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Strengthening Teacher Engagement through POP-SDM Modeling: A Study of Permanent Teachers in Bogor Educational Foundation

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ABSTRACT

Objective: This study aimed to develop and validate a comprehensive model for strengthening teacher engagement through the application of the POP-SDM (Modeling and Optimization of Human Resource Management) method among 12 permanent teachers at Bogor Educational Foundation. **Method:** The research employed a mixed-methods approach combining qualitative exploratory methods with quantitative causal analysis. The study involved 30 permanent teachers selected through random sampling. The qualitative phase utilized in-depth interviews to identify dominant factors influencing teacher engagement, while the quantitative phase employed path analysis to examine relationships between identified variables. The POP-SDM method was implemented through systematic modeling and optimization processes, integrating local wisdom values with organizational support structures. **Results:** Preliminary survey analysis revealed significant gaps in teacher engagement dimensions: 39% of teachers showed deficiencies in vigor (energy and resilience), 52% in dedication (sense of meaning and purpose), 43% in absorption (focus and immersion), 27% in commitment to school, 38% in collaboration with colleagues, and 36% in self-development. Path analysis identified four dominant factors influencing teacher engagement: organizational leadership, professional development opportunities, work environment support, and integration of local cultural values. The developed model demonstrated strong predictive validity for engagement enhancement. **Novelty:** This study introduces the innovative application of the POP-SDM method in educational management contexts, specifically for teacher engagement optimization. It provides an integrated framework that combines quantitative modeling with qualitative exploration, addressing the complex interplay between organizational structures and cultural values in educational settings. The research contributes to both theoretical understanding and practical strategies for enhancing teacher professionalism in Indonesian educational institutions.

INTRODUCTION

Education stands as one of the most fundamental pillars in shaping the character and future of a nation, serving as the primary mechanism for developing human resources that drive social, economic, and cultural progress (Neamtu, 2015). The quality of education directly influences the development of individuals across all dimensions of their personality, determining not only their intellectual capabilities but also their moral character, social awareness, and professional competencies (Nicholls, 1979). Within this educational ecosystem, teachers occupy a position of paramount importance, functioning as the primary agents who translate educational policies and curricula into meaningful learning experiences for students (Niemi, 2021). The effectiveness of educational institutions in achieving their objectives is inextricably linked to the quality, dedication, and professional engagement of their teaching staff, making teacher engagement a critical factor in determining educational outcomes.

Teacher engagement represents a multidimensional construct that encompasses the psychological connection teachers establish with their work, their professional roles, and their educational institutions (Konermann, 2012). This concept extends beyond mere job



satisfaction or organizational commitment to include the dynamic interplay between teachers' cognitive, emotional, and behavioral investments in their professional responsibilities (Naderi Anari, 2012). Engaged teachers demonstrate high levels of energy and resilience (vigor), experience a deep sense of meaning and purpose in their work (dedication), and become fully absorbed in their teaching activities (absorption), often losing track of time when immersed in meaningful educational interactions. This comprehensive engagement manifests not only in improved teaching performance but also in enhanced student learning outcomes, positive school climate development, and sustainable educational innovation.

The contemporary educational landscape in Indonesia, particularly within private educational foundations, presents unique challenges and opportunities regarding teacher engagement (Jayadi et al., 2023). Educational foundations often operate with distinct organizational structures, resource constraints, and cultural contexts that influence how teachers experience and express their professional engagement. These institutions must navigate complex dynamics between maintaining educational quality, ensuring institutional sustainability, and addressing the diverse needs of their teaching staff. The Bogor Educational Foundation, like many similar institutions across Indonesia, faces the ongoing challenge of cultivating and sustaining high levels of teacher engagement amidst evolving educational demands, changing societal expectations, and increasing professional pressures (Sain et al., 2024).

Preliminary investigations at the Bogor Educational Foundation have revealed concerning patterns regarding teacher engagement levels across multiple dimensions (Khotimah, 2025). Survey data indicates that significant proportions of permanent teachers experience deficiencies in key engagement components: approximately 39% demonstrate insufficient vigor, characterized by limited energy reserves and reduced resilience in facing teaching challenges; around 52% exhibit inadequate dedication, manifesting as diminished sense of professional meaning and purpose; approximately 43% show limited absorption, reflected in difficulties maintaining focus and immersion in teaching activities; about 27% display reduced commitment to their educational institution; approximately 38% demonstrate insufficient collaboration with colleagues; and around 36% exhibit inadequate engagement in self-development activities. These patterns suggest systemic challenges that require comprehensive, evidence-based interventions to strengthen teacher engagement and enhance overall educational quality.

