LEADING THROUGH CHANGE: HOW ADAPTIVE PRINCIPALS SHAPE POSITIVE SCHOOL CULTURE AND CLIMATE

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ABSTRACT

Educational institutions must navigate rapid change and increasing complexity, making school leadership a crucial factor in shaping organizational conditions. This study investigates the relationship between principals' adaptive leadership and two organizational outcomes: positive school culture and school climate. Using a quantitative explanatory design, data were collected from 63 vocational high school teachers through self-administered questionnaires. Adaptive leadership was the independent variable, while positive school culture and school climate were the dependent variables. Descriptive statistics and simple linear regression were applied for analysis. The results show that adaptive leadership is significantly associated with both positive school culture and school climate, accounting for a meaningful proportion of the variance in each. Leadership practices characterized by responsiveness, participation, and flexibility contribute to favorable organizational conditions. However, the effect sizes suggest that leadership is only one of several influencing factors. The findings support adaptive leadership theory in vocational education and highlight the need for further research on additional organizational variables and longitudinal school improvement processes.

Keywords: adaptive leadership, school culture, school climate, vocational education

INTRODUCTION

The contemporary educational landscape is characterized by rapid change, uncertainty, and increasing complexity, driven by digital transformation, shifting societal expectations, and evolving student needs. Schools are no longer static institutions; instead, they function as adaptive organizations that must continuously respond to internal and external pressures. Within this context, school leadership has emerged as a critical factor influencing organizational resilience, teacher engagement, and the overall quality of the learning environment. Recent global discussions in educational leadership emphasize that effective school leaders are not merely administrators but adaptive agents who can guide schools through change while sustaining positive organizational conditions (Leithwood et al., 2020; Harris & Jones, 2022).

Among various leadership paradigms, adaptive leadership has attracted growing scholarly attention in response to complex, nonlinear challenges in education. Rooted in the work of Heifetz, adaptive leadership emphasizes leaders' capacity to mobilize individuals to address adaptive challenges, learn collectively, and adjust practices in uncertain conditions. In school settings, adaptive principals are expected to navigate curriculum reforms, technological integration, teacher professional development, and socio-emotional demands, all while maintaining a supportive school environment (Netolicky, 2020; Gurr & Drysdale, 2023). This leadership approach is particularly relevant in times of disruption, where traditional bureaucratic or instructional leadership models may no longer suffice.

One of the most critical outcomes of effective school leadership is the development of a positive school culture and a conducive school climate. School culture refers to shared values, norms, and beliefs that shape daily practices, while school climate reflects teachers' and students' perceptions of safety, relationships, and organizational support. Empirical evidence consistently shows that positive culture and climate are associated with higher teacher commitment, improved instructional quality, and enhanced student outcomes (Thapa et al., 2021; Wang &

Degol, 2022). However, cultivating such conditions is neither automatic nor incidental; it requires intentional leadership practices that align vision, behavior, and organizational learning.

Despite the growing recognition of adaptive leadership, many schools continue to struggle with fragmented cultures, low teacher morale, and unsupportive work climates. In vocational and secondary education contexts, these challenges are often exacerbated by rapid policy changes, industry-aligned curricula, and resource constraints. Teachers frequently report limited involvement in decision-making, inconsistent enforcement of norms, and insufficient support for professional growth, all of which undermine a positive organizational environment (OECD, 2020; Admiraal et al., 2021). These conditions raise an urgent question regarding how adaptive leadership enacted by school principals can effectively shape school culture and climate in contemporary educational settings.

Recent empirical studies have examined leadership's influence on organizational conditions in schools, yet several limitations remain. First, many studies focus predominantly on instructional or transformational leadership, with less attention given to adaptive leadership as a distinct construct. For example, a large-scale study by Wang, Pollock, and Hauseman (2021) demonstrated that transformational leadership positively influences school climate through teacher trust and collaboration. While insightful, this study does not account for leadership behaviors specifically designed to address adaptive challenges, such as uncertainty and change management.

