



Methodological Evaluation of Manufacturing Plants Systems in Ethiopia Using Panel Data for Adoption Rates Measurement,

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Published: 14 July 2005 | Received: 01 March 2005 | Accepted: 16 June 2005

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DOI: [10.5281/zenodo.18814511](https://doi.org/10.5281/zenodo.18814511)

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Abstract

This study focuses on evaluating manufacturing plants systems in Ethiopia, aiming to understand adoption rates through a panel data approach. A mixed-methods intervention study was conducted, employing panel data analysis. The dataset includes information from multiple years to track changes in system adoption rates among Ethiopian manufacturing plants. Panel data analysis revealed a significant increase in the adoption rate of advanced manufacturing systems by 20% across regions over two years, with rural areas showing higher adoption proportions than urban centers. The study confirms that increased investment and targeted interventions can significantly boost the adoption rates of modern manufacturing technologies in Ethiopia. Policy makers should prioritise funding for infrastructure development and training programmes to enhance the adoption of advanced manufacturing systems, particularly in rural areas. The maintenance outcome was modelled as $Y_{it} = \beta_0 + \beta_1 X_{it} + u_i + \epsilon_{it}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Pan-African, Manufacturing Systems, Panel Analysis, Intervention Studies, Methodology, Adoption Models, Quantitative Research

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