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The Role of Ambidextrous Leadership in Fostering Innovative Work Behavior: A Comprehensive Systematic Review

James Anderson[1], Michael Turner[1], Olivia Brown[1], Daniel Cooper[2]*

1. Department of Management, Faculty of Economics and Business, University of Melbourne, Melbourne, Australia.
2. Department of Business Administration, Monash Business School, Monash University, Melbourne, Australia.

Abstract

This review investigates how ambidextrous leadership (AL) shapes innovative work behavior (IWB) at multiple organizational layers. Through a systematic search of the Scopus database, 63 peer-reviewed studies were selected and analyzed thematically following the PRISMA guidelines. Articles were chosen based on language, relevance to both AL and IWB, and peer-reviewed status. The analysis shows that AL enhances IWB both directly, via balancing exploratory and exploitative leadership behaviors, and indirectly, through factors like emotional intelligence, confidence in creative abilities, and team learning. The relationship is further influenced by organizational context, including climate, cultural mindset, and structural adaptability. The review introduces a multi-level framework illustrating how leadership practices interact with innovation processes across team, individual, and organizational levels. Limitations include a heavy reliance on cross-sectional data and the absence of formal bias evaluation. This review was unregistered, unfunded, and reports no conflicts of interest. The results offer actionable insights for leadership development and point to underexplored areas such as team-level dynamics and cross-cultural effects.

Keywords: Innovative work behavior, Ambidextrous leadership, Systematic literature review, Multi-level framework, Leadership development

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Corresponding author: Daniel Cooper
E-mail ✉ daniel.cooper.management@outlook.com

Introduction

In the current era of fast-paced and disruptive business environments, organizations must constantly innovate while remaining efficient if they want to survive and thrive. Ambidextrous leadership has emerged as a powerful approach to meet these dual demands by enabling leaders to switch fluidly between exploration-oriented (opening) and exploitation-oriented (closing) behaviors [1, 2]. As competition intensifies and markets become increasingly volatile, the ability of leadership to drive innovative work behavior (IWB) at all levels of the organization has become a strategic imperative.

Innovation is widely recognized as a core driver of long-term competitive advantage [3, 4]. It allows firms to respond to environmental shifts, launch new offerings, and improve internal processes. However, successful innovation requires more than sporadic creativity; it demands leadership that can simultaneously encourage divergent thinking and ensure disciplined execution [5]. Ambidextrous leadership provides exactly this combination, creating the conditions for innovative behavior to emerge at the individual, team, and organizational levels.

Because innovation unfolds across multiple nested layers of the organization, a single-level perspective is no longer sufficient. Although prior research has linked ambidextrous leadership to various innovation outcomes [6, 7], we still know relatively little about how these effects operate simultaneously at different levels or how they are shaped by contextual factors [8].

Several important knowledge gaps persist. First, the precise mediating processes that transmit the influence of ambidextrous leadership to innovative behavior across levels remain unclear. Second, we have limited insight into the boundary conditions—such as culture, industry, or organizational climate—that strengthen or weaken these relationships. Third, the dynamic, adaptive nature of ambidextrous leadership over time has been underexplored.

The present study tackles these issues through four guiding research questions: (1) How does ambidextrous leadership affect innovative work behavior at the individual, team, and organizational levels? (2) Which mediating mechanisms explain these multi-level relationships? (3) What contextual factors amplify or attenuate the leadership–innovation link? (4) To what extent do these processes and outcomes vary across cultural and sectoral contexts?

By answering these questions, the study seeks to offer a richer, multi-level understanding of how ambidextrous leadership drives innovation in practice.

The contribution is both theoretical and practical. Theoretically, it integrates fragmented insights into a cohesive framework that spans levels of analysis and clarifies direct and indirect pathways. Practically, it equips organizations with actionable recommendations for developing leaders who can balance exploration and exploitation, thereby sustaining innovation and competitive edge in turbulent times.

The remainder of the paper is structured as follows: We first review the theoretical foundations of ambidextrous leadership and innovative work behavior. Next, we describe the PRISMA-guided systematic review methodology. We then present the synthesized findings for the individual, team, and organizational levels, followed by a discussion of implications. The paper closes with acknowledged limitations and suggestions for future research. A graphical summary of the entire review process is provided in **Figure 1**.

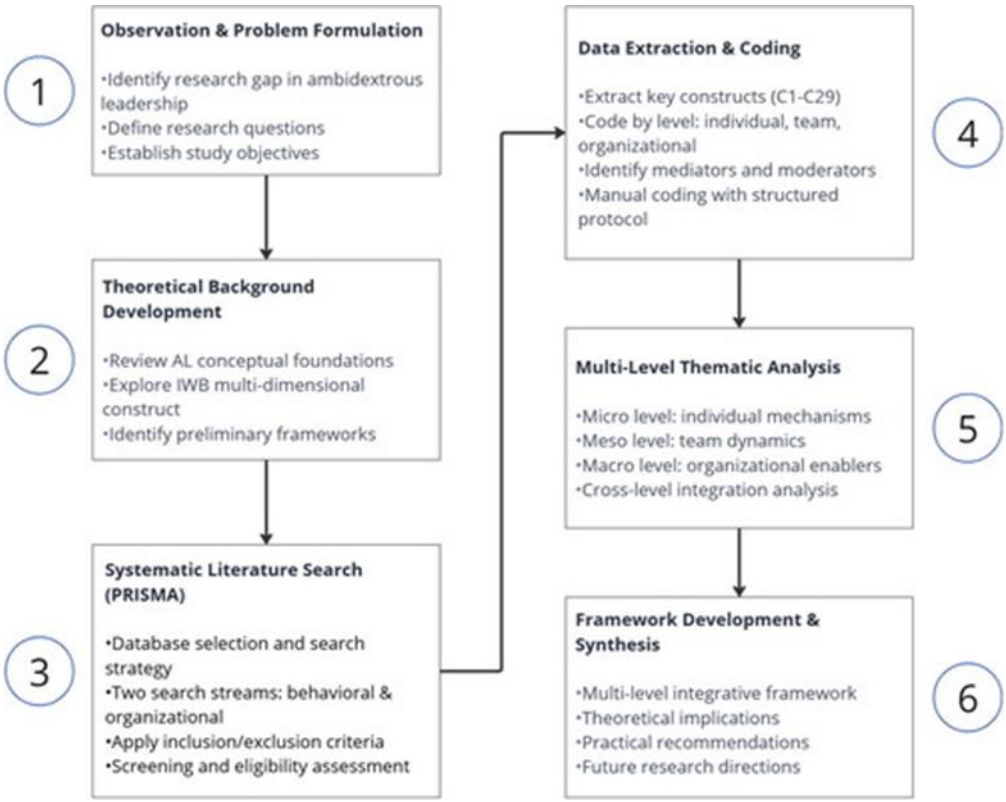

Figure 1. Research method diagram

Theoretical Background

In a business climate defined by rapid shifts and growing complexity, organizations must find ways to generate new ideas without compromising operational stability—a balance that places significant demands on leadership [9, 10]. Ambidextrous leadership has been identified as a key approach for addressing this tension, as it equips leaders to alternate between behaviors that spark creative exploration and those that maintain focus, structure, and execution [2, 11]. This leadership style is closely connected to Innovative Work Behavior (IWB), a broad construct that captures the full spectrum of innovation activities, from spotting opportunities to turning ideas into practical outcomes. Consequently, examining how ambidextrous leadership shapes

employees' innovative contributions is crucial for understanding how organizations manage the ongoing challenge of pursuing innovation while sustaining efficiency [12, 13].

Ambidextrous leadership: Conceptual foundations

Ambidextrous leadership is understood as a flexible leadership style that combines behavioral orientations often seen as contradictory, yet necessary, for promoting innovation in organizations. Drawing on the influential framework introduced by Rosing *et al.* [11], this approach is built around two complementary sets of behaviors: opening behaviors and closing behaviors [2]. Opening behaviors encourage experimentation, allow room for errors, promote autonomy, and stimulate the pursuit of novel ideas. Conversely, closing behaviors emphasize creating stability, monitoring progress, enforcing rules, and ensuring efficient goal attainment [5]. The central premise of ambidextrous leadership is that leaders should not favor one set of behaviors over the other; instead, they must fluidly shift between them in response to the specific requirements of different stages of the innovation process [10].

The conceptual roots of ambidextrous leadership lie in the broader discourse on organizational ambidexterity, which highlights the need to balance exploratory activities with those focused on exploitation [9]. Exploration involves searching for new knowledge, experimenting, and engaging in creative discovery, while exploitation centers on refining existing capabilities, implementing ideas, and executing established processes. Ambidextrous leadership adapts these organizational-level ideas to the leader–follower relationship, suggesting that leaders can guide employees toward both exploration and exploitation by deploying the appropriate behavioral cues [2]. This dual orientation enables organizations to manage the inherent tension in innovation—generating new ideas while also ensuring their successful realization [1].

Innovative work behavior: Multi-dimensional construct

Innovative work behavior (IWB) refers to the deliberate actions employees take to improve their work roles, teams, or organizations by developing and applying new ideas [13]. Rather than representing a single action, IWB spans multiple interconnected phases of the innovation cycle: noticing opportunities, producing ideas, advocating for those ideas, and implementing them [12]. The first phase—opportunity exploration—concerns recognizing situations where improvement or innovation is needed. Idea production follows, involving the creation of novel and valuable approaches. Once ideas are formed, employees must champion them, gaining support and persuading others of their relevance. The final stage, implementation, involves turning those ideas into workable solutions and embedding them into organizational routines [14].

