and the development of the national agroindustry. However, following the implementation of the export tax (BK) policy in 2010, there was a significant shift in Indonesia's cocoa industry. Prior to this, approximately 75% of cocoa beans were exported in raw form. Post-policy, the proportion of processed cocoa production increased significantly, reaching 41% of total production, as the export of raw cocoa beans became less profitable (Mas'ud & Wahyuningsih, 2023). This policy spurred the rapid growth of the cocoa processing industry in Indonesia, adding economic value to cocoa within the domestic market.

Despite this shift, the export tax also made Indonesian cocoa beans less competitive on the international market, as the higher prices compared to countries without similar taxes reduced Indonesia's market share. Consequently, the volume of raw cocoa bean exports declined, and Indonesia pivoted towards exporting processed cocoa products like cocoa powder and cocoa butter, which offer higher added value. Data from 2019 to 2023 shows that processed cocoa products have dominated Indonesia's cocoa exports (Mas'ud & Wahyuningsih, 2023). Furthermore, the import of cocoa beans (HS1801) remains relatively high, indicating an increasing reliance on imports despite the substantial potential for domestic production.

Within this broader context, the Special Region of Yogyakarta (DIY) stands out as one of Indonesia's significant cocoa-producing regions. According to DPKP data (DPKP, 2023) the area of cocoa plantations in DIY reached 30.5 thousand hectares in 2023, spread across four districts. However, since 2020, the area of cocoa plantations has experienced a negative growth rate of -3.20%, alongside a decline in the number of cocoa farmers, averaging -1.46% per year between 2018 and 2023. This decline is largely attributed to a shift in commodity preferences, as many cocoa plants have become less productive (Ingesti & Kusumawati, 2022). The selection of DIY as the research site is critical because the region not only plays a key role in Indonesia's cocoa production but also faces the challenge of declining productivity. This makes it an ideal location to examine the factors influencing cocoa farming, such as the entrepreneurial capacity of farmers and its effect on business performance and welfare. Furthermore, the region's historical importance in cocoa production, combined with the recent challenges faced by farmers, provides a unique opportunity to explore how entrepreneurial capacity can help address the issues of declining productivity and improve the economic resilience of cocoa farmers.

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Figure 1 Total Area of Cocoa Plantations in the Special Region of Yogyakarta Province
Source: DPKP, 2023, processed in 2024

From the four cocoa-producing districts in DIY, Kulon Progo District has the largest area, namely 21.3 thousand hectares in 2023 (DPKP, 2023). However, cocoa production in this area shows a fluctuating trend, with a decline of -2.27% in 2023 after an increase in 2022. This decline has a direct impact on farmers' incomes and increases the risk of instability in their welfare.

This condition indicates a research gap because various government programs, such as the provision of technology and market access, have not been sufficient to improve farmers' welfare in a sustainable manner. Previous studies, such as Iskandar et al., (2021) highlighted that approximately 90% of Indonesia's cocoa production comes from small-scale farmers who face challenges related to limited capital, technology, and education. These limitations contribute to the difficulties smallholder farmers face in achieving consistent and sustainable improvements in their welfare. Furthermore, Ingesti & Kusumawati, 2022 found that the welfare of cocoa farmers can be measured based on the number of cocoa plants they own. Farmers with fewer than 200 plants were classified as less prosperous, those with 200-599 plants as prosperous, and those with more than 600 plants as highly prosperous. However, there is limited research examining how entrepreneurial capacity, including a farmer's ability to innovate, make decisions, and seize market opportunities, directly impacts both their business performance and overall welfare. In contrast, this research aims to address this gap by focusing on the entrepreneurial capacity of cocoa farmers in Kulon Progo Regency. While previous studies have focused on the number of cocoa plants as an indicator of welfare, this study explores how entrepreneurial capacity can mediate the relationship between business performance and farmers' welfare. By analyzing this factor, the research seeks to provide a more comprehensive understanding of the drivers of farmers' welfare beyond the scale of their cocoa production.

Kulon Progo Regency was chosen as the research location because it is the largest cocoa center in DIY. This research is important to analyze the effect of entrepreneurial capacity on the welfare of cocoa farmers with business performance as a mediating variable.