Second, existing research often examines school culture and climate separately, rather than as interconnected outcomes shaped by leadership practices. A study by Collie, Shapka, and Perry (2020) found that supportive leadership contributes to a positive school climate, which in turn enhances teacher well-being. However, the study treats leadership as a general supportive construct and does not explore how adaptive leadership behaviors simultaneously influence deeper cultural norms and surface-level climate perceptions.

Third, empirical evidence from non-Western and vocational education contexts remains limited. Most leadership studies focus on general secondary schools in Western education systems, which may limit the transferability of findings. A recent meta-analysis by Liu and Hallinger (2022) highlights the need for context-sensitive leadership research, particularly in vocational schools, where organizational demands differ significantly from those in general education institutions. This gap is critical, as vocational schools require leaders who can balance academic goals with industry alignment, workforce readiness, and teacher adaptability.

Moreover, while several studies acknowledge the importance of leadership during periods of change, few explicitly examine adaptive leadership as a mechanism for shaping both school culture and climate. For instance, Bush and Glover (2021) emphasize leadership responsiveness during reform but do not empirically test adaptive leadership constructs. Similarly, a qualitative study by Netolicky and Brown (2022) illustrates how school leaders adapt practices during crises, yet it lacks quantitative evidence linking adaptive leadership to measurable organizational outcomes.

Based on this review, a clear research gap emerges. There is limited empirical research that quantitatively examines how adaptive leadership practiced by school principals simultaneously influences both positive school culture and school climate, particularly in vocational school contexts. Furthermore, existing studies often emphasize leadership effectiveness without sufficiently addressing the adaptive dimension required to lead through continuous change and uncertainty.

This study addresses these gaps by positioning adaptive leadership as a central explanatory variable in shaping positive school culture and school climate. The novelty of this research lies in three aspects. First, it operationalizes adaptive leadership within a quantitative framework, extending leadership research beyond traditional models. Second, it empirically examines the dual outcomes of school culture and climate as interconnected organizational constructs. Third,

it provides context-specific evidence from vocational schools, offering insights into leadership practices in settings underrepresented in the international literature.

Accordingly, this study is guided by the following research problem. Despite increasing demands for adaptability in schools, there is insufficient empirical evidence on how principals' adaptive leadership contributes to the development of a positive school culture and a supportive school climate. Addressing this problem is essential for informing leadership development, policy formulation, and school improvement initiatives in dynamic educational environments.

The purpose of this study, therefore, is to examine the influence of school principals' adaptive leadership on positive school culture and school climate. Specifically, this research aims to analyze the extent to which adaptive leadership practices contribute to the formation of shared values, norms, and perceptions that support effective teaching and learning. By doing so, the study seeks to provide empirical evidence that strengthens theoretical understanding of adaptive leadership while offering practical implications for school leaders navigating change.

METHODOLOGY

Research Design

This study employed a quantitative explanatory research design to examine how adaptive leadership among school principals influences positive school culture and climate. A quantitative approach was selected because it allows for systematic measurement of relationships among variables and enables statistical testing of hypothesized effects (Creswell & Creswell, 2021). The explanatory design is appropriate as the study seeks to explain how variations in adaptive leadership are associated with changes in organizational outcomes within school settings. The research model positions adaptive leadership as the independent variable, with positive school culture and school climate as the dependent variables. This design aligns with contemporary leadership research that examines leadership behaviors as predictors of organizational conditions in educational institutions.

Population and Sample

The population of this study comprised all vocational high school teachers in the Petarukan District, Pemalang Regency, Indonesia, totaling 63 teachers. Given the relatively small population, a saturated sampling technique (census sampling) was used, in which all members of the population were included as research participants. This approach minimizes sampling bias and enhances the representativeness of the findings within the defined context. The final sample consisted of 63 valid responses, all of which were included in the data analysis.

Research Variables and Operational Definitions

Three key variables were examined in this study: adaptive leadership, positive school culture, and school climate. Each variable was operationalized using established theoretical frameworks and measured with a structured questionnaire.

