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HUMAN-CENTERED ADAPTIVE LEADERSHIP AND ORGANIZATIONAL RESILIENCE IN THE ERA OF DIGITAL TRANSFORMATION: A DECADE OF INTEGRATIVE REVIEW AND FUTURE RESEARCH AGENDA

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ABSTRACT

Objective: Despite the growing literature on adaptive leadership in digitally transforming organizations, research remains fragmented and largely technology-focused, providing limited understanding of its role in supporting human-centered organizational resilience. This study synthesizes two decades of adaptive leadership research and reframes adaptive leadership as a key human-centered HR capability that enables organizational resilience, learning, and employee agency in the digital era.

Research Design & Methods: Using a bibliometric review of 65 Scopus-indexed articles, this study analyzes publication trends, disciplinary convergence, keyword co-occurrence, collaboration networks, and thematic evolution. Network mapping and frequency-based visualization are employed to uncover dominant conceptual trajectories and underexplored human-centered dimensions within the adaptive leadership literature.

Findings: The findings show a rapid growth of adaptive leadership research since 2020, alongside intensified digital transformation. Although adaptive leadership is increasingly linked to organizational resilience and strategic agility, human and HR-related aspects–such as sensemaking, collective learning, employee adaptability, and psychosocial resources–remain underdeveloped and insufficiently integrated into existing theories. The analysis also suggests a growing recognition of adaptive leadership as a systemic and relational capability, yet its implications for human-centered HR design are still not clearly articulated.

Implications & Recommendations: This study encourages future research to move beyond techno-centric approaches by integrating adaptive leadership with human-centered HR perspectives, particularly in relation to employee agency, ethical decision-making, and sustainable people management in digital contexts.

Contribution & Value Added: This study contributes theoretically by reframing adaptive leadership as a human-centered HR capability rather than a purely strategic or technological response. By synthesizing fragmented literature and outlining a human-centered research agenda, it advances adaptive leadership theory and supports the development of idealistic HR practice in the digital era.

Keywords: Adaptive leadership, digital transformation, organizational resilience.

JEL codes: M12, M15, D83.
Article type: research paper

INTRODUCTION

The contemporary business environment is increasingly shaped by digital transformation, global uncertainty, and recurring systemic disruptions. The rapid diffusion of digital technologies–such as artificial intelligence, data analytics, automation, and remote collaboration tools–has fundamentally altered how organizations operate, coordinate work, and manage people (Bauwens & Cortellazzo, 2025). While these developments promise efficiency and strategic renewal, they simultaneously intensify turbulence, challenge established roles, and expose the limitations of conventional leadership approaches that emphasize control and stability (Leroy et al., 2025). In volatile, uncertain, complex, and ambiguous (VUCA), and increasingly brittle, anxious, non-linear, and incomprehensible (BANI) environments, organizations require leadership capabilities that enable continuous adaptation rather than static optimization. In response to these conditions, adaptive leadership has emerged as a critical capability that enables leaders to interpret environmental change, mobilize collective learning, and coordinate adaptive responses across organizational levels (Ajith et al., 2025). As digital transformation reshapes how organizations create value and sustain competitiveness, adaptive leadership becomes closely intertwined with organizational resilience, positioning both as interdependent mechanisms for navigating complex disruptions (Beauchamp et al., 2023; Kalra et al., 2025). Importantly, resilience in digitally intensive environments cannot be understood solely as a structural or technological outcome, but must be viewed as a human-centered capacity grounded in employees' psychological resources, relational dynamics, and opportunities for participation and sensemaking.

Organizational resilience–defined as the capacity to anticipate, absorb, and adapt to disruptions while sustaining core functions–is increasingly recognized as a central outcome of adaptive leadership (Lutz & Schutte, 2025). Adaptive leaders foster resilience by creating enabling conditions such as psychological safety, distributed decision-making, and open communication, which facilitate rapid learning and coordinated responses during uncertainty (Sasongko et al., 2025). Empirical evidence from the COVID-19 pandemic illustrates how operational leaders initially focused on crisis containment and subsequently shifted toward long-term recovery, trust-building, and organizational renewal, reflecting adaptive leadership in action (Ajith et al., 2025). In the public sector, resilience is further strengthened when adaptive leadership supports cross-departmental collaboration and institutional learning, allowing organizations to respond flexibly to recurring shocks (Lutz & Schutte, 2025). Similarly, in healthcare settings, adaptive and compassionate leadership has been shown to sustain staff morale and coordination under extreme pressure, highlighting the relational dimension of resilience (Baldevenites et al., 2025; Zulueta, 2016). Across sectors, these findings suggest that adaptive leadership operates as a behavioral and relational mechanism that links individual flexibility with organizational systems capable of continuous adaptation (Yu et al., 2022). Consequently, when resilience becomes a strategic imperative, adaptive leadership functions not merely as a supportive leadership style but as a foundational capability that enables systemic resilience and ongoing organizational renewal (Abukalusa & Oosthuizen, 2025).

However, the literature on adaptive leadership and organizational resilience remains conceptually fragmented. Existing studies tend to examine adaptive leadership primarily within crisis contexts–such as pandemics, cyber disruptions, or extreme uncertainty–while treating digital transformation as a separate strategic or technological phenomenon (Abukalusa & Oosthuizen, 2025; Sahlin et al., 2025). As a result, the dynamic role of digital transformation in shaping how adaptive leadership contributes to organizational resilience is insufficiently theorized. Only a limited number of studies explicitly address how digital transformation mediates or amplifies the leadership–resilience relationship, and these efforts remain largely context-specific rather than integrative (Oluwafemi et al., 2025). Moreover, much of the empirical work focuses either on individual leadership behaviors or on organizational processes in isolation, overlooking the multilevel interactions among individuals, teams, technologies, and institutional systems that characterize digitally enabled organizations (Gigerenzer et al., 2022). Although recent research acknowledges that digitalization gives rise to hybrid organizational forms that combine hierarchical coordination with collaborative and adaptive practices, these insights have yet to be consolidated into a coherent theoretical framework (Baldevenites et al., 2025; Besauchamp et al., 2023). This lack

of theoretical integration constrains our understanding of how adaptive leadership capabilities can be systematically developed, embedded, and scaled to enhance organizational resilience in digitally intensive environments (Sasongko et al., 2025). Consequently, there is a clear need for research that synthesizes evidence across sectors–such as healthcare, education, entrepreneurship, and public governance–to advance an integrated conceptual foundation linking adaptive leadership, digital transformation, and organizational resilience. Taken together, these limitations point to a clear research gap: the absence of an integrative conceptual understanding of adaptive leadership as a human-centered HR capability that links digital transformation and organizational resilience across levels and contexts. Addressing this gap requires a systematic synthesis of existing research to clarify how adaptive leadership supports resilience through human agency, collective learning, and relational coordination in digitally intensive environments.

