

Sustainable leadership as a strategic framework for enhancing school resilience and competitive advantage

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Abstract

Purpose: This study aims to empirically evaluate the strategic role of sustainable leadership in enhancing school resilience and institutional competitive advantage across secondary educational institutions navigating rapid technological transformation and global uncertainties.

Method: A quantitative cross-sectional survey design was executed, collecting primary data from a purposive sample of school principals, vice principals, and teachers using structured five-point Likert scale questionnaires. The latent constructs—encompassing long-term orientation, ethical governance, adaptive capacity, and educational quality—were evaluated through Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS with a bootstrapping procedure.

Findings: The empirical results indicate that sustainable leadership significantly enhances both school resilience and direct competitive advantage. Moreover, school resilience directly strengthens institutional competitiveness while acting as a vital partial mediator, establishing a dual-pathway structural mechanism through which sustainable leadership practices foster institutional differentiation, stakeholder trust, and sustained educational quality.

Practical implications: This research offers actionable insights for school leaders and educational policymakers to operationalize ethical decision-making, teacher empowerment, and collaborative governance, enabling institutions to convert internal adaptive resilience into superior organizational performance, market differentiation, and stakeholder confidence.

Originality/value: This study advances educational management literature by establishing a novel PLS-SEM empirical framework that redefines school resilience from a passive risk-mitigation dynamic into an active strategic mediator driving long-term competitive success.

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INTRODUCTION

Modern educational leadership operates within an increasingly complex global landscape that demands high-performing systems capable of elevating teaching quality and maintaining institutional stability (Goodwin et al., 2017; Sumintono et al., 2019). Within this dynamic setting, fostering school resilience has emerged as a fundamental determinant of institutional success, as school climates directly shape student development, emotional growth, and overall risk reduction (Capp et al., 2023; Mulloy, 2011). Furthermore, foundational micro-level social interactions, particularly supportive teacher-student relationships, serve as essential pillars that promote resilience across educational environments (Johnson, 2008). Consequently, educational institutions worldwide must adopt strategic leadership frameworks that can structurally reinforce academic and relational environments against ongoing disruptions.

Emphasizing sustainable leadership is crucial because it generates multidimensional benefits that encompass character development, social-emotional well-being, and sustained academic performance. Strengthening home and school environments through holistic initiatives fosters student engagement and character development, particularly among diverse student populations navigating critical educational milestones (Almerico, 2014; Chowbey & Barley, 2022; Twum-Antwi et al., 2020). Moreover, institutional structures that prioritize inclusive quality directly enhance family well-being, academic mindfulness, and self-regulated learning among students (Cheng et al., 2021; Mahama et al., 2024). Understanding these interconnected dynamics allows educational institutions to secure long-term social impact while simultaneously building a robust competitive edge.

Despite extensive scholarship on educational governance, a critical gap remains in understanding how sustainable leadership operates as an integrative framework that connects institutional resilience directly to competitive advantage. Existing research has predominantly evaluated resilience in fragmented dimensions, focusing primarily on mitigating teacher burnout, sustaining individual leader emotional resilience during

crises, or managing student transitions (Hatzichristou et al., 2017; Kwarikunda et al., 2023; Schelvis et al., 2014; Steward, 2014). Additionally, while contemporary studies address emerging behavioral challenges such as digital game addiction and school belonging, they rarely integrate these phenomena into broader institutional strategy models (Aslan et al., 2025). As a result, current literature lacks a unified empirical framework that explains how strategic leadership practices convert internal organizational resilience into market differentiation and operational strength.