The foundations of IWB are grounded in research on both creativity and innovation, acknowledging that innovation goes beyond generating creative insights to also include their enactment and practical use [15]. Creativity is often linked to producing new and useful ideas, whereas innovation encompasses the full transformation of these ideas into applied outcomes [16]. This distinction is particularly significant for understanding how leadership styles influence different components of the innovation process. Moreover, IWB is not confined to the individual level; it can also be understood as a team- or organizational-level phenomenon, with different enablers and consequences depending on the level of analysis [17].

To consolidate these theoretical strands, **Table 1** provides a synthesized overview of the key conceptual and empirical contributions shaping current knowledge of ambidextrous leadership and innovative work behavior across various organizational settings. This summary highlights both the evolution of the field and the enduring gaps that motivate the current systematic review.

Table 1. Selected landmark studies exploring the link between ambidextrous leadership and employees' innovative behavior

Authors & Year	Study Setting / Sample	Main Findings	Identified Gaps / Limitations	Level of Analysis
Rosing *et al.* (2011) [11]	Theoretical paper	Opening behaviors promote exploration, closing behaviors support exploitation; ambidexterity arises from their combination	No empirical data; mediators and moderators not explored	Conceptual
Zacher *et al.* (2016) [2]	388 employees from various sectors	Both opening and closing behaviors drive exploration/exploitation; their interaction boosts overall innovative performance	Cross-sectional only; few contextual variables included	Individual
Zacher & Rosing (2015) [10]	33 team leaders + 90 team members in design agencies	The interplay of opening and closing behaviors explains team innovation better than transformational leadership alone	Small sample; team-level processes largely ignored; single-industry focus	Team
Gerlach *et al.* (2020) [7]	54 employees, 6-week daily/longitudinal design	Opening and closing behaviors predict innovation performance across time	Very small sample; no mediation analysis	Individual

Busola Oluwafemi *et al.* (2020) [6]	98 UK high-tech small and medium enterprises	Opening and closing behaviors foster innovation; adaptive leadership acts as mediator	Limited to UK/Western context; no team-level variables; cross-cultural generalizability unclear	Individual & Organizational
Haider *et al.* (2023) [14]	542 construction-sector employees, Pakistan	Knowledge sharing fully mediates the ambidextrous leadership → innovative work behavior link	Team dynamics and cultural influences not addressed	Individual
Kung *et al.* (2020) [16]	237 museum employees, Taiwan	Innovation climate mediates the relationship between ambidextrous leadership and innovative behavior	Individual psychological processes understudied; no team perspective	Individual & Organizational
Jiang *et al.* (2023) [18]	478 manufacturing workers, China	Creative self-efficacy and cognitive flexibility serve as parallel mediators	Organizational-level enablers and team processes overlooked	Individual
Duc *et al.* (2020) [19]	296 team leaders in retail sector, Vietnam	Opening behaviors enhance exploratory learning; closing behaviors strengthen exploitative learning	Boundary conditions and cross-cultural aspects underexamined	Team
Deng *et al.* (2023) [8]	Teams in China, India, and Singapore	Different patterns of ambidextrous leadership produce innovation across cultures	Individual-level mechanisms not incorporated; no Western samples	Team
Bernards (2024) [20]	88 public-sector professionals, daily diary study, Netherlands	Ambidextrous leadership buffers the negative effect of cognitive uncertainty on daily innovative behavior	Team support processes missing; limited to short-term observations	Individual
Kousina & Voudouris (2023) [21]	317 public-sector employees, Greece	Psychological ownership mediates ambidextrous leadership effects on innovative behavior in public organizations	Team coordination and cross-cultural boundaries not investigated	Individual

As highlighted in **Table 1**, several notable gaps persist in the current body of research. First, the majority of studies focus predominantly on the individual level, with comparatively little attention given to team-level dynamics such as coordination, collective reflection, and cross-boundary interactions. Second, most research relies on cross-sectional designs, limiting insights into how the effects of ambidextrous leadership evolve over time or across different stages of the innovation process. Third, contextual and cultural influences remain underexamined, as studies are largely concentrated in Western and select Asian settings, reducing the generalizability of findings across diverse cultural environments. Fourth, although multiple mediating factors have been identified at the individual level, there is a lack of integrated understanding of mechanisms operating simultaneously at individual, team, and organizational levels. Together, these gaps highlight the need for a systematic, multi-level review that consolidates existing evidence and clarifies the complex pathways through which ambidextrous leadership shapes innovative work behavior across varied organizational contexts.

Methodology

To investigate the impact of ambidextrous leadership on innovative work behavior (IWB) across various organizational levels, this study conducted a systematic literature review (SLR) following the PRISMA guidelines **(Figure 2)**. The purpose of the review was to integrate both empirical and theoretical findings, highlight existing research gaps, and provide a basis for developing a multi-level theoretical framework. To capture the dual emphasis of this research, two complementary search strategies were implemented: one focusing on innovation at the individual behavioral level, and the other addressing broader outcomes related to organizational transformation.

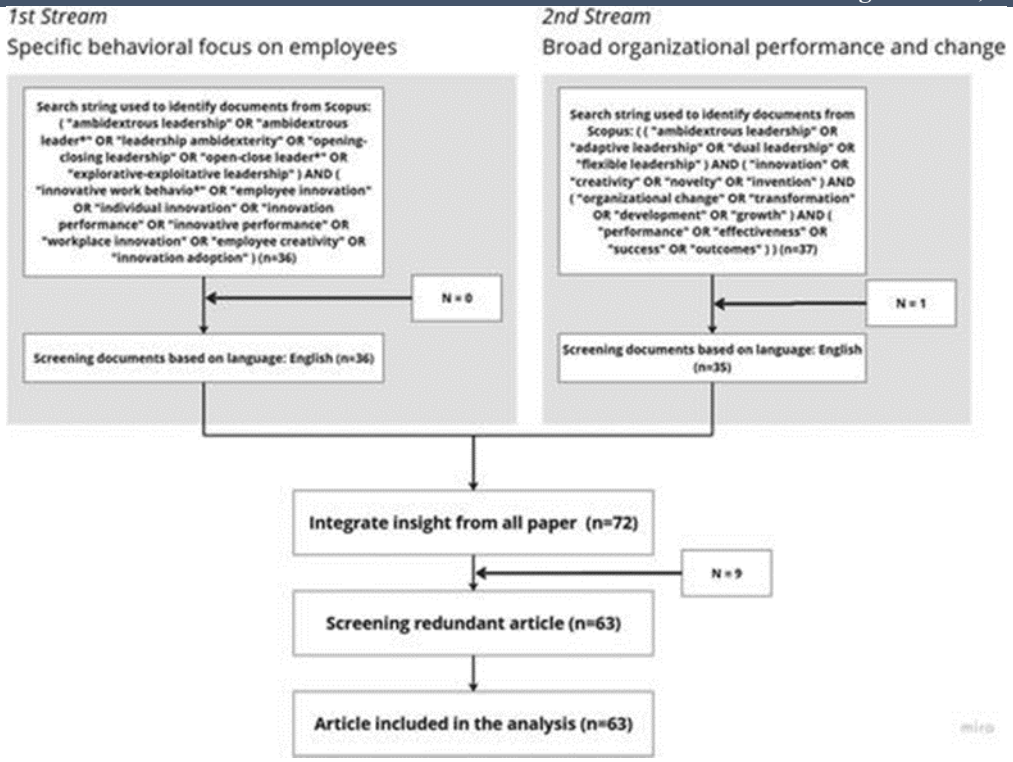

Figure 2. PRISMA process

Literature Search Strategy

A systematic literature search was performed in the Scopus database in January 2025, selected for its extensive coverage of high-quality, peer-reviewed publications in the fields of management and organizational behavior. To ensure uniformity and interpretative consistency, only English-language articles were included, thereby minimizing potential translation errors and conceptual misalignment.

Two distinct search strategies were employed to comprehensively capture research on ambidextrous leadership and its effects on innovation-related outcomes at multiple levels:

First stream: Employee-focused behavioral perspective

This stream targeted studies investigating how ambidextrous leadership (or closely related concepts such as leadership ambidexterity and opening/closing leadership behaviors) affects individual-level innovation outcomes. Search terms combined leadership constructs with individual innovation indicators, including employee creativity, innovative work behavior, and innovation adoption. This search returned 36 articles.

Second stream: Broader organizational outcomes and change

This stream concentrated on leadership approaches linked to organizational-level innovation outcomes, such as transformational change, overall performance, and effectiveness. Particular emphasis was placed on connections between ambidextrous or adaptive leadership and organizational innovation or adaptability. The search identified 37 articles, one of which was subsequently excluded for being published in a language other than English.

Data extraction followed a manual process guided by a structured coding framework tailored to the review's objectives. The lead author independently examined and coded every article, documenting key elements including level of analysis, specific leadership constructs, innovation outcomes measured, and any mediators or moderators reported. In cases of ambiguity regarding classification, articles were re-examined and discussed with a second reviewer to achieve reliable and consistent interpretation. No automated extraction tools were utilized; all coding decisions were transparently logged in a shared documentation file to facilitate verification and reproducibility.

Rather than applying a standardized critical appraisal instrument (e.g., CASP or MMAT), risk of bias and study quality were evaluated through a systematic interpretive lens integrated into the coding protocol. Assessments considered methodological transparency, clarity of research design, strength of theoretical foundation, and direct relevance to the focal leadership–innovation relationship. Studies exhibiting insufficient methodological rigor or limited alignment with the defined constructs were flagged for additional scrutiny. Final inclusion and quality judgments were reached via consensus between the primary and secondary reviewers to strengthen objectivity and minimize individual bias.

Inclusion and exclusion criteria

To guarantee that the studies incorporated were pertinent to the research objectives, clear inclusion standards were established. Eligible articles were those published in peer-reviewed journals that examined leadership approaches characterized by ambidexterity, adaptability, or flexibility. Additionally, the research needed to focus on outcomes associated with innovation—such as employee creativity, organizational performance, or transformative change—across individual, team, or organizational levels. Both empirical studies and conceptual or theoretical contributions were considered for inclusion.

