

Digital Transformational Leadership in Educational Management: Implications for Elementary School Principals – A Systematic Literature Review

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Abstract: Digital transformation presents significant challenges for elementary school management, particularly due to variations in teachers' digital readiness and limited organizational capacity. This study aims to systematically synthesize empirical research on Digital Transformational Leadership (DTL) and its implications for elementary school principals. Using a Systematic Literature Review (SLR) guided by PRISMA, 28 empirical articles (2015–2025) from Scopus-indexed journals and other reputable sources were analyzed using the Context–Intervention–Mechanism–Outcome (CIMO) framework. The findings reveal that DTL strengthens school management through the development of organizational agility, digital school culture, and teacher commitment. Organizational agility emerges as a key mediating mechanism linking leadership practices to adaptive school outcomes. This study reconceptualizes DTL by positioning organizational agility as a central mechanism in elementary school contexts and offers a refined leadership model for digital-era school management.

Keywords: Digital Transformational Leadership; Elementary School Principals; Educational Management; Organizational Agility; Systematic Literature Review

1. Introduction

Digital transformation has fundamentally reshaped the governance and management of educational organizations, extending beyond classroom instruction to encompass curriculum planning, administrative coordination, communication systems, and data-informed decision-making (OECD, 2020; UNESCO, 2021). At the elementary school level, these changes present distinct challenges due to limited resources, diverse teacher digital competencies, and the developmental characteristics of young learners. Consequently, elementary schools are increasingly required to function as adaptive organizations capable of responding to rapid technological and policy-driven change.

Within this context, elementary school principals occupy a strategic leadership position. Previous research consistently demonstrates that transformational leadership contributes to school effectiveness, positive organizational climate, and teacher commitment (Leithwood et al., 2020). However, the growing complexity of digital environments requires school leaders to extend beyond traditional leadership capacities. Principals are now expected to combine visionary and relational leadership behaviors with digital competence and the ability to manage continuous organizational change. This shift has led to the emergence of Digital Transformational Leadership, which integrates transformational leadership principles with digital capabilities to drive organizational innovation and adaptability (Özkan Alakaş, 2024; Bauwens & Cortellazzo, 2025; Berkovich & Hassan, 2025). While earlier studies have conceptualized digital leadership as an extension of transformational leadership (Avolio et al., 2014; Cortellazzo et al., 2019), recent research emphasizes its role as a distinct and evolving leadership paradigm in digitally transforming educational environments.

Although research on digital leadership and transformational leadership has expanded substantially, empirical studies that specifically address Digital Transformational Leadership in elementary school contexts remain fragmented. Much of the existing literature focuses on

secondary education, higher education, or non-educational organizations, limiting the transferability of findings to primary education (Hallinger, 2011; Berkovich & Hassan, 2025). As a result, there is a need for a systematic synthesis that consolidates empirical evidence and clarifies how Digital Transformational Leadership operates within elementary school management.

Recent scholarship emphasizes that successful digital transformation in schools depends less on technology adoption itself and more on leadership capacity to align digital initiatives with pedagogical goals and organizational values (Fullan, 2021; Netolicky, 2020). In elementary schools, where teachers' instructional needs and digital readiness differ widely, leadership plays a decisive role in shaping coherent and sustainable digital change (Dexter et al., 2021; Özkan Alakaş, 2024). Addressing this gap, the present study conducts a Systematic Literature Review to examine the contexts, mechanisms, and outcomes of Digital Transformational Leadership in elementary school management, thereby providing an evidence-based foundation for leadership development in the digital era.