To address this research gap, a systematic synthesis of the literature over the past decade is needed to capture the evolution, convergence, and divergence of ideas about adaptive leadership and organizational resilience. Research between 2016 and 2025 shows that resilience is not a static attribute, but rather a dynamic capability developed through adaptive leadership and emotional intelligence (Oluwafemi et al., 2025; Yu et al., 2022). In the context of entrepreneurship, adaptive leadership combined with emotional intelligence encourages ambidextrous behavior that balances exploration and exploitation, resulting in innovation and resilience (Oluwafemi et al., 2025). Meanwhile, in the education and public sectors, trust-based adaptive leadership has been shown to increase preparedness and stability during the pandemic (Sahlin et al., 2025). Theoretically, contributions from complexity leadership theory and ecological rationality confirm that leadership effectiveness depends on contextual appropriateness, heuristic-based decision-making, and the creation of adaptive spaces that bridge formal structures and emergent collaboration (Gigerenzer et al., 2022; Sasongko et al., 2025). By examining these various intersections, researchers can move toward an integrative theory that places adaptive leadership at the core of organizational resilience in the digital age.

Accordingly, this study aims to systematically review and synthesize a decade of research (2016–2025) on adaptive leadership and organizational resilience in the context of digital transformation, and to propose future research directions. Through a structured analysis of Scopus-indexed articles, this study identifies conceptual trends, methodological patterns, and theoretical connections across disciplines. This synthesis is expected to strengthen theoretical integration by demonstrating how adaptive leadership functions not only as a behavioral capability at the micro level, but also as a human-centered organizational dynamic that supports resilience in uncertain digital ecosystems. The main contribution of this study lies in reframing adaptive leadership as a humanistic HR capability rather than a purely instrumental or technological response to change, thereby bridging fragmented literature and advancing a more idealistic understanding of leadership and resilience in the digital era (Bauwens & Cortellazzo, 2025; Leroy et al., 2025).

LITERATURE REVIEW

Adaptive leadership was first introduced by Ronald A. Heifetz in his work Leadership Without Easy Answers, which emphasizes the ability of leaders to mobilize followers in the face of "adaptive challenges"–problems that have no automatic technical solutions and require changes in organizational values, beliefs, and behaviors (Heifetz, 1994). This distinction between technical and adaptive challenges has become a foundational assumption in adaptive leadership theory, positioning leadership as a process of mobilizing people rather than exercising authority. However, as organizational environments have grown more complex and digitally mediated, scholars have debated whether this individual-centered formulation sufficiently captures the systemic and relational nature of leadership in contemporary organizations. Subsequent theoretical developments therefore extend adaptive leadership beyond individual leader behavior toward a more distributed and contextual perspective, incorporating sensemaking, shared leadership, and the creation of "adaptive space" that enables learning and experimentation across organizational levels (Peesker et al., 2019; Schulze & Pinkow, 2020). In contemporary literature (2020–2025), adaptive leadership is directly linked to the context of digital change, global crises, and the need for organizational agility (Bagwell, 2020; Yeo, 2021). This stream of research reveals an important

conceptual tension. On the one hand, adaptive leadership is framed as a relational and learning-oriented process that empowers individuals and teams to co-create solutions under uncertainty (Kaltiainen & Hakanen, 2022). On the other hand, some studies implicitly reduce adaptive leadership to a functional mechanism for improving organizational responsiveness and performance, thereby emphasizing outcomes over underlying human processes. This tension raises questions about whether adaptive leadership should be understood primarily as a strategic capability or as a human-centered process grounded in collective learning, psychological safety, and social interaction (Solberg et al., 2022).

A similar debate emerges in the literature on organizational resilience. Organizational resilience is commonly defined as the capacity to anticipate, cope with, and adapt to disruptions while maintaining core functions and enhancing future adaptive capacity (Sasongko et al., 2025). From a capability-based perspective, resilience is conceptualized as a dynamic process encompassing anticipation, coping, and adaptation, supported by cognitive, behavioral, and social resources (Bai et al., 2025; Duchek, 2020). While this perspective highlights the role of organizational capabilities, it remains contested whether resilience should be viewed primarily as a structural property of organizations or as an emergent outcome of human agency and collective sensemaking. In this debate, adaptive leadership is often positioned as a key driver of resilience, yet the mechanisms through which leadership activates resilience capabilities remain unevenly theorized (Ajith et al., 2025). Empirical studies generally support a positive relationship between adaptive leadership and organizational resilience, particularly in contexts of crisis and digital disruption (Grędzińska et al., 2022; Wallo et al., 2013). However, existing findings suggest that this relationship is not linear or unidirectional. Rather, adaptive leadership and resilience appear to be mutually reinforcing, with leadership fostering learning and reflection processes that, in turn, enhance organizational capacity for ongoing adaptation (Sasongko et al., 2025). Despite this insight, much of the literature treats leadership behaviors and resilience outcomes as analytically separable, limiting understanding of how adaptive leadership becomes embedded in organizational routines and social systems over time.

Digital transformation further complicates this relationship by introducing new socio-technical dynamics. Digital transformation is not merely a technological shift but involves profound changes in organizational structures, work practices, and patterns of interaction (Baldevenites et al., 2025). Management scholars argue that digitalization requires leadership approaches capable of navigating ambiguity, managing complexity, and cultivating a digital mindset across organizational levels (Bauwens & Cortellazzo, 2025). While adaptive leadership is frequently proposed as an appropriate response to these demands, there remains debate over whether digital transformation primarily amplifies existing adaptive leadership processes or fundamentally reshapes the nature of leadership itself. Some studies emphasize the facilitative role of leaders in promoting experimentation and learning during digital change (Beauchamp et al., 2023; Peesker et al., 2019; Sahlin et al., 2025). Whereas others focus on the strategic alignment between digital technologies and organizational goals, potentially downplaying human and relational dimensions. Thus, digital transformation is not only an external context, but also a catalyst for the emergence of new forms of adaptive leadership that focus on value creation, speed of adaptation, and balance between humans and technology (Kaltiainen & Hakanen, 2022).

As a result, the intersection of digital transformation, adaptive leadership, and organizational resilience represents a contested conceptual space rather than a settled theoretical domain. Digital disruption accelerates environmental change and increases the demand for leadership capable of integrating technological innovation with human-centered adaptation (Ajith et al., 2025). Adaptive leaders are increasingly portrayed as mediators between technological possibilities and organizational learning processes, shaping cultures of experimentation and flexible structures that support resilience (Baldevenites et al., 2025). At the same time, organizational resilience is recognized as enabling not only recovery from disruption but also long-term transformation and innovation (Duchek, 2020). Recent research shows that digital leadership has a positive effect on digital transformation and organizational performance through leaders' adaptive ability to integrate technology and people (Bauwens & Cortellazzo, 2025). In addition, organizational resilience enables companies to not only recover from disruptions but also evolve to

