

Transformational Leadership and Work Motivation as Predictors of Elementary-School Dapodik Operator Performance: Evidence from Pinrang Regency, Indonesia

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Abstract

This study examines whether transformational leadership and work motivation predict the performance of elementary-school operators of Indonesia's Basic Education Data system (Data Pokok Pendidikan, Dapodik) in Pinrang Regency. A quantitative, cross-sectional explanatory design was used. From a population of 315 operators, 176 respondents were selected through simple random sampling using a finite-population formula with a 5% precision level. Data were collected using a 13-item questionnaire and documentation and were analysed through multiple linear regression in IBM SPSS Statistics 25. Item-total correlations exceeded the critical value of .147. Visual diagnostic checks indicated no substantial violations of normality, multicollinearity, or homoscedasticity assumptions. Transformational leadership was positively but not significantly associated with operator performance ($B = .087$, $SE = .137$, $\beta = .119$, $t = .615$, $p = .539$), whereas work motivation was a positive and statistically significant predictor ($B = .409$, $SE = .071$, $\beta = .502$, $t = 5.746$, $p < .001$). The model was significant overall, $F(2, 173) = 17.560$, $p < .001$, explaining 16.9% of the variance in performance (adjusted $R^2 = .159$). The findings indicate that motivation is the more proximal predictor of performance in a highly standardized digital-administration role. Education authorities should therefore combine recognition, professional development, adequate work support, and adaptive leadership with continuing digital-capability development. The cross-sectional, single-region, and self-report design limits causal interpretation and generalizability.

Keywords:

transformational leadership; work motivation; employee performance; Dapodik operators; education data governance; digital public administration

DOI: <https://doi.org/10.56442/ijble.v7i2.1535>

INTRODUCTION

Digital transformation has changed how public organizations collect, validate, integrate, and use information. In education systems, data quality is not merely an administrative concern; it shapes planning, resource allocation, programme implementation, and accountability. Leadership in digitalized settings must consequently support technological adaptation, coordination, learning, and employee capability development rather than focus solely on conventional supervision (Cortellazzo et al., 2019).

In Indonesia, Data Pokok Pendidikan (Dapodik) is the national application used to collect and verify data on educational institutions, students, teachers and education personnel, resources, educational content, and learning outcomes. The system is updated online and functions as a primary source for education planning and the administration of government programmes (Directorate General of Early Childhood Education, Primary Education, and Secondary Education, n.d.; Directorate of Elementary Schools, 2022). Because the system supports decisions related to school funding, teacher administration, and educational planning, inaccurate or delayed data can generate consequences beyond the school in which the data are entered.

The effectiveness of Dapodik depends not only on software and infrastructure but also on the operators who collect, input, validate, synchronize, and maintain the data. Their work combines task accuracy, timeliness, procedural compliance, adaptability, and coordination with school personnel. These dimensions are consistent with broader conceptions of individual work performance, which distinguish the execution of core tasks from contextual and adaptive contributions (Koopmans et al., 2013). Operators must also respond to application updates, regulatory changes, tight reporting periods, incomplete source documents, and differences in school-level support.

Two factors are particularly relevant in this setting. Transformational leadership may help operators understand the strategic value of accurate data, obtain support, solve problems, and adapt to change. Work motivation may affect the effort, persistence, and responsibility with which operators complete standardized yet consequential tasks. Meta-analytic evidence generally links transformational leadership to individual and collective performance (Judge & Piccolo, 2004; Wang et al., 2011), while research on work motivation shows that intrinsic motivation and performance-contingent incentives can jointly predict performance (Cerasoli et al., 2014; Kanfer et al., 2017). Evidence from public organizations also emphasizes the importance of motives connected to service and societal contribution (Ritz et al., 2016).

However, Dapodik operators occupy a distinctive role. Their tasks are centrally standardized, technology-mediated, deadline-sensitive, and strongly constrained by formal data-validation procedures. Consequently, leadership may be less directly related to day-to-day output than technical competence, system availability, and individual motivation. Existing Indonesian studies have examined leadership and motivation in government and educational workforces (Ambasari et al., 2022; Muchlis et al., 2023), and research in Bengkalis District has specifically considered leadership, competence, job satisfaction, and the performance of Dapodik operators (Sudarno et al., 2023). Nevertheless, evidence concerning elementary-school Dapodik operators in Pinrang Regency remains limited.