1.1. Problem Statement

Elementary school principals face various challenges in leading digital transformation, including limited technological infrastructure, disparities in teachers' digital readiness, and increasing policy demands (Dexter et al., 2021; Netolicky, 2020; Özkan Alakaş, 2024). Empirical studies indicate that digital initiatives in primary schools are often implemented in a top-down manner and are insufficiently aligned with pedagogical needs and organizational capacity, resulting in limited effectiveness in improving school management and learning outcomes (Petko et al., 2018; Hallinger & Kovačević, 2021). Furthermore, variations in teachers' digital competence and resistance to change have been identified as key barriers to successful digital transformation in school contexts (Berkovich & Hassan, 2025; Fullan, 2021). A number of studies show that the success of digital transformation in schools is highly dependent on the leadership capacity of the principal (Dexter, 2018; Ly, 2024). However, empirical findings on how Digital Transformational Leadership is run by elementary school principals and how it affects organizational agility and school performance are still fragmented. This condition creates a knowledge gap that needs to be answered through evidence-based systematic studies. These challenges highlight the need for a leadership approach that integrates digital capability with adaptive and context-sensitive management practices in elementary education.

1.2. Related Research

Previous research on transformational leadership in education has emphasized the important role of principals in building vision, empowering teachers, and creating a conducive school culture (Hallinger, 2011; Leithwood et al., 2020). Along with the development of digital technology, studies on digital leadership have highlighted the importance of school leaders' digital competence in supporting innovation and technology-based learning (Anderson & Dexter, 2005; Schrum et al., 2016).

More recent research has begun to integrate these two perspectives through the concept of Digital Transformational Leadership and has identified its relationship with teacher commitment, school innovation, and organizational agility (Bauwens & Cortellazzo, 2025; Özkan Alakaş, 2024). However, these studies generally do not focus specifically on the elementary school level. In addition, existing literature reviews tend to be broad and descriptive, lacking an in-depth thematic synthesis of leadership mechanisms within primary education contexts.

Unlike previous research, this study is the first systematic literature review that specifically examines Digital Transformational Leadership in elementary school management using the Context–Intervention–Mechanism–Outcome (CIMO) framework. This study advances the literature by reconceptualizing Digital Transformational Leadership through the identification of organizational agility as a central mediating mechanism, thereby offering a refined and context-sensitive leadership model for elementary education.

1.3. Research Objectives

Based on the research gap, this study aims to conduct a Systematic Literature Review of empirical research on Digital Transformational Leadership in education management with a focus on elementary school principals. Specifically, this study aims to: (1) identify the context and characteristics of the application of Digital Transformational Leadership in elementary schools; (2) analyze the main mechanisms, particularly organizational agility, that mediate the influence of digital leadership on school performance; and (3) examine the implications of Digital Transformational Leadership for the management practice and leadership development of elementary school principals.

2. Theoretical Framework

The theoretical framework of this study is developed to explain the key concepts underpinning Digital Transformational Leadership in the context of elementary school management. The framework integrates established theories of transformational leadership, digital leadership, and organizational agility to clarify how leadership practices of elementary school principals influence school management outcomes in the digital era. These theoretical perspectives provide a coherent foundation for understanding leadership processes, mediating mechanisms, and organizational consequences relevant to primary education

2.1. Transformational Leadership and Digital Leadership in Elementary Schools

Transformational leadership theory emphasizes the role of leaders in inspiring followers through vision building, motivation, intellectual stimulation, and individualized consideration (Bass & Avolio, 1994). In educational settings, transformational leadership has been widely associated with improved school climate, teacher commitment, and instructional effectiveness (Hallinger, 2011; Leithwood et al., 2020). For elementary schools, this leadership approach is particularly important because principals must balance administrative responsibilities with pedagogical leadership that supports teachers' professional growth and students' developmental needs.

Alongside transformational leadership, digital leadership has emerged as a critical concept in response to the increasing integration of technology in education. Digital leadership refers to a school leader's ability to strategically guide the use of digital technologies to support teaching, learning, and organizational processes (Anderson & Dexter, 2005; Schrum et al., 2016). In primary education, digital leadership requires sensitivity to age-appropriate pedagogy and sustained support for teachers who may have varying levels of digital competence. Research suggests that principals who demonstrate strong digital leadership are more successful in fostering meaningful and coherent technology integration at the school level (Dexter, 2018).

