

Adaptive Leadership in Complex Organizational Systems: A Systematic Literature Review and Conceptual Framework

Shabnam Moghimi¹, Masoud Bakhtiari^{1*}, Tahereh Sotoudeh²

1. Department of Supply Chain Management, University of Tehran, Tehran, Iran

2. Department of Industrial Management, SR.C., Islamic Azad University, Tehran, Iran

Abstract

This study aimed to develop a conceptual framework of adaptive leadership in complex organizational systems by exploring how leaders interpret uncertainty, enable distributed action, and sustain organizational adaptability under dynamic conditions. This qualitative study was conducted through semi-structured interviews with 24 senior managers, organizational development specialists, leadership consultants, and academic experts in Tehran. Participants were selected through purposive and theoretical sampling based on their professional experience with organizational change, leadership development, strategic adaptation, and complex decision-making environments. Data collection continued until theoretical saturation was achieved after the twenty-first interview, followed by three additional interviews for saturation confirmation. Interviews were audio-recorded with participants' consent, transcribed verbatim, and analyzed using thematic coding in NVivo software. Data analysis followed an inductive procedure involving open coding, axial categorization, constant comparison, memo writing, and conceptual integration. Credibility was strengthened through member checking, peer review, and prolonged engagement with the data. The analysis produced five main categories: adaptive sensemaking and systemic diagnosis, enabling structures and distributed authority, experimentation-based learning, relational resilience and psychological safety, and boundary-spanning coordination. The findings showed that adaptive leadership in complex systems is not limited to individual leader traits; rather, it operates as a dynamic capability embedded in interactions, feedback loops, informal networks, and collective learning processes. Participants emphasized that leaders become adaptive when they tolerate ambiguity, mobilize diverse interpretations, create conditions for local initiative, and transform disruption into organizational learning. Adaptive leadership in complex organizational systems should be understood as an enabling, relational, and systemic process through which leaders shape the conditions for emergence rather than directly controlling outcomes. The proposed framework contributes to leadership theory by integrating adaptive leadership, complexity leadership, sensemaking, and organizational learning perspectives.

Keywords: adaptive leadership; complex organizational systems; complexity leadership theory; qualitative research; organizational adaptability; conceptual framework.

✉ *CORRESPONDING AUTHOR'S EMAIL

masoud.bakhtiari.scm@gmail.com

“ HOW TO CITE

Moghimi, S., Bakhtiari, M., & Sotoudeh, T. (2025). Adaptive Leadership in Complex Organizational Systems: A Systematic Literature Review and Conceptual Framework. *Management Systems Evolution and Leadership Studies*, 2(4), 40-50.

1. Introduction

Contemporary organizations increasingly operate in environments characterized by volatility, uncertainty, complexity, and ambiguity. Rapid technological change, global competition, digital transformation, institutional turbulence, workforce diversification, and unpredictable stakeholder expectations have weakened the explanatory power of linear, command-based models of leadership. In such conditions, organizational problems rarely present themselves as stable technical issues with clear boundaries, fixed causes, and predetermined solutions. Instead, they emerge as complex adaptive challenges in which causes and consequences interact dynamically across organizational levels, actors interpret the same situation differently, and interventions often produce unintended consequences. This shift has generated growing scholarly interest in adaptive leadership, complexity leadership, and systemic forms of organizing that emphasize learning, emergence, distributed intelligence, and contextual



responsiveness rather than hierarchical control alone (Heifetz, 1994; Snowden & Boone, 2007; Uhl-Bien et al., 2007). Complexity Leadership Theory, for example, explicitly frames leadership as a mechanism for enabling learning, creativity, and adaptive capacity in complex adaptive systems, distinguishing adaptive, administrative, and enabling leadership functions within organizational life (Uhl-Bien et al., 2007).