Table 1. Research Variables and Operational Definitions

Variable	Definition	Main Dimensions
Adaptive Leadership	The principal's ability to respond flexibly to change, engage stakeholders, and guide the school through complex challenges	Responsiveness to change, participative decision-making, problem-solving, and learning orientation
Positive School Culture	Shared values, norms, and practices that promote collaboration, discipline, and professional commitment	Shared values, collaboration, discipline, and mutual respect
School Climate	Teachers' perceptions of the physical, social, and psychological conditions of the school environment	Work comfort, collegial relations, and psychological safety

This operationalization ensures conceptual alignment between leadership practices and organizational outcomes, as emphasized in recent educational leadership literature.

Instrumentation and Data Collection

Data in this study were collected using a self-administered questionnaire developed based on established theories of educational leadership and school organization. The instrument was designed to capture teachers' perceptions of principals' adaptive leadership practices and prevailing conditions in school culture and climate. All items were measured on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), allowing respondents to indicate the extent of their agreement with each statement. The questionnaire consisted of three sections corresponding to the research variables: adaptive leadership (10 items), positive school culture (6 items), and school climate (6 items). Data were collected directly from respondents in their schools to ensure a high response rate, reduce missing data, and enhance response accuracy and completeness.

Validity and Reliability

To ensure the measurement instrument's quality and rigor, content validity was established through an expert review process involving scholars in educational leadership and experienced school practitioners. The experts assessed each item for clarity, relevance, and alignment with the constructs' conceptual definitions. Revisions were made based on their feedback to improve the items' precision and appropriateness. Reliability analysis was subsequently conducted using Cronbach's alpha to assess the internal consistency of each scale. A Cronbach's Alpha value of 0.70 or higher was considered acceptable, indicating that the items within each construct consistently measured the same underlying concept. The reliability analysis demonstrated that all three scales—adaptive leadership, positive school culture, and school climate—met the recommended reliability threshold, confirming that the instrument was suitable for further statistical analysis.

Data Analysis Technique

Data analysis was performed using SPSS for Windows version 21 and followed a systematic three-stage procedure. First, descriptive statistics were used to summarize the characteristics of each research variable, including minimum and maximum scores, means, and standard deviations. This step provided an initial overview of teachers' perceptions of adaptive leadership, school culture, and school climate. Second, assumption testing was conducted to ensure the appropriateness of the regression analysis, including checks for normality and linearity of the data. Third, simple linear regression analysis was employed to test the hypothesized relationships between adaptive leadership and each dependent variable. However, the study examined two outcome variables; separate regression models were estimated for positive school culture and school climate to maintain clarity of interpretation and avoid potential multicollinearity issues. The regression models were specified as $Y1 = a + bX + e$ for positive school culture and as $Y2 = a + bX + e$ for school climate, with adaptive leadership as the independent variable. Statistical significance was determined using a 0.05 alpha level.

RESULT AND DISCUSSION

Descriptive Statistics

Descriptive statistics were used to summarize teachers' perceptions of adaptive leadership, positive school culture, and school climate. As presented in Table 2, the mean score for adaptive leadership was 43.10 (SD = 3.25), indicating that principals' leadership practices were generally perceived as adaptive. Positive school culture and school climate each had a mean score of 25.00 and standard deviations of 2.31 and 2.35, respectively. These findings suggest

that teachers tended to perceive both the cultural and climatic conditions of their schools positively, with relatively moderate variability across respondents.

Table 2. Descriptive Statistics of Research Variables

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Adaptive Leadership	63	37.00	50.00	43.10	3.25
Positive School Culture	63	21.00	29.00	25.00	2.31
School Climate	63	21.00	29.00	25.00	2.35

The descriptive results indicate that respondents shared relatively consistent perceptions, particularly regarding adaptive leadership practices and organizational conditions within their schools.

Effect of Adaptive Leadership on Positive School Culture

Simple linear regression analysis was conducted to examine the relationship between adaptive leadership and positive school culture. The regression results, shown in Table 3, indicate that adaptive leadership was a statistically significant predictor of positive school culture ($\beta = 0.630$, t = 6.340, p < 0.001). This finding suggests that higher levels of adaptive leadership are associated with stronger shared values, norms, and collaborative practices among teachers.

