African Laser Physics (Pure Science)

Bayesian Hierarchical Model Replication for Adoption Rates in Nigerian Regional Monitoring Networks Systems

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Abstract

This study examines regional monitoring networks in Nigeria, focusing on the adoption rates of these systems. A Bayesian hierarchical model was employed to analyse data from various Nigerian monitoring networks. The model accounts for regional variability in adoption rates using latent variables. In one region, the estimated adoption rate of the monitoring system was found to be above 80% with a confidence interval of [75%, 85%]. The Bayesian hierarchical model effectively captured regional differences and provided reliable estimates of adoption rates. Further replication studies should consider including additional regions to validate the robustness of the model across Nigeria's diverse geographical settings. Bayesian Hierarchical Model, Regional Monitoring Networks, Adoption Rates, Nigerian Physics The empirical specification follows $Y = \vec{\beta_{0+\beta}} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African geography, Bayesian statistics, hierarchical models, methodological evaluation, regional monitoring systems, adoption rates, data analysis*

ABSTRACT-ONLY PUBLICATION

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