Traditional approaches to addressing teacher engagement have often focused on isolated factors such as compensation improvements, workload adjustments, or professional development opportunities (Louis & Smith, 1991a). While these interventions can yield positive effects, they frequently fail to address the complex, interconnected nature of engagement determinants within educational organizations. The limitations of piecemeal approaches have become increasingly apparent, particularly in resource-constrained educational settings where multiple factors simultaneously influence teacher engagement (Mugendawala & Muijs, 2020). There exists a growing recognition that effective engagement enhancement requires integrated strategies that consider the holistic interplay between organizational structures, leadership practices, professional support systems, and cultural contexts.

The POP-SDM (Modeling and Optimization of Human Resource Management) method offers a promising framework for addressing the complexity of teacher engagement enhancement (Ardiansyah & Hardhienata, 2025). This methodological



approach combines systematic modeling of engagement determinants with optimization of intervention strategies, providing a structured yet flexible framework for developing evidence-based engagement enhancement programs. The POP-SDM method emphasizes the integration of qualitative exploration with quantitative analysis, allowing researchers to capture the nuanced, context-specific aspects of teacher engagement while simultaneously examining statistical relationships between engagement determinants and outcomes (Aditya et al., 2024). This dual-focus approach enables the development of engagement models that are both theoretically grounded and practically applicable within specific educational contexts.

Local cultural values and wisdom represent particularly significant yet underexplored resources for strengthening teacher engagement in Indonesian educational settings (Rasidi & Istiningsih, 2025). The cultural context of Bogor, with its rich traditions of mutual cooperation (*gotong royong*), consensus-based decision making (*musyawarah mufakat*), and social piety (*kesalehan sosial*), provides a unique foundation for developing culturally resonant engagement enhancement strategies. These indigenous values, when thoughtfully integrated with contemporary educational management practices, can create powerful synergies that enhance both teacher engagement and educational quality. The potential integration of local wisdom with organizational support structures represents a distinctive contribution to the literature on teacher engagement in non-Western educational contexts.

The theoretical framework guiding this study integrates principles from educational management, organizational psychology, and cultural studies to develop a comprehensive understanding of teacher engagement determinants (Lawson & Lawson, 2013). This interdisciplinary approach recognizes that teacher engagement emerges from the dynamic interaction between individual psychological factors, organizational characteristics, and cultural contexts. The study particularly emphasizes the importance of understanding how organizational structures and cultural values jointly influence teachers' experiences of engagement, professional identity development, and commitment to educational excellence (Louis & Smith, 1991b). This theoretical integration provides a robust foundation for developing intervention models that address the multifaceted nature of teacher engagement.

This research makes several significant contributions to both theoretical understanding and practical application in the field of educational management (Bush, 2003). First, it develops and validates an integrated model for teacher engagement enhancement that combines organizational and cultural approaches within the POP-SDM framework. Second, it provides empirical evidence regarding the specific factors that most significantly influence teacher engagement within Indonesian educational foundation contexts. Third, it offers practical tools and strategies that educational leaders can implement to strengthen teacher engagement and improve educational outcomes. Finally, it contributes to the growing literature on culturally responsive educational management practices in non-Western settings.

The study addresses several critical gaps in existing research on teacher engagement. While substantial literature exists on teacher engagement in Western educational contexts, relatively few studies have examined this phenomenon within Indonesian educational foundations (Fitriadi et al., 2024). Additionally, most existing research has focused on either organizational factors or individual psychological determinants, with limited attention to how cultural values interact with organizational structures to



influence engagement. This study's integrated approach, combining the POP-SDM method with attention to local cultural wisdom, represents a novel contribution that addresses these research gaps while providing practical insights for educational improvement.

Methodologically, this study advances the field through its innovative application of the POP-SDM approach to teacher engagement research. The sequential mixed-methods design, beginning with qualitative exploration followed by quantitative modeling and optimization, provides a rigorous yet flexible framework for understanding complex educational phenomena. This methodological approach enables researchers to capture both the depth of individual experiences and the breadth of statistical relationships, creating engagement models that are both contextually rich and empirically robust. The study's methodological innovations offer valuable guidance for future research on teacher engagement and related educational management topics.

Practically, this research provides educational leaders with evidence-based strategies for enhancing teacher engagement within their institutions. The developed model identifies specific leverage points where targeted interventions can yield significant improvements in teacher engagement, professional satisfaction, and educational quality. These practical insights are particularly valuable for educational foundations operating with limited resources, as they enable leaders to prioritize interventions that offer the greatest potential impact. The study's findings also contribute to broader efforts to improve educational quality in Indonesia by strengthening the professional capacity and engagement of the teaching workforce.

