# Methodological Evaluation of Manufacturing Systems Adoption in Kenyan Plants: A Multilevel Regression Analysis

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## Abstract

Manufacturing systems adoption in Kenyan plants has been a topic of interest due to its impact on productivity and competitiveness. A mixed-method approach was employed, combining quantitative data from surveys with qualitative insights from interviews. Multilevel regression models were used to analyse the impact of various variables on adoption rates across different plants and industries in Kenya. The multilevel regression analysis revealed that plant-level factors such as management practices significantly influenced manufacturing system adoption, accounting for a proportion of variance not captured by industry-level variables alone. This study provides evidence to support the effectiveness of targeted interventions aimed at enhancing managerial practices in manufacturing plants to improve adoption rates of advanced systems. Based on the findings, it is recommended that Kenyan manufacturers and policy-makers prioritise training programmes for managers focused on best practices in system implementation. Manufacturing Systems Adoption, Multilevel Regression Analysis, Kenyan Plants The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** *Kenya, Multilevel Modelling, Adoption Theory, Supply Chain Management, Regression Analysis, Geographic Information Systems, Participatory Action Research*

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