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Methodological Evaluation of Process-Control Systems in Ethiopian Adoption Context: A Randomized Field Trial

Yared Mekonnen[1], **Hawassa Gelati**[2], **Negusse Tekle**[3]

[1] Addis Ababa Science and Technology University (AASTU)

[2] Department of Mechanical Engineering, Addis Ababa Science and Technology University (AASTU)

[3] Department of Civil Engineering, Adama Science and Technology University (ASTU)

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Correspondence: ymekonnen@hotmail.com

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Author notes

Yared Mekonnen is affiliated with Addis Ababa Science and Technology University (AASTU) and focuses on Engineering research in Africa.

Hawassa Gelati is affiliated with Department of Mechanical Engineering, Addis Ababa Science and Technology University (AASTU) and focuses on Engineering research in Africa.

Negusse Tekle is affiliated with Department of Civil Engineering, Adama Science and Technology University (ASTU) and focuses on Engineering research in Africa.

Abstract

The adoption of process-control systems in engineering projects has been studied extensively in developed countries, but less so in developing contexts such as Ethiopia. A Randomized Field Trial (RCT) was conducted, where participants were randomly assigned either control or treatment groups. Data collection included pre- and post-intervention assessments using Likert scales for user satisfaction and process efficiency. In the treatment group, there was a statistically significant increase in user satisfaction ($text\{Satisfaction\}\{post\} = text\{Satisfaction\}\{pre\} + 0.5 \pm SE$) compared to the control group ($p < 0.01$), indicating enhanced system usability and adoption. The randomized field trial demonstrated that process-control systems can be effectively adopted in an Ethiopian context, with measurable improvements in user satisfaction and efficiency. Based on these findings, recommendations are provided for policymakers and practitioners to integrate robust process-control systems into engineering projects within Ethiopia.

Keywords: *Ethiopia, Geographic Information Systems (GIS), Sampling Theory, Randomization, Blinding, Intervention Evaluation, Impact Assessment*

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