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RESEARCH METHODS

This research was conducted in Kulon Progo Regency, specifically in the Kokap District, Special Region of Yogyakarta. The location was selected using purposive sampling, considering that this area has the largest area and population of cocoa farmers in the Special Region of Yogyakarta (DPKP, 2023). The sampling technique used was snowball sampling, given the lack of up-to-date data on the number of farmers actively engaged in cocoa rejuvenation. Research data was collected through face-to-face interviews using a Likert scale-based questionnaire. The total number of respondents in this study was 178 cocoa farmers (DPKP, 2023).

The analysis methods applied included descriptive analysis and Partial Least Squares - Structural Equation Modeling (PLS-SEM). Descriptive analysis was used to provide an overview of the characteristics of cocoa farmers in the study area. Meanwhile, PLS-SEM was chosen because this method is capable of analyzing the relationship between latent variables without having to meet the assumption of normal distribution (Wold, 1985 in Ghozali, 2021) .In addition, PLS-SEM provides flexibility in conducting path analysis on latent variables and can utilize non-interval measurement scales (Garson, 2016). The PLS-SEM model includes two components, namely a measurement model that explains the relationship between indicators and latent variables, and a structural model that describes the relationship between latent variables. Validity and reliability testing were conducted on the measurement model, while the structural model was evaluated through explanatory power and path coefficient significance measurements.

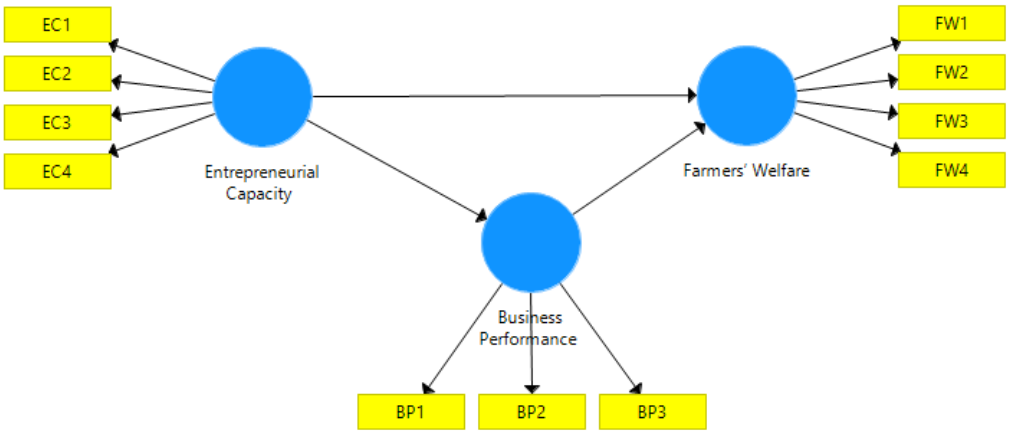

Figure 2 Initial Model Estimation

This figure illustrates the conceptual model used to explore the relationships between Entrepreneurial Capacity (EC), Business Performance (BP), and Farmers' Welfare (FW). EC is measured through indicators such as EC1, EC2, EC3, and EC4, representing the key components of entrepreneurial skills, including decision-making, business management, and innovation. BP, represented by BP1, BP2, and BP3, evaluates the operational and financial aspects of cocoa farmers'

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businesses. FW, assessed by FW1, FW2, FW3, and FW4, gauges the welfare of farmers in terms of income, quality of life, and economic stability.

The model hypothesizes that Entrepreneurial Capacity directly influences Business Performance, which in turn affects Farmers' Welfare. Business performance acts as a mediating variable, strengthening the connection between entrepreneurial capacity and the overall welfare of cocoa farmers. This model, using PLS-SEM for data analysis, provides valuable insights into the dynamics that influence farmers' economic well-being and productivity in the cocoa sector.

RESULT AND DISCUSSION

Regency of Kulon Progo consists of several subdistricts with fairly extensive agricultural land. The commodity of cocoa is one of the leading agricultural products, especially in areas with highland topography and productive land. The subdistricts in the western and central parts of Kulon Progo are known to have a dominant area of cocoa, making this region the main center of cocoa production in the Special Region of Yogyakarta. The favorable geographical conditions and relatively large availability of land make cocoa one of the leading commodities. However, there are challenges in the form of land conversion and production fluctuations that affect the welfare of farmers.