Adaptive leadership emerged as a response to the limitations of conventional leadership models in situations where existing expertise, formal authority, and routine procedures are insufficient. Heifetz (1994) distinguished technical problems, which can be solved through existing knowledge and authority, from adaptive challenges, which require stakeholders to revise assumptions, values, roles, and patterns of behavior. This distinction is central to understanding leadership in complex organizational systems because complexity does not merely increase the quantity of information leaders must process; it changes the nature of the leadership task itself. Leaders must diagnose evolving patterns, mobilize collective intelligence, regulate distress, orchestrate conflict productively, and create holding environments in which people can experiment with new practices (Heifetz et al., 2009). Adaptive leadership therefore shifts the emphasis from leader-centered influence to system-centered facilitation, where leadership is judged less by the leader's ability to provide answers and more by the leader's capacity to help the system generate, test, and institutionalize adaptive responses.

The complexity perspective further deepens this view by conceptualizing organizations as complex adaptive systems composed of interacting agents whose local decisions create emergent macro-level patterns. Complexity theory challenges the assumption that organizations can be fully understood through reductionist, mechanistic, or equilibrium-based models. Instead, organizations are nonlinear systems in which small events can have disproportionate consequences, feedback loops shape behavior over time, and adaptation occurs through interaction rather than centralized design (Anderson, 1999; Holland, 1995; Schneider & Somers, 2006). Schneider and Somers (2006) argued that complexity theory has important implications for leadership research because leadership in complex adaptive systems often operates indirectly through identity, meaning, interaction patterns, and self-organizing processes rather than direct command alone. From this perspective, adaptive leadership is not simply a personal style but a systemic process that influences the conditions under which adaptive behavior becomes possible.

Complexity Leadership Theory has become one of the most influential approaches for connecting leadership studies with complexity science. Uhl-Bien et al. (2007) proposed that leadership in knowledge-producing organizations requires the dynamic interaction of administrative leadership, adaptive leadership, and enabling leadership. Administrative leadership refers to formal planning, coordination, resource allocation, and bureaucratic control. Adaptive leadership refers to emergent, informal, creative, and learning-oriented actions generated through interactions among agents. Enabling leadership connects these domains by creating conditions that allow adaptive dynamics to emerge while maintaining sufficient coordination for organizational coherence. This triadic model is especially relevant to contemporary organizations because it avoids the false dichotomy between hierarchy and emergence. Complex systems still require structure, accountability, and strategic direction, but excessive control suppresses experimentation and adaptation. Effective leadership therefore involves managing the tension between order and emergence.

The adaptive leadership literature also intersects strongly with sensemaking theory. In complex environments, leaders and organizational members must interpret ambiguous signals before they can act. Weick et al. (2005) described sensemaking as the process through which people turn uncertain circumstances into situations that can

be understood and acted upon. This process is central to adaptive leadership because complex challenges often become visible through weak signals, contradictions, anomalies, and breakdowns in existing routines. Leaders who rely only on formal reports, historical performance indicators, or hierarchical communication channels may fail to detect emerging threats and opportunities. By contrast, adaptive leaders cultivate interpretive diversity, encourage dissent, and create spaces where multiple actors can collectively construct meaning. In this sense, adaptive leadership is not only a decision-making practice but also a meaning-making practice.

Decision-making under complexity also requires contextual diagnosis. Snowden and Boone's (2007) Cynefin framework distinguishes simple, complicated, complex, chaotic, and disorder contexts according to the relationship between cause and effect. In complex contexts, cause and effect can usually be understood only in retrospect, making experimentation, probing, sensing, and responding more appropriate than prediction and control. This insight is important because many organizational failures occur when leaders apply tools suited to simple or complicated problems to genuinely complex situations. Strategic planning, expert analysis, and best-practice transfer may be useful when cause-effect relationships are stable, but complex challenges require iterative learning, safe-to-fail experiments, and rapid feedback. Adaptive leadership therefore depends on leaders' ability to recognize the type of problem they are facing and to select leadership practices that fit the nature of the context.

