



# Digital Payment Systems and Financial Sustainability in Smallholder Farmers of Eastern Kenya: An Impact Evaluation

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## Abstract

Digital payment systems have become increasingly prevalent in modern agricultural economies as a means to facilitate financial transactions efficiently. The research employs a mixed-methods approach, combining quantitative data from surveys with qualitative insights gathered through interviews. A multivariate regression analysis is used to assess the relationship between digital payment adoption and financial outcomes. Findings indicate that smallholder farmers who adopted digital payment systems experienced an average increase of 15% in income compared to those not using such systems, though there was a significant variance among different farmer groups. The study concludes that while digital payment systems have the potential to enhance financial sustainability for some smallholder farmers in Eastern Kenya, their effectiveness varies and is contingent upon specific contextual factors. For policymakers considering implementing or expanding digital payment services, it is recommended to tailor these initiatives to local agricultural contexts and consider socioeconomic differences among farmer groups. Model estimation used  $\hat{\theta} = \text{argmin}\{\theta\} \text{sumiell}(y_i, f\theta(\xi)) + \lambda \text{Vert}\theta_r \text{Vert}^2$ , with performance evaluated using out-of-sample error.

**Keywords:** Kenya, Smallholder Farmers, Digital Payments, Financial Inclusion, Impact Evaluation, Payment Systems, Agricultural Economics

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