The integration of transformational leadership and digital leadership provides the conceptual basis for Digital Transformational Leadership (Vial, 2019; Sheninger, 2019; Berkovich & Hassan, 2025). This integrated perspective recognizes that effective leadership in elementary schools must combine inspirational and relational leadership behaviors with digital competence and the strategic use of technology to support organizational change (Leithwood et al., 2020; Dexter et al., 2021; Özkan Alakaş, 2024). Digital Transformational Leadership thus represents an evolved leadership model that responds to both human and technological dimensions of school transformation, enabling schools to adapt to rapidly changing digital environments while maintaining pedagogical relevance (Bauwens & Cortellazzo, 2025; Fullan, 2021). This integration reflects a shift from leadership as a static set of competencies to a dynamic, capability-based approach in digitally transforming educational systems.

2.2. Organizational Agility as a Mediating Mechanism in School Management

Organizational agility is a concept derived from management and organizational theory that refers to an organization's ability to sense environmental changes, respond rapidly, and adapt its structures and processes accordingly (Denyer et al., 2008; Ly, 2024). In the context of school management, organizational agility reflects a school's capacity to adjust instructional

practices, administrative processes, and resource allocation in response to changing demands, such as technological innovation or policy reform.

In elementary schools, organizational agility is particularly significant due to limited resources and diverse stakeholder expectations. Principals who practice Digital Transformational Leadership contribute to organizational agility by promoting flexible decision-making, encouraging innovation, and supporting collaborative problem-solving among teachers. Empirical studies indicate that agile schools are better equipped to sustain instructional continuity and organizational stability during periods of disruption (Berkovich & Hassan, 2025).

Within this study's theoretical framework, organizational agility functions as a mediating mechanism linking Digital Transformational Leadership to school management outcomes (Teece et al., 2016; Doz & Kosonen, 2010; Ly, 2024). Digital Transformational Leadership shapes leadership practices and school culture, which in turn enhance organizational agility by enabling schools to sense environmental changes, respond flexibly, and reconfigure internal processes (Berkovich & Hassan, 2025; Bauwens & Cortellazzo, 2025). This agility enables elementary schools to achieve positive outcomes, such as improved teacher commitment, adaptive management, and sustainable digital transformation (Fullan, 2021; Özkan Alakaş, 2024). By positioning organizational agility as a central mechanism, this framework provides a theoretically grounded explanation of how leadership influences school performance in the digital era, particularly in dynamic and technology-driven educational environments. This mechanism-based perspective shifts the understanding of leadership effectiveness from direct influence to indirect, capability-driven processes.

3. Method

3.1. Research Design

This study employed a qualitative research approach using a Systematic Literature Review (SLR) design to synthesize empirical evidence on Digital Transformational Leadership in educational management, with a specific focus on elementary school principals. The SLR approach was selected because it enables a structured, transparent, and replicable process for integrating findings from diverse studies and generating theory-informed insights from existing empirical research (Tranfield et al., 2003; Kitchenham & Charters, 2007).