Demographic Characteristics of Cocoa Farmers

The majority of cocoa farmers in Kulon Progo Regency are of productive age (68%), which means they still have the energy and capability to develop their farming businesses. However, 32% of them are of non-productive age, which presents challenges in sustaining long-term farming activities without additional support. In terms of education, a significant portion of farmers are high school graduates (61%) and junior high school graduates (30%), while only a small percentage have pursued higher education. This indicates that while farmers possess basic knowledge and skills, there is still a substantial need for educational support and capacity-building programs to further enhance their expertise in modern farming practices.

Regarding income, more than half of the farmers (58%) fall into the high-income category, earning more than 2.8 million IDR per month. However, 42% of the farmers remain in the low-income category, earning less than or equal to 2.8 million IDR per month. This income categorization highlights the disparity within the farming community and indicates that while some farmers have achieved relative economic stability, a large portion still struggles with financial challenges.

The relatively high dependency on cocoa farming (with 44% of farmers not engaging in side jobs) further underscores the critical role of cocoa as their primary source of income, suggesting that improving cocoa farming practices could significantly impact their economic resilience. These demographic characteristics provide valuable context for understanding the challenges and opportunities facing cocoa farmers in the region, which are crucial for designing effective interventions to improve their welfare

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Table 1 Demographic Characteristics of Cocoa Farmers

Category	Percentage
Age Category	
Productive (25-64)	68%
Non-Productive (>65)	32%
Education Level	
Junior High School	30%
Senior High School	61%
Associate Degree (D3)	6%
Bachelor's Degree (D4/S1)	3%
Type of Side Job	
Entrepreneur	33%
Labore	18%
Village Official	4%
None	44%
Income Category	
Low <= 2,8 (million IDR)	42%
High >2,8 (million IDR)	58%
Total	**100%**

Source: Primary Data, processed in 2025

Measurement Model Evaluation (Outer Model)

The results of the data analysis indicate that the indicator KW4 (Problem-Solving), which represents the Entrepreneurial Capacity construct, failed to meet the required criteria, as its loading factor was below the predetermined threshold. Accordingly, a revalidation process was conducted to obtain a more optimal final model. In the subsequent stage, all indicators with loading factors below 0.7 were removed from the model, and the PLS-SEM analysis was re-estimated on the revised model until valid and reliable estimates were achieved (Hair et al., 2021).

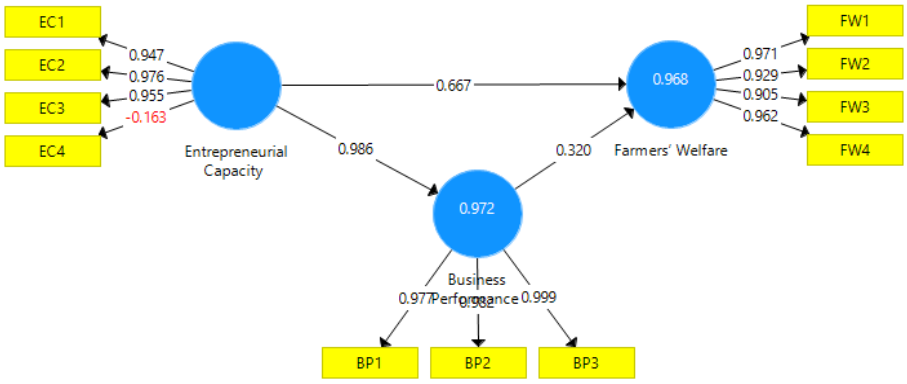

Figure 3 Initial Measurement Model (Outer Model)
Source: Primary Data, processed in 2025

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Structural Model Evaluation (Inner Model)

The subsequent stage involves evaluating the inner model or structural model. This model serves to explain the pattern of relationships, both direct and indirect, among the latent variables in the study (Ghozali, 2021). The evaluation of the inner model is carried out to assess the extent to which the relationships among constructs align with the established conceptual framework. Subsequently, the path coefficient values are obtained through the bootstrapping procedure. The resulting path coefficients are then utilized to test the previously formulated hypotheses. The following figure presents the inner model generated through the bootstrapping procedure.