Table 3. Regression Results: Adaptive Leadership and Positive School Culture

Predictor	B	Std. Error	Beta	t	Sig.
Constant	5.669	3.057	–	1.854	0.069
Adaptive Leadership	0.449	0.071	0.630	6.340	<0.001

The model demonstrated a coefficient of determination (R^2) of approximately 0.397, indicating that adaptive leadership accounted for about 39.7% of the variance in positive school culture. This effect size reflects a moderate explanatory contribution, suggesting that while adaptive leadership plays an important role in shaping school culture, other factors beyond leadership practices also contribute to cultural development. Substantively, these results indicate that principals who are perceived as responsive, participative, and flexible tend to foster more positive cultural conditions. However, the findings do not imply that adaptive leadership alone determines school culture, as the model explains only a substantial proportion of the variance.

Effect of Adaptive Leadership on School Climate

A separate regression analysis was conducted to examine the relationship between adaptive leadership and school climate. As shown in Table 4, adaptive leadership was a statistically significant predictor of school climate ($\beta = 0.610$, t = 6.019, p < 0.001). This result indicates that teachers who perceived higher levels of adaptive leadership also reported more favorable perceptions of their school environment.

Table 4. Regression Results: Adaptive Leadership and School Climate

Predictor	B	Std. Error	Beta	t	Sig.
Constant	5.998	3.166	–	1.895	0.063
Adaptive Leadership	0.441	0.073	0.610	6.019	<0.001

The coefficient of determination (R^2) for this model was approximately 0.372, indicating that adaptive leadership explained about 37.2% of the variance in school climate. This suggests a moderate relationship between leadership practices and teachers' perceptions of the physical, social, and psychological school environment. From a substantive perspective, the findings suggest that adaptive leadership meaningfully fosters a supportive school climate, particularly through practices that promote communication, trust, and responsiveness to emerging challenges. Nevertheless, like school culture, school climate is influenced by multiple factors, including leadership.

Comparative Interpretation of the Findings

A comparison of the two regression models indicates that adaptive leadership explained a slightly higher proportion of variance in positive school culture than in school climate. This pattern suggests that adaptive leadership may be more closely associated with deeper organizational elements, such as shared values and norms, than with surface-level perceptions of the work environment. However, the similar effect sizes across the two models highlight the consistent importance of adaptive leadership in shaping organizational conditions in schools.

Summary of Results

Overall, the results demonstrate that adaptive leadership is significantly associated with both positive school culture and school climate. The effect sizes indicate that adaptive leadership provides a meaningful, though not exclusive, contribution to these outcomes. These findings support the view that adaptive leadership is an important organizational resource for schools navigating change, while also underscoring the need to consider additional contextual and organizational factors in future research.

DISCUSSION

The findings of this study provide empirical support for the relevance of adaptive leadership in shaping organizational conditions within school settings, particularly positive school culture and school climate. The results indicate that adaptive leadership is significantly associated with both outcomes and has moderate explanatory power. These findings align with contemporary leadership theories that emphasize adaptability, learning, and collective problem-solving as essential capabilities for school leaders operating in dynamic and uncertain environments.

From a theoretical perspective, adaptive leadership views leadership as a process of mobilizing people to address complex challenges that cannot be solved through technical solutions alone. Adaptive leaders are expected to facilitate learning, encourage stakeholder participation, and adjust strategies in response to emerging conditions (Heifetz et al., 2021). The present findings support this theoretical premise by demonstrating that principals perceived as adaptive are more likely to foster shared values, collaboration, and supportive norms that underpin a positive school culture. This suggests that adaptive leadership operates not only at the behavioral level but also at the cultural level, shaping how organizational members interpret and enact shared meanings within the school (Urbain et al., 2026).

The observed relationship between adaptive leadership and positive school culture is consistent with recent international studies emphasizing the role of leadership in shaping deep organizational structures. For instance, Nguyen et al. (2020) found that leadership practices that promote flexibility and shared decision-making contribute to stronger professional norms and collective responsibility among teachers. Similarly, Kurland et al. (2021) argue that adaptive leadership supports cultural coherence by enabling schools to align values and practices during periods of change. The present study extends this body of literature by providing quantitative evidence that adaptive leadership accounts for a substantial proportion of the variance in positive school culture in vocational education.

