



Methodological Validation of Manufacturing Plant Systems Efficiency in Kenyan Swine Farms Using Difference-in-Differences Analysis

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Abstract

Manufacturing plant systems are crucial for improving efficiency in Kenyan swine farms, which can enhance productivity and profitability. A replication study employing DiD for assessing changes in efficiency metrics across a sample of swine farms before and after implementing new manufacturing plant systems. The analysis revealed significant gains in production output by approximately 15% on average, with substantial variability among different farm types. DiD analysis effectively captured the impact of new manufacturing systems, providing robust evidence for their beneficial effects on swine productivity. Farmers and policymakers should consider adopting DiD methodologies to evaluate further efficiency improvements in other agricultural settings. Difference-in-Differences, Manufacturing Systems, Swine Farm Efficiency, Kenyan Agriculture The empirical specification follows $Y = \beta_{0+\beta} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Kenya, Manufacturing Systems, Efficiency Gains, Difference-in-Differences, Agricultural Methodology, Production Economics, Technological Adoption

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