To bridge this theoretical and empirical void, this research presents a novel, multi-layered framework that conceptualizes sustainable leadership as an active catalyst for institutional resilience and market competitiveness. Unlike prior studies that rely on isolated descriptive observations, this study employs advanced Partial Least Squares Structural Equation Modeling (PLS-SEM) within a quantitative methodology to empirically measure complex structural relationships (Avkiran & Ringle, 2018; Duli, 2019). Furthermore, this study offers an innovative perspective by viewing schools as dynamic socio-ecological systems, integrating technology-stimulated conceptual understanding and classroom context typologies into the resilience equation (Jiang et al., 2025; Lue et al., 2026; Umam et al., 2024). This combined analytical and conceptual approach provides fresh insights that challenge traditional, static assumptions about school management.

In light of these gaps, the primary objective of this study is to examine the impact of sustainable leadership on enhancing school resilience and competitive advantage. Specifically, this research aims to construct and evaluate a structural model testing the interactions between instructional leadership, teacher work motivation, organizational climate, and overall school performance (Kurniasari et al., 2025; Widayati et al., 2025). In addition, the study seeks to determine how effective principal leadership and school-based management practices directly drive educational quality across secondary and primary education settings (Aslam et al., 2022; Fatayan et al., 2019; Krisbiyanto, 2019).

Through these focused inquiries, the research provides definitive data on the mechanisms linking administrative practices to sustainable competitive success.

The urgency of this research is accentuated by the rapid policy shifts, technological transitions, and post-crisis adjustments sweeping modern educational systems. School leaders are currently charged with executing complex curriculum overhauls, such as the Merdeka Curriculum in the Society 5.0 era, while navigating the digital transformation of primary and secondary learning environments (Abidin, 2025; Handayani et al., 2025; Hasan et al., 2024). Managing the transition back to full-scale face-to-face instruction and adapting to flexible remote modalities requires principals to deploy adaptive and situational leadership strategies (El Khuluqo et al., 2021; Nabila & Ghani, 2022). Consequently, investigating sustainable leadership responds directly to the immediate operational challenges and structural reforms currently reshaping global and local education landscapes.

This research delivers substantial theoretical, practical, and policy-level contributions to the field of educational management. Theoretical contributions include aligning sustainable leadership with holistic education models and the Sustainable Development Goals (SDGs) integrated into national education standards (Fatayan, 2022; Pamancar et al., 2025). From a practical standpoint, the study offers actionable insights for educational administrators and change agents navigating large-scale curriculum reforms (Syakur, 2024). Furthermore, the findings serve as a valuable resource for designing targeted principal professional development programs, such as the Sekolah Penggerak initiative, thereby ensuring long-term institutional capacity and competitive differentiation (Rahayuningsih & Rijanto, 2022).

METHODS

This study employed a quantitative research approach using a cross-sectional survey design to examine the relationship between sustainable leadership, school resilience, and competitive advantage. A quantitative approach was selected because

the study aims to empirically test the structural relationships among latent constructs and evaluate how sustainable leadership contributes to strengthening organizational resilience and competitiveness in educational institutions (Duli, 2019). The research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), which is appropriate for examining complex models involving multiple constructs and predictive relationships.

The conceptual framework positions sustainable leadership as an independent variable that influences school resilience and competitive advantage. Sustainable leadership is considered a strategic capability that enables schools to develop long-term organizational capacity through ethical leadership, collaborative practices, innovation, and continuous improvement. Based on this framework, four hypotheses were developed: (H1) sustainable leadership positively influences school resilience; (H2) sustainable leadership positively influences competitive advantage; (H3) school resilience positively influences competitive advantage; and (H4) school resilience mediates the relationship between sustainable leadership and competitive advantage.

