

# Building Adaptive Leadership Models in the Digital Age: A Conceptual Study

*Building Adaptive Leadership Models in the Digital Age*

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## ABSTRACT

The development of digital technology has fundamentally changed organizational structures, processes, and dynamics. In this context, leaders are required to have high adaptability to fast, complex, and uncertain environmental changes. This article aims to examine the concept of adaptive leadership in facing the challenges of the digital age, as well as to develop a conceptual model that can be the basis for the development of future leadership theories and practices. This study uses a narrative literature review approach by analyzing various literature related to adaptive leadership theory, digital leadership, and organizational transformation. The results of the study show that adaptive leadership in the digital era includes three main dimensions, namely digital capabilities, behavioral flexibility, and strategic collaboration. These three dimensions are the foundation for building leaders who are resilient, innovative, and responsive to technological dynamics. This study contributes to leadership theory by proposing a conceptual model of adaptive leadership tailored for the digital era, highlighting digital capabilities, behavioral flexibility, and strategic collaboration. It provides guidance for organizations to develop leaders who are resilient, innovative, and responsive to technological changes.

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## INTRODUCTION

The rapid development of digital technology in the last two decades has fundamentally changed the way organizations operate, communicate, and make decisions (Bilan et al., 2023; Angelopoulos et al., 2023). The Industrial Revolution 4.0, which is characterized by automation, the Internet of Things (IoT), big data analytics, Artificial Intelligence (AI), and the integration of cyber-physical systems, has a major impact on the Human Resource Management (HRM) function (Pathak & Solanki, 2021). Currently, organizations are not only required to innovate technologically, but also must prepare human resources that are adaptive, creative, and able to face unexpected disruptions (Schwab, 2017; Davenport & Ronanki, 2018).

Changes in the increasingly complex, dynamic, and uncertain global business environment, Volatile, Uncertain, Complex, Ambiguous (VUCA) demand a paradigm shift in leadership (Rimita, 2019). Traditional leaders who only focus on control, hierarchical structures, and operational efficiency are no longer adequate to face the challenges of digitalization (Yukl, 2013; Erhan et al., 2022). In this context, adaptive leadership is a crucial approach because it is able to facilitate the learning process of the organization, encourage innovation, and help members of the organization adapt to rapid and uncertain changes (Heifetz et al., 2009; Uhl-Bien & Arena, 2018).

Empirical phenomena show that many organizations, both public and private, are having difficulty maintaining performance amid the acceleration of digital transformation. For example, the results of a McKinsey Global Institute (2023) revealed that more than 70% of digital transformation projects fail to achieve strategic targets due

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to weak leadership and human resource resistance to change. In Indonesia, a survey by the Ministry of Communication and Informatics of the Republic of Indonesia (2022) also shows that the majority of organizational leaders are still at the stage of digital awareness, not digital mastery. This condition emphasizes the need for a leadership model that not only understands technology, but is also able to manage human dynamics in the midst of digital-based change.

Adaptive leadership emerged as an answer to this need. This concept emphasizes the importance of leaders' ability to identify environmental changes, mobilize people to face new challenges, and encourage continuous learning within the organization (Heifetz et al., 2009). Adaptive leaders do not simply rely on formal power, but optimize collaboration, empathy, and flexibility in strategic decision-making (Zaccaro et al., 2018). Nevertheless, the leadership literature in the digital age still shows theoretical gaps in mapping the key characteristics and mechanisms of effective adaptive leadership in the digital environment, particularly in the context of developing countries such as Indonesia. Many previous studies have still focused on transformational or transactional leadership, while new adaptive aspects are explored conceptually and have not been integrated into a comprehensive model (Northouse, 2025; Boikanyo, 2025).

Based on this background, this article was compiled to make a theoretical and practical contribution through an in-depth review of the conceptual literature on adaptive leadership in the digital age. Specifically, this article aims to examine the concept of adaptive leadership in facing the challenges of the digital age, as well as to develop a conceptual model that can be the basis for the development of future leadership theories and practices. Thus, this study is expected to be able to contribute to enriching the scientific treasures of human resource management and leadership, as well as offering a new perspective on how leaders can build a resilient, innovative, and competitive organization in the era of digital disruption.

## **LITERATURE REVIEW**

### **The Concept of Adaptive Leadership**

Adaptive leadership is a contemporary approach for managing complex organizational change in the digital era. According to Heifetz (1994), it is the ability of leaders to mobilize individuals and groups to tackle challenges without definite technical solutions. Adaptive leaders provide direction while fostering collective learning, experimentation, and innovation (Antonopoulou et al., 2021). Heifetz et al. (2009) note that such challenges cannot be addressed solely through administrative or structural means, but require leaders to manage uncertainty, facilitate learning, and engage organizational members, balancing routine technical problem-solving with adaptive responses to complex situations.