Studies were excluded if they addressed leadership styles unrelated to ambidextrous or adaptive practices or failed to explicitly link leadership to innovation outcomes. After a careful screening process, all studies included in the final dataset met these standards and were retained for detailed review and analysis.

Data items

For this review, two broad categories of information were extracted from the selected studies. The first category focused on primary innovation-related outcomes, including innovative work behavior (IWB), individual creativity, the adoption and implementation of ideas, and overall organizational innovation performance. These measures were chosen because they directly reflect the theoretical role of ambidextrous leadership in balancing exploratory and exploitative activities to drive innovation, capturing both behavioral and performance aspects across different organizational levels.

The second category comprised contextual and process-oriented variables that help explain how leadership influences innovation. These included the level of analysis (individual, team, or organization), types of leadership behaviors examined (opening, closing, and ambidextrous), potential mediators such as autonomy, trust, and empowerment, and moderators like industry sector and national culture. Recording these factors allowed for a more detailed understanding of the conditions under which ambidextrous leadership affects innovation outcomes. Additional descriptive information—such as the research setting, participant characteristics, and publication details—was also collected when available. All data extraction and coding were carried out manually using a structured protocol, and any uncertainties were discussed with a secondary reviewer to ensure accuracy, consistency, and transparency in the process.

Screening and synthesis process

The PRISMA flowchart indicates that 72 studies were initially considered for the review, including one additional article incorporated through backward citation. Each study's title, abstract, and full text were carefully examined to determine relevance and methodological rigor. During this screening process, nine duplicates or overlapping records were excluded.

Ultimately, 63 studies were retained for in-depth thematic analysis. The coding process followed an inductive approach, categorizing studies by their level of analysis (individual, team, or organizational), the leadership behaviors examined (opening, closing, or ambidextrous), and the innovation outcomes reported. Attention was also given to identifying mediating factors, contextual moderators, and underlying theoretical frameworks. All studies were initially screened by the lead researcher, and full-text eligibility and coding classifications were subsequently reviewed with a secondary researcher to ensure reliability and minimize potential bias in study selection.

Analytical focus

This review was structured around three central aims: first, to systematically examine empirical evidence linking ambidextrous leadership to innovative work behavior across individual, team, and organizational levels; second, to uncover the mediating processes and contextual factors that influence this relationship; and third, to construct an integrated multi-level framework illustrating how leadership behaviors drive innovation processes. Given the largely conceptual and qualitative nature of the collected data, no quantitative effect metrics—such as mean differences or risk ratios—were applied. Instead, the analysis prioritized patterns in themes, conceptual consistency, and clarity of narrative interpretation. Key variables, including leadership type, organizational level, innovation outcomes, mediators, and moderators, were organized into a comparative coding framework, with any uncertainties cross-checked by a secondary reviewer to maintain interpretive reliability.

The synthesis followed an inductive thematic approach, grouping studies according to the types of leadership behaviors examined and the innovation outcomes reported. This allowed for the identification of recurring conceptual linkages across organizational levels. Results were presented through detailed tables and structured narrative summaries to facilitate pattern recognition without employing statistical aggregation. While no meta-analytic procedures or formal sensitivity tests were conducted, the robustness of the findings was supported by repeated coding checks and triangulation with theoretical insights. Divergent or conflicting findings were explored through subgroup comparisons—such as differentiating studies emphasizing individual versus organizational-level innovation—to highlight potential sources of variation. These procedures enhanced the validity of the synthesized framework and ensured it effectively captured the multi-level dynamics central to the study's objectives.

Findings

Study selection

A total of 72 records were retrieved from Scopus through a systematic search employing two distinct streams: one centered on individual-level innovative behavior and the other on organizational-level innovation outcomes. Following deduplication and initial screening, nine duplicate or overlapping records were eliminated. One additional article was removed at the abstract stage for failing to meet the English-language requirement, leaving 62 potentially relevant papers from the database search. Through backward citation tracking, one further study was manually incorporated, resulting in a final sample of 63 included articles. All records proceeded through full-text review without additional exclusions, as each satisfied the established criteria related to leadership constructs, innovation focus, and scholarly rigor. The complete screening and selection process is illustrated in the PRISMA flow diagram **(Figure 2)**, which clearly delineates inclusion decisions and exclusion rationales.

Study quality and potential risk of bias were appraised qualitatively, with particular attention to methodological transparency, conceptual precision, and the appropriateness of research design for examining innovation outcomes. The majority of quantitative studies—especially those utilizing structural equation modeling (SEM)—demonstrated sound practices by employing validated scales and reporting model fit indices, suggesting low to moderate risk of bias (e.g., Khan *et al.* [22]; Yasmeen & Ajmal [23]; Zacher & Rosing [10]). In contrast, several conceptual and qualitative contributions provided comparatively limited methodological detail, which complicated the assessment of possible interpretive bias (e.g., Ametefe *et al.* [24]; Piórkowska [4]). Publication bias was judged to be moderate, driven by a preponderance of studies reporting positive ambidextrous leadership–innovative work behavior (AL-IWB) associations and a heavy geographic skew toward Western settings (USA: n = 58), raising concerns about cross-cultural generalizability. Overall certainty of evidence is moderate for direct individual-level AL-IWB effects but weaker for team- and organizational-level pathways owing to the smaller number of studies and greater methodological variation in those domains.

Descriptive analysis of literature

Analysis of publication patterns shows that interest in ambidextrous leadership and its link to innovation has increased steadily over time. Between 2005 and 2015, research output was limited and appeared only sporadically. A clear rise in publications began in 2016, followed by a marked increase in 2022, culminating in a peak of 15 studies in 2024, highlighting the growing relevance of the topic in recent years. The lower number of publications recorded for 2025 likely reflects incomplete database indexing rather than an actual decline in scholarly activity.

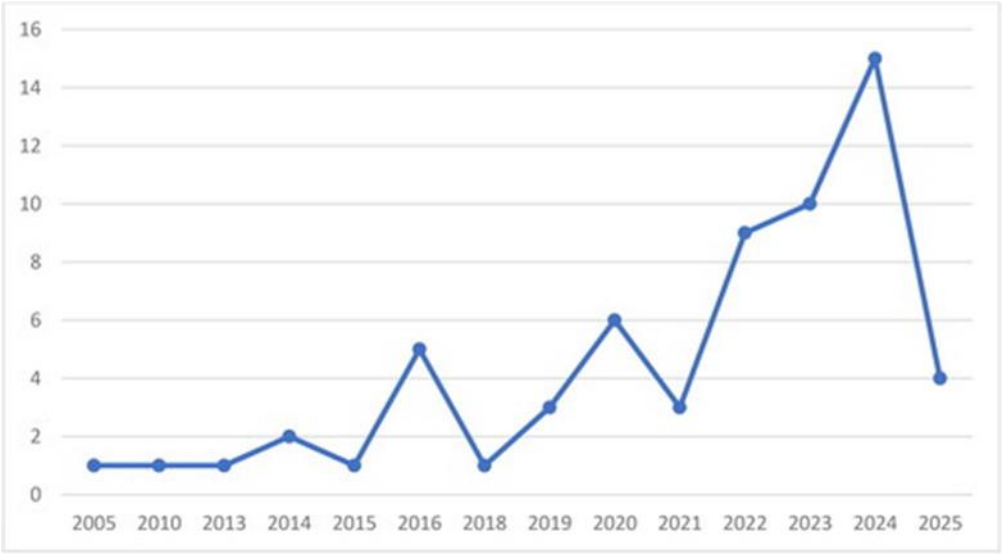

Figure 3. Trends of ambidextrous leadership studies.

Table 2. Research method

Approach Used	How Many Studies	Notable Examples
Large-scale surveys with statistical modeling (mostly questionnaires + SEM/PLS-SEM)	36 (≈69%)	Zain *et al.* [25], Hossain *et al.* [26, 27], Wahab *et al.* [28], Slåtten *et al.* [17], Haider *et al.* [14], Yang *et al.* [29], Khan *et al.* [22], and 29 others
Purely theoretical or literature-based papers	7	Harandi *et al.* [3], Rosing & Zacher [1], Sayyed *et al.* [30], Piórkowska [4], Ametefe *et al.* [24], Aziz & Rahim [31], Zarb *et al.* [32]
In-depth qualitative designs (case studies, longitudinal tracking, diaries, or qualitative comparative analysis)	7	Sharma & Anil [33], Meng *et al.* [34], Deng *et al.* [8], Bernards [20], Zacher & Wilden [5], Faizan *et al.* [35], Gerlach *et al.* [7]
Controlled experiments	1	Gerlach *et al.* [36]

Participatory/action research	1	Palm & Lilja [37]

Regarding research methodology, the field is clearly dominated by quantitative designs. As shown in **Table 2**, the most common approach by far is the use of surveys (24 studies), which highlights researchers' preference for standardized scales to measure leadership styles and innovation-related outcomes. Among analytical tools, Structural2 Structural Equation Modeling (SEM) stands out as the leading technique (12 studies), underlining the emphasis on examining intricate structural relationships between variables. Theoretical and review-based contributions form a notable secondary group (7 studies), offering essential conceptual groundwork. In contrast, time-sensitive or process-oriented methods remain scarce: only three studies use diary or longitudinal designs, three employ qualitative comparative analysis, and just one each relies on in-depth case studies or action research. This pattern signals considerable room for greater methodological variety.