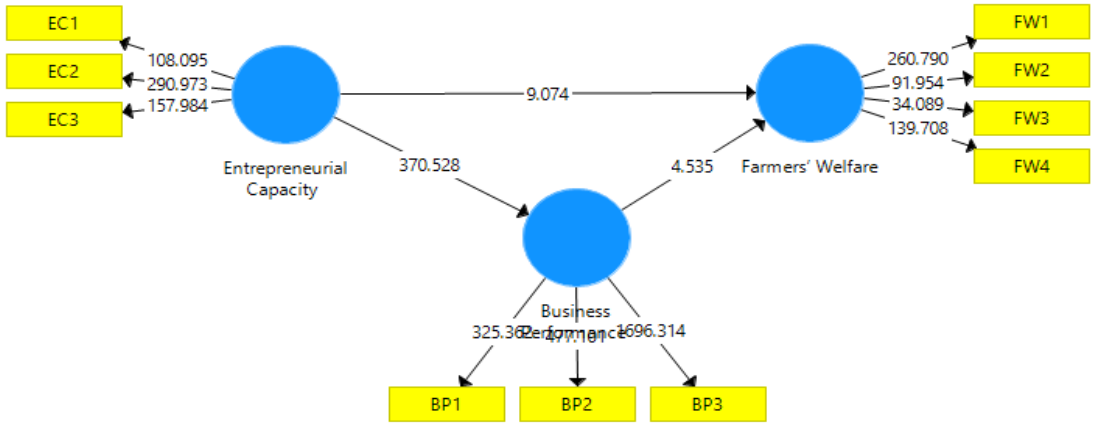

Figure 4 Bootstrapping Results for the Structural Model (Inner Model)
Source: Primary Data, processed in 2025

Figure 4 presents the results of the bootstrapping analysis on the structural model. Entrepreneurial Capacity was found to have a positive and significant effect on Business Performance (β = 394.349) and on Farmers' Welfare (β = 8.357) (Hair et al., 2021). In addition, Business Performance also exhibited a positive and significant influence on Farmers' Welfare (β = 4.174). All indicators demonstrated outer loading values that met the criteria for convergent validity, indicating that the constructs used in this study are considered reliable. These findings suggest that the enhancement of entrepreneurial capacity contributes directly to farmers' welfare, as well as indirectly through the improvement of business performance.

The results of hypothesis testing indicate that all paths exert a positive and significant effect at the 1% significance level. Entrepreneurial Capacity has a direct effect on Farmers' Welfare, with a path coefficient of 0.659 (t-statistic = 8.357; $p < 0.01$) (Hair et al., 2021). Furthermore, Entrepreneurial Capacity exerts a very strong influence on Business Performance, with a coefficient of 0.985 (t-statistic = 394.349; $p < 0.01$). Business Performance was also shown to significantly improve Farmers' Welfare, with a coefficient of 0.329 (t-statistic = 4.174; $p < 0.01$). These results confirm that strengthening entrepreneurial capacity not only has a direct impact on farmers' welfare but also

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exerts an indirect effect through improved business performance. The detailed results of the hypothesis testing are presented in the following table.

Table 2 Results of Hypothesis Testing

	Original Sample (O)	T-statistic	P Values
Entrepreneurial Capacity => Farmers' Welfare	0.659	8.357	0
Entrepreneurial Capacity => Business Performance	0.985	394.349	0
Business Performance => Farmers' Welfare	0.329	4.174	0
Entrepreneurial Capacity => Business Performance => Farmers' Welfare (Mediated Path)	0.324	4.166	0

Source: Primary Data, processed in 2025

The results of the hypothesis testing indicate that entrepreneurial capacity has a significant influence on farmers' welfare, with a path coefficient of 0.659 and a t-statistic of 8.357 ($p < 0.01$). Cocoa farmers in Kapanewon Kokap who possess production planning skills and sound decision-making such as regular branch pruning and semi-organic fertilization are able to maintain harvest stability despite relatively small landholdings. This finding is consistent with the argument that seed quality, agricultural extension, the use of organic fertilizers, and access to credit and markets significantly affect cocoa farm efficiency in Indonesia (Effendy et al., 2019).

