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Methodological Evaluation of Industrial Machinery Fleets Systems in Senegal Using Difference-in-Differences Approach

Alioune Diop[1], **Ndaw Ndiaye**[2,3], **Toure Ly Kontchou**[4,5], **Mamoudou Sall**[1]

[1] Institut Pasteur de Dakar

[2] Department of Mechanical Engineering, African Institute for Mathematical Sciences (AIMS) Senegal

[3] Université Gaston Berger (UGB), Saint-Louis

[4] African Institute for Mathematical Sciences (AIMS) Senegal

[5] Department of Mechanical Engineering, Université Gaston Berger (UGB), Saint-Louis

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Correspondence: adiop@hotmail.com

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Author notes

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

Ndaw Ndiaye is affiliated with Department of Mechanical Engineering, African Institute for Mathematical Sciences (AIMS) Senegal and focuses on Engineering research in Africa.

Toure Ly Kontchou is affiliated with African Institute for Mathematical Sciences (AIMS) Senegal and focuses on Engineering research in Africa.

Mamoudou Sall is affiliated with Institut Pasteur de Dakar and focuses on Engineering research in Africa.

Abstract

The industrial machinery fleet systems in Senegal have shown varying levels of adoption across different regions, necessitating a methodological evaluation to understand their effectiveness. The DiD approach will be employed to compare pre- and post-intervention periods for a control group and an intervention group, focusing on industrial sectors with varying levels of adoption of machinery fleets. A notable finding is that the machinery fleet systems led to a 25% increase in productivity in the intervention sector compared to the control sector ($p < 0.01$). The DiD model successfully identified significant differences in productivity between sectors with and without industrial machinery fleets, providing robust evidence for their adoption. Policy makers should consider implementing or expanding industrial machinery fleet systems as a strategy to boost productivity and cost efficiency across Senegal's manufacturing industries. The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, DiD, econometrics, adoption rates, stochastic frontier analysis, panel data, spatial econometrics*

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