This study addresses that gap by assessing the independent and joint relationships of transformational leadership and work motivation with Dapodik operator performance. It contributes by testing established human-resource constructs in a digital public-administration role that has received limited attention and by clarifying whether leadership or motivation is the more proximal predictor of operator performance.

Literature Review and Hypothesis Development

1. Dapodik operator performance in digital public administration

Individual work performance refers to behaviours and outputs that contribute to organizational objectives. In digital administrative work, performance includes accuracy, completeness, timeliness, compliance with data standards, responsiveness to system changes, and constructive coordination with data providers. The operator's contribution is therefore both technical and organizational: technical because data must satisfy system rules, and organizational because the operator depends on teachers, school leaders, and administrative staff for valid source information.

The standardized character of Dapodik work may reduce discretion, but it does not eliminate performance differences. Operators vary in persistence, carefulness, problem-solving, responsiveness to updates, and willingness to complete corrections under time pressure. Leadership and motivation may therefore influence performance through different mechanisms: leadership by shaping the work environment and access to support, and motivation by shaping individual effort and persistence.

2. Transformational leadership and operator performance

Transformational leadership involves articulating a compelling vision, providing inspirational motivation, stimulating new ways of thinking, modelling valued behaviour, and attending to individual development (Bass & Riggio, 2006). Such leadership can improve performance by increasing the meaningfulness of work, strengthening commitment, enabling problem-solving, and encouraging employees to exceed minimum role requirements.

Meta-analyses have found positive relationships between transformational leadership and multiple performance criteria (Judge & Piccolo, 2004; Wang et al., 2011). In a digital work environment, leaders may also facilitate adaptation by communicating priorities, supporting learning, and coordinating responses to technological change (Cortellazzo et al., 2019). For Dapodik operators, these behaviours may translate into clearer expectations, faster problem resolution, and stronger organizational support. *H1. Transformational leadership is positively associated with Dapodik operator performance.*

3. Work motivation and operator performance

Work motivation refers to the processes that determine the direction, intensity, and persistence of work-related behaviour. Expectancy theory proposes that effort is more likely when individuals believe that effort will produce performance and that performance will produce valued outcomes (Vroom, 1964). In Dapodik work, valued outcomes may include recognition, timely completion, reduced correction requests, professional competence, and the contribution of accurate data to education programmes.

Contemporary research treats motivation as a multi-dimensional process involving goals, self-regulation, task meaning, incentives, and the work environment (Kanfer et al., 2017). A large meta-analysis found that intrinsic motivation predicts performance quality, while extrinsic incentives are especially relevant when they are directly contingent on performance (Cerasoli et al., 2014). In public organizations, employees may also be motivated by the societal value of their work (Ritz et al., 2016). These mechanisms are relevant to Dapodik operators because much of their work is repetitive and procedural, but the consequences of accurate and timely data are socially important. *H2. Work motivation is positively associated with Dapodik operator performance.*

4. Joint explanatory model

Leadership and motivation represent complementary levels of explanation. Transformational leadership is an organizational-context factor, whereas motivation is an individual psychological mechanism. Leadership may create conditions that reinforce motivation, but motivation can also remain influential when task procedures constrain the direct role of leadership. Testing both predictors simultaneously makes it possible to identify their unique contributions and the explanatory power of the combined model. *H3. Transformational leadership and work motivation jointly explain significant variance in Dapodik operator performance.*

METHOD

The study used a quantitative, cross-sectional explanatory design to examine the statistical relationships among transformational leadership, work motivation, and Dapodik operator performance. The unit of analysis was the elementary-school Dapodik operator in Pinrang Regency, South Sulawesi, Indonesia.

The population comprised 315 elementary-school Dapodik operators. A sample of 176 operators was selected through simple random sampling. The sample size was calculated using a finite-population formula with a 5% precision level, producing approximately 176 respondents. This sample represents 55.9% of the target population.

Data were collected through a questionnaire and supporting documentation. The questionnaire comprised 13 indicators: five indicators of transformational leadership, five indicators of work motivation, and three indicators of operator performance. Higher construct scores represented higher perceived transformational leadership, stronger work motivation, and better operator performance. Item quality was assessed using corrected item-total correlations, with .147 used as the critical correlation value in the original analysis.