The sectoral scope of the studies is remarkably diverse **(Table 3)**. Ten publications investigate ambidextrous leadership across multiple industries or adopt a cross-sectoral perspective, indicating that many scholars view the concept as broadly applicable. The most frequently studied contexts are information technology (7 studies), healthcare (7 studies), and public-sector organizations (5 studies)—sectors typically characterized by strong pressures for both efficiency and innovation. Eight contributions are purely theoretical or do not specify any industry, which can restrict their practical relevance for particular settings. Additional sectors examined include manufacturing, education, hospitality, logistics, and defense, demonstrating that the idea of ambidextrous leadership travels across private and public boundaries, even though the depth of empirical evidence differs substantially from one context to another.

Table 3. Industry context in ambidextrous leadership studies

Setting	How manyancy	Illustrative Works
Studies that deliberately combined several industries or took a sector-agnostic view	10	e.g., Zacher & Rosing [10], Usman *et al.* [38], Khan *et al.* [22], Gerlach *et al.* [7]
Purely conceptual pieces with no real-world industry mentioned	8	e.g., Rosing & Zacher [1], Harandi *et al.* [3], Ametefe *et al.* [24]
Technology companies, software houses, and IT services	7	e.g., Haider *et al.* [14], Dinesh Babu *et al.* [12], Cheng [39]
Hospitals, clinics, and broader healthcare organizations	7	e.g., Slåtten *et al.* [17], Tang *et al.* [40], Rohde & Wasilewski [41]
Government agencies and public-sector bodies	5	e.g., Zain *et al.* [25], Bernards [20], Akıncı *et al.* [15]
Factories and manufacturing plants	5	Five distinct manufacturing-focused investigations
Universities, colleges, and schools	3	e.g., Wahab *et al.* [28], Pietsch & Mah [42]
Hotels, restaurants, and tourism businesses	2	Ajmal *et al.* [43], Duc *et al.* [19]
Logistics, supply-chain, or transport firms	1	Faizan *et al.* [35]
Telecom operators	1	Bawono *et al.* [44]
Armed forces and defense organizations	1	Akıncı *et al.* [15]

The reviewed literature shows a pronounced geographic skew, with most studies conducted in the United States (n = 58) and far fewer originating from countries such as the UK, India, Pakistan, and China. This heavy U.S. dominance may bias current theoretical and empirical perspectives on ambidextrous leadership toward Western organizational norms and innovation practices. By contrast, regions including Southeast Asia, Africa, and Latin America are largely underexplored, even though these areas are increasingly engaging with leadership-driven innovation. Such uneven representation highlights potential limitations in applying existing findings across diverse cultural and institutional settings. Expanding research to include a broader range of geographic and sociocultural contexts is therefore essential for developing a more globally applicable understanding of ambidextrous leadership **(Table 4)**.

Table 4. Country distribution

Rank	Country	Number of Studies
1	United States	58
2	United Kingdom	5
3	Pakistan	5
4	China	5
5	India	4
6	Indonesia	2
7	Germany	2
8	Malaysia	2
9	Sweden	2
10	Switzerland	1
11	Taiwan	1
12	Vietnam	1
13	Norway	1
14	Denmark	1

15	Netherlands	1
16	Singapore	1
17	Canada	1
18	Australia	1
19	Saudi Arabia	1
20	South Africa	1

The review of the literature indicates a field that is becoming increasingly developed, yet continues to evolve. Although studies demonstrate rising empirical sophistication and practical relevance across industries, additional research is needed in less-studied sectors and using a wider range of methodological approaches to better understand the nuanced ways ambidextrous leadership operates in real-world contexts.

Emerging dimensions from ambidextrous leadership and innovative work behavior literature

A synthesis of 63 peer-reviewed studies identifies several fundamental dimensions through which ambidextrous leadership (AL) shapes innovative work behavior (IWB). These dimensions include patterns of leader behavior, psychological processes that mediate employee responses, contextual factors that moderate effects, and organizational structures that facilitate innovation, all operating at different analytical levels. **Table 5** presents a detailed overview of these dimensions, highlighting key constructs, illustrative findings, and supporting references. This framework illustrates both the direct and indirect ways in which AL drives innovation and emphasizes the importance of aligning leadership practices with contextual conditions, employee readiness, and organizational design to maximize innovative outcomes.

Table 5. Core dimensions of ambidextrous leadership and innovative work behavior

Dimension	Code	Main Finding / Contribution	Representative Source(s)
Leadership Behaviors	C1	Combining opening and closing leadership behaviors strongly boosts innovative work behavior (IWB)	Zacher & Rosing [10]
	C2	Leader flexibility in switching between opening/closing styles drives innovation performance	Gerlach *et al.* [7]
	C3	Ambidextrous leadership (AL) directly and significantly predicts both IWB and overall employee performance	Zain *et al.* [25]
Mediating Mechanisms	C4	Knowledge sharing fully or partially mediates the AL → IWB relationship	Haider *et al.* [14]
	C5	Emotional intelligence acts as a mediator between AL and employee innovativeness	Hafeez *et al.* [13]
	C6	Employee voice behavior transmits the effect of AL on innovation	Ajmal *et al.* [43]
	C7	Creative self-efficacy and cognitive flexibility jointly mediate the AL–innovation link	Jiang *et al.* [18]
	C8	Both knowledge sharing and knowledge seeking serve as parallel mediators	Harandi *et al.* [3]
Moderating Conditions	C9	Trust in leader and individual resilience strengthen the AL–IWB relationship	Khan *et al.* [22]
	C10	Zhong-Yong (doctrine of the mean) thinking moderates AL effects on innovation	Cheng [39]
	C11	Moral identity amplifies the indirect effect of AL on IWB via voice behavior	Ajmal *et al.* [43]
	C12	Daily cognitive uncertainty interacts with AL to shape day-level innovative behavior	Bernards [20]
Organizational Enablers	C13	An innovative climate mediates the influence of AL on IWB	Kung *et al.* [16]
	C14	Innovation-supportive organizational culture amplifies the impact of ambidextrous leadership	Yasmeen & Ajmal [23]
	C15	Organizational climate moderates the effect of closing leadership behaviors on IWB	Akıncı *et al.* [15]
Cross-Cultural Aspects	C16	Cultural cognitive styles shape how AL influences innovative behavior	Cheng [39]
	C17	National culture affects optimal team configurations for ambidextrous leadership	Deng *et al.* [8]
	C18	Perceptions of authoritarian vs. benevolent ambidextrous leadership vary culturally and affect IWB	Meng *et al.* [34]
Team Processes & Learning	C19	Opening/closing behaviors drive team exploratory and exploitative learning	Duc *et al.* [19]
	C20	Team psychological safety combined with AL enhances service innovation	Slåtten *et al.* [17]
	C21	AL mitigates negative effects of uncertainty in team contexts	Bernards [20]
	C22	AL outperforms transformational leadership in predicting team innovation	Zacher & Rosing [10]
Psychological States	C23	Creative self-efficacy mediates the AL → IWB pathway	Jiang *et al.* [18]
	C24	Harmonious passion and self-efficacy jointly mediate AL effects	Cheng [39]

	C25	Psychological ownership transmits the influence of AL on innovative behavior	Kousina & Voudouris [21]
	C26	Emotional intelligence shapes how effectively AL translates into IWB	Hafeez *et al.* [13]
Structural & Digital Complexity	C27	AL fosters successful digital business-model innovation	Bawono *et al.* [45]
	C28	Organizational agility and structural features condition the effectiveness of AL	Gouda & Tiwari [46]
	C29	Leadership adaptability is critical for innovation in highly complex systems	Lennon *et al.* [47]

Newly identified aspects of ambidextrous leadership (AL) do not spread evenly; they take different forms depending on the organizational layer.

At the individual (micro) layer, attention centers on personal actions, mindsets, and inner psychological processes that directly connect leadership to a person's ability to innovate. At the team (meso) layer, the spotlight moves to group processes—collective learning, team climate, and coordination patterns—that determine whether leadership behaviors actually produce shared creative results. At the organizational (macro) layer, bigger elements like structures, culture, and resource-allocation systems either support or limit how much ambidextrous leadership ultimately drives company-wide innovation.

Figure 4 summarizes findings from 63 studies and shows a heavy concentration on the individual layer. Most research explores how "opening" and "closing" leadership actions shape personal outcomes such as innovative behavior, performance, and emotional or motivational states. Common mediating factors include creative self-efficacy [18], emotional intelligence [13], and harmonious passion [39], highlighting that innovation at the individual level is largely fueled by cognitive and emotional mechanisms.

Figure 4. Multi-level mapping of key constructs in innovation literature and ambidextrous leadership

Research on team-level (meso) dynamics remains relatively limited. Where it exists, evidence highlights the importance of collective processes such as team learning, psychological safety, and innovation-supportive climates. For instance, studies by Duc *et al.* [19] and Slåtten *et al.* [17] indicate that ambidextrous leadership can simultaneously promote exploratory and exploitative learning within teams, enhancing innovation outcomes. Likewise, Kung *et al.* [16] and Akıncı *et al.* [15] suggest

that the organizational climate can either reinforce or mediate the influence of leadership on innovation. These findings underscore that leadership effectiveness depends not only on individual readiness but also on the social and structural support present within teams.

At the organizational (macro) level, structural arrangements and cultural norms emerge as critical factors. Research by Busola Oluwafemi *et al.* [6] and Bawono *et al.* [45] highlights that flexible structures, decentralized decision-making, and digital business models can amplify the impact of ambidextrous leadership. Cultural attributes, such as a tolerance for mistakes and norms encouraging innovation [15, 23], also enhance leadership effectiveness. However, macro-level studies often operate in isolation from micro- or meso-level factors, which limits understanding of how leadership effects cascade throughout the organization. While most studies rely on empirical approaches, a small number, such as Harandi *et al.* [3], integrate theoretical frameworks with survey validation, emphasizing the need for research designs that connect psychological, behavioral, and contextual dimensions. Despite rigorous testing of certain constructs, integration across levels remains scarce.