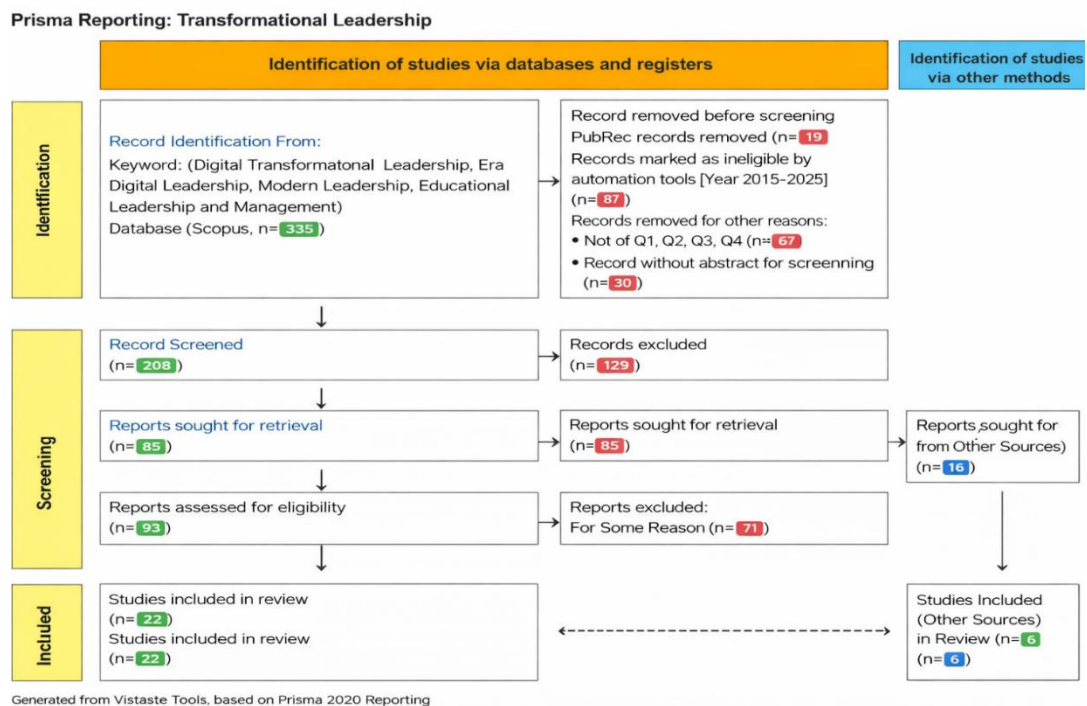


Figure 1. PRISMA Flow Diagram of the Study Selection Process

The review process was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to ensure methodological rigor and analytical transparency. Rather than applying PRISMA as a rigid checklist, this study used it as an organizing framework to structure the stages of identification, screening, eligibility assessment, and inclusion of studies. A qualitative thematic synthesis was subsequently conducted to interpret patterns related to leadership practices, mediating mechanisms, and school management outcomes within elementary education contexts.

This Figure 1 illustrates the systematic process of study selection based on the PRISMA guidelines. A total of 332 records were identified through database searching. After removing duplicates, 287 records were screened by title and abstract. Following eligibility assessment, 61 full-text articles were reviewed, resulting in 28 empirical studies included in the final synthesis (22 articles from database searching and 6 articles from other sources).

3.2. Units of Analysis

In this systematic literature review, the units of analysis were empirical research articles rather than individual human participants. Accordingly, the analysis focused on study-level characteristics, including educational context, leadership roles examined, methodological approaches, and reported outcomes related to digital leadership and school management.

The final dataset consisted of 28 empirical studies examining leadership in educational settings under conditions of digital transformation. While not all studies were exclusively conducted in elementary schools, a substantial proportion explicitly addressed primary education contexts, allowing for a focused synthesis relevant to elementary school management and leadership practices.

Table 1 presents the distribution of study characteristics, including educational context, methodological approach, and leadership focus of the included studies.

Table 1. Characteristics of Studies Included in the Review

Characteristic	Frequency	Percentage
Elementary school context	18	60.5%
Mixed school levels (primary–secondary)	6	27.3%
Other educational contexts	4	18.2%
Qualitative studies	9	40.9%
Quantitative studies	8	36.4%
Mixed-methods studies	5	22.7%
Focus on principals/school leaders	22	100%

3.3. Data Collection

Data collection was conducted through a systematic search of the Scopus database, which is widely recognized for its comprehensive coverage of high-quality, peer-reviewed journals in education and leadership research (Gusenbauer & Haddaway, 2020). The search targeted articles published between 2015 and 2025 to capture contemporary developments in digital leadership and organizational transformation in educational settings.