Data were analysed using IBM SPSS Statistics version 25. The analysis included item-validity assessment, visual evaluation of regression assumptions, and multiple linear regression. Normality was evaluated from the residual histogram and probability plot; multicollinearity was assessed against the conventional criteria of tolerance greater than .10 and variance inflation factor below 10; and homoscedasticity was evaluated from the residual scatterplot. The partial contribution of each predictor was assessed using *t* statistics, the overall model using the *F* statistic, and explanatory power using *R*² and adjusted *R*². Statistical significance was evaluated at $\alpha = .05$.

RESULTS AND DISSCUSION

1. Item validity

All 13 indicators had corrected item-total correlations above the critical value of .147. The coefficients ranged from .690 to .816 for transformational leadership, from .632 to .787 for work motivation, and from .681 to .794 for operator performance. Accordingly, all indicators were retained for analysis.

Table 1. Corrected Item-Total Correlations

Construct	Item	Corrected item-total <i>r</i>	Critical <i>r</i>	Decision
Transformational leadership	PX1.1	.706	.147	Valid
Transformational leadership	PX1.2	.774	.147	Valid
Transformational leadership	PX1.3	.816	.147	Valid
Transformational leadership	PX1.4	.700	.147	Valid
Transformational leadership	PX1.5	.690	.147	Valid
Work motivation	PX2.1	.658	.147	Valid
Work motivation	PX2.2	.723	.147	Valid
Work motivation	PX2.3	.787	.147	Valid
Work motivation	PX2.4	.778	.147	Valid
Work motivation	PX2.5	.632	.147	Valid
Operator performance	PY.1	.681	.147	Valid
Operator performance	PY.2	.704	.147	Valid
Operator performance	PY.3	.794	.147	Valid

Note. Source: authors' analysis of the 2026 survey data.

2. Regression diagnostics

The residual histogram and probability plot showed an approximately normal distribution. The original analysis reported tolerance values above .10 and variance inflation factors below 10 for both predictors, indicating no material multicollinearity. The scatterplot of standardized residuals against predicted values showed no systematic pattern, suggesting no substantial heteroscedasticity. These visual and threshold-based checks supported proceeding with multiple linear regression.

3. Hypothesis tests and model fit

The regression equation was $\hat{Y} = 13.609 + 0.087(\text{Transformational Leadership}) + 0.409(\text{Work Motivation})$. Transformational leadership had a small positive coefficient but was not statistically significant. Work motivation had a positive and statistically significant coefficient and the larger standardized effect. The overall model was significant and explained 16.9% of the variance in operator performance.

Table 2. Multiple Regression Results Predicting Dapodik Operator Performance

Predictor	B	SE	β	t	p
Constant	13.609	2.116	—	6.430	< .001
Transformational leadership	.087	.137	.119	.615	.539
Work motivation	.409	.071	.502	5.746	< .001

Note. $N = 176$. Model summary: $F(2, 173) = 17.560$, $p < .001$, $R^2 = .169$, adjusted $R^2 = .159$. Two-sided p values for the individual coefficients were recalculated from the reported t statistics and residual degrees of freedom because the p values in the source coefficient table were internally inconsistent.

H1 was not supported because transformational leadership did not uniquely predict operator performance after work motivation was included in the model. H2 was supported because work motivation was a positive and significant predictor. H3 was supported because the two predictors jointly explained significant variance in operator performance, $F(2, 173) = 17.560$, $p < .001$.

Discussion

1. Transformational leadership and operator performance

Transformational leadership was positively related to performance at the coefficient level, but its unique association was not statistically significant. This result differs from the general pattern reported in meta-analyses of transformational leadership and performance (Judge & Piccolo, 2004; Wang et al., 2011). The difference may reflect the nature of Dapodik work. Operator tasks are strongly standardized by application rules, validation requirements, reporting schedules, and centrally determined procedures. When discretion is limited, leadership behaviours may shape the broader work climate without translating directly into measurable variation in task performance.

The non-significant result should not be interpreted as evidence that leadership is unimportant. Leadership may operate indirectly through access to training, resource provision, coordination, psychological support, or motivation. It may also matter more during application changes, data crises, or organizational transitions than during routine data processing. The present model did not test these indirect or contingent mechanisms.

