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Determinants of profitability in youth-led net-zero farming: Evidence from the YCFC programme in Indonesia

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Abstract

Climate change continues to challenge the sustainability of small-scale agriculture, particularly in developing countries with limited access to capital. In Indonesia, the Young Cool Farming Challenge (YCFC) operates as a competitive challenge by RYCAM where selected the best proposals receive a grant of Rp15 million to develop adaptive agribusinesses within a net-zero framework. Although the programme targets up to a 30 % economic increase, empirical evidence on how financial and non-financial factors jointly shape farm business profitability remains limited.

This study examines how challenge grants, cost structure, farming experience, market access, and the network relate on farm business profitability. Drawing on the Agricultural Innovation Systems (AIS) framework, a quantitative-dominant mixed-methods approach was applied to 12 youth farming teams across Java, Sumatra, and Sulawesi (November 2025–April 2026) with approximately 50 % female participation. Data were collected through surveys and financial reports to measure profit margins and return on investment, complemented by in-depth interviews to identify network roles, access to information, and decision-making processes.

Early observations indicate that profitability is shaped by several factors working together particularly Cost efficiency, cost structure, market access, and farmer involvement in innovation networks. Challenge grants appear to play a facilitating role. Their impact becomes more visible when the funds are directed toward productive assets rather than short-term operational expenses. Farming experience appears to strengthen resource use efficiency and managerial decisions. These factors are also correlated with the adoption of low-emission agricultural practices, including integrated farming and circular resources. However, the current funding level remains insufficient to sustain business viability beyond the initial production cycle.

Overall, the results point to a broader pattern: profitability in youth-led agribusiness is not simply a matter of accessing funds. Instead, it is closely linked to how resources are managed, how farmers connect to markets, and how they engage with networks that support learning and innovation within a low-emission farming system.

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