Human-Centered Adaptive Leadership and Organizational Resilience in The Era of Digital Transformation: A Decade of Integrative Review and Future Research Agenda
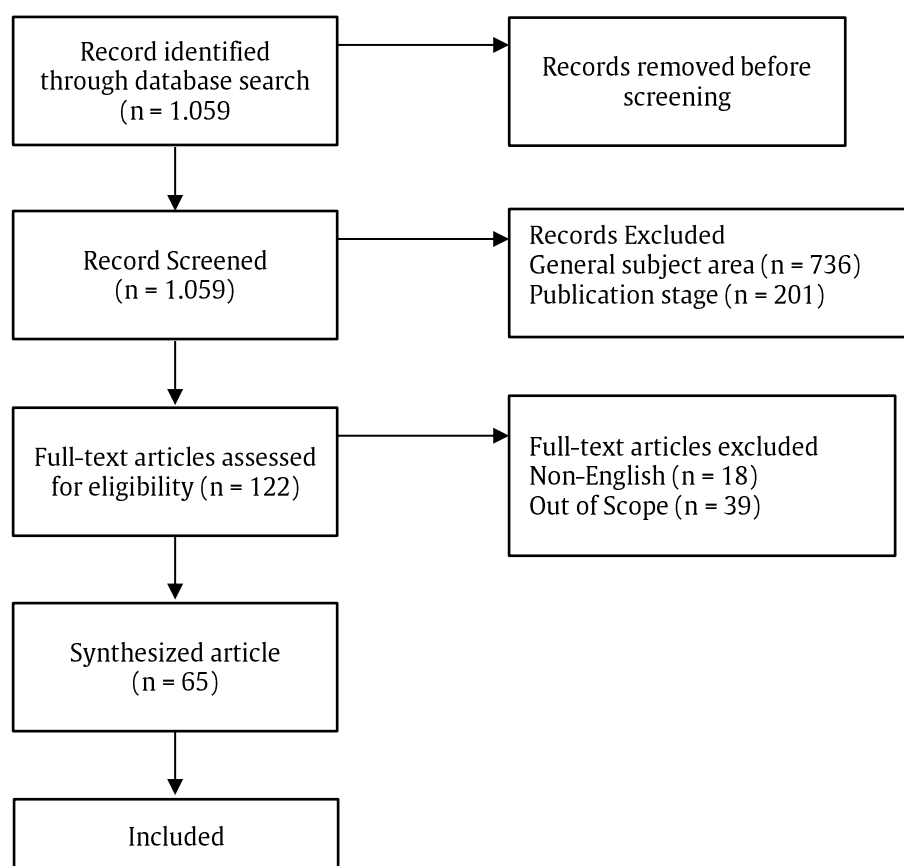
| 99

become more resilient and innovative (Duchek, 2020). Thus, adaptive leaders can be positioned as a bridge between digital transformation and organizational resilience–on the one hand providing strategic direction for digital adoption, on the other hand strengthening the organization's ability to survive and thrive in uncertainty (Sasongko et al., 2025). The integration of these three concepts provides an important theoretical basis for research on adaptive leadership and organizational resilience amid digital transformation in the coming decade.

The literature lacks an integrative perspective that reconciles instrumental views of digital leadership with more humanistic interpretations of adaptive leadership and resilience. Taken together, these debates highlight a critical theoretical gap: while adaptive leadership, digital transformation, and organizational resilience are frequently examined in relation to one another, their interconnections remain conceptually underdeveloped and theoretically fragmented. Existing research has yet to fully explain how adaptive leadership operates as a human-centered mechanism that links digital transformation processes with the development of organizational resilience. Addressing this gap requires a synthesis that moves beyond narrative accumulation toward conceptual integration, clarifying competing assumptions and positioning adaptive leadership as a central, relational capability in digitally intensive organizational contexts.

METHODS

This research method adopts a Systematic Literature Review (SLR) approach based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to ensure that the entire process of identifying, selecting, and evaluating literature is transparent, standardized, and replicable. The procedure began with the identification stage, which involved collecting all potentially relevant articles from reputable scientific databases such as Scopus, Web of Science, Google Scholar, and ERIC. The search strategy was developed through a combination of keywords that reflect the core topics–covering educational leadership, human resource management in schools, organizational dynamics, and factors of educator professionalism–so that the scope of the literature obtained is comprehensive and representative. All articles that appeared from the initial search results were collected without restrictions on journal type or methodology, so as not to ignore the potential for broad scientific contributions in the field. Next, the research entered the screening stage, which involved filtering based on titles and abstracts to identify initial relevance. At this stage, articles unrelated to the fields of education, school leadership, or human resource management were immediately eliminated. Non-peer-reviewed articles, documents that do not meet academic standards, or publications that are not classified as scientific articles are also excluded. This screening stage aims to retain only articles that meet substantive and methodological criteria, thereby reducing the potential for bias in the subsequent analysis stage.

The third stage is eligibility assessment through full-text reading. The evaluation is conducted by considering a number of indicators, including the appropriateness of the research context, the accuracy of the methodological design, the clarity of the variables analyzed, and the quality of scientific argumentation. Articles that are not available in full-text form, that use languages outside the scope of the analysis, or that contain a research scope that is not in line with the objectives of the study are excluded at this stage. Thus, the eligibility process ensures that only literature with high scientific integrity and adequate substantive relevance is retained for the synthesis process. Articles that passed the eligibility stage were then analyzed through a thematic synthesis procedure to systematically integrate research findings and identify conceptual constructs that developed in the relevant literature. Each article was examined in depth to reveal argumentative patterns, thematic trends, methodological approaches, and recurring determinants in various studies, particularly those related to effective leadership practices, human resource management in educational institutions, and the dynamics of professionalism among educators. This synthesis process aims to produce knowledge mapping that not only describes literature findings but also critically and argumentatively interprets the relationships between variables in the context of leadership and educational organization theory.

Figure 1 Research sample selection strategy

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┌─────────────────────────┐              ┌─────────────────────────┐
│   Record identified     │─────────────▶│ Records removed before  │
│ through database search │              │       screening         │
│      (n = 1.059         │              │                         │
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│    Record Screened      │─────────────▶│     Records Excluded        │
│     (n = 1.059)         │              │ General subject area (n = 736) │
│                         │              │ Publication stage (n = 201)    │
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│ Full-text articles      │─────────────▶│ Full-text articles excluded │
│ assessed for            │              │ Non-English (n = 18)        │
│ eligibility (n = 122)   │              │ Out of Scope (n = 39)       │
└───────────┬─────────────┘              └─────────────────────────────┘
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│   Synthesized article   │
│       (n = 65)          │
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Source: Created by author (2025)

In addition to integrating findings, the synthesis stage is also aimed at identifying research gaps, whether in the form of inconsistent results, methodological limitations, or substantive issues that have not been explored much by previous studies. Thus, the synthesis does not function merely as a descriptive summary, but as an analytical process that produces theoretical contributions through the strengthening of conceptual arguments and the identification of future research directions. This process is carried out through rigorous thematic classification and critical comparison between articles.

