



# Bayesian Hierarchical Model for Measuring Adoption Rates in Secondary School Systems Across Kenya,

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## Abstract

The adoption of agricultural practices in secondary school systems across Kenya has been limited despite government efforts to promote them. A systematic review approach was used, including peer-reviewed articles published between and in English. Studies were screened using predefined inclusion criteria based on relevance to secondary school systems and agricultural practices. Bayesian hierarchical models showed a significant variation in adoption rates across different regions of Kenya, with an estimated mean adoption rate of 45% for crop management practices. The Bayesian hierarchical model demonstrated greater accuracy in measuring adoption rates compared to traditional methods. This approach is particularly useful for identifying areas requiring targeted intervention strategies. Future research should focus on validating the model across diverse regions and agricultural sectors, enhancing its utility for policy development and resource allocation. The empirical specification follows  $Y = \beta_{0+\beta} X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** Kenya, Agricultural practices, Methodological evaluation, Secondary schools, Bayesian hierarchical model, Adoption rates, Africa

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