



Digital Agriculture Platforms in Northern Ghana: Coverage and Claims Performance Analysis in Crop Insurance Systems

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Abstract

Digital agriculture platforms are increasingly being utilised to enhance insurance coverage for crops in Ghana. Northern Ghana faces significant climate variability and a high incidence of crop failure, making effective risk management crucial. A mixed-methods approach was employed, combining quantitative data on coverage rates with qualitative insights from farmer interviews to evaluate platform effectiveness. Digital agriculture platforms achieved an 85% coverage rate for participating farmers, with a notable reduction of 30% in reported claims compared to traditional insurance systems. The digital platforms are effective in increasing crop insurance reach and reducing administrative burdens on farmers. Further research should focus on scalability and sustainability of these platforms across different regions of Ghana. Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n (y_i - f(\theta; \xi_i))^2 + \lambda \|\theta\|_2^2 \}$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, AgriculturalGIS, CropDiversification, EvaluationModel, InsuranceMicrofinance, VulnerabilityAnalysis*

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