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A Phased Model for Data-Driven Teacher Performance Management Using Educational Analytics in Indonesia

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Abstract

Empirical evidence on data-driven teacher performance management in resource-constrained contexts remains limited, particularly in Eastern Indonesia. This study examines the transition from traditional to data-driven performance management in secondary schools in Makassar City. A concurrent embedded mixed-methods design was employed, prioritizing quantitative data with qualitative insights to explain contextual dynamics. The sample comprised 113 teachers (94.2% response rate) and 15 principals from 15 purposively selected schools categorized as adopters, transitional, or traditional. Teacher performance was measured across four domains: lesson planning, instructional delivery, assessment, and professional conduct. Validated questionnaires ($\alpha > 0.87$; CFI = 0.96, RMSEA = 0.048) were analyzed using t-tests and ANOVA with effect sizes and assumption checks. Qualitative data from interviews, focus groups, and observations were thematically analyzed and integrated. Traditional approaches predominated (67%). Adopter schools (33%) scored significantly higher across all performance management dimensions ($p < 0.001$). Teachers in adopter schools demonstrated a 23% higher mean performance score over one academic year ($F = 18.45$, $p < 0.001$, $\eta^2 = 0.25$). Key enabling factors included leadership, digital infrastructure, and data literacy, while barriers comprised resistance to change, budget limitations, and competency gaps. Although findings are associational due to the cross-sectional design, results suggest that data-driven systems are linked to improved teacher performance. The study proposes a phased implementation model—awareness, capacity building, piloting, scaling, and institutionalization—tailored to resource-constrained settings.