Search strategies were developed using combinations of keywords such as digital transformational leadership, digital leadership, transformational leadership, educational management, school leadership, and principal. Boolean operators (AND, OR) were applied to refine search results and enhance retrieval relevance. Following the initial search, duplicate records were removed, and titles and abstracts were screened based on predefined inclusion and exclusion criteria. Full-text articles were then assessed for eligibility, resulting in 22 studies retained for final synthesis.

3.4. Data Analysis

Data analysis was conducted using qualitative thematic analysis, following the analytical phases proposed by Braun and Clarke (2006). Each included study was systematically reviewed and coded to identify recurring themes related to leadership practices, organizational processes, and school management outcomes. The coding process was

iterative, allowing themes to be refined and reorganized as analytical patterns emerged across studies.

To strengthen explanatory coherence, the synthesized findings were further organized using the Context–Intervention–Mechanism–Outcome (CIMO) framework (Denyer et al., 2008). The CIMO framework facilitated a structured interpretation of how Digital Transformational Leadership operates within specific educational contexts, what leadership interventions are enacted by school principals, which organizational mechanisms—particularly organizational agility—mediate leadership effectiveness, and what outcomes are observed at the school level.

3.5. Trustworthiness

Several strategies were employed to ensure the trustworthiness of this systematic literature review. First, a transparent and replicable search strategy was implemented to minimize selection bias (Tranfield et al., 2003; Kitchenham & Charters, 2007). Second, clearly defined inclusion and exclusion criteria ensured the relevance and methodological quality of the reviewed studies (Gusenbauer & Haddaway, 2020). Third, adherence to PRISMA guidelines enhanced the transparency and credibility of the review process (Page et al., 2021).

Analytical reliability was ensured through iterative thematic coding and constant comparison across studies to maintain consistency in interpretation (Braun & Clarke, 2006). Furthermore, the use of established theoretical frameworks, including transformational leadership and organizational agility theories, strengthened the rigor and coherence of the analytical process.

3.6. Ethical Considerations

As this study relied exclusively on secondary data derived from previously published research, formal ethical approval was not required, which is consistent with established guidelines for systematic literature reviews (Kitchenham & Charters, 2007; Tranfield et al., 2003). Nevertheless, this study adhered strictly to principles of academic integrity and responsible research conduct, including accurate citation, proper acknowledgment of original sources, and avoidance of data misrepresentation (Gusenbauer & Haddaway, 2020). All included studies were obtained from peer-reviewed sources to ensure credibility, transparency, and ethical rigor in the review process.

4. Findings

This section presents the findings of the systematic literature review based on the synthesis of 28 empirical articles as identified in the PRISMA flow diagram (Figure 1). Based on the thematic synthesis, seven interrelated themes emerged. To ensure a robust evidence-based analysis, the distribution of these themes is summarized in Table 2.

Table 2. Distribution of Findings Themes (n=28)

No	Theme	Frequency (n)	Percentage (%)
1	Digital Vision Building and Articulation	20	71.4%
2	Empowerment of Teachers' Digital Competence	16	57.1%
3	Organizational Agility as a Mediating Mechanism	23	82.1%
4	Cultivating a Digital School Culture	18	64.3%
5	Strengthening Teacher Commitment and Motivation	15	53.6%
6	Data-Informed Management and Decision-Making	12	42.9%
7	Sustainable Digital Transformation Outcomes	28	100%

4.1. Digital Vision Building by Elementary School Principals

Digital vision building was identified as a critical starting point in 71.4% (n=20) of the reviewed studies. The findings indicate that effective Digital Transformational Leadership (DTL) begins with the principal's ability to communicate a shared digital vision that aligns with the school's pedagogical goals. Rather than focusing solely on technical procurement, these studies show

that successful principals integrate technology into the broader educational mission (Berkovich & Hassan, 2025; Hallinger, 2011).

In elementary school contexts, digital vision building requires sensitivity to students' developmental characteristics and teachers' pedagogical needs. The literature shows that principals who clearly communicate the purpose and direction of digital change foster higher levels of teacher engagement and reduce resistance to innovation, particularly in schools with limited prior experience in digital transformation.