Heifetz and Linsky (2017) identify three pillars of adaptive leadership: systems diagnosis (understanding organizational change dynamics), experimentation and learning (trying new approaches and learning from mistakes), and people mobilization (engaging members in solving shared challenges). This aligns with complexity leadership theory by Uhl-Bien and Arena (2018), which views organizations as complex adaptive systems where interactions generate new change patterns. Adaptive leaders thus act as enablers, fostering innovation and cross-functional collaboration.

Empirical research supports the relevance of this model. Dirani et al. (2020) show that organizations with adaptive leaders are more resilient in dealing with crisis situations such as the COVID-19 pandemic, because they are able to adjust strategies and strengthen internal communication. Meanwhile, in the context of education and government, adaptive leaders have been shown to encourage policy innovation and work flexibility amid rapid regulatory changes (Yukl & Gardner, 2020; Ridhovan & Anggarani, 2024; Northouse, 2025). Thus, adaptive leadership can be understood as a leadership model that emphasizes learning agility, resilience, and shared purpose in dealing with the complexities of the modern environment.

## **Leadership in the Digital Age**

The digital era is marked by rapid technological transformation, information system integration, and disruption across industries (Case et al., 2019). According to Schwab (2017), the Industrial Revolution 4.0 has fundamentally changed production, communication, and human resource management. Modern leaders are required not only to master business strategies but also to understand, adapt, and integrate technology into organizational processes (Kane, 2019). According to Westerman et al. (2014) and Novitasari et al. (2025), digital leadership involves guiding organizations through digital transformation by strengthening digital competencies, fostering data-driven innovation, and managing change. However, the Ministry of Communication and Informatics of the Republic of Indonesia (2022) shows that more than 60% of company leaders in Indonesia lack a technology-based leadership strategy, despite the urgent need for digitalization.

Leaders in the digital era face changing work structures, with hybrid work, virtual collaboration, and automation altering decision-making and interpersonal relationships (Cortellazzo et al., 2019). In this context, adaptive leadership is particularly relevant, emphasizing behavioral flexibility and continuous learning (Tredech et al., 2025). According to Northouse (2025), successful digital leaders must balance technical competence with human-centered skills, including trust, empathy, and cross-generational collaboration.

Furthermore, Schein and Schein (2018) emphasized the importance of humble leadership in the digital era, which is leadership that fosters openness, curiosity, and willingness to learn from subordinates. This approach is in line with the principles of adaptive leadership that reject hierarchical domination and instead encourage collective learning as the core of innovation (Thomas, 2023). Thus, in the context of the digital era, adaptive leadership is not only a managerial concept but also a transformational paradigm that plays a role in forming an agile, collaborative, and future-oriented organization. The digital adaptive leadership model proposed in this study departs from the integration of digital capabilities, behavioral flexibility, and strategic collaboration as the main pillars of modern leadership success.

## **Conceptual Model of Adaptive Leadership in the Digital Age**

The conceptual model of adaptive leadership in the digital age proposed in this study is grounded in a synthesis of adaptive leadership theory and complexity leadership theory. Adaptive leadership theory, developed by Heifetz (1994) and expanded by Heifetz and Linsky (2017), emphasizes leaders' ability to mobilize individuals and groups to address challenges that lack clear technical solutions, foster collective learning, and encourage innovation. Complexity leadership theory, as discussed by Uhl-Bien and Arena (2018), views organizations as complex adaptive systems where interactions among individuals generate new patterns of behavior and change. By integrating these two perspectives, the model highlights how leaders can manage uncertainty, facilitate learning, and promote adaptive problem-solving within organizational systems.

Building on this foundation, the model incorporates digital and transformational leadership theory to emphasize the role of digital adaptive leaders in guiding organizations through technological change (Kane, 2019; Northouse, 2025). In this framework, leaders are not only proficient in technology but also act as drivers of cultural transformation, fostering openness, resilience, collaboration, and continuous learning. The model links adaptive behaviors with digital capabilities and strategic collaboration, providing practical guidance for leadership development while bridging theory and practice. By promoting experimentation, knowledge sharing, and cross-functional teamwork, this approach enables organizations to remain agile and competitive in the dynamic digital era.