Entrepreneurial capacity also has a very strong influence on business performance, with a coefficient of 0.985 and a t-statistic of 394.349 ($p < 0.01$). This capacity is shaped not only by capital but also by farmers' skills and experience in managing their businesses. Farmers implement technical adaptations such as weed control, semi-organic fertilization, and plant rejuvenation to maintain productivity (average 7.74 tons/ha), even though the average farm size per farmer is 0.0717 ha. This finding is consistent with the evidence that national cocoa productivity is strongly influenced by input efficiency and policies that support the adoption of better techniques (Fahmid et al., 2018). Furthermore, business success is also positively associated with education level, business experience, managerial skills, and the age of business actors (Charina, 2025).

However, despite the positive results for entrepreneurial capacity and business performance, farmers still face barriers such as limited access to stable markets, particularly after private processing partners ceased operations, forcing them to sell beans to middlemen at more variable prices. Their business capital is also insufficient, and no cooperative partnerships currently exist to reduce dependence on third parties. Therefore, the establishment of business incubators is considered an important driver of innovation because they provide mentoring and other forms of support (Faisol et al., 2024).

Business performance was also shown to significantly improve farmers' welfare (coefficient = 0.329; t-statistic = 4.174; $p < 0.05$). The profits from cocoa farming are used to meet household needs and for farm investment, such as plant rejuvenation, thereby supporting production sustainability. Cocoa contributes approximately 63.13% of farmers' average total income, while the

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remainder comes from other crops and non-agricultural activities (Nur et al., 2023). Nevertheless, in addition to cocoa income, farmers in Kokap also obtain revenue from other crops or side jobs to cope with price fluctuations or yield reductions. This income diversification strategy is crucial to prevent farmers from being fully exposed to the risks of a single commodity and helps them maintain household economic stability. This shows that business performance affects not only primary income but also drives farmers' adaptive strategies in managing production and price risks.

However, the majority of cocoa farmers fall within the older age group, making the regeneration of younger farmers willing to manage cocoa farms essential for the continuity of the business. These results also imply that, in order to increase rural youth interest in becoming farmers, welfare aspects must be an important consideration so that cocoa farming remains attractive and capable of ensuring sustainable regeneration (Saputra et al., 2022)

It can be concluded that improving entrepreneurial capacity is the key to strengthening business performance and ultimately enhancing the welfare of cocoa farmers. The required policies include continuous technical and managerial training, the establishment or strengthening of institutional arrangements such as cooperatives for marketing and financing, as well as facilitating market access and transparent price information. If structural barriers such as limited capital and market access can be addressed, the mechanism for improving farmers' welfare will be more optimal, sustainable, and serve as an incentive for farmers to continue developing their enterprises.

CONCLUSION AND SUGGESTION

CONCLUSION

The research findings highlight that entrepreneurial capacity is a crucial factor influencing both business performance and the welfare of cocoa farmers in Kapanewon Kokap. Farmers with strong managerial skills, effective production planning, and sound decision-making abilities are better positioned to optimize land use, sustain productivity, and manage resources efficiently. While business performance positively impacts household income, many farmers still rely on farm diversification and off-farm employment to adapt to price fluctuations and production uncertainties. Key barriers such as limited market access, weak cooperative institutions, and inadequate working capital continue to hinder the full potential of farmers' welfare. Addressing these constraints is essential for fostering sustainable improvements in farmers' economic well-being.

SUGGESTION

1. Training Programs: Offer continuous technical and managerial training tailored to local needs, focusing on skills such as production planning, financial management, and decision-making.
2. Market Access: Strengthen collaboration between local governments, agricultural institutions, and universities to establish cooperatives that can provide fairer market access and low-interest loans for farmers.

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3. Technological Innovation: Promote the use of new technologies in cocoa cultivation and post-harvest processes to improve product quality and increase farmers' bargaining power.
4. Inclusive Implementation: Ensure that all farmers benefit from these programs, paying special attention to vulnerable groups and ensuring interventions are contextually appropriate.

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