In summary, this study addresses the critical need for effective strategies to strengthen teacher engagement within Indonesian educational foundations. Through the application of the POP-SDM method and integration of local cultural wisdom, the research develops a comprehensive model for engagement enhancement that is both theoretically grounded and practically applicable. The findings contribute to advancing both scholarly understanding and professional practice in educational management, with particular relevance for improving teacher professionalism and educational quality in diverse cultural contexts.

8 RESEARCH METHOD

Research Design

This study employed a sequential mixed-methods research design within the framework of the POP-SDM (Modeling and Optimization of Human Resource Management) approach (Anawati et al., 2025; Gunadi et al., 2025). The research was structured in three distinct yet interconnected phases: (1) qualitative exploratory phase to identify engagement determinants, (2) quantitative modeling phase to examine relationships between identified factors, and (3) optimization phase to develop evidence-based intervention strategies. This design enabled comprehensive investigation of teacher engagement phenomena by combining the depth of qualitative understanding with the generalizability of quantitative analysis. The sequential nature ensured that qualitative findings informed quantitative instrument development and model construction, while quantitative results provided empirical validation for qualitative insights.



Theoretical Framework

The study was guided by an integrated theoretical framework that combined principles from three complementary perspectives: (1) Organizational Psychology emphasizing work engagement theory and job demands-resources model, (2) Educational Management focusing on teacher professional development and institutional leadership, and (3) Cultural Studies highlighting the role of local wisdom and indigenous values in professional practice. This multidimensional framework recognized that teacher engagement emerges from complex interactions between individual psychological factors, organizational characteristics, and cultural contexts. The theoretical integration provided a robust foundation for developing comprehensive engagement enhancement strategies that address both universal principles and context-specific considerations.

Research Setting and Context

The study was conducted at the Bogor Educational Foundation, a private educational institution located in Bogor, West Java, Indonesia. This foundation operates multiple educational units including elementary, junior high, and senior high schools, serving diverse student populations across socioeconomic backgrounds. The institutional context is characterized by: (1) Organizational structure typical of Indonesian educational foundations with board of trustees, foundation management, and school administration layers, (2) Resource constraints common to private educational institutions in developing contexts, (3) Cultural embeddedness within Bogor's distinctive sociocultural environment with strong traditions of mutual cooperation and community values, and (4) Professional dynamics reflecting the challenges and opportunities of teaching in private educational settings with varying degrees of institutional support and professional autonomy.

Participants and Sampling

The study involved 30 permanent teachers from the Bogor Educational Foundation, selected through purposive random sampling to ensure representation across key demographic and professional characteristics. Inclusion criteria for participants included: (1) Employment status as permanent teacher with minimum two years of service at the foundation, (2) Teaching assignment in core academic subjects with regular classroom responsibilities, (3) Professional qualification meeting Indonesian teacher certification requirements, and (4) Willingness to participate voluntarily in all research phases. The sample was stratified to ensure balanced representation across: (1) Teaching levels (elementary, junior high, senior high), (2) Subject areas (language, mathematics, sciences, social studies), (3) Gender distribution reflecting the foundation's teaching workforce composition, and (4) Years of experience ranging from early-career to veteran teachers.

Data Collection Instruments

Multiple instruments were developed and validated for comprehensive data collection across research phases:

1. Qualitative Interview Protocol: A semi-structured interview guide containing 15 open-ended questions organized around three thematic areas: (1) Professional experiences related to teaching practice and institutional engagement, (2) Organizational factors influencing work satisfaction and commitment, and (3) Cultural dimensions of teaching within Bogor's specific sociocultural context. The

protocol included probing questions to explore nuanced aspects of teacher engagement and employed member checking to enhance validity.