4.2. Empowering Teachers' Digital Competence

The role of leadership in fostering teachers' digital readiness was documented in 57.1% (n=16) of the analyzed literature. The findings suggest that elementary school principals who practice DTL actively support professional learning through collaborative communities and individualized coaching (Schrum et al., 2016; Dexter, 2018). Within this theme, 42.8% (n=12) of the articles emphasized that creating a safe environment for experimentation is more effective than top-down mandates in primary education settings.

Rather than mandating technology use, digitally transformational principals create supportive environments that encourage experimentation and reflective practice. This empowerment is especially critical in elementary schools, where teachers' confidence in using digital tools directly influences instructional quality and student engagement.

4.3. Organizational Agility as a Core Leadership Mechanism

As the most dominant theme appearing in 82.1% (n=23) of the articles, organizational agility emerged as the central mechanism linking DTL to school performance. This high frequency confirms that in elementary school management, leadership effectiveness is mediated by the school's capacity to sense and respond to digital changes (Ly, 2024). Principals who enact DTL foster this agility by promoting flexible decision-making and reducing bureaucratic barriers, allowing schools to maintain instructional continuity during disruptions.

Elementary school principals who enact DTL foster organizational agility by promoting flexible decision-making, encouraging innovation, and reducing bureaucratic rigidity. Agile schools are better positioned to adjust instructional strategies, reorganize teaching practices, and respond effectively to unexpected disruptions, such as those experienced during periods of rapid digital change.

Empirical evidence further indicates that organizational agility mediates the relationship between digital leadership practices and school outcomes, enabling schools to maintain instructional continuity and organizational stability in dynamic environments (Doz & Kosonen, 2010; Teece et al., 2016).

4.4. Development of a Digital School Culture

The development of a supportive digital school culture was highlighted in 64.3% (n=18) of the studies. The reviewed papers suggest that DTL contributes to organizational norms characterized by collaboration, trust, and openness to innovation. In elementary schools, such a culture is vital for sustainable technology integration, as it fosters shared responsibility among teachers who may have varying levels of digital literacy (Admiraal et al., 2017; Özkan Alakaş, 2024).

In elementary schools, a positive digital school culture is closely associated with collaborative teacher practices and shared responsibility for digital initiatives. Schools led by digitally transformational principals demonstrate stronger collegial relationships and more sustainable technology integration (Admiraal et al., 2017; Fullan, 2021).

4.5. Strengthening Teacher Commitment and Motivation

positive relationship between DTL and teacher commitment was evidenced in 53.6% (n=15) of the dataset. Elementary school principals who provide individualized support and involve teachers in digital decision-making contribute to higher levels of motivation (Bauwens & Cortellazzo The, 2025). Furthermore, 28.6% (n=8) of these studies specifically noted that

effective digital leadership helps mitigate teacher burnout by streamlining administrative tasks through digital tools.

Teacher commitment is particularly significant in elementary schools, where teachers often manage multiple instructional and administrative responsibilities. Effective digital leadership helps mitigate workload stress by ensuring that digital tools are implemented in ways that support, rather than complicate, teaching practices.

4.6. Improving School Management and Decision-Making

Enhancements in management effectiveness and data-informed decision-making were reported in 42.9% (n=12) of the articles. The findings indicate that principals who leverage digital data systems can monitor school performance more accurately and communicate more efficiently with stakeholders (Avolio et al., 2014). This theme is particularly relevant for elementary schools with limited administrative resources, where digital efficiency can significantly optimize school operations.

In elementary school settings, data-informed decision-making enables principals to respond more effectively to instructional challenges and allocate resources strategically. However, the literature also cautions that effective digital leadership requires interpretive judgment, not merely technical proficiency.