Organizational learning is another foundation of adaptive leadership. Complex systems adapt by generating variation, selecting workable responses, and retaining successful patterns. This logic is visible in theories of dynamic capabilities, which emphasize the capacity of organizations to sense opportunities and threats, seize opportunities, and reconfigure resources in changing environments (Teece et al., 1997). It also aligns with learning organization theory, which highlights systems thinking, team learning, shared vision, and mental model revision as conditions for sustained adaptation (Senge, 1990). Adaptive leadership strengthens organizational learning by legitimizing experimentation, reducing fear of failure, and converting disruption into feedback. In complex environments, learning is not a peripheral activity; it is the core mechanism through which organizations remain viable.

Relational conditions also shape adaptive capacity. Complex organizational systems depend on interdependence, coordination, and trust among actors who possess different expertise, values, and interests. Psychological safety is especially important because adaptive work often requires people to raise uncomfortable information, question dominant assumptions, expose errors, and participate in uncertain experiments. Edmondson (1999) showed that psychological safety supports learning behavior in teams, while later work further emphasized its role in creating environments where employees can speak up, take interpersonal risks, and contribute to improvement. Adaptive leadership therefore involves emotional and relational labor: regulating anxiety, sustaining trust, reframing conflict as a learning resource, and protecting minority perspectives from premature dismissal.

Despite the richness of existing theories, several gaps remain. First, the adaptive leadership literature often emphasizes normative principles but provides less clarity about how leaders actually operationalize adaptation in organizational systems. Second, complexity leadership theory offers a powerful macro-conceptual lens, but empirical studies are still needed to clarify how enabling leadership practices are experienced by managers and organizational experts in specific institutional contexts. Third, many leadership models remain either overly individualistic, focusing on traits and competencies, or overly structural, focusing on systems and routines, while adaptive leadership requires an integrated understanding of leaders, networks, culture, structures, and feedback

processes. Finally, more qualitative research is needed to identify the lived meanings, practical mechanisms, and contextual conditions through which adaptive leadership emerges in complex organizational environments.

Accordingly, the present study develops a conceptual framework of adaptive leadership in complex organizational systems through qualitative inquiry. By drawing on semi-structured interviews with senior managers, organizational development specialists, consultants, and academic experts in Tehran, the study explores how adaptive leadership is understood, enacted, and sustained in organizational contexts marked by uncertainty and change. The central aim of this study was to identify the main dimensions of adaptive leadership in complex organizational systems and to develop an integrated conceptual framework explaining how leaders enable systemic adaptation under conditions of uncertainty.

2. Methods and Materials

This study used a qualitative, exploratory design to develop a conceptual framework of adaptive leadership in complex organizational systems. A qualitative approach was selected because the objective was not to test predetermined hypotheses but to understand how experienced organizational actors interpret adaptive leadership, how they describe its mechanisms, and how they explain its role in complex organizational environments. The study was positioned within an interpretivist paradigm, assuming that adaptive leadership is socially constructed through organizational experience, interaction, language, and contextual interpretation. Therefore, semi-structured interviews were considered the most appropriate method for generating rich, experience-based data.

The participants included 24 experts from Tehran who had direct experience with leadership, organizational change, strategic management, human resource development, organizational consulting, or academic research on management and leadership. Participants were selected through purposive sampling at the beginning of the study and theoretical sampling during later stages of data collection. Inclusion criteria were at least seven years of professional or academic experience in leadership, management, organizational development, or strategic change; direct familiarity with complex organizational environments; willingness to participate in an in-depth interview; and ability to provide reflective accounts of adaptive leadership practices. Participants who had only operational experience without involvement in leadership or organizational change processes were excluded.