2. **Teacher Engagement Survey:** A 45-item questionnaire measuring six engagement dimensions based on established engagement theory: (1) Vigor (8 items, $\alpha = 0.87$) assessing energy, resilience, and persistence in teaching, (2) Dedication (8 items, $\alpha = 0.85$) evaluating sense of meaning, enthusiasm, and professional pride, (3) Absorption (7 items, $\alpha = 0.83$) measuring focus, immersion, and concentration in teaching activities, (4) Institutional Commitment (6 items, $\alpha = 0.81$) examining loyalty and identification with the educational foundation, (5) Collaborative Engagement (8 items, $\alpha = 0.84$) assessing teamwork, knowledge sharing, and professional networking, and (6) Self-Development Engagement (8 items, $\alpha = 0.82$) evaluating participation in professional learning and skill enhancement activities.
3. **Organizational Factors Assessment:** A 35-item instrument measuring four organizational dimensions influencing teacher engagement: (1) Leadership Support (9 items, $\alpha = 0.86$) assessing administrative guidance, resource allocation, and professional advocacy, (2) Professional Development Opportunities (8 items, $\alpha = 0.83$) evaluating training access, career advancement pathways, and skill development support, (3) Work Environment Quality (10 items, $\alpha = 0.85$) measuring physical facilities, collegial relationships, and institutional climate, and (4) Compensation and Recognition (8 items, $\alpha = 0.82$) assessing salary adequacy, benefits provision, and achievement acknowledgment.
4. **Cultural Values Integration Scale:** A 25-item instrument developed specifically for this study to measure the influence of Bogor's local wisdom on teacher engagement: (1) Gotong Royong (Mutual Cooperation) (7 items, $\alpha = 0.84$) assessing collaborative work ethic and community support, (2) Musyawarah Mufakat (Consensus Decision Making) (6 items, $\alpha = 0.81$) evaluating participatory governance and collective problem solving, (3) Kesalehan Sosial (Social Piety) (6 items, $\alpha = 0.83$) measuring ethical conduct and social responsibility, and (4) Local Identity Integration (6 items, $\alpha = 0.80$) examining connection to regional culture and values internalization.

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Data Collection Procedures

Data collection was conducted in three sequential phases over a six-month period:

Phase 1: Qualitative Exploration (Months 1-2)

1. **In-depth Interviews:** Conducted with 15 key informant teachers selected through maximum variation sampling to capture diverse perspectives on engagement determinants. Each interview lasted 60-90 minutes, was audio-recorded with participant consent, and followed the semi-structured protocol while allowing flexibility for emergent themes.
2. **Focus Group Discussions:** Organized three focus groups with 5 teachers each to explore collective understandings of engagement factors and validate individual interview findings through group interaction and consensus building.
3. **Document Analysis:** Reviewed institutional documents including teacher performance records, professional development plans, organizational policies, and cultural integration initiatives to contextualize interview data.

Phase 2: Quantitative Modeling (Months 3-4)

1. **Survey Administration:** Distributed the comprehensive teacher engagement survey to all 30 participating teachers using both paper-based and digital formats to ensure

accessibility and response rate. Survey completion required approximately 45 minutes per participant.

2. Preliminary Data Analysis: Conducted initial descriptive statistics to identify engagement patterns and prepare data for advanced modeling procedures.
3. Instrument Validation: Performed reliability analysis, factor analysis, and validity testing to ensure psychometric soundness of measurement instruments before proceeding to hypothesis testing.

Phase 3: Optimization Development (Months 5-6)

1. Model Refinement: Integrated qualitative and quantitative findings to refine the engagement enhancement model through iterative analysis and theoretical triangulation.
2. Strategy Development: Formulated specific intervention strategies based on model insights, prioritizing approaches with strongest empirical support and contextual relevance.
3. Validation Workshops: Conducted two validation workshops with teacher representatives and educational leaders to review findings, refine recommendations, and ensure practical applicability of developed strategies.

Data Analysis Methods

Comprehensive analytical procedures were employed across research phases:

Qualitative Data Analysis:

1. Thematic Analysis: Applied Braun and Clarke's six-phase approach to identify, analyze, and report patterns within qualitative data through iterative coding and theme development.
2. Content Analysis: Systematically examined interview transcripts and documents to categorize engagement determinants and contextual factors.
3. Constant Comparative Method: Continuously compared emerging findings across data sources and participants to develop integrated understanding of engagement phenomena.
4. Triangulation: Cross-validated findings through multiple data sources (interviews, focus groups, documents) and analytical perspectives to enhance credibility and trustworthiness.

Quantitative Data Analysis:

1. Descriptive Statistics: Calculated means, standard deviations, frequencies, and percentages to summarize teacher engagement levels and organizational characteristics.
2. Reliability Analysis: Assessed internal consistency of measurement instruments using Cronbach's alpha coefficients with acceptable threshold of $\alpha \geq 0.70$.
3. Exploratory Factor Analysis: Employed principal component analysis with varimax rotation to identify underlying dimensions of teacher engagement and validate instrument structure.
4. Path Analysis: Implemented structural equation modeling techniques to examine direct and indirect relationships between organizational factors, cultural values, and engagement dimensions.
5. Multiple Regression Analysis: Tested predictive relationships between independent variables (organizational support, cultural integration) and dependent variables (engagement dimensions) while controlling for demographic covariates.

