Journal of Business Research 189 (2025) 115151



Contents lists available at ScienceDirect

Journal of Business Research

journal homepage: www.elsevier.com/locate/jbusres





Ambidextrous leadership: A systematic review and roadmap for future research

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ARTICLE INFO

Keywords:
Ambidexterity
Leadership
Systematic review
Multi-level framework
Qualitative data analysis

ABSTRACT

The main aim of this study is to extend our understanding of ambidextrous leadership. For this purpose, a systematic review of the literature published since 1991 has been conducted to reveal a variety of viewpoints on how leaders manage ambidexterity. A total of 141 articles were included in this study. According to our findings, at the individual level, the role requires that people be both capable and willing to act ambidextrously to foster ambidexterity. At the team level, middle managers' composition and willingness to embrace ambidextrous activities of their leaders are important as their role and behaviors differ significantly from those of top managers. At the organizational level, many factors may affect ambidexterity management, from leaders' personal characteristics to organizational characteristics, such organizational size, structure, strategy, and external environment. This study uses a multi-level framework to explain the concept of ambidextrous leadership, and then proposes future research directions.

1. Introduction

Recent research on ambidexterity has demonstrated its potential to expand our knowledge of how people perceive and manage conflicting demands in organizations (O'Reilly & Tushman, 2011). The term organizational ambidexterity was first introduced by Duncan in 1976 (Duncan, 1976). Later, March (1991) included the notions of exploration and exploitation to explain the ambidexterity concept in more detail (Lavie et al., 2010). March has stated that exploration refers to search, risk taking, experimentation, and innovation in organizations, whereas exploitation has to do with refinement, efficiency, implementation, and execution (March 1991). Since then, his work has received numerous citations, a finding that suggests further research into the concept of ambidexterity is necessary to completely comprehend the extent and nature of its influence (Wilden et al., 2018).[1]

Within this context, however, scholars emphasize that ambidextrous leadership and organizational ambidexterity are two distinct concepts not always related. According to researchers, different organizational levels may need different behaviors on behalf of individuals to manage ambidexterity (Lubatkin et al., 2006; Mom et al., 2007, 2009), as ambidexterity management is important in a different degree for each level (Jansen et al., 2016; Kassotaki et al., 2019; Raisch & Birkinshaw, 2008). If, however, leaders manage to balance explorative and exploitative activities at their organizational level, then ambidexterity may effectively penetrate at the lower organizational levels, resulting in high firm performance outcomes (Kassotaki et al., 2019; Kauppila & Tempelaar, 2016; Lin & McDonough, 2011). Finally, scholars have also stated that as leadership is a multi-level concept (Gooty et al., 2012; Yukl, 2009), the effective balance of explorative and exploitative activities is not only affected by the behavioral aspects of the leader (Koryak et al., 2018), but is also influenced by additional significant moderators, like corporate-, industry- and country-specific characteristics (Jansen, Vera, et al., 2009; Kassotaki, 2019).

Through the years, researchers have stressed their attention on the important role of senior executives in fostering ambidexterity. For example, Tushman and O'Reilly (1997) have initially mentioned that ambidexterity is facilitated by the top management team's internal processes. In the same vein, Volberda, Baden-Fuller and van den Bosch (2001) have further explained this statement and proposed that senior executives can introduce new competencies to some units while maintaining the use of well-developed competencies in others, so creating an appropriate balance between explorative and exploitative activities.

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[1] One of the key reasons for studying organizational ambidexterity is the apparent high firm performance of those firms that are able to successfully achieve a balance between exploratory and exploitative activities (Boumgarden et al., 2012; Kassotaki, 2022).

https://doi.org/10.1016/j.jbusres.2024.115151
Received 22 June 2024; Received in revised form 5 December 2024; Accepted 11 December 2024
Available online 19 December 2024
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Later, other scholars have emphasized how crucial leadership circumstances are for enabling a team to participate in paradoxical cognitive processes (Smith & Tushman, 2005), how significant the team composition is to the firm performance (Beckman, 2006), how important is the role of the TMT behavioral integration in facilitating ambidexterity (Lubatkin et al., 2006), and how significant is the link of leadership styles to explorative and exploitative innovation (Jansen et al., 2008; Jansen, Vera, et al., 2009).