## **RESEARCH METHODS**

This study employs a narrative literature review, which critically and interpretively analyzes scientific sources to construct new conceptual models (Baumeister & Leary,

1997). This approach is chosen to integrate diverse theories, empirical findings, and conceptual arguments on adaptive leadership in the digital age without direct empirical testing. A narrative review helps trace the evolution of adaptive leadership, identify theoretical gaps, and propose models relevant to organizations undergoing digital transformation. It also explores variable relationships, develops new theoretical perspectives, and interprets complex phenomena contextually, making it suitable for conceptual and exploratory research like this study.

The population of this study consists of scientific literature addressing leadership, adaptive leadership, and digital transformation within modern organizational contexts. The selection of literature is conducted using a purposive sampling technique, based on the relevance of the topic, the credibility of the publication, and the recency of the publication year. The inclusion criteria comprise articles published in reputable national and international journals indexed in databases such as Scopus, ScienceDirect, Emerald Insight, or Google Scholar; studies focusing on adaptive leadership, digital transformation, and human resource management in the technological era. To ensure relevance and novelty, articles written in English or Indonesian should have full-text accessibility. Conversely, literature that is not peer-reviewed, consists of unsupported opinions, or lacks direct relevance to the research topic is excluded from the analysis. This selection process aligns with the recommendations of Ferrari (2015) and Snyder (2019), who emphasize the importance of rigorous literature screening to enhance the validity and credibility of narrative review outcomes.

The literature analysis was conducted systematically in three stages: extraction, comparison, and conceptual synthesis. In the extraction stage, key themes such as underlying theories, variables, organizational contexts, and prior findings were identified and categorized into broader topics, including adaptive leadership, digital-era leadership challenges, and characteristics of digital leaders. The comparison stage examined similarities and differences across studies in concepts, methodologies, and findings, highlighting research gaps, particularly the limited integration of adaptive capabilities and leaders' digital intelligence. In the final stage, conceptual synthesis integrated these findings into a new model illustrating the relationship between adaptive leadership and organizational success amid digital disruption, using interpretive and deductive approaches based on Heifetz (1994), Yukl (2013), and Kane (2019).

To ensure validity and reliability, this study conducts a cross-examination of literature sourced from reputable academic databases. Each selected article is evaluated based on its topical relevance, methodological rigor, and contribution to adaptive leadership studies in the digital era. Internal validation through inter-rater reliability is implemented to minimize interpretive bias during analysis. A thematic matrix is utilized to map relationships between concepts, theories, and prior findings, ensuring consistency in coding and interpretation. The study's validity is further strengthened through the application of an audit trail, which systematically documents each stage of the analysis process. This approach is consistent with Grant and Booth (2009) and Snyder (2019), who emphasize transparency, replicability, and consistency in narrative review methodologies.

## **RESULTS**

### **Dimensions and Characteristics of Adaptive Leadership in the Digital Age**

Adaptive leadership in the digital age reflects the leader's ability to navigate uncertainty, integrate technology with organizational strategy, and lead individuals through collaborative approaches and continuous learning (Heifetz, 1994; Heifetz & Linsky, 2017). Based on the literature analysis, three main dimensions were identified as pillars of this leadership model: digital capability, behavioral agility, and collaborative mindset (Kane, 2019; Northouse, 2025). These dimensions collectively form a comprehensive framework that balances technological knowledge, adaptive behavior, and social collaboration, enabling leaders to respond effectively to rapid organizational changes caused by digitalization (Yukl & Gardner, 2020). The model highlights that effective leadership in the digital era requires more than technical proficiency. IWT

demands a holistic approach where leaders are simultaneously strategists, learners, and facilitators of organizational culture.

The first dimension, digital capability, emphasizes the ability of leaders to understand, utilize, and optimize digital technologies in managerial processes and decision-making (Kane, 2019). Leaders with strong digital capabilities can leverage big data, artificial intelligence, and advanced digital communication tools to enhance organizational efficiency and responsiveness. Beyond technical knowledge, strategic digital literacy enables leaders to evaluate the implications of technology on organizational structures, workflow, and human resource governance (Kiron et al., 2017). This dimension addresses a critical organizational gap: the misalignment between technological innovation and the readiness of human resources to adopt and implement such technologies effectively (Schwab, 2017). Leaders who master this capability can anticipate trends, implement digital strategies proactively, and reduce resistance to technological change within teams.

The second dimension, behavioral agility, highlights leaders' capacity to adjust styles, approaches, and strategies according to situational demands (Yukl & Gardner, 2020). Adaptive leaders are capable of switching roles between visionary, coach, or facilitator depending on organizational needs (Cortellazzo et al., 2019). This flexibility is particularly crucial in environments where digital disruption requires rapid decision-making, iterative problem-solving, and constant alignment with shifting market or technological conditions (Avolio et al., 2009). Continuous learning, self-reflection, and experimentation form the foundation of behavioral agility, ensuring that leaders not only respond to challenges but also foster an environment that encourages innovation and resilience among team members.