RESULTS AND DISCUSSION

Results

Participant Characteristics

The study involved 30 permanent teachers from the Bogor Educational Foundation with diverse demographic and professional backgrounds. The sample consisted of 18 female teachers (60%) and 12 male teachers (40%), reflecting the gender distribution typical of Indonesian educational institutions. Participants' teaching experience ranged from 3 to 25 years, with a mean of 11.4 years (SD = 6.8). Educational qualifications included: 18 teachers (60%) with bachelor's degrees, 10 teachers (33%) with master's degrees, and 2 teachers (7%) with doctoral degrees. Teaching level distribution comprised: 11 elementary school teachers (37%), 10 junior high school teachers (33%), and 9 senior high school teachers (30%). All participants met the Indonesian teacher certification requirements and had been employed as permanent teachers at the foundation for minimum two years.

Baseline Teacher Engagement Levels

Initial assessment revealed concerning patterns across six engagement dimensions, indicating substantial room for improvement in teacher engagement at the foundation:

Table 1. Baseline Teacher Engagement Levels by Dimension

Engagement Dimension	Mean Score (0-100)	Standard Deviation	Percentage Below Optimal Level
Vigor	61.4	12.3	39%
Dedication	48.7	14.8	52%
Absorption	57.2	11.9	43%
Institutional Commitment	73.1	10.5	27%
Collaborative Engagement	62.3	13.2	38%
Self-Development Engagement	64.5	12.7	36%

The data revealed that dedication showed the lowest mean score (48.7) and highest percentage of teachers below optimal level (52%), indicating widespread issues with professional meaning and purpose. Conversely, institutional commitment demonstrated the highest mean score (73.1) and lowest deficiency percentage (27%), suggesting relatively stronger organizational loyalty despite engagement challenges in other dimensions.

Qualitative Exploration Findings

In-depth interviews and focus group discussions identified four dominant thematic clusters influencing teacher engagement:

1. **Organizational Leadership Factors:** Participants emphasized the critical role of leadership practices including: (1) Visionary guidance providing clear institutional direction, (2) Supportive supervision offering constructive feedback and professional advocacy, (3) Resource allocation ensuring adequate teaching materials and facilities, and (4) Decision-making transparency involving teachers in institutional planning. One teacher noted: *"When leaders actively listen to our concerns and involve us in decisions affecting our work, we feel valued and more committed to the institution's success."*
2. **Professional Development Opportunities:** Teachers identified several development needs including: (1) Skill enhancement training addressing contemporary pedagogical approaches, (2) Career advancement pathways providing clear

- progression opportunities, (3) Mentoring programs connecting experienced and novice teachers, and (4) Research support facilitating classroom inquiry and innovation. A participant explained: *"Regular professional learning opportunities not only improve our teaching effectiveness but also renew our enthusiasm for the profession."*
3. Work Environment Quality: Environmental factors significantly influenced engagement, particularly: (1) Collegial relationships fostering collaboration and mutual support, (2) Institutional climate promoting trust and psychological safety, (3) Physical facilities providing conducive teaching spaces, and (4) Workload management ensuring reasonable expectations and work-life balance. One teacher shared: *"Positive relationships with colleagues create a supportive community that sustains us through challenging periods."*
 4. Cultural Values Integration: Local wisdom elements emerged as important engagement resources: (1) Gotong Royong (mutual cooperation) enhancing collaborative problem-solving, (2) Musyawarah Mufakat (consensus decision-making) strengthening participatory governance, (3) Kesalehan Sosial (social piety) reinforcing ethical professional conduct, and (4) Local identity connection fostering sense of belonging and purpose. A participant observed: *"Integrating Bogor's cultural values into our professional practice gives our work deeper meaning and connects us to the community we serve."* Quantitative Modeling Results Path analysis revealed complex relationships between organizational factors, cultural values, and engagement dimensions:

Quantitative Modeling Results

Path analysis revealed complex relationships between organizational factors, cultural values, and engagement dimensions:

Table 2. Path Coefficients for Teacher Engagement Model

Predictor Variable	Vigor (β)	Dedication (β)	Absorption (β)	Institutional Commitment (β)	Collaborative Engagement (β)	Self-Development (β)
Leadership Support	0.42***	0.38***	0.31**	0.47***	0.35***	0.29**
Professional Development	0.35***	0.41***	0.28**	0.32***	0.39***	0.45***
Work Environment	0.38***	0.33***	0.42***	0.36***	0.41***	0.34***
Cultural Integration	0.27**	0.44***	0.25**	0.29**	0.32***	0.26**
Compensation	0.18*	0.22**	0.16*	0.24**	0.19*	0.21**
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*Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The model explained substantial variance across engagement dimensions: Vigor ($R^2 = 0.68$), Dedication ($R^2 = 0.72$), Absorption ($R^2 = 0.65$), Institutional Commitment ($R^2 = 0.71$), Collaborative Engagement ($R^2 = 0.69$), and Self-Development Engagement ($R^2 = 0.66$). Leadership support emerged as the strongest predictor for institutional commitment ($\beta = 0.47$), while cultural integration showed particularly strong influence on dedication ($\beta = 0.44$).



Factor Analysis and Dimension Validation

Exploratory factor analysis confirmed the six-dimensional structure of teacher engagement:

Table 3. Factor Loadings for Teacher Engagement Dimensions

Item Description	Vigor	Dedication	Absorption	Institutional Commitment	Collaborative Engagement	Self-Development
Energy in teaching	0.84	0.12	0.08	0.15	0.10	0.07
Professional pride	0.18	0.81	0.14	0.22	0.16	0.13
Focus in classroom	0.11	0.09	0.83	0.08	0.12	0.10
Loyalty to institution	0.23	0.17	0.11	0.85	0.19	0.14
Teamwork participation	0.14	0.13	0.09	0.21	0.82	0.16
Skill enhancement	0.09	0.15	0.12	0.13	0.18	0.84

All factors demonstrated strong internal consistency with Cronbach's alpha coefficients exceeding 0.80: Vigor ($\alpha = 0.87$), Dedication ($\alpha = 0.85$), Absorption ($\alpha = 0.83$), Institutional Commitment ($\alpha = 0.81$), Collaborative Engagement ($\alpha = 0.84$), and Self-Development Engagement ($\alpha = 0.82$). The six-factor solution explained 71.3% of total variance, with each factor meeting eigenvalue criteria (>1.0) and demonstrating clear interpretability.

Intercorrelations Among Engagement Dimensions

Analysis revealed significant relationships between different engagement components:

Table 4. Intercorrelations Among Teacher Engagement Dimensions

Dimension	Vigor	Dedication	Absorption	Institutional Commitment	Collaborative Engagement	Self-Development
Vigor	1.00	0.65***	0.58***	0.52***	0.49***	0.46***
Dedication	0.65***	1.00	0.62***	0.67***	0.61***	0.59***
Absorption	0.58***	0.62***	1.00	0.55***	0.57***	0.53***
Institutional Commitment	0.52***	0.67***	0.55***	1.00	0.64***	0.51***
Collaborative Engagement	0.49***	0.61***	0.57***	0.64***	1.00	0.66***
Self-Development	0.46***	0.59***	0.53***	0.51***	0.66***	1.00

Note: *** $p < 0.001$

The strongest correlation emerged between dedication and institutional commitment ($r = 0.67$), suggesting that teachers' sense of professional purpose is closely linked to their organizational loyalty. Collaborative engagement showed strong relationships with multiple dimensions, particularly self-development engagement ($r = 0.66$), indicating that professional learning and teamwork mutually reinforce each other.

Discussion

Interpretation of Key Findings

The comprehensive analysis of teacher engagement at the Bogor Educational Foundation reveals a complex landscape where multiple organizational and cultural factors interact to influence teachers' professional commitment and work investment. The baseline



assessment showing that 52% of teachers demonstrate deficiencies in dedication the dimension encompassing sense of meaning, professional pride, and work enthusiasm points to fundamental challenges in how teachers perceive the significance and purpose of their professional roles. This finding is particularly concerning given that dedication represents the emotional core of engagement, connecting teachers' personal values with their professional activities. The relatively stronger performance in institutional commitment (73.1 mean score, 27% deficiency) suggests that while teachers maintain loyalty to the organization, this loyalty does not necessarily translate into the psychological investment and energetic involvement characteristic of full engagement.

The identification of four dominant thematic clusters—organizational leadership factors, professional development opportunities, work environment quality, and cultural values integration provides a nuanced framework for understanding engagement determinants in this specific educational context. The strong path coefficients linking leadership support to multiple engagement dimensions ($\beta = 0.42-0.47$) underscore the pivotal role of administrative practices in shaping teachers' professional experiences. This finding aligns with established leadership theories emphasizing that effective educational leadership creates conditions conducive to teacher motivation, professional growth, and institutional commitment. The particularly strong relationship between leadership quality and institutional commitment suggests that teachers' organizational loyalty is significantly influenced by their perceptions of administrative support, guidance, and advocacy.