The final stage of the research is the determination of articles to be included in the SLR, namely articles that meet all requirements of quality, methodological accuracy, and depth of substance. These articles form the basis for the preparation of the results and discussion sections, as well as serving as the main reference in formulating theoretical and practical implications. By systematically following the PRISMA framework, this study ensures that the entire selection and analysis process is conducted with a high level of academic rigor. This guarantees that the research findings have strong conceptual validity and are accountable in the context of reputable international scientific publications.

RESULT

A bibliometric analysis of 65 identified articles shows a significant increase in research on adaptive leadership in the last decade, especially after 2020 when external pressures on organizations increased dramatically due to accelerated digitalization, market volatility, and global crises that demanded systemic adaptive capabilities. Prior to 2020, publications on this topic were still limited and theoretical in nature; however, after 2020, the literature shows a strong surge in academic interest, as seen in the increase in articles exploring the role of adaptive leadership in organizational stabilization, crisis management, and digital transformation. Contemporary research confirms that adaptive leadership is increasingly seen as an essential approach to dealing with

extreme complexity and uncertainty, especially in the context of technology-based organizations and digital ecosystems (Bien & Arena, 2018; Hannah et al., 2009). Several recent studies also show that the dynamics of adaptive leadership post-2020 are increasingly oriented towards developing collective sensemaking capacity, cross-functional collaboration, and orchestrating flexible organizational structures to accelerate responses to change (Sahlin et al., 2025; Sasongko et al., 2025). The surge in research became more pronounced in the period 2021–2023 when the global pandemic prompted organizations to adopt hybrid working models, accelerate the digitization of operations, and strengthen organizational resilience through continuous adaptation processes. Publications during these years show that adaptive leadership is not only a crisis response instrument, but also a mechanism for long-term capability building, including strengthening organizational resilience, digital innovation, and complexity-based risk management (Duchek, 2020; Sasongko et al., 2025). Recent research emphasizes that adaptation is no longer understood within an individual framework, as in the literature prior to 2015, but rather within a systemic framework involving technology integration, the datasphere organization, and the formation of adaptive behavior through digital structures and collaborative platforms (Ceci & Davies, 2024). This evolution demonstrates a fundamental shift from adaptive leadership focused on leaders as the main actors to an organizational ecology approach that emphasizes collective adaptation and networks (Syamsir et al., 2025; Thommes et al., 2024).

Findings related to the distribution of these publications reflect a significant epistemological shift in management literature, where adaptive leadership is now seen not only as a variant of behavior-based leadership theory, but as a strategic approach rooted in the need for organizations to experiment, perform sensemaking, and develop long-term resilience in the face of digital disruption and rapid structural change (Baldevenites et al., 2025; Bien & Arena, 2018). Exponential growth after 2020 provides empirical evidence that adaptive approaches are increasingly aligned with the demands of modern organizations, particularly in relation to digital transformation, crisis management, and increasing organizational resilience in the face of uncertainty (Bien & Arena, 2018; Duchek, 2020). This increase also indicates cross-disciplinary expansion, where the concept of adaptive leadership is beginning to be integrated into studies of strategy, innovation, human resource management, and public organization governance, thereby expanding its conceptual significance in various operational contexts (Bien & Arena, 2018; Hannah et al., 2009).

The peak of research contributions in 2024–2025 shows a significant shift in the orientation of adaptive leadership research, especially as leadership perspectives begin to be more strongly integrated with contemporary technological issues such as artificial intelligence adoption, digital resilience, and agile transformation. Research in this range confirms that adaptive leaders act as catalysts in orchestrating data-driven responsive organizational structures, fostering a culture of experimentation, and creating adaptation mechanisms that align human capabilities with evolving digital systems (Ferede et al., 2024; Scuotto et al., 2024). These developments show that adaptive leadership is no longer framed solely as a response to uncertainty, but has evolved into a strategic approach that holistically connects leadership, technology, and organizational resilience. The convergence of these themes confirms that adaptive leadership now plays a central role in steering organizations toward more agile, sustainable, and relevant operating models in the face of increasingly intense digital disruption.

This surge in publications indicates that the academic community views adaptive leadership as a strategic research domain that is increasingly rich in theory and application, particularly in efforts to build adaptive capacity and organizational resilience amid the volatility of the global business environment (Bien & Arena, 2018). The bibliometric trend over the past five years shows consistent growth, particularly in research exploring adaptation mechanisms at the individual, team, and organizational levels, as well as its integration with digital transformation and agile capability theories. Thus, the latest publication patterns not only illustrate an increase in research volume but also confirm that adaptive leadership has developed into a key paradigm in contemporary management that is predicted to remain a major focus of academic research in the coming decade.

Figure 2 Annual Publication Trends on Adaptive Leadership in Scopus (2000–2025)
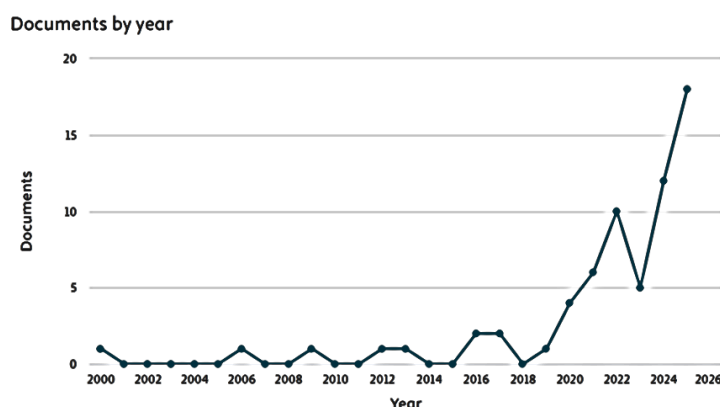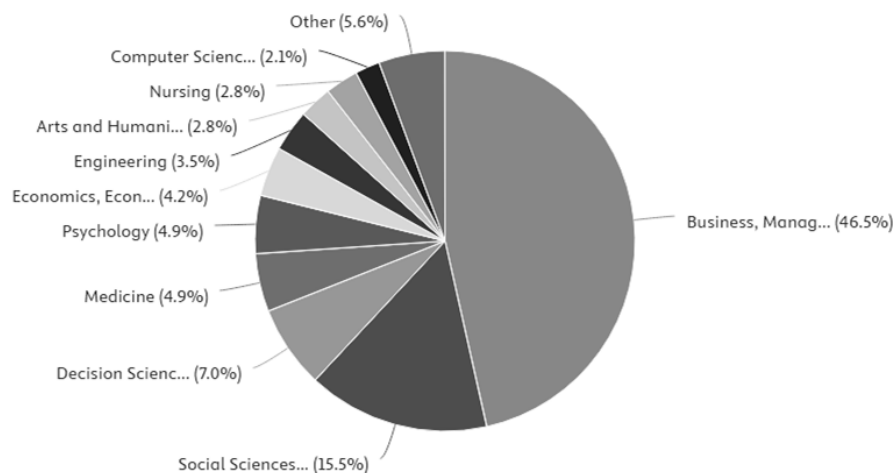

Source: created by author (2025)