The final sample consisted of 24 participants, including 13 men and 11 women. In terms of professional role, eight participants were senior executives, five were middle or senior-level managers, six were human resource or organizational development specialists, and five were university faculty members or leadership consultants. Regarding education, 10 participants held master's degrees and 14 held doctoral degrees. In terms of work experience, four participants had 7–10 years of experience, seven had 11–15 years, and 13 had more than 15 years of experience. Participants represented public, private, and semi-private organizations in Tehran, including knowledge-based companies, consulting firms, financial organizations, technology-oriented organizations, and educational institutions. Theoretical saturation was reached after the twenty-first interview, when no substantially new codes or conceptual dimensions emerged. Three additional interviews were conducted to confirm saturation and refine the emerging conceptual framework.

Data were collected through semi-structured interviews. An interview guide was developed based on the study objectives and sensitizing concepts from adaptive leadership, complexity leadership theory, sensemaking, and organizational learning. The interview questions were open-ended and designed to encourage participants to

describe concrete experiences rather than provide only abstract definitions. The main interview questions addressed participants' understanding of adaptive leadership, examples of leadership during uncertainty, differences between routine leadership and adaptive leadership, practices used by leaders to respond to complex challenges, conditions that enable or inhibit adaptive behavior, and the role of trust, learning, experimentation, and distributed decision-making in organizational adaptation.

Each interview began with general questions about the participant's professional background and experience with organizational change. The interviewer then asked more focused questions such as: "How do you define adaptive leadership in a complex organizational environment?", "Can you describe a situation in which formal planning was insufficient and leaders had to respond adaptively?", "What do adaptive leaders do differently when facing uncertainty?", "How do leaders create conditions for employees to participate in adaptation?", and "What organizational barriers prevent adaptive leadership from emerging?" Probing questions were used to clarify meanings, obtain examples, and explore contradictions in participants' responses.

The interviews lasted between 45 and 80 minutes. All interviews were conducted in a private and professional setting, either face-to-face or through secure online platforms, depending on participants' availability. Before each interview, participants were informed about the purpose of the study, voluntary participation, confidentiality, and their right to withdraw at any stage. With participants' consent, interviews were audio-recorded and later transcribed verbatim. Field notes and analytic memos were written immediately after each interview to capture contextual impressions, emerging ideas, and possible relationships among codes.

Data analysis was conducted using NVivo software. The analysis followed an inductive thematic procedure supported by constant comparison. In the first stage, all transcripts were read several times to gain familiarity with the data. Initial open coding was then conducted line by line to identify meaningful units related to adaptive leadership, complexity, decision-making, learning, communication, resilience, and organizational adaptation. Codes were kept close to participants' language during early analysis to preserve the empirical grounding of the findings.

In the second stage, similar codes were compared, merged, and organized into preliminary subcategories. Constant comparison was used to examine similarities and differences across interviews, professional groups, and organizational contexts. Codes such as "reading weak signals," "accepting uncertainty," "listening to multiple voices," and "diagnosing patterns" were grouped under the broader category of adaptive sensemaking and systemic diagnosis. Codes such as "giving authority to teams," "removing bureaucratic obstacles," "creating flexible rules," and "supporting local decisions" were organized under enabling structures and distributed authority.

In the third stage, axial coding was used to identify relationships among categories. The analysis focused on how categories interacted to explain adaptive leadership as a systemic process. For example, adaptive sensemaking was found to precede experimentation, while psychological safety appeared to function as a relational condition that enabled employees to participate in experimentation and speak openly about problems. Boundary-spanning coordination emerged as a mechanism connecting internal adaptation with external environmental demands. The final conceptual framework was developed by integrating the main categories into a process model.

Trustworthiness was enhanced through several strategies. Credibility was supported through member checking, in which selected participants reviewed summaries of the interpreted findings. Peer debriefing was conducted

with two qualitative research experts to review coding decisions and category development. Dependability was strengthened by maintaining an audit trail of interview guides, transcripts, coding files, memos, and category revisions. Confirmability was supported through reflexive memo writing to reduce the influence of researcher assumptions. Transferability was addressed by providing detailed descriptions of the participants, research context, and analytic process.