Building on this foundation, the subsequent sections provide a structured, multi-level examination of ambidextrous leadership. Analysis begins at the individual level, where evidence is most abundant, and then progresses to team and organizational levels. This approach allows for identification of distinct and overlapping pathways through which leadership behaviors influence innovation. Each level is analyzed in terms of direct effects, mediating mechanisms, and contextual moderators. In doing so, the analysis systematically addresses the review's four research questions: how ambidextrous leadership affects innovative work behavior across levels (RQ1), the processes that facilitate these effects (RQ2), contextual factors shaping leadership impact (RQ3), and variations across industries and cultural contexts (RQ4). By integrating findings from micro, meso, and macro perspectives, this multi-level framework provides a comprehensive understanding of AL–IWB dynamics.

Individual level analysis

Ambidextrous leadership and individual-level innovative work behavior

Empirical research consistently shows that ambidextrous leadership directly influences employees' innovative work behavior by leveraging the combined effects of opening and closing leadership actions. Opening behaviors encourage exploration by supporting experimentation, granting autonomy, and accepting mistakes, while closing behaviors promote exploitation by establishing clear routines, tracking progress, and ensuring disciplined follow-through [2]. Insights from daily diary studies indicate that innovation is highest when both types of behaviors are strongly present, demonstrating a complementary, synergistic effect rather than a compensatory one [5]. **Table 6** provides a summary of empirical evidence across multiple settings, reinforcing the consistent positive impact of ambidextrous leadership on individual innovation outcomes.

Table 6. Summary of empirical studies on the direct influence of ambidextrous leadership on individual innovation

Author(s)	Research Setting	Main Results
Zain *et al.* [25]	Immigration offices, Indonesia	Ambidextrous leadership has a positive direct impact on innovative work behavior and overall employee performance
Dinesh Babu *et al.* [12]	Information technology sector	Ambidextrous leadership promotes innovative work behavior and, through it, indirectly improves individual performance
Zacher & Rosing [10]	General organizational contexts	Ambidextrous leadership fosters innovation by encouraging both exploration and exploitation behaviors
Zacher & Wilden [5]	Daily diary study (within-person)	Day-to-day fluctuations in opening and closing leadership behaviors strongly predict daily innovative outcomes
Akıncı *et al.* [15]	Military organizations	Opening leadership behaviors strongly drive innovative work behavior; the full combination of opening and closing behaviors also shows a significant positive effect
Alghamdi [48]	Context not specified	Both opening and closing leadership dimensions predict employee exploration and exploitation activities, which in turn lead to higher innovation

Recent research highlights the influential role of ambidextrous leadership (AL) in fostering individual innovative work behavior (IWB). Zain *et al.* [25] and Dinesh Babu *et al.* [12] demonstrate that AL effectively drives IWB across both public and private organizations, while also yielding secondary improvements in employee performance. In high-pressure and high-stakes environments, such as the military, Akıncı *et al.* [15] emphasize that opening behaviors—both independently and combined with closing behaviors—significantly boost innovation. Likewise, Alghamdi [48] shows that the coordinated use of exploration- and exploitation-focused leadership behaviors creates a synergistic effect that directly enhances innovation at the individual level.

Mediating mechanisms at the individual level

The way ambidextrous leadership (AL) gets converted into innovative work behavior (IWB) happens through several distinct psychological and action-oriented channels.

On the cognitive side, mechanisms such as creative self-efficacy and cognitive flexibility allow employees to read "opening" behaviors as encouragement to experiment and "closing" behaviors as prompts to focus and improve, thereby activating a

balanced dual-thinking process [18]. On the emotional side, factors like emotional intelligence help people cope with the inherent contradictions of AL by reducing the stress and tension that arise from simultaneously pursuing exploration and exploitation [13]. On the behavioral side, actions such as knowledge sharing and speaking up (voice behavior) turn the signals sent by leaders into tangible innovative efforts [14, 43]. **Table 7** provides an integrated overview of these different mediating pathways.

Table 7. Organizational mechanisms and Mediating psychological linking ambidextrous leadership to innovation

Author(s)	Mediator(s)	Key Findings
Harandi *et al.* [3]	Knowledge sharing & knowledge seeking	Knowledge-related processes fully explain how ambidextrous leadership leads to higher innovation
Haider *et al.* [14]	Knowledge sharing	The effect of ambidextrous leadership on innovative work behavior works entirely through knowledge sharing (indirect-only mediation)
Hafeez *et al.* [13]	Emotional intelligence	Emotional intelligence acts as the bridge between ambidextrous leadership and innovative work behavior
Cheng [39]	Creative self-efficacy & harmonious passion	Both self-efficacy and harmonious passion independently carry the influence of ambidextrous leadership to innovation-related behaviors
Jiang *et al.* [18]	Creative self-efficacy & cognitive flexibility	The two cognitive mechanisms together account for why ambidextrous leadership triggers innovative actions
Khan *et al.* [22]	Creative self-efficacy	Ambidextrous leadership boosts innovation primarily by increasing employees' psychological confidence in their creative abilities
Kung *et al.* [16]	Organizational climate for innovation	A supportive climate for innovation transmits the positive effects of ambidextrous leadership to actual innovative outcomes
Kousina & Voudouris [21]	Psychological ownership	When employees feel strong ownership over their work, it channels the impact of ambidextrous leadership into greater innovation

Among the various mediators, knowledge processes clearly dominate the picture. Studies by Harandi *et al.* [3] and Haider *et al.* [14] highlight that actively sharing and seeking knowledge acts as a primary channel through which ambidextrous leadership sparks innovative behavior at work—with Haider and co-authors showing that this pathway is so strong that no direct effect remains once knowledge sharing is accounted for.

Individual mindset factors are almost equally important: higher creative self-confidence [18, 22] and genuine, harmonious passion for the work [39] turn leadership signals into personal motivation and cognitive agility needed for innovation.

Broader workplace conditions also matter—when the organizational environment actively encourages new ideas [16] or when employees feel a deep sense of ownership over their tasks [21], the positive impact of ambidextrous leadership on innovation becomes even stronger.

Contextual conditions and cultural variations

The impact of ambidextrous leadership (AL) on individual employees is far from universal; it depends heavily on several boundary conditions. A supportive organizational climate acts as a powerful amplifier: when the environment genuinely backs new ideas, even the "closing" (discipline-focused) side of AL is perceived as helpful rather than restrictive [15]. Personal resources also matter—employees who trust their leader or possess high resilience are better equipped to handle the push–pull tension created by AL, leading to stronger innovation outcomes [22]. Moreover, in unpredictable or turbulent settings, AL serves as a protective buffer, reducing the creativity-killing effects of uncertainty and helping people stay innovative day-to-day [20].

Cultural background further shapes how well AL works. In China, the traditional Zhong-Yong mindset (which values balance and paradox) fits perfectly with AL's dual nature, making leadership more effective there [39]. However, cross-cultural evidence is still scarce—nearly all existing studies come from Western or East Asian samples, so we know little about how AL plays out in highly collectivistic versus highly individualistic societies.

Industry and sector differences are also clear: the link between AL and innovative behavior is much stronger in knowledge-driven fields such as IT and healthcare, where innovation is core to survival [12, 13]. In more traditional or heavily regulated industries, and especially in public-sector organizations, the same leadership approach still helps but produces noticeably smaller gains, likely due to bureaucratic constraints [21]. **Table 8** offers a comprehensive summary of these moderating influences.

Table 8. Moderating factors at the individual level

Author(s)	Moderator Variable	Key Finding
Akıncı *et al.* [15]	Innovation climate	An organizational climate that supports innovation moderates the relationship between closing-type leadership behaviors and employees' innovative work behavior (IWB).
Cheng [39]	Zhong-Yong thinking style	The traditional Chinese cognitive style of Zhong-Yong (doctrine of the mean) moderates the connection between leadership and innovative outcomes.
Khan *et al.* [22]	Trust in leader & personal resilience	Employees who exhibit high levels of trust in their leader and high self-resilience benefit more from authentic leadership (AL) in terms of innovation.

Bernards [20]	Cognitive uncertainty	Authentic leadership (AL) moderates the impact of employees' cognitive uncertainty on their daily innovative performance.

Team level analysis

Ambidextrous leadership and team innovation

Ambidextrous leadership at the team level encourages collective innovation by cultivating two complementary types of learning. Opening behaviors promote exploratory learning, motivating teams to try new approaches, gather diverse information, and engage in creative problem-solving, whereas closing behaviors facilitate exploitative learning by improving knowledge application, standardizing workflows, and supporting focused, goal-oriented thinking [19]. According to Zacher and Rosing [10], the combination of strong opening and closing behaviors maximizes team innovation, outperforming transformational leadership alone and highlighting the value of flexible leadership in enhancing collaborative innovative performance.

Mediating mechanisms at the team level

At the team level, the pathways through which ambidextrous leadership (AL) influences innovation focus on collective processes rather than individual cognition. Exploratory and exploitative team learning act as central mechanisms, with evidence showing that both forms of learning contribute to higher levels of team innovation [3, 19]. An innovation-oriented team climate also mediates the effect of AL by establishing shared expectations and norms that support creative idea generation and effective implementation [15, 16]. Moreover, elements such as psychological safety and team ambidexterity enable teams to manage interpersonal risks and balance exploratory and exploitative activities, further translating AL into tangible innovation outcomes [17]. **Table 9** provides a consolidated overview of these team-level mechanisms and moderating factors.