The findings also reveal a significant association between adaptive leadership and school climate, suggesting that leadership practices influence teachers' perceptions of the physical, social, and psychological aspects of the work environment. School climate is often conceptualized as a more immediate, perceptual outcome than culture, reflecting day-to-day interactions and working conditions (Maxwell et al., 2022). The moderate effect size observed in this study indicates that adaptive leadership contributes meaningfully to these perceptions, although it does not fully account for them. This aligns with prior research suggesting that leadership is one of several interrelated factors shaping school climate, alongside resources, policies, and interpersonal dynamics (Aldridge & McChesney, 2021).

In global literature, adaptive and responsive leadership has been increasingly linked to positive school climate, particularly in contexts characterized by change and uncertainty. For example, a study by Hargreaves and Fullan (2020) highlights that leaders who demonstrate adaptability and relational trust are better positioned to maintain staff morale and psychological safety during reform initiatives. Likewise, Liu and Bellibas (2021) found that leadership responsiveness and teacher involvement were significant predictors of positive perceptions of the climate across diverse educational systems. The present findings align with these studies, suggesting that adaptive leadership fosters a sense of stability and support, thereby enhancing teachers' experiences in their work environment.

A notable contribution of this study is its examination of school culture and school climate as related yet distinct outcomes of adaptive leadership. While both outcomes were significantly associated with leadership practices, adaptive leadership explained slightly more variance in positive school culture than in school climate. This pattern may reflect the deeper, more enduring nature of culture compared to that of climate. As noted by Schein and Schein (2021), cultural change requires sustained leadership influence over time, whereas climate may fluctuate in response to short-term conditions. Adaptive leadership may be particularly influential in shaping shared values and norms, while situational and structural factors complement its influence on climate.

The vocational school context of this study further enhances its contribution to the literature. Vocational schools face unique challenges, including aligning with labor market demands, navigating rapid technological change, and meeting diverse student needs. These conditions require leaders who can navigate complexity and foster adaptability among staff (Pilz & Li, 2020). However, vocational education remains underrepresented in international leadership research. By focusing on this context, the study provides empirical evidence that adaptive leadership is relevant beyond general education settings, supporting calls for more context-sensitive leadership research (Hallinger & Kulophas, 2020).

Despite its contributions, the findings should be interpreted with caution. The use of a cross-sectional design limits the ability to draw causal conclusions about the effects of adaptive leadership. While significant associations were observed, positive school culture and climate also reinforce perceptions of effective leadership over time. This reciprocal relationship has been suggested in prior studies, which emphasize the dynamic interplay between leadership and organizational conditions (Gumus et al., 2021). Longitudinal research is therefore needed better to understand the directionality and sustainability of these relationships.

Overall, the discussion underscores the importance of adaptive leadership as a meaningful, though not exclusive, contributor to positive school culture and school climate. By situating the findings within adaptive leadership theory and global empirical research, this study reinforces the view that school leaders who are responsive, participative, and learning-oriented play a critical role in supporting organizational conditions that enable effective teaching and professional collaboration. At the same time, the results highlight the need for integrated leadership development approaches that consider both leadership practices and broader organizational contexts.

CONCLUSION

This study examined the relationship between adaptive leadership practiced by school principals and two key organizational outcomes—positive school culture and school climate—within vocational schools. The findings demonstrate that adaptive leadership is significantly associated with both outcomes and accounts for a meaningful proportion of the variance in teachers' perceptions of shared values, norms, and the overall school environment. These results position adaptive leadership as an important organizational factor in contexts characterized by change and complexity. The study contributes to educational leadership literature by providing empirical support for adaptive leadership beyond traditional instructional or transformational models, showing its relevance not only to school climate but also to deeper cultural dimensions that shape how teachers collectively interpret and respond to change.

In the context of vocational schools, the research extends evidence on leadership to this relatively underexplored sector, highlighting the suitability of adaptive leadership in environments that balance educational objectives with workforce and technological demands. However, moderate effect sizes indicate that leadership is not the sole determinant of culture and climate; broader organizational and contextual factors also play a role. Despite limitations related to its cross-sectional design and reliance on self-reported data, the study underscores adaptive leadership as a meaningful, though not exclusive, contributor to sustainable school improvement.

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