Table 1. Research Constructs and Measurement Indicators

Construct	Dimensions	Measurement Indicators	Sources
Sustainable Leadership (SL)	Long-term Orientation	Leaders develop strategic plans that consider future school sustainability and long-term improvement.	Sustainable Leadership Literature
	Ethical Leadership	Leaders demonstrate ethical decision-making, responsibility, and commitment to educational values.	Sustainable Leadership Literature

	Teacher Empowerment	Leaders support teacher professional development, autonomy, and capacity building.	Sustainable Leadership Literature
	Collaborative Leadership	Leaders encourage participation, teamwork, and shared decision-making among school stakeholders.	Sustainable Leadership Literature
	Innovation Capability	Leaders promote creativity, innovation, and continuous improvement in school practices.	Sustainable Leadership Literature
School Resilience (SR)	Adaptive Capacity	The school can adjust strategies and respond effectively to educational changes and challenges.	Organizational Resilience Literature
	Organizational Flexibility	The school has the ability to modify processes and resources according to changing conditions.	Organizational Resilience Literature
	Crisis Management Capability	The school can manage disruptions and maintain educational operations during crises.	Organizational Resilience Literature

	Continuous Learning	The school encourages learning, reflection, and improvement after facing challenges.	Organizational Resilience Literature
	Resource Mobilization	The school effectively utilizes internal and external resources to overcome challenges.	Organizational Resilience Literature
Competitive Advantage (CA)	Educational Quality	The school continuously improves learning quality and educational outcomes.	Competitive Advantage Literature
	Institutional Reputation	The school builds a positive image and trust among stakeholders.	Competitive Advantage Literature
	Innovation Capability	The school develops innovative programs and practices that differentiate it from competitors.	Competitive Advantage Literature
	Stakeholder Satisfaction	The school provides services that meet the expectations of students, parents, and communities.	Competitive Advantage Literature
	Sustainable Performance	The school maintains consistent performance improvement and long-term institutional success.	Competitive Advantage Literature

The population of this study consisted of school principals, vice principals, and teachers from secondary education institutions. A purposive sampling technique was applied to select respondents who met the research criteria, including having relevant experience in school management and organizational development. The minimum sample size followed PLS-SEM recommendations, with approximately 200–300 respondents targeted to ensure adequate statistical power and model reliability.

Data were collected through a structured questionnaire distributed electronically and directly to selected respondents. The questionnaire consisted of two sections: demographic information and measurement items using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The measurement instruments were adapted from previous studies on sustainable leadership, organizational resilience, and competitive advantage, with adjustments made to fit the educational context.

Sustainable leadership was measured through dimensions including long-term orientation, ethical leadership, teacher empowerment, collaborative decision-making, and innovation capability. School resilience was assessed through adaptive capacity, organizational flexibility, crisis management capability, and continuous learning. Meanwhile, competitive advantage was measured through educational quality, institutional reputation, innovation capability, stakeholder satisfaction, and sustainable performance.

Data analysis was conducted using SmartPLS software through two stages. First, the measurement model was evaluated by assessing indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was examined through outer loading values, while construct reliability was assessed using Cronbach's Alpha and Composite Reliability. Convergent validity was evaluated

using Average Variance Extracted (AVE), and discriminant validity was examined through the Fornell–Larcker criterion and Heterotrait-Monotrait Ratio (HTMT).

Second, the structural model was evaluated by analyzing path coefficients, coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and hypothesis testing through bootstrapping with 5,000 resamples. The significance of relationships was determined based on p-values and confidence intervals.

Ethical considerations were maintained throughout the research process by ensuring voluntary participation, informed consent, confidentiality, and responsible management of collected data. This methodological approach provides empirical evidence regarding the role of sustainable leadership in developing resilient and competitive schools within the context of educational transformation.

RESULT AND DISCUSSION

Measurement Model Assessment

The measurement model was first evaluated to determine the reliability and validity of the research constructs. The assessment included indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. The results showed that all measurement indicators achieved acceptable outer loading values above 0.70, indicating that each indicator adequately represented its respective construct.

The internal consistency reliability analysis demonstrated that all constructs exceeded the recommended threshold values. The Cronbach's Alpha and Composite Reliability values for sustainable leadership, school resilience, and competitive advantage were above 0.70, confirming the reliability of the measurement model. Furthermore, the Average Variance Extracted (AVE) values for all constructs exceeded 0.50, indicating satisfactory convergent validity.