Continuing the findings regarding the increase in publications per year, analysis of the distribution of subject areas in the pie chart shows how studies on adaptive leadership have not only increased quantitatively but also expanded into various intersecting disciplines. The largest proportion of publications comes from the Social Sciences, reflecting a strong tendency for adaptive research to position leadership as a social phenomenon influenced by behavioral dynamics, institutional interactions, and managerial practices in the context of crisis and organizational transformation (Hannah et al., 2009). This dominance is in line with research findings that emphasize that leadership adaptation cannot be separated from collective learning processes, collaborative practices, and cross-functional coordination mechanisms that arise organically in situations of constraint (Kalra et al., 2025; Lutz & Schutte, 2025). In addition, the significant contribution of the subject area of Business, Management and Accounting confirms that the study of adaptive leadership is now seen as the foundation for understanding how organizations build resilience, increase structural flexibility, and navigate uncertainty through adaptive decision-making (Musa & Enggarsyah, 2025). Recent studies show that adaptive leadership is no longer understood solely as a manager's response in a crisis context, but as a strategic capability that enables organizations to continuously improvise, innovate, and strategically reposition themselves (Abukalusa & Oosthuizen, 2025; Ajith et al., 2025; Yu et al., 2022).

Contributions from the field of Health Sciences also occupy an important position, especially after the pandemic, which showed that the health system is the ecosystem most in need of leaders with adaptive capacities. Several studies highlight how hospitals, national blood agencies, and public health authorities have improved operational effectiveness through responsive, collaborative, and psychologically resilient leadership practices (Baldevenites et al., 2025; Sasongko et al., 2025). The expansion into the fields of Computer Science and Information Systems reflects increased exploration of leadership adaptation in digital environments, especially as organizations increasingly rely on digital platforms, communication technologies, automation, and artificial intelligence. Recent findings indicate that the relationship between leadership and digital transformation is now not only related to technical capabilities, but also to the ability to navigate complexity, manage cyber risks, and combine formal structures with more fluid collaborative pattern (Bauwens & Cortellazzo, 2025; Beauchamp et al., 2023). Overall, findings on the subject area indicate that adaptive leadership has evolved into a multidisciplinary field of study that combines managerial, psychological, digital, and social perspectives, thereby expanding the theoretical space and enriching practical understanding of how leaders respond to increasingly uncertain dynamics.

The widespread dissemination of publications across disciplines shows that adaptive leadership is not only a functionally relevant topic but also has epistemological depth that is increasingly expanded by various methodological approaches. Contributions from the field of psychology, for example, reinforce the understanding of the role of psychological resilience, emotional intelligence, and self-regulation abilities as basic components that enable leaders to maintain effectiveness under high pressure conditions. Research on the relationship between

leadership resilience and organizational performance shows that adaptive qualities are manifested not only through actions but also through internal capacities such as cognitive flexibility and the ability to reframe situations (Prayag et al., 2024; Yu et al., 2022).

Figure 3 Subject Area Distribution of Adaptive Leadership Research

Source: Created by author (2025)

This resonates with findings from the field of Education, which highlight how school principals and educational institution leaders developed adaptive leadership during the pandemic through improved communication, strengthened teamwork, and digital competency development in response to rapid changes in the learning environment (Harris, 2020; Netolicky, 2020).

Contributions from Engineering and Environmental Sciences, although proportionally smaller, provide additional perspectives on adaptive leadership in the context of infrastructure systems, risk management, and sustainability. For example, analyses of the Australian mining sector and South African public infrastructure confirm that leadership adaptation involves not only procedural changes, but also the restructuring of coordination patterns and the reorientation of long-term strategies to address complex systemic risks (Frykmer et al., 2025; Staub & Tirmizi, 2025). The field of Information Systems contributes significantly to explaining how leaders adapt to digital risks, particularly through the integration of technical understanding, adaptive communication skills, and the creation of a culture of trust that enables collective responses in high-risk situations. This is in line with findings from research on the multidimensional relationship between leadership, digital technology, and institutional character (Bauwens & Cortellazzo, 2025), as well as evidence from the banking and financial services sector showing that leaders' adaptation to innovation and digital pressures depends on technological readiness, cross-actor coordination, and the ability to bridge technical knowledge gaps within organizations (Tedyono et al., 2025). The integration of studies on heuristics and ecological rationality in leadership can be traced through research findings that show that adaptive leaders often rely on cognitive simplification strategies when operating in conditions of high uncertainty. This is reflected in a study of leadership in Ukrainian companies during wartime, which shows that leaders use heuristic risk profiling patterns to quickly assess situations and determine relocation strategies appropriate to the changing risk context (Polishchuk et al., 2025). Similar findings were also seen in an analysis of leadership during a cross-border crisis in Europe, where national leaders used cognitive simplification mechanisms to navigate institutional complexities and tailor strategic responses to the dynamics of the pandemic (Frykmer et al., 2025). The pattern of interaction between these various fields indicates that adaptive leadership has moved beyond conventional approaches toward a more holistic perspective, encompassing the relationships between people, technology, organizational structures, and the external environment (Bauwens & Cortellazzo, 2025; Staub & Tirmizi, 2025). Thus, the findings of this circular diagram not only illustrate the spread of disciplines, but also confirm that strengthening

adaptive capabilities is a crucial cross-sector agenda for the development of contemporary leadership theory and practice.

In addition to annual growth patterns and distribution based on scientific fields, further bibliometric analysis shows increasingly strong thematic configurations and intellectual relationships in research on adaptive leadership. Table 1 shows that keywords such as resilience, crisis leadership, digital transformation, organizational agility, team adaptability, and psychological capital emerge as interconnected main nodes, indicating that adaptive leadership is understood as a multidimensional phenomenon that operates through psychological, structural, and technological mechanisms (Khanh & Cuong, 2025; Polishchuk et al., 2025; Prayag et al., 2024). The network structure shows that adaptive leadership does not stand alone as a single concept, but operates alongside other approaches such as complexity leadership and transformational leadership. This pattern of interconnection is clearly seen in various contexts of crisis and uncertainty, where the effectiveness of leadership in a VUCA environment is determined by the leader's ability to engage in continuous learning, improvisation, and cross-functional coordination. These findings are consistent with studies emphasizing how leaders need to navigate complex dynamics through cross-sector collaboration (Staub & Tirmizi, 2025), adaptive decision-making under high risk (Polishchuk et al., 2025), and structural and coordinative adjustments in cross-regional crises (Frykmer et al., 2025).

The co-authorship analysis also reveals a growing pattern of international collaboration, with research groups from Europe, North America, and Asia forming separate but interconnected clusters through joint publications. This reflects that the issue of adaptive leadership has become a global agenda whose relevance is not limited to specific cultural contexts or sectors. This collaboration is particularly evident in the topics of digital leadership, adaptive decision-making in the health sector, and agility in public operations management. In addition, analysis of information sources shows that reputable journals such as Leadership Quarterly, Journal of Management & Organization, Journal of Leadership & Organizational Studies, and several other Emerald-indexed journals are the main channels for the development of adaptive leadership theory and application. Citation mapping also shows that publications focusing on crisis responsiveness, distributed leadership, and adaptive capacity occupy a central position as the intellectual foundation for theoretical development. These findings indicate that not only has the number of studies increased, but also the depth and epistemological diversification have developed progressively.