In spite of the abundance of literature on ambidextrous leadership, there is still need for investigation into ambidexterity management at the individual level of analysis (Kassotaki, 2019; Luo et al., 2018), for the investigation of managing ambidexterity at multiple levels (Asif, 2017; Cao et al., 2010; Kassotaki, 2019), and for how ambidexterity is gradually enabled and supported by leadership actions over time (Carmeli & Halevi, 2009; Mathias et al., 2018). The main objective of this study, therefore, is to explain the notion of ambidextrous leadership in more detail through a systematic review of the academic research output and to make propositions for future research in the field. In what follows, we explain our review methodology, we discuss research on ambidextrous leadership, and we propose future research directions.

2. Methodology

The systematic review process of this study consisted of three parts: data collection, data analysis and data synthesis in accordance to the review procedure conducted in the study of Crossan and Apaydin (2010). More specifically, we reviewed the existing literature for the data collection. Then, the data was theoretically analyzed into sections. Among variable qualitative analysis techniques, the pattern matching and explanation building were the ones selected for this review (Crossan & Apaydin, 2010; Yin, 2018). Based on the data analysis, we identified two levels in research about how leaders manage ambidexterity. These levels were then mapped onto a conceptual framework consisting of two sequential components: ambidextrous leadership on the micro-level and ambidextrous leadership on the macro-level. Overall, in this study we used systematic data collection processes, qualitative data analysis techniques and data synthesis of the selected research output (Denyer & Tranfield, 2009; Knight & Parker, 2019; Tranfield et al., 2003).

In this work, we define ambidextrous leadership as the management of organizational ambidexterity by senior executives. This definition brings together the fragmented research on the following topics: executive strategic human resource management in the management of ambidexterity; management of exploration and exploitation activities by top management teams; strategic leadership in the management of organizational ambidexterity; paradoxical leadership in the balancing of explorative and exploitative activities; and ambidextrous leadership. All these diverse studies have a common characteristic, which is the management of organizational ambidexterity by senior executives.[2]

When identifying articles for our study, the electronic database of Web of Science was used, as it is one of the most comprehensive databases of peer-reviewed journals in the social sciences (Crossan & Apaydin, 2010). The search terms were "ambidextrous leadership", "managers and ambidexterity", and "top management teams and ambidexterity". All articles included in this review were peer reviewed, written in English and the years for articles used in our study at the time of the research were from 1991 to 2024 (10th June). The start date was the year of publication of the milestone article of March (1991) on exploration and exploitation. The articles included in this study were restricted to journals included in the Financial Times list.[3] This was a measure to conduct a quality assessment of the retrieved research output. As a result, all articles had a large number of citations, a fact that indicates the impact and scientific importance of papers, while also reflecting the caliber of the field's study (Aksnes et al., 2019).

The triangulation of the papers was conducted through an additional search in the sites of the top journals to assure the validity and reliability of the search strategy (Carter et al., 2014). Articles from other top journals, outside the Financial Times list, were also added to achieve data saturation. These journals are *The Leadership Quarterly, Journal of Business Research, Long Range Planning,* and *European Management Journal.* Data saturation technique is used in qualitative studies to reach, through a large sample size, that point at which little or no new information can emerge through additional data to address the research question (Guest et al., 2020; Mwita, 2022).

3. Results

The search strategy resulted in 1,101 articles. A total of 141 articles were included in this study, while 960 articles were excluded. The reasons for exclusion were that the articles were not published in the aforementioned journals, and/or they had unfit title, abstract or full text, and/or they had low number of citations.

More specifically, the procedure was the following. After the first screening of the articles, we have included highly cited papers (both theoretical and empirical) while also excluding duplicate articles or articles with an irrelevant title, and/or abstract. After the second screening, we have included more recent articles, published in the last two years, while excluding articles which had an irrelevant text of the topic under review. Fig. 1 below provides the flow diagram of the systematic review.

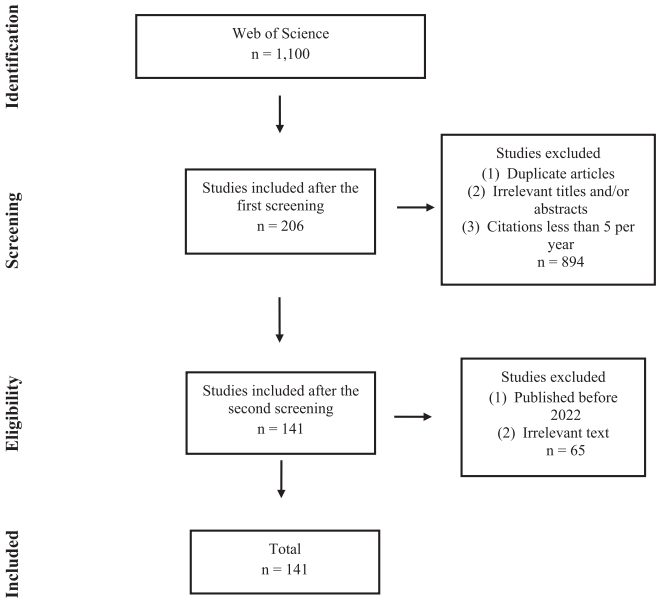


Fig. 1. A flow diagram of the systematic review.