3. Findings and Results

The demographic characteristics of participants showed that the study included a diverse group of experienced organizational actors from Tehran. Among the 24 participants, 13 were men and 11 were women. Five participants were between 30 and 39 years old, 10 were between 40 and 49 years old, and nine were 50 years old or older. Regarding professional background, eight participants were senior executives, five were middle or senior managers, six were human resource or organizational development specialists, and five were academic experts or leadership consultants. Four participants had 7–10 years of professional experience, seven had 11–15 years, and 13 had more than 15 years. In terms of education, 10 participants held master's degrees and 14 held doctoral degrees. This distribution indicates that the data were collected from participants with substantial experience in leadership, organizational transformation, and complex decision-making environments.

Adaptive sensemaking and systemic diagnosis emerged as the first main category. Participants repeatedly emphasized that adaptive leadership begins with the ability to understand complexity before acting. They described adaptive leaders as individuals who avoid premature closure, listen to multiple interpretations, recognize weak signals, and distinguish technical problems from adaptive challenges. One participant stated, “In complex situations, the first mistake is to think that the problem is already clear. An adaptive leader pauses, listens, and tries to understand the pattern behind the noise” (P7, senior executive). Another participant explained, “Sometimes the numbers look normal, but the conversations in the organization show that something is changing. Adaptive leaders pay attention to these informal signals” (P12, organizational development specialist). This category included subthemes such as environmental scanning, pattern recognition, collective interpretation, tolerance of ambiguity, and reframing problems.

Enabling structures and distributed authority formed the second category. Participants argued that adaptation becomes impossible when decision-making is concentrated only at the top of the hierarchy. Adaptive leaders were described as those who create enabling structures, clarify boundaries, and give teams enough autonomy to respond to local conditions. One participant noted, “When everything needs approval from the top, the organization loses time and intelligence. Adaptive leadership means designing a system where people close to the problem can act responsibly” (P3, senior manager). Another participant stated, “Freedom without direction creates chaos, but control without freedom kills adaptation. The leader must set the frame and let teams move inside it” (P18, leadership consultant). This category included flexible governance, decentralization, empowerment, enabling constraints, role clarity, and reduced bureaucratic rigidity.

Experimentation-based learning was the third category. Participants described adaptive leadership as a learning process based on small experiments, rapid feedback, and revision of assumptions. In their view, complex organizational problems cannot be solved through one-time decisions; they require iterative inquiry and practical testing. One participant said, “In uncertainty, the best strategy is not a perfect plan; it is a small experiment that

teaches the organization what is possible” (P9, technology manager). Another participant explained, “The adaptive leader does not punish every failure. The leader asks what the system learned and how the next action should change” (P21, academic expert). This category included safe-to-fail experiments, feedback loops, learning from mistakes, agile adjustment, knowledge sharing, and institutionalization of lessons learned.

Relational resilience and psychological safety emerged as the fourth main category. Participants emphasized that adaptive leadership depends on trust, emotional regulation, open communication, and the ability to sustain collaboration during uncertainty. They argued that complex change often produces anxiety, resistance, conflict, and fatigue; therefore, adaptive leaders must create relational conditions that allow people to speak honestly and remain engaged. One participant stated, “People do not share the truth when they are afraid. Adaptive leadership starts with making the organization safe enough to tell the truth” (P15, HR specialist). Another participant said, “In crisis, employees look at the leader’s emotional reaction. If the leader becomes defensive, the whole system becomes defensive” (P5, senior executive). Subthemes included psychological safety, trust-building, conflict regulation, emotional containment, resilience, and constructive dialogue.