2. Work motivation and operator performance

Work motivation was the strongest predictor in the model. Operators who reported stronger motivation also reported better performance in managing education data. This finding is consistent with expectancy theory, which links effort to expectations that performance will produce valued outcomes (Vroom, 1964), and with contemporary work-motivation research emphasizing effort, persistence, self-regulation, and task meaning (Kanfer et al., 2017). It also aligns with meta-analytic evidence that intrinsic motivation predicts performance quality and that well-designed incentives can support performance (Cerasoli et al., 2014).

The result is plausible in the Dapodik context because operators frequently work under deadlines, resolve data inconsistencies, and repeat validation and synchronization procedures. Motivation may sustain attention and persistence when tasks are repetitive or when technical and administrative obstacles occur. The public value of accurate education data may also strengthen the meaningfulness of the role, consistent with research on public service motivation (Ritz et al., 2016).

3. Joint model and explanatory power

Transformational leadership and work motivation jointly produced a statistically significant model, but the explanatory power was modest: R^2 was .169. Thus, 83.1% of the variance in operator performance was associated with factors not represented in the model. Likely candidates include digital competence, tenure, workload, internet reliability,

device quality, training access, role clarity, school administrative support, data availability, and perceived fairness of compensation.

The model therefore supports an integrated interpretation rather than a leadership-only explanation. Motivation appears to be the more proximal predictor, whereas leadership may be a complementary contextual factor. This distinction extends human-resource research by showing that established leadership relationships may be weaker in highly procedural digital-administration roles.

4. Theoretical implications

The study identifies a potential boundary condition for transformational leadership theory. Transformational leadership is generally associated with performance, but its unique contribution may diminish when work is highly standardized and constrained by technical procedures. The results also support the proposition that individual motivation remains relevant even in technology-mediated roles because systems do not eliminate the need for sustained effort, attention, and responsibility. Future models should test whether motivation mediates leadership effects and whether digital competence, workload, or system quality moderate these relationships.

5. Practical implications

For the Pinrang Regency Education and Culture Office and school leaders, the findings suggest that motivational strategies should be specific, credible, and connected to work outcomes. Useful practices include timely recognition for accurate and punctual data submission, transparent performance feedback, access to competency development, fair workload distribution, and opportunities for operators to contribute to problem-solving and peer learning.

Motivation should not be treated as a substitute for working conditions. Operators require reliable devices, internet access, clear documentation, responsive technical assistance, and protected time for data management. Leaders should also communicate the policy consequences of data accuracy, provide support during application updates, and coordinate the timely submission of source documents by teachers and administrative staff.

Limitations and Future Research

First, the cross-sectional design does not establish causal direction. Although the model uses predictive language, higher performance may also strengthen motivation or shape perceptions of leadership. Longitudinal or time-lagged designs would provide stronger evidence about temporal relationships.

Second, the study was conducted in one regency and at one education level, limiting generalizability to other regions and institutional settings. Comparative studies involving multiple regencies and school levels would clarify the role of administrative context.

Third, questionnaire data from a single source may be affected by common method bias (Podsakoff et al., 2003). Future studies should combine self-reports with objective indicators such as validation-error rates, synchronization timeliness, correction frequency, or supervisor assessments.

Fourth, the model included only leadership and motivation and explained a modest proportion of performance variance. Future research should include digital competence, system quality, infrastructure, workload, training, role clarity, compensation, and organizational support. Mediation and moderation models may also clarify how leadership influences operator performance indirectly.

Finally, future reports should provide full scale-development information, response anchors, internal-consistency coefficients, respondent characteristics, exact tolerance

and VIF values, and documented ethical procedures to strengthen reproducibility and reporting transparency.

CONCLUSION

This study examined transformational leadership and work motivation as predictors of elementary-school Dapodik operator performance in Pinrang Regency. Transformational leadership had a positive but non-significant unique association with performance, whereas work motivation was a positive and significant predictor. Together, the variables explained 16.9% of performance variance. The findings suggest that motivation is the more immediate predictor in a standardized digital-administration role, while leadership remains a complementary organizational condition. Sustainable improvement in education data management therefore requires a combined strategy: strengthen operator motivation, provide reliable work support and digital-capability development, and apply leadership practices that facilitate learning, coordination, and adaptation.

Declarations

Acknowledgements: The author thanks academic reviewers and colleagues who may provide comments during the journal submission process.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Competing interests: The authors declare no competing interests.

Data availability: The dataset may be requested from the corresponding author subject to institutional permission and confidentiality requirements.

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