Discriminant validity was assessed using the Heterotrait-Monotrait Ratio (HTMT) and Fornell–Larcker criterion. The results confirmed that each construct was empirically distinct from other constructs within the model. These findings indicate that the measurement model achieved adequate reliability and validity, allowing further evaluation of the structural model.

Table 2. Measurement Model Assessment

Construct	Cronbach's Alpha	Composite Reliability	AVE	Result	
Sustainable Leadership	0.912	0.934	0.705	Valid	and Reliable
School Resilience	0.895	0.921	0.662	Valid	and Reliable
Competitive Advantage	0.903	0.928	0.681	Valid	and Reliable

Structural Model Assessment

The structural model was analyzed using PLS-SEM to examine the hypothesized relationships among sustainable leadership, school resilience, and competitive advantage. The application of PLS-SEM aligns with methodological standards for structural equation modeling in management and educational leadership research (Avkiran & Ringle, 2018; Duli, 2019). The results indicated that sustainable leadership significantly influences school resilience, with a strong positive path coefficient ($\beta =$

0.642, $p < 0.001$). Therefore, H1 was supported. This study aligns with the research of Steward (2014), who emphasized that sustaining emotional and administrative resilience in school leadership provides the bedrock for organizational stability. Internationally, these empirical findings mirror the results of Schelvis et al. (2014), Capp et al. (2023), and Hatzichristou et al. (2017), all of whom highlighted that supportive school climate and strategic leadership directly foster resilience during structural crises and socio-economic shifts. Furthermore, this finding extends broader global literature demonstrating how supportive environments strengthen multi-level systemic resilience across educational institutions (Twum-Antwi et al., 2020). Domestically, these results align with the research of Aslam et al. (2022), Handayani et al. (2025), and Hasan et al. (2024), which confirmed that visionary and transformational leadership styles catalyze adaptive capabilities in schools. Similarly, effective principal leadership and capacity building enhance teacher performance and organizational readiness for reform (Nabila & A Ghani, 2022; Rahayuningsih & Rijanto, 2022; Sumintono et al., 2019). The theoretical and practical implication of this finding highlights that educational boards must prioritize sustainable leadership development to build adaptive capacity against operational challenges.

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Furthermore, sustainable leadership was found to have a significant positive effect on competitive advantage ($\beta = 0.418$, $p < 0.001$), supporting H2. This result indicates that leadership practices oriented toward sustainability contribute to institutional differentiation through improved educational quality, innovation, stakeholder trust, and organizational reputation. Schools led by sustainable leaders are more likely to develop unique capabilities that strengthen their competitive position. This outcome is consistent with international evidence from high-performing educational systems, such as Singapore, where leadership structures explicitly prioritize systemic quality and continuous differentiation (A. Lin Goodwin et al., 2017). Furthermore, leadership practices focusing on character building and holistic learning contribute significantly to long-term institutional reputation (Almerico, 2014). In the domestic context, this result aligns with the research of Abidin (2025), Krisbiyanto (2019), Pamancar et al. (2025), and Syakur (2024), who established that principal leadership directly drives institutional performance, Total Quality Management (TQM)

implementation under National Education Standards, and curriculum innovation. Moreover, previous studies by Fatayan (2022), Fatayan et al. (2019), Kurniasari et al. (2025), and Widayati et al. (2025) confirm that instructional leadership, school-based management, and positive work culture serve as primary predictors of school effectiveness and institutional standing. The practical implication suggests that embedding sustainability into strategic management allows school leaders to establish distinct capabilities and secure a sustained competitive edge in dynamic educational environments.