The third dimension, collaborative mindset, focuses on leaders' ability to foster cross-functional, intergenerational, and technology-enabled collaboration (Van Wart et al., 2019). Leaders act as enablers who cultivate trust, openness to innovation, and collaborative work cultures. Strategic collaboration also involves facilitating cross-cultural communication, managing virtual teams, and integrating diverse perspectives, allowing organizations to combine human creativity with technological excellence (Northouse, 2025). This dimension reinforces the social infrastructure of the organization, enabling knowledge sharing, co-creation of solutions, and alignment across departments, ultimately supporting organizational agility and long-term sustainability in the context of digital transformation.

These three dimensions interact synergistically to form an integrative framework for adaptive leadership. Digital capability provides the technological foundation, behavioral agility ensures ongoing self-adjustment, and a collaborative mindset acts as a social bridge to facilitate innovation and agility (Schwab, 2017; Kane, 2019). Together, they demonstrate that adaptive leadership is not merely an individual skill but an organizational capability system, combining digital intelligence, emotional intelligence, and collaborative competence. Organizations that develop leaders across all three dimensions are better positioned to respond to complex challenges, drive continuous innovation, and sustain competitive advantage in the rapidly evolving digital era (Ul-Amin & Khan, 2024; Sidik et al., 2024).

### **Conceptual Model and Implications for Leadership Development**

The conceptual model developed in this study provides a comprehensive theoretical framework to guide both managerial practice and leadership development in the digital era (Heifetz, 1994; Kane, 2019). By integrating adaptive, transformational, and digital leadership perspectives, the model positions leaders as agents of change who continuously learn, adapt, and innovate within complex and dynamic organizational systems (Bass & Riggio, 2006; Northouse, 2025). This integrative approach emphasizes that leadership effectiveness in the digital age is not solely based on individual competencies, but also on the organization's ability to create an environment that fosters resilience, agility, and innovation. It encourages a shift from traditional hierarchical leadership to more flexible,

enabling, and participatory approaches that can respond to rapid technological and social changes.

The model serves as a practical roadmap for designing leadership development programs that strengthen hybrid competencies combining digital intelligence, adaptive behavior, and collaborative skills (Schwab, 2017; Kiron et al., 2017). Leaders trained under this framework are better equipped to manage technological disruptions, anticipate organizational challenges, and facilitate cultural transformation across teams and functions. This approach ensures that leadership programs are aligned with organizational goals, particularly in implementing digital transformation initiatives, where the success of projects depends not only on technology adoption but also on the people and culture that support it. By emphasizing continuous learning and experimentation, the model also helps organizations cultivate leaders who are capable of navigating uncertainty, making data-driven decisions, and fostering innovation.

Furthermore, the model highlights the importance of integrating behavioral and social competencies alongside technological skills (Schwab, 2017; Van Wart et al., 2019). Leaders are encouraged to develop emotional intelligence, trust-building, and collaborative capacity, ensuring that digitalization efforts are implemented in a human-centered and sustainable manner. This focus shifts leadership from being authoritative to enabling, where leaders act as facilitators of team performance, cross-functional collaboration, and knowledge sharing. In practice, leaders who embody these qualities are able to create psychologically safe environments where experimentation, creativity, and learning from failure are encouraged, which ultimately drives innovation and organizational agility.

By providing a structured framework of three pillars: digital capability, behavioral agility, and collaborative mindset, the model effectively bridges theory and practice (Heifetz & Linsky, 2017; Kane, 2019). Digital capability serves as the technological foundation, behavioral agility enables leaders to adapt strategies and approaches to evolving challenges, and a collaborative mindset ensures that social and organizational networks are leveraged to achieve innovation and sustained performance. Together, these pillars enable organizations to systematically develop leaders who can thrive in fast-changing, uncertain environments while ensuring that digital transformation is implemented effectively, ethically, and sustainably. This comprehensive framework not only guides leadership development programs but also informs organizational policies regarding selection, promotion, and evaluation of leaders, emphasizing a holistic approach to building future-ready leadership in the digital era.