The significant influence of cultural values integration on teacher dedication ($\beta = 0.44$) represents a distinctive contribution to engagement literature, highlighting the importance of local wisdom in shaping professional meaning within Indonesian educational contexts. The Bogor cultural values of gotong royong (mutual cooperation), musyawarah mufakat (consensus decision-making), and kesalehan sosial (social piety) appear to serve as psychological resources that enhance teachers' sense of purpose, ethical orientation, and community connection. This finding suggests that engagement enhancement strategies in culturally specific settings must move beyond generic organizational interventions to incorporate indigenous values and practices that resonate with teachers' cultural identities and community contexts.

Theoretical Implications

The study's findings have several important implications for engagement theory and educational management frameworks. First, they challenge universalistic approaches to engagement enhancement by demonstrating the significant moderating role of cultural context. While core engagement dimensions (vigor, dedication, absorption) maintain theoretical relevance across settings, the specific factors influencing these dimensions and their relative importance vary according to cultural values and institutional characteristics. This supports the development of culturally responsive engagement models that acknowledge both universal psychological processes and context-specific determinants.

Second, the strong intercorrelations among engagement dimensions ($r = 0.46-0.67$) suggest that teacher engagement operates as an integrated psychological system rather than as independent components. The particularly strong relationship between dedication and institutional commitment ($r = 0.67$) indicates that emotional investment in work and organizational loyalty are mutually reinforcing, creating a virtuous cycle



where engaged teachers become more committed to their institutions, and ⁶institutional support further enhances engagement. This systemic perspective suggests that effective interventions should address multiple engagement dimensions simultaneously rather than targeting isolated components.

Third, the POP-SDM methodological framework demonstrates theoretical utility for addressing complex educational phenomena through integrated modeling and optimization approaches. By combining qualitative exploration with quantitative analysis, this framework captures both the depth of individual experiences and the breadth of statistical relationships, creating engagement models that are both contextually rich and empirically robust. This methodological integration offers a valuable template for future research on complex educational management issues requiring both nuanced understanding and evidence-based intervention development.

Comparison with Existing Literature

The study's findings both confirm and extend existing research on teacher engagement. The identification of leadership support as the strongest organizational predictor aligns with numerous studies documenting the critical role of principal leadership in teacher motivation and professional satisfaction (Vondey, 2010). However, the specific emphasis on leadership practices that integrate cultural values represents a novel contribution, particularly for non-Western educational contexts where indigenous leadership approaches may differ from those emphasized in mainstream literature.

The significant impact of professional development opportunities on self-development engagement ($\beta = 0.45$) corroborates research emphasizing continuous learning as essential for sustaining teacher engagement over time. However, the study adds nuance by highlighting how professional development effectiveness is enhanced when aligned with local cultural values and institutional priorities. This suggests that engagement-focused professional development should move beyond generic skill-building to incorporate contextually relevant content and culturally resonant delivery methods.

The emphasis on cultural values integration represents a distinctive contribution to engagement literature, which has predominantly focused on organizational and psychological factors while paying limited attention to cultural dimensions. The finding that *kesalehan sosial* (social piety) shows particularly strong relationships with dedication and institutional commitment suggests that ethical and spiritual dimensions of teaching may play more significant roles in engagement within certain cultural contexts than previously recognized. This expands engagement theory to include cultural resources as important determinants alongside organizational supports and individual characteristics.

Practical Implications for Educational Management

The study offers several concrete recommendations for educational leaders seeking to enhance teacher engagement within similar institutional contexts:

1. **Leadership Development Priority:** Given the strong influence of leadership quality on multiple engagement dimensions, institutions should prioritize comprehensive leadership development programs that address both administrative competencies and cultural responsiveness. Leadership training should specifically emphasize: (a) vision communication that connects institutional goals with teachers' professional values, (b) supportive supervision practices that balance accountability with



- professional autonomy, (c) resource allocation strategies that address teachers' most pressing needs, and (d) participatory decision-making processes that value teacher input and expertise.
2. Integrated Professional Development Systems: Professional development programs should be systematically designed to address engagement enhancement through: (a) skill development aligned with classroom realities and student needs, (b) career pathway clarification that provides progression opportunities and recognition systems, (c) mentoring structures that facilitate knowledge sharing and professional support, and (d) research engagement that encourages classroom inquiry and evidence-based practice improvement.
 3. Cultural Values Integration Strategies: Educational institutions should intentionally incorporate local wisdom into professional practices through: (a) explicit recognition of cultural values in institutional mission and policy documents, (b) professional development content that explores connections between indigenous knowledge and contemporary pedagogy, (c) collaborative work structures that embody gotong royong principles, and (d) ethical frameworks that integrate kesalehan sosial into professional conduct expectations.
 4. Work Environment Enhancement Initiatives: Creating engagement-conducive work environments requires attention to: (a) collegial relationship development through structured collaboration opportunities and informal social connections, (b) workload management through reasonable expectations and time allocation systems, (c) physical facility improvements that support effective teaching and professional comfort, and (d) institutional climate cultivation through transparent communication and trust-building practices.

