



Evaluating Technological Uptake in Smart Agriculture Among Smallholder Farmers in Northern Nigerian Villages: Dynamics and Economic Performance Six Months On

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Abstract

The adoption of smart agriculture technologies among smallholder farmers in northern Nigerian villages is a growing area of interest due to its potential to enhance productivity and profitability. A mixed-methods approach combining qualitative interviews with quantitative data analysis was employed to assess farmers' perceptions and actual usage patterns post-intervention. Smart agriculture technologies were adopted at a moderate rate (45%) by smallholder farmers, with significant variance in uptake between different socio-economic groups. The study highlights the importance of tailored training programmes and supportive policies to facilitate wider technology adoption and sustainable economic benefits for farmers. Farmers' needs should be prioritised through ongoing engagement and infrastructure support, while policymakers must consider incentives that encourage tech investment in agriculture.

Keywords: *Smart Agriculture, Smallholder Farmers, Northern Nigeria, Technological Uptake, Precision Farming, Yield Analysis, Economic Metrics*

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