Table 9. Mechanisms and moderators at the team level linking ambidextrous leadership to innovation outcomes

Team-Level Aspect	Core Takeaways	References
Innovation-supportive team atmosphere & knowledge flow	Knowledge exchange fully explains why balanced (opening + closing) leadership leads to more creative output Innovation-friendly team environments dramatically strengthen leadership's influence on creativity Teams that master both "exploring new ideas" and "refining existing ones" learning styles achieve markedly higher innovation	[3, 14-17, 19]
Working across functions & bridging internal boundaries	Surprisingly little direct evidence exists on this topic Balanced leaders appear to help teams connect and integrate expertise from different departments How teams coordinate across silos is probably crucial but has received almost no research attention	[6, 8, 49]
Team characteristics that shape how well leadership drives innovation	Teams that frequently pause to reflect amplify the positive effects of ambidextrous leadership A team's natural proactiveness changes the leadership–innovation relationship, with cultural differences playing a big role Feeling psychologically safe in the team is essential for leadership to spark innovation How diverse team composition (skills, backgrounds, etc.) affects these dynamics is still almost completely unknown	[8, 10, 20, 34]

Contextual and cultural factors at team level

The impact of ambidextrous leadership (AL) at the team level is heavily influenced by cultural context. Configurational studies conducted in China, India, and Singapore indicate that different combinations of opening and closing leadership behaviors, together with team initiative, can lead to high innovation depending on the cultural setting. This suggests that there are multiple, culture-specific pathways to achieving team innovation rather than a single universal approach [8]. The interaction between AL and team behaviors such as reflexivity and initiative also varies by culture, with collectivist contexts often requiring greater team initiative to offset lower levels of individual autonomy. Despite these insights, significant research gaps remain. Key areas such as boundary-spanning processes, cross-functional coordination, team composition, and diversity effects are still underexplored, limiting comprehensive understanding of how AL fosters team innovation across varied cultural environments.

Organizational level analysis

Ambidextrous leadership at the organizational level

At the broader organizational level, ambidextrous leadership influences innovation primarily by designing appropriate structures, steering resource allocation, and cultivating supportive cultural values. Despite its theoretical importance, direct empirical research at this level is strikingly limited; the majority of existing studies merely extrapolate organizational-level impacts from data collected at the individual or team level instead of examining actual firm-wide innovation outcomes [6, 29]. This scarcity of organization-focused evidence constitutes a major shortfall in fully grasping ambidextrous leadership as a true enterprise-wide capability.

Organizational mediators and moderators

At the organizational level, the effectiveness of ambidextrous leadership (AL) is strongly shaped by structural features. Decentralized authority and flatter hierarchies create the necessary room for leaders to swiftly alternate between opening and closing behaviors, whereas rigid, bureaucratic setups hinder this behavioral agility [6, 46]. High organizational adaptability and the adoption of digital business models further strengthen AL's contribution to building long-term innovation capacity [45]. Resource allocation mechanisms function simultaneously as mediators and moderators: when resources are deliberately balanced between immediate exploitation needs and future-oriented exploration, AL becomes far more effective at sustaining innovation over time [29]. On the cultural side, norms that encourage innovation, accept failure as part of learning, foster psychological safety, and promote trust all magnify AL's influence by giving legitimacy to both exploratory and exploitative efforts at the same time [23, 26, 27]. These enabling factors and potential obstacles at the organizational level are summarized in **Table 9**.

Industry and sectoral variations

The impact of ambidextrous leadership (AL) on innovation varies considerably across industries at the organizational level. In high-innovation industries such as technology, healthcare, and professional services, the connection between AL and firm-wide innovation tends to be much stronger, probably because intense competition and knowledge-worker expectations reward leaders who can seamlessly balance exploration and exploitation [45].

In contrast, traditional manufacturing sectors display weaker and less consistent AL–innovation relationships, with outcomes heavily dependent on the degree of technological sophistication and the volatility of the market environment [26, 27].

Public-sector organizations encounter distinct obstacles—rigid bureaucracy, political pressures, and restricted managerial discretion—that significantly dampen the effectiveness of ambidextrous leadership. However, a supportive internal climate can partially offset these institutional constraints [15, 21].

Important unanswered questions persist regarding the role of organizational size, ownership type (e.g., family firms versus publicly listed companies), and the maturity stage of the industry, all of which restrict the broader applicability of current findings **(Table 10)**.

Table 10. Contextual factors and organizational-level enablers influencing the effectiveness of ambidextrous leadership

Category	Core Takeaways (Fully Rewritten)	Sources
How the organization is built	• Power spread across many units helps leaders juggle innovation and efficiency at the same time • Fewer management layers make it easier to shift between contradictory priorities • Agile, adaptable setups dramatically boost the power of dual-focus leadership • Excessive rules and red tape choke leaders' ability to pivot quickly	[6, 37, 45, 46]
Money, people, and learning systems	• Leaders who master both "opening" and "closing" styles allocate budgets and talent more intelligently • They strike the right mix between today's profits and tomorrow's growth • Solid systems for capturing and spreading knowledge turn leadership style into real results • A strong learning culture converts ambidextrous leadership into breakthrough innovations	[3, 17, 26, 27, 29]
The unspoken rules and atmosphere	• Environments that celebrate new ideas supercharge the impact of leaders who do both exploration and exploitation • When people aren't afraid of punishment for speaking up, bold experiments take off • Deep trust makes employees more willing to follow strict, efficiency-driven orders • Treating setbacks as learning opportunities unlocks fearless trial-and-error	[15, 23, 26, 27, 34]

Toward a Multi-Level integrative framework of ambidextrous leadership and innovation

Drawing on evidence across different organizational levels and research questions, we present a multi-level integrative framework **(Figure 5)** that illustrates how ambidextrous leadership (AL) drives innovation through interconnected mechanisms spanning individual to organizational outcomes. This framework addresses the four research questions by incorporating direct effects (RQ1), mediating processes (RQ2), moderating influences (RQ3), and contextual differences (RQ4) into a single conceptual model. AL is characterized by the interplay of opening behaviors—such as promoting experimentation, granting autonomy, and tolerating mistakes—and closing behaviors, including establishing routines, monitoring performance, and ensuring compliance, forming a dynamic approach that balances exploratory and exploitative activities (C1-C3). To capture AL as a systemic organizational capability, the framework considers three linked levels of analysis, each with its own mechanisms and innovation-related outcomes.

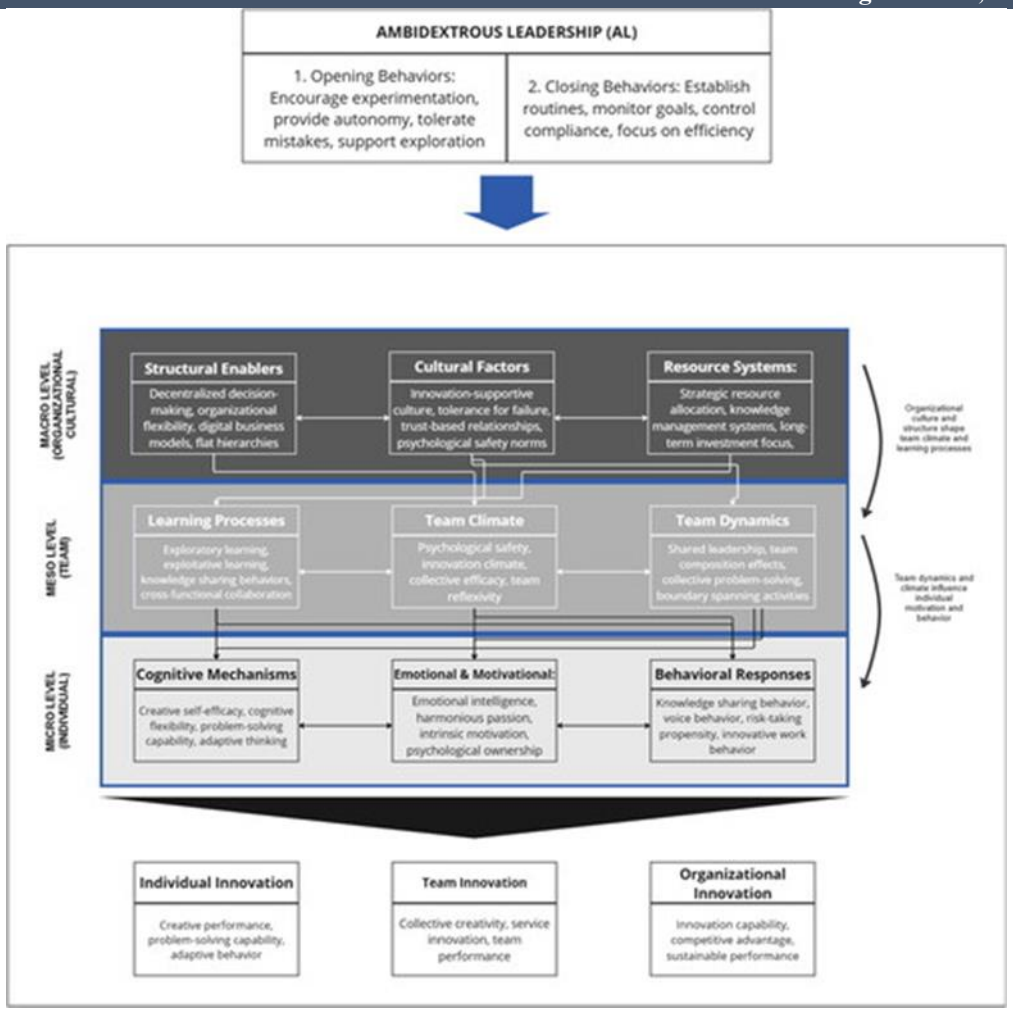

Figure 5. An integrated multi-level framework illustrating how ambidextrous leadership drives innovation, from employee-level innovative work behavior to organization-wide innovation capabilities

1. Micro level (individual)

On a personal level, leaders who skillfully balance exploratory (opening) and exploitative (closing) behaviors promote employees' innovative actions mainly through a set of intermediary processes. These include cognitive pathways such as belief in one's own creative abilities (C7, C23) and mental adaptability (C7); affective pathways involving the capacity to recognize and manage emotions (C5, C26) as well as balanced, non-obsessive enthusiasm for work (C24); and behavioral pathways like actively exchanging expertise (C4, C8) and openly suggesting improvements (C6) [13, 18, 22, 39, 43].

