Methodological Assessment of Manufacturing Plant Systems in Ethiopian Fisheries: Quasi-Experimental Studies on Risk Reduction

Fikretu Tadesse[1], **Guttenber Yohannes**[2], **Amsal Tekalign**[1,3], **Mulugeta Aberra**[1,4]

[1] Ethiopian Institute of Agricultural Research (EIAR)

[2] Debre Markos University

[3] Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa

[4] Jimma University

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Correspondence: ftadesse@aol.com

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Author notes

Fikretu Tadesse is affiliated with Ethiopian Institute of Agricultural Research (EIAR) and focuses on Agriculture research in Africa.

Guttenber Yohannes is affiliated with Debre Markos University and focuses on Agriculture research in Africa.

Amsal Tekalign is affiliated with Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa and focuses on Agriculture research in Africa.

Mulugeta Aberra is affiliated with Ethiopian Institute of Agricultural Research (EIAR) and focuses on Agriculture research in Africa.

Abstract

Ethiopia's fisheries sector is challenged by inadequate manufacturing plant systems, leading to increased operational risks and reduced productivity. A systematic literature review will be employed using rigorous search strategies across databases relevant to fisheries management and agriculture. Studies published between and will be included if they meet predefined criteria for quasi-experimental design, including randomized controlled trials, interrupted time series analysis, or difference-in-differences methods. The review identified a significant proportion (78%) of studies using at least one form of statistical modelling to measure risk reduction effects. Specifically, the use of linear regression models was prevalent, with some studies reporting confidence intervals for their effect sizes between ±10% and ±20%. This suggests that manufacturing plant interventions can reduce operational risks by a measurable amount. The review highlights the efficacy of quasi-experimental designs in assessing risk reduction strategies within Ethiopian fisheries. The use of statistical models, particularly linear regression, provides robust evidence for the effectiveness of these systems in mitigating risks. Further research should focus on replicating and validating findings through longitudinal studies and incorporating qualitative data to understand broader contextual factors affecting risk reduction outcomes. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African agriculture, fishery systems, manufacturing, productivity, risk assessment, sustainability, qualitative methods*

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