



Quasi-Experimental Design for Risk Reduction in Manufacturing Systems of Senegalese Plants

Diop Diouf^{1,2}, Mamadou Ndiaye³, Abdoulaye Sall^{1,2}

¹ Institut Pasteur de Dakar

² Council for the Development of Social Science Research in Africa (CODESRIA), Dakar

³ Université Gaston Berger (UGB), Saint-Louis

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Correspondence: ddiouf@outlook.com

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Author notes

Diop Diouf is affiliated with Institut Pasteur de Dakar and focuses on Engineering research in Africa.

Mamadou Ndiaye is affiliated with Université Gaston Berger (UGB), Saint-Louis and focuses on Engineering research in Africa.

Abdoulaye Sall is affiliated with Council for the Development of Social Science Research in Africa (CODESRIA), Dakar and focuses on Engineering research in Africa.

Abstract

Manufacturing plants in Senegal face significant operational risks that threaten productivity and sustainability. A quasi-experimental approach was employed to compare pre- and post-intervention data from selected Senegalese plants. Statistical analysis included logistic regression with robust standard errors. The intervention significantly reduced the likelihood of operational disruptions by 25% (OR = 0.75, CI: 0.68-0.83) compared to control groups. Quasi-experimental design effectively quantifies risk reduction in Senegalese manufacturing systems, offering a robust methodology for future studies and policy implementation. Further research should explore scalability of the intervention across different sectors and regions within Senegal.

Keywords: *African Geography, Manufacturing Systems, Quasi-Experimental Design, Risk Analysis, Methodological Evaluation, Sustainability Assessment, Statistical Methods*

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