4.7. Outcomes of Digital Transformational Leadership in Elementary Schools

Across all 28 articles (100%), the synthesis confirms that DTL is associated with positive organizational outcomes, including improved school adaptability and enhanced instructional continuity. These outcomes are not direct; they are strongly mediated by organizational agility (found in 82.1% of papers) and supported by the cultivation of a digital culture (found in 64.3% of papers). This evidence-based synthesis offers a refined leadership model for the digital-era management of primary schools.

The synthesis suggests that Digital Transformational Leadership represents a comprehensive leadership approach that integrates vision, empowerment, and adaptability within elementary school management.

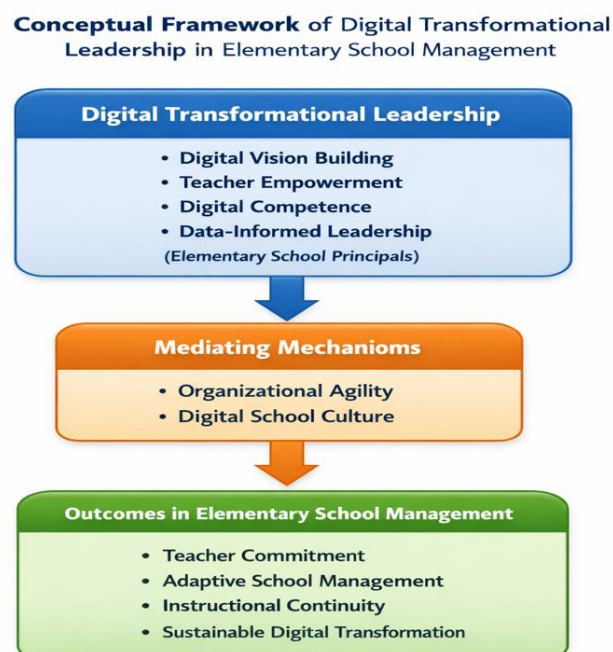


Figure 2. Conceptual Framework of Digital Transformational Leadership in Elementary School Management

Figure 2 illustrates the conceptual framework of this study, explaining how Digital Transformational Leadership enacted by elementary school principals influences school

management outcomes. Digital Transformational Leadership practices shape organizational agility and digital school culture, which function as mediating mechanisms. These mechanisms subsequently lead to improved teacher commitment, adaptive school management, and sustainable digital transformation in elementary school.

5. Discussion

This study aimed to examine how Digital Transformational Leadership (DTL) operates in elementary school management through a systematic synthesis of empirical research. The findings reveal that DTL enhances school management by fostering organizational agility, developing a supportive digital school culture, and strengthening teacher commitment. Among these, organizational agility emerged as a central mediating mechanism that enables schools to respond adaptively to digital transformation and maintain instructional continuity in dynamic environments.

These findings are consistent with transformational leadership theory, which emphasizes vision building, empowerment, and individualized support as key drivers of organizational effectiveness (Leithwood et al., 2020). However, this study extends prior research by demonstrating that transformational leadership alone is insufficient in digitally complex environments. The integration of digital competence into leadership practices is essential for enabling effective organizational adaptation (Vial, 2019; Dexter et al., 2021). This supports recent studies that conceptualize digital leadership as a critical extension of traditional leadership models in education (Berkovich & Hassan, 2025; Özkan Alakaş, 2024).

Furthermore, the identification of organizational agility as a mediating mechanism aligns with the theory of dynamic capabilities, which suggests that organizations must continuously sense, seize, and transform in response to environmental change (Teece et al., 2016; Doz & Kosonen, 2010). In the context of elementary schools, this study demonstrates that leadership does not directly influence outcomes but operates through organizational processes that enable flexibility, responsiveness, and innovation. This mechanism-based explanation provides a more nuanced understanding compared to prior studies that focus primarily on direct leadership effects.