Analysis of document type, country of origin, and area of application provides a more specific picture of research patterns. The majority of documents are scientific journal articles (more than 70%), followed by conference papers and review articles, indicating that theory development is still a higher priority than the development of implementable models. However, the increase in publications in the form of case studies and mixed-method research over the past five years shows that empirical approaches in real organizations are beginning to dominate, especially in the health, education, and organizational digital transformation sectors (Fernandes et al., 2023; Kaltiainen & Hakanen, 2022; Lovett et al., 2023). Meanwhile, from a geographical perspective, countries such as the United States, the United Kingdom, Australia, and Canada continue to dominate the number of publications. However, significant growth from Asian countries such as China, India, and Indonesia shows that the dynamics of economic and technological change in the Asia-Pacific region have driven the need to understand leadership adaptation in different organizational contexts (Damayanti et al., 2021; Enwereji et al., 2024; Luo et al., 2024; Yozi & Mbokota, 2024).

Citation structure analysis shows that works related to adaptive performance, organizational resilience, and technological readiness have had the highest citation rates in the last five years (Aguinis & Tian, 2021; Lutz & Schutte, 2025; Prayag et al., 2024). This trend indicates that operational and digital issues are increasingly becoming the main focus of researchers.

Table 1 Summary of Bibliometric Findings on Adaptive Leadership

Analysis Aspect	Key Findings	Academic and Conceptual Implication	References
Keyword Co-occurrence	Key words: adaptive leadership, resilience, crisis leadership, digital transformation, organizational agility.	Adaptive leadership is understood as a multidimensional and interdisciplinary phenomenon.	Bien & Arena (2018); Esenyel (2024); Kaltiainen & Hakanen (2022); Opatska et al. (2024); Thommes et al. (2024); Yozi & Mbokota (2024)
Co-authorship Network	Dominant clusters from Europe, North America, and Asia.	Adaptive leadership is a global research agenda with cross-country collaboration.	Fernandes et al. (2023); Luo et al. (2024); Polishchuk et al., (2025)
Publication Source	Dominated by high-reputation journals, including Emerald.	This topic has established and growing academic legitimacy.	Cederquist (2022); Damayanti et al. (2021); Laustsen & Olsen (2022)
Document Types	70% journal articles, the rest conferences and reviews.	Theoretical development remains dominant, but empirical research is increasing.	Ferede et al. (2024); Lovett et al. (2023); Rico et al. (2022)
Geographic Distribution	US, UK, Australia dominant; Asia rapidly increasing.	Adaptive leadership is relevant in both advanced and developing economies.	Sahlin et al. (2025); Vuuren et al. (2021); Yozi & Mbokota (2024)
Citation Structure	Most cited topics: resilience, digital adaptation, agility.	Research focus is shifting to digital issues and complex risks.	Aguinis & Tian (2021); Barnes et al. (2024); Schophuizen et al. (2023)
Thematic Evolution	Shift from individual focus to systemic and digital adaptation.	Adaptive leadership is entering a new generation of technology-based theory.	Baldevenites et al. (2025); Esenyel (2024); Sasongko et al. (2025)

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In addition, thematic evolution mapping shows a shift in focus from early studies that emphasized individual adaptation to contemporary approaches that highlight systemic adaptation through technology integration, cross-team collaboration, and complex risk management. Themes such as cyber risk leadership, digital resilience, and AI-driven decision support are emerging as increasingly prominent topics, signaling that adaptive leadership is now moving toward a more futuristic and technology-based framework (Barnes et al., 2024; Sahlin et al., 2025; Schophuizen et al., 2023). Overall, these findings reinforce the understanding that adaptive leadership continues to evolve as a dynamic domain of knowledge, connecting classical leadership theory with the needs of modern organizations operating in high-pressure, digital, and interconnected environments.

DISCUSSION

The Shift from Theoretical Fundamentalism to Systemic Adaptive Capabilities

Research on adaptive leadership has undergone a fundamental transformation in response to increasing global uncertainty, the COVID-19 pandemic, accelerated digitalization, and socio-technological disruptions affecting various sectors. Historically, Heifetz et al. (2009) theory positioned adaptive leadership as the ability of leaders to mobilize individuals to face adaptive challenges–problems that cannot be solved with technical solutions and require a change in mindset. However, recent empirical findings show that adaptation is no longer understood solely as a personal competency of leaders, but rather as a systemic capability distributed throughout the organization and involving interactions between people, structures, and technology. Studies in the public and healthcare sectors confirm that an organization's success in facing crises depends on how leadership is able to activate collaborative structures, distributed learning, and adaptive cross-unit communication (Ajith et al., 2025; Kalra et al., 2025). This approach is in line with the concepts of enabling and distributive leadership, which encourage organizations to operate as complex adaptive systems (Staub & Tirmizi, 2025; Zulueta, 2016), where the dynamics of adaptation are not only initiated by top leaders but also emerge from the collective interactions of internal actors

through adaptive spaces that enable innovation, improvisation, and experimentation to occur continuously (Leroy et al., 2025; Sasongko et al., 2025).

This theoretical shift is further reinforced when adaptive leadership is linked to the development of digital technology and platform-based transformation. Leaders' digital literacy, data management skills, and ability to drive organizational digital behavior change are critical factors that distinguish today's adaptive leaders from previous heroic and top-down leadership models (Beauchamp et al., 2023; Shahzad, 2024). A number of studies have shown that adaptive leaders play a central role in maintaining operational sustainability while continuing to drive innovation, particularly in vulnerable sectors such as education and energy (Halabi, 2024; Sahlin et al., 2025). Adaptation no longer focuses solely on human development, but also includes the ability of leaders to orchestrate the integration of technologies such as AI, data analytics, and cyber-resilience capabilities, including digital ethics governance (Baldevenites et al., 2025). A study of the UK entrepreneurship sector shows that leadership flexibility helps leaders balance operational exploitation and innovation exploration, making adaptation a strategic mechanism for growth (Oluwafemi et al., 2025). This is in line with findings on SMEs in Vietnam that adaptive leadership improves green business performance through technological innovation capabilities (Khanh & Cuong, 2025). Thus, digitally-enabled adaptive leadership is not only a response to crises but also a strategic element in shaping agile, learning-oriented, and future-ready organizations (Gigerenzer et al., 2022).