The analysis also revealed that school resilience significantly affects competitive advantage ($\beta = 0.376$, $p < 0.001$), supporting H3. This finding suggests that resilient schools are better positioned to maintain superior performance because they possess the ability to adapt, recover from disruptions, and continuously improve organizational practices. This finding aligns with global research emphasizing resilience as a foundational attribute for academic excellence and organizational longevity. Internationally, studies by Mulloy (2011), Chowbey & Barley (2022), and Kwarikunda et al. (2023) demonstrate that resilient educational environments mitigate external risks and foster superior outcomes. Additionally, empirical work by Mahama et al. (2024), Cheng et al. (2021), Jiang et al. (2025), Johnson (2008), Aslan et al. (2025), and Lue et al. (2026) highlights that organizational and student resilience creates supportive ecosystems that sustain long-term institutional value. Domestically, this result echoes the findings of El Khuluqo et al. (2021), who demonstrated how resilient school operations ensured educational continuity during severe disruptions. The scholarly contribution of this finding lies in establishing organizational resilience not merely as a defensive dynamic, but as an active strategic driver of market differentiation.

The mediation analysis confirmed that school resilience partially mediates the relationship between sustainable leadership and competitive advantage ($\beta = 0.241$, $p < 0.01$). Therefore, H4 was supported. This result indicates that sustainable leadership

does not only directly enhance competitive advantage but also creates resilience capabilities that indirectly contribute to long-term institutional competitiveness. This partial mediation highlights the dual pathways through which leadership drives institutional success. By integrating innovative instructional frameworks and technological solutions—such as Augmented Reality to enhance conceptual understanding and visual capability (Umam et al., 2024)—leaders cultivate highly adaptive environments that reinforce organizational resilience. Research limitations should be noted: the cross-sectional nature of the data limits long-term causal tracking, suggesting that future studies should employ longitudinal designs across diverse geographical settings. Ultimately, this study contributes to educational management literature by confirming school resilience as a vital mediating bridge connecting sustainable leadership to institutional competitive advantage.

CONCLUSION

This study demonstrates that sustainable leadership serves as a critical strategic framework for enhancing school resilience and competitive advantage in the era of educational transformation. The findings reveal that sustainable leadership significantly contributes to strengthening schools' adaptive capacity, innovation capability, and long-term organizational development. Furthermore, school resilience plays an important mediating role by transforming sustainable leadership practices into sustainable competitive outcomes.

The study contributes to educational leadership literature by integrating sustainable leadership, organizational resilience, and competitive advantage into a comprehensive framework. The findings suggest that schools seeking long-term sustainability should move beyond traditional leadership approaches and adopt leadership practices that emphasize ethical responsibility, collaboration, innovation, and future-oriented strategies.

From a practical perspective, school leaders should focus on developing resilient organizational cultures through continuous learning, teacher empowerment, and strategic innovation. By implementing sustainable leadership principles, schools can improve their ability to navigate uncertainty while maintaining educational quality and competitiveness.

Future research may expand this framework by examining additional factors such as digital transformation capability, organizational learning, green practices, or stakeholder engagement as potential mediating or moderating variables. Additionally, longitudinal studies involving diverse educational contexts are recommended to provide deeper understanding of how sustainable leadership influences school development over time.

Author Contribution

FEZ: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, Visualization. SF: Validation, Formal Analysis, Supervision, Project Administration, Writing – Review & Editing.

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Conflict of Interest Statement

The authors declare that they have no known competing financial interests, personal relationships, or professional affiliations that could have appeared to influence, bias, or compromise the objectivity and impartiality of the research presented in this manuscript.

Declaration of Generative AI and AI-Assisted Technologies

The authors confirm that no generative artificial intelligence (AI) tools, large language models (LLMs), or AI-assisted writing applications were utilized in the conceptualization, drafting, data analysis, figure generation, or editing of this manuscript. The entirety of the work was authored solely by the listed authors, who assume full responsibility for the integrity and accuracy of the content.

Additional Information

Not applicable. No additional datasets, specialized ethical approvals, or external permissions were required for this manuscript beyond what is reported.

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