Boundary-spanning coordination and ecosystem awareness was the fifth category. Participants explained that complex organizational systems do not adapt in isolation; they are embedded in broader institutional, technological, economic, and stakeholder ecosystems. Adaptive leaders were described as boundary spanners who connect internal teams with external knowledge, customers, regulators, partners, and professional networks. One participant noted, “The organization cannot learn only from itself. Adaptive leaders bring the outside into the organization and take the organization into the outside world” (P22, consultant). Another participant stated, “Many changes begin at the boundary, where customers, technology, and competitors pressure the organization to rethink itself” (P11, senior executive). This category included stakeholder engagement, external scanning, interorganizational learning, network coordination, and strategic responsiveness.

The conceptual framework developed from the findings shows adaptive leadership as a dynamic process consisting of five interconnected mechanisms. Adaptive sensemaking allows the organization to interpret complexity. Enabling structures distribute authority and activate local intelligence. Experimentation-based learning converts uncertainty into feedback. Relational resilience and psychological safety sustain participation under stress. Boundary-spanning coordination connects the organization to external sources of change and knowledge. Together, these mechanisms explain how adaptive leadership helps complex organizational systems move from uncertainty toward collective learning, coordinated action, and strategic renewal.

4. Discussion and Conclusion

The findings of this study indicate that adaptive leadership in complex organizational systems is best understood as a systemic and relational process rather than a fixed set of individual leader traits. The five categories identified in the study—adaptive sensemaking and systemic diagnosis, enabling structures and distributed authority, experimentation-based learning, relational resilience and psychological safety, and boundary-spanning coordination—show that adaptive leadership operates through the interaction of cognition, structure, learning, emotion, and networks. This result aligns with complexity leadership theory, which argues that leadership in complex adaptive systems is not confined to formal authority but emerges through interactions that enable learning, creativity, and adaptation (Uhl-Bien et al., 2007). The findings also support Heifetz’s view

that adaptive challenges require changes in values, assumptions, behaviors, and relationships rather than the application of existing technical expertise alone (Heifetz, 1994; Heifetz et al., 2009). Therefore, adaptive leadership should not be reduced to crisis response or flexible decision-making; it should be conceptualized as the capacity to shape organizational conditions in which collective adaptation becomes possible.

The first category, adaptive sensemaking and systemic diagnosis, shows that participants considered interpretation to be the foundation of adaptive leadership. In complex systems, the problem is often unclear, contested, and unstable. Leaders must therefore help organizational members recognize patterns, question assumptions, and construct shared meanings before acting. This result is consistent with Weick et al. (2005), who emphasized sensemaking as a central process through which ambiguous circumstances are transformed into actionable understandings. It also aligns with Snowden and Boone's (2007) argument that leaders must diagnose the nature of the decision context before selecting an appropriate response. In complex contexts, leaders cannot rely only on prediction or best practices because cause-and-effect relationships are not immediately knowable. The present findings extend this literature by showing that adaptive sensemaking is both cognitive and social. Participants did not describe diagnosis as an individual analytical act; rather, they emphasized listening to diverse voices, reading informal signals, and creating interpretive conversations across organizational levels. Thus, adaptive leaders function as architects of collective interpretation.

The second category, enabling structures and distributed authority, suggests that adaptive leadership requires a deliberate reconfiguration of control. Participants repeatedly argued that organizations cannot adapt if all important decisions must move through hierarchical approval channels. This finding supports Complexity Leadership Theory's distinction between administrative leadership and enabling leadership (Uhl-Bien et al., 2007). Formal structures remain necessary for coordination, accountability, and strategic coherence, but they must be designed in ways that do not suppress local initiative and self-organization. The finding also corresponds with Schneider and Somers' (2006) argument that leadership in complex adaptive systems often operates indirectly by shaping the conditions under which self-organization can occur. Participants' emphasis on "freedom with direction" is particularly important because it avoids a simplistic celebration of decentralization. Adaptive leadership does not mean removing structure; it means creating enabling constraints that clarify priorities while allowing flexible action. This supports the view that adaptive organizations require a balance between order and emergence.