Recent research places adaptive leadership as part of the dynamic capabilities framework, which is the ability of organizations to sense opportunities and threats, seize strategic opportunities, and continuously reconfigure resources. Adaptive leadership has been shown to play a role in increasing organizational resilience through the formation of cross-functional collaboration patterns, increased decision-making speed, and the creation of a culture that supports risk-taking (Frykmer et al., 2025; Idris et al., 2022). In critical sectors such as blood services and climate crisis governance, the implementation of enabling and contextual leadership helps organizations survive rapidly changing pressures (Staub & Tirmizi, 2025). In addition, studies show that organizational resilience is linked to leadership-enabled job crafting, which allows employees to proactively adapt their roles to new challenges (Baldevenites et al., 2025). Thus, the paradigm shift shows that adaptive leadership is no longer a theory of individual behavior, but rather a multilevel leadership architecture that connects: (1) the psychological adaptation of leaders, (2) the structural adaptation of organizations, and (3) technological adaptation as an ecosystem. All of this evidence confirms that adaptive leadership is developing as a strategic management paradigm that positions organizations as entities capable of continuous evolution in the face of VUCA and BANI realities, so that long-term competitiveness is not determined by stability, but by continuous and orchestrated adaptability.

Integration of Adaptive Leadership in Digital Transformation and Dynamic Capabilities

Digital transformation has become the most dominant arena in the theoretical development of adaptive leadership over the past five years. Academic literature agrees that adaptive leaders now not only respond to change but also become architects who simultaneously orchestrate technology, people, and organizational capabilities to ensure the sustainability of adaptation (Bauwens & Cortellazzo, 2025). In the context of prolonged crises such as pandemics, adaptive leadership is tested through the activation of sensing capabilities to identify rapidly emerging digital opportunities and threats (Razzak et al., 2025). In public organizations, leaders' digital capabilities become a differentiating factor in institutional capabilities to navigate uncertainty and governance turbulence at the national level (Eom & Lee, 2022; Frykmer et al., 2025). In addition, adaptive leadership has been shown to play a role in the formation of more fluid and cross-functional organizational structures, enabling rapid responses to systemic transformation needs (Sott & Bender, 2025). Most studies confirm that digitization not only changes work processes, but also the institutional logic that guides strategic decision-making, so that adaptive leadership plays a role as an "institutional change driver." In line with this, adaptive leadership is positioned as a source of dynamic capabilities development, particularly in the functions of capability seizing and capability reconfiguring—which ensure that knowledge, processes, and resources can be reconfigured in line

with the demands of new technologies (Gigerenzer et al., 2022; Khanh & Cuong, 2025). In the digital entrepreneurship and technology SME sectors, adaptive leaders become the link between emotional intelligence and ambidextrous behavior that drives innovation while maintaining operational efficiency (Malik et al., 2024).At the same time, the increase in cyber attacks has prompted new studies on cyber crisis leadership–which emphasizes the aspects of adaptive foresight and the ability to build cross-unit IT collaboration in maintaining business continuity. This literature trend continues to strengthen as the AI-based digital ecosystem develops, where leaders must be able to understand algorithmic ethical risks, data bias, and the need for human-machine system co-evolution (Baldevenites et al., 2025; Staub & Tirmizi, 2025). Adaptive leadership in the digital age is not only a managerial competency, but also a strategic capability that acts as a mechanism for driving organizational agility.

As organizational digital capabilities develop, changes in roles and work structures create the phenomenon of adaptive job crafting, which occurs at both the leadership and employee levels (Petrou et al., 2018; Sahlin et al., 2025). This job crafting contributes to increased organizational resilience through the redistribution of authority and simultaneous autonomous adaptation (Ajith et al., 2025; Malik, 2024). In the education sector, adaptive digital leadership capabilities accelerate institutions' ability to switch to online learning, strengthen collaborative communication, and develop more inclusive hybrid work systems (Beauchamp et al., 2023). In the tourism sector, adaptive leaders play a role in improving performance and adaptability by encouraging organizations to build a flexible and collaborative culture amid market uncertainty (Idris et al., 2022; Szentgróti et al., 2025). In healthcare, digital adaptation accompanied by empathetic leadership has been proven to improve the quality of care and the resilience of service systems. Conceptually, this body of evidence demonstrates that adaptive leadership has transformed into the foundation of dynamic digital capability, enabling organizations not only to survive but to thrive in the VUCA–BANI era (Syamsir et al., 2025). Its theoretical position is now embedded in the digital transformation agenda as a core capability, rather than a supporting entity.

Table 2 Integration of Adaptive Leadership in the Dynamics of Digital Transformation

Key Adaptive Mechanisms	Key Findings	References
Digital leadership readiness	Role adaptation & digital acceleration in crisis	Ajith et al. (2025); Sahlin et al. (2025)
Institutional adaptation via technology	Technology changes leadership logic & structure	Bauwens & Cortellazzo (2025); Frykmer et al. (2025)
Innovation–driven sustainability	Innovation as a mediator of digital transformation impact	Khanh & Cuong (2025); Staub & Tirmizi (2025)
Cyber–crisis adaptive capability	Adaptive foresight & trust-based collaboration	Björck et al. (2025)
AI–driven ecosystem leadership	Human–AI co-evolution, ethics, and regulation	Baldevenites et al. (2025)

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Table 2 confirms that adaptive leadership is no longer understood merely as an individual leader's response to a crisis, but has evolved into a portfolio of strategic capabilities integrated with digital platforms and organizational technology processes (Sott & Bender, 2025). This adaptive ability manifests itself in the sensing–seizing–reconfiguring function as defined in dynamic capabilities theory, when leaders are able to detect environmental pressures, make innovative decisions, and continuously reconfigure resources. Empirical evidence from various sectors shows that the complexity of digital technology, cyber threats, and the AI ecosystem have become new determinants of adaptive leadership effectiveness (Secundo et al., 2025). In the energy and resources sector, for example, digital readiness has become a core competency for operational security and crisis response (Ajith et al., 2025). In public organizations and healthcare services, technological adaptation plays a direct role in public legitimacy and service sustainability (Baldevenites et al., 2025; Sahlin et al., 2025). Meanwhile, in the context of institutional transformation, leadership can determine how organizations absorb and direct digital technology

design to build adaptive structures that are in line with environmental changes (Bauwens & Cortellazzo, 2025).

In addition, the cross-sector pattern in the table shows that the higher the digital maturity of an organization, the greater the contribution of adaptive leadership in creating agility, resilience, and innovation sustainability. This is reflected in studies on cyber disruption readiness and strengthening security culture, which depend on leaders' ability to build adaptive collaboration and trust (Björck et al., 2025). In small businesses and the sustainable sector, adaptive leadership focused on digital innovation has been shown to drive green business performance (Khanh & Cuong, 2025). Studies in the context of global climate change also emphasize the importance of adaptive polycentric networks as collective capital for sensemaking and cross-actor action (Staub & Tirmizi, 2025). Thus, adaptation is no longer just a personal competency as initially defined (Heifetz et al., 2009), but a systemic capability that is integrated with technology, organizational governance, and the dynamics of interconnected digital-social ecosystems.

