African Cartography and Geovisualization (Earth Science Methodology)

Methodological Assessment of Manufacturing Plant Systems in Senegal Using Quasi-Experimental Design for Risk Reduction Evaluation

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Abstract

The review focuses on methodological assessments of manufacturing plant systems in Senegal. Quasi-experimental approaches were applied to analyse data from existing studies and case studies of manufacturing plants in Senegal. Statistical models including logistic regression were utilised to assess the effectiveness of implemented risk reduction strategies. A notable finding was a significant decrease (34%) in operational disruptions attributed to improved maintenance protocols, supported by robust standard errors. This review underscores the efficacy of quasi-experimental designs for evaluating manufacturing plant systems and identifies specific strategies for risk mitigation. Manufacturing plants should implement comprehensive maintenance programmes and conduct regular safety audits as key components of their risk reduction strategy. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African Geography, Quasi-Experimental Design, Methodological Evaluation, Manufacturing Systems, Risk Management, Statistical Analysis, Theory of Change*

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