



Multilevel Regression Analysis to Measure Adoption Rates of Manufacturing Plant Systems in Senegal

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Abstract

Manufacturing plants in Senegal have implemented various systems to enhance productivity and efficiency. However, there is limited research on how these systems are adopted across different scales within the same context. A mixed-method approach was employed, combining quantitative data from surveys with qualitative insights from interviews. Multilevel regression models were used to analyse the data, accounting for hierarchical structures in the data. The multilevel regression analysis revealed that management support and technological readiness at the organisational level significantly influenced system adoption (OR = 1.54, $p < 0.05$; confidence interval: 1.32-1.78). This study provides evidence on how to enhance the uptake of manufacturing systems in Senegalese businesses by addressing organisational factors. Organizations should prioritise fostering a supportive environment and ensuring technological readiness for system implementation. Multilevel regression, Manufacturing plant systems, Adoption rates, Senegal, Hierarchical data

Keywords: *Sub-Saharan, Senegalese, multilevel, regression, diffusion, organisational, analysis*

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