Consolidating the Role of Adaptive Leadership in Resilience, Agility & Future Research Trajectories

Adaptive leadership in recent literature emphasizes its increasingly strategic role in creating organizations that are able to survive and thrive under the pressure of a volatile environment. The concept of resilient–agile organizations now directs the focus not only on recovery from disruption (bouncing back), but also on transformation towards new competitive advantages (bouncing forward), as found in the context of public and health organizations (Baldevenites et al., 2025; Lutz & Schutte, 2025). At the operational level, cross-functional collaboration capabilities are a key pillar of adaptability, as reflected in a study of the Australian mining sector that shows a shift in coordination patterns during the pandemic (Ajith et al., 2025), as well as in Dutch healthcare organizations that have successfully created adaptive spaces through enabling leadership (Sahlin et al., 2025). In the education sector, school leaders in Sweden experienced increased digital and adaptive capabilities in responding to sudden changes (Beauchamp et al., 2023). Meanwhile, studies in Indonesia show that adaptive organizational culture strengthens the impact of transformational leadership and political skills in improving performance (Idris et al., 2022), emphasizes that the Asian context requires leaders who are sensitive to institutional and social change. Along with the increasing intensity of digital transformation, leaders' ability to ensure learning agility, collective sensemaking, and flexible work structures has become the foundation for the sustainable resilience of various organizations (Bauwens & Cortellazzo, 2025; Björck et al., 2025).

Cross-sector findings reinforce the close relationship between adaptive leadership and organizational agility. In the technology entrepreneurial ecosystem, emotional intelligence has been shown to play a role as an antecedent of ambidextrous leadership that enables leaders to manage the tension between exploration and exploitation (Oluwafemi et al., 2025). In the transnational public sphere, leaders who are able to dynamically adapt political structures and information flows are able to deal with transnational crises more effectively (Frykmer et al., 2025). Even in rule-bound governance systems, leaders who apply the principle of complexity are able to increase the connectivity and agility of organizational structures (Staub & Tirmizi, 2025). In the tourism sector–an important context in Southeast Asia–research with a gender-inclusive adaptive leadership perspective shows that the participation of female leaders improves the performance and adaptability of tourist destinations (Szentgróti et al., 2025). The contribution of digital leadership is also evident in the ability of organizations to create resilience through psychosocial mechanisms such as job crafting, which encourages employees to redefine their roles in order to be responsive to disruption (Sahlin et al., 2025). The emergence of AI-driven organizational ecosystems requires a reformulation of leadership competencies, including the ability to manage algorithmic bias, ethics, and human-machine collaboration (Björck et al., 2025), so that adaptive leadership enters a multidimensional realm that combines technology, social, and governance (Leroy et al., 2025).

Despite its significant contribution, there are research gaps that open up new epistemic paths (see Table 1). First, the causal relationship between AI capability, adaptive leadership, and organizational resilience has not been extensively tested using longitudinal methods, especially in

developing countries where the situation is vulnerable (Baldevenites et al., 2025). Second, the adaptation of MSMEs and digital startups–which are very important to the Indonesian economy–has been overlooked in empirical studies, even though digital transformation competency has been proven to improve green business performance (Khanh & Cuong, 2025). Third, the dimensions of sustainability and green digital innovation have only recently emerged as minor topics, even though climate change pressures demand the integration of adaptive leadership into long-term sustainability strategies (Staub & Tirmizi, 2025; Zulueta, 2016). Furthermore, most studies still focus on North America and Europe, while research in Asia, such as Indonesia, Vietnam, India, and South Africa, is beginning to show unique and disruptive adaptive patterns when resources are limited. Therefore, the future research agenda must move towards interdisciplinarity, linking systemic resilience, technology ethics, and adaptive governance in an increasingly complex global digital context. Thus, adaptive leadership is in a phase of maturation and expansion–becoming a key strategic framework in contemporary management and redefining how organizations deal with uncertainty in the digital age.

Table 3 Adaptive Leadership Research Frontier & Future Agenda

Isu Frontier	Temuan Literatur Dominan	Riset yang Kurang	Agenda Masa Depan
AI-driven Adaptive Leadership	Cyber crisis readiness, ethical leadership, human–AI coordination (Björck et al., 2025)	Longitudinal quantitative evidence	AI–adaptability–resilience causal model
Digital Leadership in Emerging Economies	Digital capacity enhances green performance & collaboration (Idris et al., 2022; Khanh & Cuong, 2025)	Focus on Asian MSMEs & startups	Innovation ecosystem & digital poverty study
Systemic Resilience	Adaptive spaces & distributed leadership (Sasongko et al., 2025)	The relationship between resilience & sustainability	Green digital transformation leadership
Governance & Public Trust	Hybrid crisis decision-making (Frykmer et al., 2025)	Comparisons between political cultures	Public value co-creation model
Psychological Mechanisms	Emotional intelligence → ambidexterity (Oluwafemi et al., 2025)	Variations in Asian cultural contexts	Collective value-based adaptive model

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Table 3 clearly shows that the development of adaptive leadership research has entered a phase where the focus of theory is no longer solely on the behavior of leaders as individuals, but rather on how organizations systematically build and integrate adaptive capabilities to deal with digital disruption and ecological challenges. The dominance of publications from Western countries such as the United Kingdom, the Netherlands, and Australia shows that theoretical constructs are largely built on the context of resource-rich and maturely structured institutions (Frykmer et al., 2025). However, a significant surge in research in Asia–particularly China, India, and Indonesia–indicates that global shifts in economic and technological dynamics also demand the adaptation of leadership models in contexts of constraint and uncertainty (Sahlin et al., 2025). Under these conditions, adaptive leadership not only plays a role in maintaining operational reliability, but also becomes a strategic mechanism for creating competitive advantage through cross-actor collaboration, technological innovation, and organizational learning.

In the public and health sectors, adaptive leadership has been proven to strengthen system resilience through the integration of digital readiness, data-based sensemaking, and multilevel governance coordination during the COVID-19 pandemic (Kalra et al., 2025). Meanwhile, in the entrepreneurship and SME sector, leaders' adaptive capabilities drive the agility and innovation needed to navigate competitive pressures in the digital business ecosystem. Thus, this table confirms that Asia–including Indonesia–is no longer just a consumer of knowledge, but has become a producer of empirical references that strengthen the theoretical foundations of adaptive leadership in the era of VUCA economics and continuous digital transformation.

CONCLUSION

This study concludes that adaptive leadership has evolved into a central framework for understanding how organizations sustain resilience and agility amid digital transformation. The sharp growth of publications in recent years reflects a shift from viewing adaptive leadership as an individual response to change toward recognizing it as a systemic, multilevel organizational capability. The review advances theory by positioning adaptive leadership as a mechanism that integrates sensemaking, collective learning, and structural flexibility within digitally intensive environments. At the same time, it reveals a persistent theoretical gap in explaining how digital technologies and human-centered leadership processes interact across organizational levels, limiting current models of digital adaptation. Looking ahead, adaptive leadership should be conceptualized not merely as a reactive capability, but as a foundational logic for designing human-centered digital organizations. By reframing adaptive leadership as a strategic capability embedded in organizational systems, this study provides a clear direction for future research and establishes adaptive leadership as a key paradigm for managing complexity in the digital era..

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