The third category, experimentation-based learning, indicates that adaptive leadership is inseparable from iterative learning. Participants described complex challenges as problems that cannot be solved through a single strategic plan. Instead, they require small experiments, feedback, correction, and institutional learning. This result is consistent with complexity theory, which views adaptation as an emergent process generated through variation, selection, and retention (Holland, 1995). It also aligns with organizational learning theory, especially Senge's (1990) emphasis on systems thinking and team learning, and with dynamic capabilities theory, which highlights sensing, seizing, and reconfiguring as essential to adaptation in changing environments (Teece et al., 1997). Plowman et al. (2007) similarly showed that radical organizational change can emerge through the amplification of small changes rather than through fully intentional top-down design. The present findings contribute to this discussion by showing that leaders influence experimentation not by controlling every outcome but by legitimizing inquiry, protecting learning from blame, and ensuring that lessons are circulated across the system.

The fourth category, relational resilience and psychological safety, demonstrates that adaptive leadership has a strong emotional and relational dimension. Participants emphasized that uncertainty produces fear, defensiveness, silence, and resistance. Therefore, adaptive leaders must regulate anxiety, build trust, and create conditions in which employees can speak honestly about problems. This finding is consistent with Edmondson's (1999) research on psychological safety, which showed that learning behavior depends on whether team members feel safe to take interpersonal risks. It also aligns with Heifetz et al. (2009), who argued that adaptive leadership requires regulating distress and creating holding environments where people can confront difficult realities without becoming overwhelmed. The present study extends these ideas by showing that psychological safety is not only a team-level learning condition but also a system-level adaptive mechanism. When employees fear punishment, weak signals remain hidden, experiments are avoided, and leaders receive distorted information. Relational resilience therefore becomes a central condition for systemic adaptability.

The fifth category, boundary-spanning coordination and ecosystem awareness, shows that adaptive leadership is not restricted to internal organizational processes. Participants emphasized that complex systems are embedded in wider networks of customers, regulators, technologies, competitors, partners, and social expectations. Adaptive leaders must therefore connect the organization to external knowledge and interpret changes occurring at organizational boundaries. This finding is consistent with open systems thinking and dynamic capabilities theory, which stress that organizations survive by sensing and responding to environmental change (Teece et al., 1997). It also supports complexity perspectives that define organizations as interdependent systems rather than isolated entities (Anderson, 1999; Schneider & Somers, 2006). The present study adds that boundary spanning is not merely an external relations function; it is a leadership mechanism that expands the organization's field of perception. By connecting internal actors to external signals, adaptive leaders prevent organizational closure and increase responsiveness to emerging opportunities and threats.

Taken together, the findings suggest that adaptive leadership should be conceptualized as a multi-level process linking individual cognition, collective interpretation, organizational design, team learning, emotional climate, and ecosystem interaction. This integrated view advances previous leadership theories in three ways. First, it moves beyond heroic and individualistic models of leadership by showing that adaptation emerges through distributed interaction. Second, it connects adaptive leadership with organizational systems by explaining the structures and relational conditions that enable adaptation. Third, it clarifies how leaders can act under complexity without pretending to control the system fully. Adaptive leaders do not eliminate uncertainty; they help the organization learn within uncertainty. They do not provide all answers; they mobilize the system's capacity to generate better responses. They do not choose between hierarchy and emergence; they design the interface between them.

The main limitation of this study is that the data were collected from 24 participants in Tehran, which may restrict the transferability of the findings to other cultural, institutional, or industrial contexts. Although the participants had diverse professional backgrounds, the study relied on self-reported experiences and interpretations, which may be influenced by retrospective sensemaking, professional identity, and socially desirable responses. Another limitation is that the study used a qualitative design and did not statistically test the relationships among the identified categories. Therefore, the proposed framework should be interpreted as a conceptual and empirically grounded model rather than a validated causal model.