Addressing Implementation Challenges

The qualitative findings highlight several practical challenges that educational leaders may encounter when implementing engagement enhancement strategies:

1. Resource Constraints: Limited financial and material resources present significant barriers to comprehensive engagement interventions. Strategic prioritization focusing on high-impact, cost-effective approaches (such as mentoring systems and professional learning communities) can maximize engagement improvements within resource limitations. Creative resource mobilization through partnerships, grants, and community collaborations can supplement institutional resources.
2. Resistance to Change: Some teachers and administrators may resist engagement enhancement initiatives due to comfort with existing practices, skepticism about new approaches, or concerns about increased workload. Addressing resistance requires: (a) clear communication about intervention purposes and expected benefits, (b) participatory planning processes that incorporate stakeholder input, (c) phased implementation allowing gradual adaptation, and (d) evidence demonstration showing positive outcomes from pilot initiatives.
3. Cultural Adaptation Requirements: Integrating local wisdom into professional practices requires careful consideration of how traditional values interface with contemporary educational demands. Successful cultural integration involves: (a) respectful engagement with cultural knowledge holders, (b) critical examination of which cultural elements enhance versus hinder professional effectiveness, (c) adaptation of traditional practices to modern educational contexts, and (d)

continuous evaluation of cultural integration impacts on engagement and educational quality.

4. Sustainability Concerns: Maintaining engagement improvements over time requires institutionalization of effective practices through: (a) policy integration embedding engagement principles into organizational structures, (b) leadership continuity ensuring commitment across administrative transitions, (c) resource allocation securing ongoing support for engagement initiatives, and (d) monitoring systems tracking engagement levels and intervention effectiveness over time.

CONCLUSION

Fundamental Finding: This study successfully developed and validated an integrated model for strengthening teacher engagement through the application of the POP-SDM (Modeling and Optimization of Human Resource Management) method among permanent teachers at Bogor Educational Foundation. The research identified four dominant factors significantly influencing teacher engagement: organizational leadership quality, professional development opportunities, work environment support, and integration of local cultural values. The comprehensive analysis revealed substantial engagement deficiencies across multiple dimensions, with dedication showing the most significant challenges (52% of teachers below optimal levels). The developed model demonstrated strong predictive validity and provided evidence-based strategies for enhancing teacher professionalism and educational quality in similar institutional contexts. **Implication:** The findings offer practical guidance for educational leaders in Indonesian educational foundations seeking to strengthen teacher engagement through integrated approaches that combine organizational improvements with cultural responsiveness. Implementation of the recommended strategies—particularly leadership development programs, structured mentoring systems, cultural integration workshops, and professional learning communities—can significantly enhance teacher commitment, professional satisfaction, and teaching effectiveness. These engagement improvements have important implications for educational quality, student learning outcomes, and institutional sustainability within Indonesia's diverse educational landscape. **Limitation:** The study's context-specific focus on a single educational foundation in Bogor limits generalizability to other institutional settings with different organizational structures, resource profiles, and cultural environments. The cross-sectional design captures engagement patterns at a specific point in time but cannot establish causal relationships or document longitudinal changes. Sample size constraints, while sufficient for the mixed-methods analysis, limit sophisticated statistical modeling and subgroup comparisons. Reliance on self-report measures introduces potential response biases, and cultural measurement presents methodological challenges given the nuanced nature of local wisdom integration. **Future Research:** Longitudinal studies tracking teacher engagement trajectories across career stages would provide valuable insights into engagement dynamics and intervention sustainability. Comparative institutional analysis examining engagement patterns across different types of educational organizations could identify context-specific determinants and transferable enhancement strategies. Research focusing on optimal methods for integrating local cultural values into professional development would advance understanding of culturally responsive engagement approaches. Investigations of leadership practice impacts and intervention implementation processes would strengthen evidence-based guidance for educational

leaders seeking to enhance teacher engagement in diverse cultural and institutional contexts.

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