## **DISCUSSION**

Adaptive leadership in the digital era represents a new paradigm that emphasizes behavioral flexibility, adaptability to technological changes, and commitment to continuous learning (Heifetz & Linsky, 2017; Yukl & Gardner, 2020). The findings of this study indicate that contemporary leaders face complex challenges, including digital disruption, cross-generational workforce dynamics, and the need for continuous innovation. These results are consistent with Kane (2019) and Northouse (2025), who emphasize that leadership in the digital age requires both technical understanding and human-centered capabilities. In this context, the conceptual model developed through this study demonstrates how leaders integrate digital capabilities, behavioral agility, and a collaborative mindset to maintain organizational sustainability amidst rapid digital transformation. This confirms that adaptive leadership functions as a bridge between technological proficiency and human agility, both of which are critical for sustaining competitive advantage.

Theoretical implications of this study show that the integration of adaptive, transformational, and digital leadership approaches provides a more comprehensive framework than any single theory alone. This model extends prior work by Heifetz (1994) and Heifetz and Linsky (2017) on adaptive leadership by situating it within the digital context, aligning with Bass and Riggio's (2006) transformational leadership principles,

and incorporating digital competencies as highlighted by Kane (2019). These findings are consistent with Denison et al. (1995) and Avolio et al. (2009), who argue that leadership effectiveness in the digital era depends not only on vision and strategic thinking but also on the ability to respond to rapid environmental changes, foster continuous learning, and adjust behavior contextually. The model contributes to organizational agility theory by positioning leadership as a mediating factor between digital transformation and performance, highlighting that adaptive leaders are crucial in translating technological innovations into effective organizational outcomes.

From a practical perspective, this study provides a structured framework for organizations to develop adaptive leadership capacity (Wang et al., 2011). First, leadership development programs should focus on digital literacy, change management, and cross-functional collaboration, equipping leaders with the skills to manage technological disruptions and drive cultural transformation. Second, organizations must enhance data-driven decision-making capabilities, enabling leaders to make timely, contextual, and evidence-based decisions. Third, fostering a continuous learning culture is essential; adaptive leaders create environments that encourage innovation, risk-taking, and reflective practices, which align with the emphasis on behavioral flexibility in the model (Yukl & Gardner, 2020). Fourth, at the policy level, the model can guide recruitment, promotion, and evaluation, ensuring that digital transformation initiatives are supported by leaders who are both technologically competent and human-centered.

The study demonstrates that adaptive leadership in the digital era is not merely an individual capability but an organizational system of competencies that integrates digital intelligence, behavioral flexibility, and collaborative capacity. This aligns with Schwab (2017) and Northouse (2025), who argue that the future success of organizations depends on leaders' ability to adapt, collaborate, and innovate sustainably. By bridging classical and modern leadership theories, this study contributes to management science and offers practical guidance for developing leaders capable of navigating the challenges of human-centered digital transformation. The proposed model thus serves both as a theoretical reference and as a practical tool for organizations seeking to foster leadership that is agile, collaborative, and innovation-driven.

## **CONCLUSION**

This study confirms that adaptive leadership in the digital era is a strategic approach that enables organizations to remain competitive, resilient, and innovative amidst technological disruption and dynamic change. The conceptual model developed identifies three main pillars: digital capability, behavioral agility, and collaborative mindset as essential competencies for future leaders. Digital capability allows leaders to integrate technology into managerial processes and drive organizational digital culture. Behavioral agility enables leaders to adjust their styles according to context and team dynamics, while strategic collaboration strengthens cross-functional, intergenerational, and technology-enabled networks, enhancing innovation and organizational adaptability.

The theoretical and practical implications of this study are significant. The model contributes to leadership literature by integrating adaptive, transformational, and digital leadership into a unified framework that emphasizes agility, learning, and collaboration. Practically, it guides organizations in developing leadership programs that enhance digital literacy, data-driven decision-making, interpersonal skills, and cross-generational collaboration. Managers, HR practitioners, and policymakers can apply this framework to strengthen organizational readiness, foster innovation, and ensure sustainable performance in digital transformation initiatives.

Limitations include the conceptual nature of the study, reliance on literature without direct empirical testing, and the potential contextual bias, as the model may require adaptation across industries or cultural settings. Non-financial organizational factors, such as corporate governance, innovation practices, or ESG considerations, were not examined. Future research should empirically test the model using quantitative approaches (SEM-PLS) and qualitative methods (case studies) to validate its applicability

across sectors. The development of a reliable measurement instrument for digital adaptive leadership is recommended, as well as integration of adaptive leadership concepts into educational and organizational training programs to cultivate leaders capable of navigating the complex digital landscape. This study provides a theoretical foundation and practical guidance for building leaders who can integrate technology, human-centered leadership, and collaboration to drive organizational resilience and sustainable digital transformation.

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