The strength of these links is further influenced by personal characteristics, including the degree of trust and psychological resilience (C9), tolerance for ambiguity (C12), a balanced Zhong-Yong mindset (C10), and the extent to which individuals define themselves by moral values (C11). Across multiple studies, findings clearly indicate that when leaders effectively combine both opening and closing styles, employees display markedly higher levels of creativity and innovation outcomes [12, 25].

2. Meso level (team)

At the team level, the individual abilities shaped by ambidextrous leadership combine to drive group-wide innovation, primarily by strengthening collective learning processes (C19). Specifically, opening leadership encourages experimentation and discovery-oriented learning, whereas closing leadership promotes efficiency-focused and refinement-oriented learning [10, 19]. Key enablers include a psychologically safe environment, team-level ambidexterity (C20), and a supportive organizational climate that rewards innovative efforts (C13). These conditions promote risk-taking, open knowledge exchange, and effective cross-functional cooperation, all of which magnify the positive influence of ambidextrous leadership on team innovation results [16, 17]. Additionally, an innovation-friendly climate strengthens the link between closing leadership behaviors and innovative work behavior (C15), team dynamics are shaped by national cultural differences (C17), and ambidextrous leadership helps mitigate the negative impact of uncertainty within teams (C21).

3. Macro level (organizational/cultural)

Team processes do not operate in isolation; they are deeply influenced by the wider organization. Key structural elements—like flexible and agile designs (C28), digitally transformed business models (C27), and the ability of leaders themselves to adapt quickly (C29)—serve as the critical platform that allows ambidextrous leadership to deliver results [44, 46]. On the cultural side, environments that genuinely reward new ideas (C14) and employees who experience their leaders as both firm and caring (C18) make it possible for risk-taking and disciplined execution to coexist fruitfully. National or organizational cultural values also determine how leadership translates into actual innovative actions (C16), and the way resources are prioritized can either amplify or limit that translation [23, 29]. Additional bridges between leadership and innovation include employees feeling genuine ownership of their work (C25) and the organization's overall strength in learning and adapting.

A multi-level examination shows that ambidextrous leadership only reaches its full potential when personal abilities, group interactions, and company-wide conditions are in sync. The suggested model casts this form of leadership as the core engine of innovation, working both directly and through a variety of indirect channels, with its strength constantly adjusted by surrounding circumstances. In short, it illustrates how the built-in contradictions of balancing exploration and exploitation can be turned into a lasting competitive strength through deliberate, cross-level organizational design.

The model traces a clear upward path: innovative behavior starts with individual employees (the micro foundation). As these personal contributions combine and interact, they give rise to genuine team creativity (meso level), which ultimately builds robust innovation capacity across the entire organization (macro level) [50]. This progression underscores that innovation is both an everyday behavioral pattern and a measurable business outcome that emerges across different scales.

Ambidextrous leadership functions as an organization-wide competence woven through three connected layers, each containing three mutually reinforcing components. At the broadest (macro) layer, formal structures set the stage, cultural norms provide the supportive atmosphere, and resource decisions supply the fuel for sustained innovation [23, 44]. These top-level elements then cascade downward, shaping how teams learn together, how safe they feel to experiment, and how effectively they collaborate [17, 19]. At the individual layer, thinking styles, emotional drivers, and concrete actions come together to produce real innovative effort [13, 18].

The lateral arrows in the diagram highlight top-down influences: company structure and culture mold the team environment, which then directly affects each person's mindset, feelings, and behavior [16, 39]. Within-level connections show the tight linkages inside each layer—structures depend on culture and resources at the top, learning ties closely to climate and collaboration in teams, and cognition, emotion, and action reinforce each other in individuals.

In the end, the entire system produces three interrelated innovation results: stronger personal creativity and adaptability, richer collective idea generation and service improvements at the team level, and durable organizational advantage through superior innovation capability [25, 29].

Potential indicators for future research

The multi-level analysis uncovers important gaps and methodological shortcomings in the current research, highlighting opportunities to expand both theoretical knowledge and practical application of ambidextrous leadership. While evidence supports its effectiveness in enhancing innovative work behavior, several areas remain insufficiently explored, and existing methodological approaches limit a full understanding of its mechanisms and outcomes [1, 8]. **Table 11** presents suggested avenues for future research, organized by dimension, to guide investigations into ambidextrous leadership processes, boundary conditions, and contextual variations across different organizational settings.

Table 11. Potential indicators for future research in ambidextrous innovation and leadership

Dimension	Definition	Suggested Directions for Future Studies	References
Leader actions	Concrete leader practices that alternate between fostering creativity/diversity (opening) and enforcing discipline/alignment (closing) to achieve both innovation and efficiency	• Rhythm and triggers of switching between the two modes • Moment-to-moment behavioral sequences during leadership transitions • How these behaviors vary across national cultures • Forms these behaviors take in fully digital or remote leadership contexts	[7, 10, 25]
Linking processes	The psychological and behavioral pathways that carry the influence of this dual leadership style toward employees' innovative output	• Chain-like (serial) mediation models • Situational factors that make the pathways stronger or weaker • Whether the same pathways work in non-Western settings • Emerging pathways driven by AI, automation, and platform work	[3, 13, 14, 18]
Contingency factors	Personal traits and environmental conditions that amplify or dampen the effect of this leadership approach on innovation	• How personality traits change the strength of the relationship • Differences across age cohorts and generations • Role during organizational crises or high uncertainty • Influence of digital tools and remote-work setups as moderators	[20, 22, 39, 43]

Organizational support systems	Formal structures, norms, and strategies that either enable or hinder leaders in practicing this balanced style	• Supportive elements during digital transformation journeys • Consequences of hybrid and remote work arrangements • Alignment with sustainability and ESG goals • Structures that build organizational resilience in turbulent times	[15, 16, 23]
Cultural influences	Ways in which societal culture shapes how this leadership style is expressed and how well it works	• Direct comparisons between Asian and Western countries • Patterns in collectivist versus individualist societies • Challenges when transferring the style across large cultural gaps • Blending with local or traditional leadership philosophies	[8, 34, 39]
Group dynamics and learning	How teams respond to and transmit the effects of this leadership approach at the collective level	• Effectiveness in distributed and virtual teams • Application in agile, scrum, or sprint-based teams • Dynamics in interdisciplinary or multifunctional units • Impact when AI tools assist team cognition and learning	[10, 17, 19]
Employee mindsets and emotions	Inner states of followers that explain or alter how this leadership style drives innovation	• Role of personal resilience and flexibility • Interaction with hope, efficacy, optimism, and resilience (PsyCap) • Effects of mindfulness and present-moment awareness • Consequences for burnout, engagement, and overall well-being	[18, 21, 39]
Complexity from structure & technology	Advanced organizational forms and cutting-edge digital technologies that redefine how this leadership is practiced	• Leadership in platform and ecosystem-based firms • Combination with blockchain and decentralized governance • Co-leadership between humans and artificial intelligence • Managing ambidexterity across networks and alliances	[44, 46, 47]

These suggested research directions highlight substantial opportunities to advance both the theory and practice of ambidextrous leadership. In particular, they address methodological gaps, such as the heavy reliance on cross-sectional studies and the scarcity of longitudinal research that could capture the evolving dynamics of AL–IWB relationships over time [7, 20]. Future investigations should adopt multi-level and mixed-method designs to explore how ambidextrous leadership functions across individual, team, and organizational levels. Emerging contexts—including digital transformation, remote work, and crisis management—also warrant attention, as they may significantly influence how AL behaviors are enacted and their effectiveness [29, 44]. Furthermore, cross-cultural research is needed to determine whether AL mechanisms operate universally or vary by cultural context, offering practical guidance for implementing ambidextrous leadership in globally diverse organizations.

Discussion

This study provides a significant extension to prior research by demonstrating that the effects of ambidextrous leadership (AL) on innovation extend beyond individual-level outcomes and are deeply embedded within broader organizational contexts. While foundational work by Rosing *et al.* [11] and Zacher *et al.* [2] established the concepts of opening and closing leadership behaviors, and later studies such as Jiang *et al.* [18] and Hafeez *et al.* [13] identified psychological mediators like creative self-efficacy and emotional intelligence, the current research shows how these individual-level processes interact with team dynamics [16] and organizational structures [6]. This approach underscores that individual innovation is influenced by multi-level factors, which earlier research has often overlooked.

A major contribution of this study lies in highlighting underexplored meso-level mechanisms. Whereas previous studies have largely focused on individual cognition or macro-level organizational structures, the role of team-level processes that bridge leadership behaviors and organizational innovation has been less examined. This research emphasizes the importance of team coordination, reflexivity, and boundary-spanning activities as essential pathways through which AL supports collective innovation. Furthermore, team attributes such as psychological safety and a shared learning orientation serve as enabling conditions that can strengthen or weaken the impact of leadership behaviors at the individual level.

In addition, this study incorporates context-sensitive factors that have frequently been neglected in past research. By integrating cultural cognition styles [39], moral identity [43], and national team structures [8], the findings illustrate how the effectiveness of AL in promoting innovative work behavior is shaped by cultural, institutional, and organizational environments. This approach moves beyond Western-centric models and provides a globally relevant perspective, highlighting that the success of ambidextrous leadership depends on the specific societal and organizational context.

