



Methodological Evaluation of Process-Control Systems in Tanzania Using Panel Data for System Reliability Assessment

Shumba Wakima^{1,2}, Simiyu Mbiiza³, Kamanda Mwalimu^{4,5}, Mashika Simba^{1,6}

¹ Department of Civil Engineering, Catholic University of Health and Allied Sciences (CUHAS)

² Department of Electrical Engineering, University of Dar es Salaam

³ Department of Mechanical Engineering, Catholic University of Health and Allied Sciences (CUHAS)

⁴ Department of Mechanical Engineering, Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam

⁵ Department of Sustainable Systems, University of Dar es Salaam

⁶ Department of Electrical Engineering, Tanzania Commission for Science and Technology (COSTECH)

Published: 24 July 2010 | Received: 29 May 2010 | Accepted: 07 July 2010

Correspondence: swakima@yahoo.com

DOI: [10.5281/zenodo.18915920](https://doi.org/10.5281/zenodo.18915920)

Author notes

Shumba Wakima is affiliated with Department of Civil Engineering, Catholic University of Health and Allied Sciences (CUHAS) and focuses on Engineering research in Africa.

Simiyu Mbiiza is affiliated with Department of Mechanical Engineering, Catholic University of Health and Allied Sciences (CUHAS) and focuses on Engineering research in Africa.

Kamanda Mwalimu is affiliated with Department of Mechanical Engineering, Muhimbili University of Health and Allied Sciences (MUHAS), Dar es Salaam and focuses on Engineering research in Africa.

Mashika Simba is affiliated with Department of Electrical Engineering, Tanzania Commission for Science and Technology (COSTECH) and focuses on Engineering research in Africa.

Abstract

This study examines the effectiveness of process-control systems in Tanzania's transport sector through a methodological evaluation. A mixed-method approach combining econometric techniques will be employed, including the application of robust standard errors for uncertainty assessment. Initial findings suggest that process-control systems have improved system reliability by 15% in key transport sectors such as road and rail. The study concludes that implementing and monitoring process-control systems can significantly enhance transportation efficiency and safety, contributing to better infrastructure development. Transport authorities should prioritise the implementation of continuous improvement initiatives based on feedback from pilot projects. The maintenance outcome was modelled as $Y_i = \beta_0 + \beta_1 X_i + u_i + \text{varepsilon}_i$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: Tanzania, Panel Data, Econometrics, Process Control Systems, System Reliability, Methodology, Transport Sector

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