Future research should examine adaptive leadership in different organizational contexts, including public-sector institutions, startups, multinational corporations, healthcare organizations, universities, and digital platform ecosystems. Comparative studies could explore whether the dimensions identified in this study vary across industries, cultures, levels of environmental turbulence, and organizational maturity. Quantitative research may also develop and validate measurement instruments based on the five categories of the framework. Longitudinal studies would be especially valuable because adaptive leadership unfolds over time through feedback, experimentation, conflict, and learning. Future researchers could also examine how artificial intelligence, digital transformation, remote work, and algorithmic decision-making influence adaptive leadership in complex organizational systems.

In practice, organizations should develop adaptive leadership not only through individual leadership training but also through systemic redesign. Leadership development programs should strengthen sensemaking, systems thinking, facilitation of dialogue, experimentation, emotional regulation, and boundary-spanning capabilities. Organizations should reduce unnecessary bureaucracy, decentralize appropriate decisions, create psychologically safe communication channels, and institutionalize learning from experiments and failures. Senior executives should also evaluate whether formal structures support or suppress adaptation. The practical implication of this study is clear: adaptive leadership becomes sustainable only when organizations design structures, cultures, and routines that allow people across the system to perceive change, speak honestly, experiment responsibly, and coordinate learning.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

Acknowledgments

Authors thank all who helped us through this study.

Conflict of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

References

- Anderson, P. (1999). Complexity theory and organization science. *Organization Science*, 10(3), 216–232.
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press.
- Charmaz, K. (2014). *Constructing grounded theory* (2nd ed.). Sage.
- Denyer, D., & Tranfield, D. (2009). Producing a systematic review. In D. A. Buchanan & A. Bryman (Eds.), *The Sage handbook of organizational research methods* (pp. 671–689). Sage.
- Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350–383.
- Edmondson, A. C. (2019). *The fearless organization: Creating psychological safety in the workplace for learning, innovation, and growth*. Wiley.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10–11), 1105–1121.

- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15–31.
- Heifetz, R. A. (1994). *Leadership without easy answers*. Harvard University Press.
- Heifetz, R. A., Grashow, A., & Linsky, M. (2009). *The practice of adaptive leadership: Tools and tactics for changing your organization and the world*. Harvard Business Press.
- Holland, J. H. (1995). *Hidden order: How adaptation builds complexity*. Addison-Wesley.
- Kvale, S., & Brinkmann, S. (2009). *InterViews: Learning the craft of qualitative research interviewing* (2nd ed.). Sage.
- Lichtenstein, B. B., Uhl-Bien, M., Marion, R., Seers, A., Orton, J. D., & Schreiber, C. (2006). Complexity leadership theory: An interactive perspective on leading in complex adaptive systems. *Emergence: Complexity and Organization*, 8(4), 2–12.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Sage.
- Plowman, D. A., Baker, L. T., Beck, T. E., Kulkarni, M., Solansky, S. T., & Travis, D. V. (2007). Radical change accidentally: The emergence and amplification of small change. *Academy of Management Journal*, 50(3), 515–543.
- Schneider, M., & Somers, M. (2006). Organizations as complex adaptive systems: Implications of complexity theory for leadership research. *The Leadership Quarterly*, 17(4), 351–365.
- Senge, P. M. (1990). *The fifth discipline: The art and practice of the learning organization*. Doubleday.
- Snowden, D. J., & Boone, M. E. (2007). A leader's framework for decision making. *Harvard Business Review*, 85(11), 68–76.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14(3), 207–222.
- Uhl-Bien, M., Marion, R., & McKelvey, B. (2007). Complexity leadership theory: Shifting leadership from the industrial age to the knowledge era. *The Leadership Quarterly*, 18(4), 298–318.
- Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, 16(4), 409–421.
- Yukl, G. (2013). *Leadership in organizations* (8th ed.). Pearson.