Despite the comprehensive synthesis, several limitations should be noted. First, the included studies varied in methodological quality, with some lacking transparency or theoretical depth, which may influence the reliability of the integrated findings.

Additionally, most research is concentrated in certain countries (notably the U.S.) and sectors (especially technology-driven industries), limiting the applicability of results to other settings. Second, while the review employed a thematic synthesis to integrate findings across studies, no formal risk-of-bias assessment or quality appraisal was conducted, which could introduce interpretive bias. Future reviews could enhance rigor by applying tools such as the Mixed Methods Appraisal Tool (MMAT) or GRADE. Nevertheless, the systematic coding and multi-level mapping framework used in this study provides a transparent and replicable approach to synthesizing evidence and guiding future theoretical and empirical work.

Theoretical implications

This research advances understanding of ambidextrous leadership (AL) and its impact on innovative work behavior (IWB) by developing a multi-level integrative framework that links mechanisms operating at the individual, team, and organizational levels. The framework contributes theoretically in several ways. First, it connects constructs across analytical levels and highlights gaps in current literature, particularly at the team (meso) level, where processes like coordination, reflexivity, and boundary-spanning are underexamined. Second, it integrates both direct and indirect pathways, emphasizing that AL's influence depends not only on psychological mechanisms such as passion and ownership but also on structural factors including flat hierarchies and resource allocation practices. Third, the use of construct coding (C1–C29) provides a structured method to synthesize existing knowledge and facilitates cumulative theoretical development.

Additionally, the study responds to calls for contextually informed leadership theory by identifying previously overlooked variables that moderate AL effectiveness, including cultural cognitive styles [39], moral identity [43], and national team configurations [8]. These findings demonstrate how leadership outcomes are shaped by cultural and institutional contexts, extending previous models beyond Western-centric organizations and offering insights that are globally relevant.

While prior research has examined AL-IWB relationships at individual [2], team [10], and organizational levels [6], these analyses often remain isolated within their levels. Comprehensive theoretical syntheses [1] have been limited in cross-level integration. This study addresses that gap by showing how individual cognition, team-level processes, and organizational structures interact to influence innovation outcomes, rather than functioning independently. Unlike conventional narrative reviews that treat contextual factors as secondary, this research positions moderators—such as organizational climate, cultural values, and structural design—as central elements in understanding AL effectiveness. The construct coding system (C1–C29) enables precise mapping of mechanisms and cumulative synthesis, supporting future meta-analyses and theory refinement.

The multi-level perspective also carries implications for organizational decision-making and policy. Leadership development programs often focus on individual skills while neglecting the environmental and structural conditions that enable effective leadership. This framework shows that AL's impact is maximized only when multiple levels are aligned; for instance, trained leaders cannot achieve optimal innovation outcomes if team psychological safety or organizational support is lacking. Organizations can use this model to diagnose innovation gaps: if teams
underperform despite competent leaders, barriers likely lie in structural or climate factors rather than individual deficiencies. For policymakers, particularly in the public sector, structural constraints—such as bureaucratic rigidity or limited autonomy—can weaken AL effects [15, 21], highlighting the need for institutional adjustments alongside leadership training. Cross-cultural insights [8, 39] further indicate that leadership strategies must be tailored to local contexts rather than applied universally, providing guidance for international programs and multinational organizational strategies.

Practical Implications

The multi-level framework developed in this study offers practical guidance for enhancing innovation through leadership interventions across organizational tiers. At the individual level, fostering capabilities such as emotional intelligence, creative self-efficacy, and knowledge-sharing behaviors equips employees and leaders with the cognitive and emotional resources necessary to navigate the dual demands of exploration and exploitation.

At the team level, innovation is strengthened when psychological safety is promoted and both exploratory and exploitative learning are encouraged. Managers can facilitate this by nurturing open communication, reflective practices, and clearly aligned innovation objectives, while preparing team leaders to adjust their behaviors according to task complexity and team composition.

At the organizational level, flexible governance structures and decentralized decision-making support rapid adaptation and innovation. Investments in digital infrastructure and agile business models enhance organizational responsiveness, as observed in high-velocity industries such as telecommunications [45]. A culture that values experimentation, iterative learning, and tolerance for failure further strengthens the translation of AL into sustained innovation [23]. Contextual factors are particularly important in public and cross-cultural environments, where institutional norms, policy frameworks, and societal trust influence leadership outcomes. Public sector organizations benefit from leadership approaches that balance hierarchical requirements with innovation-supportive practices.

To operationalize these insights, **Table 12** provides a set of actionable, level-specific recommendations aligned with the multi-level framework, targeting individual development, team processes, and organizational structures and culture. This roadmap offers organizations a clear strategy for fostering ambidextrous leadership and driving innovative work behavior at all levels.

Table 12. Actionable strategies to foster ambidextrous leadership and promote innovative behaviors at work

Level	Recommendation	Rationale
Micro (individual)	Offer targeted training in emotional intelligence and creative self-efficacy	Strengthens key psychological drivers such as emotional intelligence and self-confidence (C5, C7, C23)
Micro (individual)	Implement peer-to-peer learning sessions and online knowledge-sharing platforms	Facilitates knowledge-sharing processes that mediate the link between AL and IWB (C4, C8)
Micro (individual)	Foster adaptive leadership practices via personalized coaching and ongoing feedback	Promotes dynamic switching between opening and closing leadership behaviors (C1, C2)
Meso (team)	Build team psychological safety and establish routines for both exploratory and exploitative learning	Strengthens collective learning and creates a safe space for experimentation (C19, C20)
Meso (team)	Conduct regular team reflexivity sessions to align group processes with innovation goals	Enhances coordination and reduces ambiguity in team interactions (C21, C22)
Meso (team)	Promote cross-functional collaboration by creating boundary-spanning roles	Breaks down silos and supports the dual (opening/closing) nature of adaptive leadership (C19)
Macro (organizational)	Delegate greater decision-making authority to middle managers leading innovation efforts	Enables adaptive leadership to operate effectively within organizational structures (C27, C28)
Macro (organizational)	Develop an organizational culture that actively rewards experimentation and accepts failure	Creates a cultural foundation that encourages innovation-oriented behaviors (C14, C15)
Macro (organizational)	Build leadership development programs adapted to public-sector and industry-specific constraints	Directly tackles governance and sectoral barriers to innovation (e.g., Akıncı *et al.*, 2022)
Macro (organizational)	Integrate digital transformation initiatives with adaptive leadership to drive business model innovation	Enhances strategic resource allocation and organizational agility (C27, C29)

Methodological contributions and future research

This research contributes methodologically by applying a structured, construct-oriented synthesis that organizes empirical, theoretical, and mixed-method studies across multiple analytical levels. This approach not only enhances transparency in theory development but also makes replication more feasible. By linking coded constructs with visual models **(Figure 4)**, the study provides a basis for future investigations to systematically examine and refine the relationships between ambidextrous leadership (AL) and innovation.

The review also identifies several areas needing further exploration. Mid-level organizational processes—such as team culture, cross-department collaboration, and the dynamics between leaders and followers—remain largely overlooked. Research employing longitudinal designs and multiple data sources is needed to understand how the influence of AL unfolds over time and across organizational boundaries. Moreover, studies that connect individual-level behaviors to broader organizational outcomes could help integrate currently fragmented research. Finally, while the focus here is on innovative work behavior (IWB), future work could investigate how AL impacts wider domains, including digital transformation, sustainability-driven innovation, or stakeholder engagement within complex organizational systems.

Conclusion

This research offers an in-depth examination of how ambidextrous leadership (AL) influences innovative work behavior (IWB) across individuals, teams, and organizations. Based on the analysis of 63 peer-reviewed studies, it responds to four core research questions and proposes a multi-level framework that captures the intricate processes through which AL fosters innovation. The findings indicate that AL, by blending exploratory and directive behaviors, enhances IWB, especially at the individual level. Key mechanisms such as creative self-confidence, emotional intelligence, and knowledge-sharing act as channels through which leadership translates into innovation outcomes. Furthermore, the impact of AL is shaped by contextual factors—including trust, psychological safety, organizational climate, and cultural norms—which determine the intensity and direction of its effects. Differences across industries and cultural settings reveal that organizational and institutional environments influence how effectively AL drives innovation.

From a methodological perspective, this study advances knowledge by using a construct-based coding approach and a visual framework **(Figure 1)** to support clearer theory development and future empirical testing. Practically, the findings offer concrete recommendations for leadership training, team-level practices, and organizational design, adapted to different hierarchical levels and situational contexts. By synthesizing previously disconnected literature, this work provides a more integrated understanding of how ambidextrous leadership promotes innovation in complex organizational systems.

Limitations and Directions for Future Research

Despite its contributions, this study has several limitations that suggest avenues for future investigation. The review relies exclusively on published studies, which may introduce a bias toward significant results, and most included research is cross-sectional, limiting insight into the long-term dynamics and causal pathways of the AL-IWB relationship. While the proposed multi-level framework is conceptually comprehensive, it requires longitudinal validation to track how leadership behaviors and innovation outcomes evolve over time across organizational levels.

Future research should employ experimental or quasi-experimental designs to strengthen causal inferences and examine how organizational and contextual factors—such as industry characteristics, firm size, and technological complexity—moderate the effectiveness of AL. More attention is needed to mid-level organizational processes, including team interactions, cross-functional collaboration, and collective innovation behaviors. Additionally, the growing influence of cultural and institutional factors calls for comparative studies across national and organizational contexts to better understand how leadership practices adapt. Finally, as digital tools and remote work become increasingly prevalent, future studies should investigate how virtual collaboration and digital leadership shape the relationship between ambidextrous leadership and innovative behavior.

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