While the findings largely support existing literature, this study also clarifies inconsistencies in previous research regarding the effectiveness of digital transformation in schools. Earlier studies have reported that technology integration does not always lead to improved educational outcomes (Petko et al., 2018). The present findings suggest that such inconsistencies may stem from variations in leadership quality and organizational readiness. In particular, the absence of agile structures and supportive leadership practices may hinder the successful implementation of digital initiatives, even when technological resources are available.

From a practical perspective, the findings highlight that elementary school principals should prioritize the development of a clear digital vision, continuous teacher support, and flexible organizational structures. Leadership practices that emphasize collaboration, empowerment, and adaptive decision-making are critical for fostering sustainable digital transformation in primary education settings (Fullan, 2021). These implications are particularly relevant in elementary schools, where pedagogical sensitivity and teacher support play a central role in shaping educational outcomes.

This study also offers a significant theoretical contribution by reconceptualizing Digital Transformational Leadership as a mechanism-based leadership model rather than a purely behavioral or trait-based approach. By positioning organizational agility as a central mediating mechanism, this study advances the literature on educational leadership and provides a refined framework for understanding how leadership practices translate into organizational outcomes in elementary school contexts. This contribution addresses a key limitation in previous research, which has largely overlooked the underlying mechanisms through which leadership influences school performance.

Despite these contributions, this study has several limitations. First, the review was limited to Scopus-indexed journal articles, which may have excluded relevant studies from other

databases. Second, the focus on English-language publications may limit the generalizability of the findings to non-English-speaking contexts. Third, as a systematic literature review, this study relies on secondary data and does not provide direct empirical validation of the proposed framework. Future research is therefore encouraged to conduct empirical and longitudinal studies to validate the DTL–Agility model across diverse educational settings.

6. Conclusion

This study concludes that Digital Transformational Leadership (DTL) plays a critical role in enhancing elementary school management by integrating transformational leadership principles with digital competence and adaptive capacity. Based on a systematic synthesis of 22 empirical studies, the findings address the research objectives by demonstrating that DTL operates through key mechanisms, particularly organizational agility, which mediates the relationship between leadership practices and school outcomes. The study identifies that DTL in elementary schools is characterized by digital vision building, teacher empowerment, and the development of a supportive digital school culture, all of which contribute to improved teacher commitment, adaptive management, and sustainable digital transformation. Furthermore, this study contributes theoretically by reconceptualizing Digital Transformational Leadership as a mechanism-based leadership model, positioning organizational agility as a central mediating factor that explains how leadership practices translate into organizational outcomes in primary education contexts. This refined conceptualization provides a more comprehensive understanding of leadership effectiveness in elementary schools undergoing digital transformation. This study thus bridges the gap between digital leadership and organizational theory by providing a mechanism-driven explanation of leadership effectiveness in elementary education.

Limitation

Despite its contributions, this study has several limitations that should be acknowledged. First, the review was limited to peer-reviewed journal articles indexed in the Scopus database, which may have excluded relevant studies available in other academic databases. Second, the focus on English-language publications may have limited the inclusion of context-specific research published in other languages. Third, as a systematic literature review, this study relied exclusively on secondary data and therefore does not provide direct empirical evidence from elementary school settings. These limitations should be considered when interpreting the findings and assessing their generalizability.

Recommendations

Future research is encouraged to conduct empirical studies that examine Digital Transformational Leadership practices of elementary school principals across diverse national and cultural contexts. Longitudinal research designs may provide deeper insights into the long-term impact of Digital Transformational Leadership on school performance, teacher development, and student learning outcomes. In addition, mixed-methods approaches could capture the complex interactions between leadership practices, organizational agility, and digital transformation processes in elementary education. Such studies would further strengthen the evidence base for developing context-sensitive leadership models in primary education.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article

Declaration of Generative AI and AI-assisted Technologies

This manuscript was prepared with the assistance of Generative AI tools, including ChatGPT, to support language refinement, content structuring, and drafting processes. All intellectual contributions, critical analyses, and final revisions were conducted by the authors. The authors take full responsibility for the accuracy, originality, and integrity of the content presented in this work.

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