[2] In their work, Klonek et al. (2023) use the definition of ambidextrous leadership proposed by Rosing et al. (2011) as "the complementary engagement in two distinct types of leadership activities, where ambidextrous leaders switch between opening and closing behaviors in consideration of the continuously changing task demands". In our study, we use a multitude of studies with diversity of theories, such as strategic leadership, transformational leadership, transactional leadership, paradox theory etc. to describe contradictory leadership behaviors (i.e. ambidextrous leadership behaviors). These studies use different empirical research designs to test those theories. Therefore, we go beyond the opening and closing behaviors to describe ambidextrous leadership by using other theories as well.

[3] For more information please see: https://www.ft.com/content/3405a512-5cbb-11e1-8f1f-00144feabdc0 (Accessed on 14 June 2024).

We then divided our research output into three groups. The first group consisted of theoretical papers, including review articles and *meta*-analyses. The second group included quantitative and qualitative papers with more than 5 citations. The third group consisted of the recently published articles (2022–2024), regardless of being theoretical, quantitative, or qualitative. Duplicate articles were removed from the start. Below follows the analysis of our methodology for each of the groups (see Table A1).

1. Group 1 – Theoretical papers: This search yielded 18 papers. In this group, except for review articles, *meta*-analyses or highly cited conceptual papers, we have also included book chapters. Purely descriptive studies (with no methodology section) or narrowly focused articles (e.g., in the healthcare sector, creative industries etc.) were excluded from this work.

2 Group 2 – Highly cited papers: After reading the titles and the abstracts, in this group we have included 105 papers, which had at least 5 citations per year

3. Group 3 – Recent papers (2022–2024): In this group we have included 18 recent papers. Despite their recency, some of the papers have already been cited more than 5 times. Fig. 2 below shows the growth of research on ambidextrous leadership, which has contributed either to the theory development or to the theory testing of the research on the management of explorative and exploitative activities by senior executives.

According to our sample, the increase in the research output on ambidextrous leadership has been observed since 2004. The average number of publications in top journals since that date was 8 articles per year. Theoretical papers represented about one eighth of the sample (13 per cent), with the largest share being that of empirical papers (87 per cent). Reviews and *meta*-analyses represented the smallest share (5 per cent). The number of citations of theoretical and highly cited papers since 2004 was 3,824 on average per year, and 495 on average per article.

When describing strategic leadership and organizational learning, Vera and Crossan (2004) have proposed a theoretical model in their study, while incorporating both a multi-level view of learning, which takes place at the individual, group and organization levels, and three contextual variables, such as environment, prior firm performance and stage of organizational life. Accordingly, Crossan and Apaydin (2010) in their work on organizational innovation have adopted a multi-dimensional framework, while using the two most frequently used dimensions, which are the level of analysis (micro- to macro-) and the type of innovation. In line with these studies, in our work we have adopted a multi-level approach to ambidextrous leadership (see Kassotaki, 2019). When analyzing our data, we have divided the research output into the following two levels: micro-level (individual and group) and macro-level (organization and environment) (see Fig. 3). However, these levels are neither exhaustive, nor systematic (Klein et al., 1994; Mueller et al., 2020; Turner et al., 2013). We have also identified some additional contingency factors that influence leadership actions, including business processes (Crossan & Apaydin, 2010), culture, and perceived environmental volatility (Waldman & Yammarino, 1999).

Our analysis of the empirical research (both highly cited and recent papers) revealed that ambidextrous leadership on the micro-level of analysis represented 51 % of the papers, the macro-level represented 24 % of the articles, while the multi-level corresponded to 25 %. Research on ambidextrous leadership involved scholars from several disciplines and areas of specialization, including leadership, human resource management, organizational behavior, and psychology on the micro-level, management, strategy, and entrepreneurship on the macro-level, and strategic management on the multi-level.

Our analysis of the theoretical content proceeded in steps. First, we reviewed the spectrum of the theoretical lenses used in Groups 2 and 3 (highly cited and recent papers), organized them by level (micro-, macro- and multilevel), and summarized the findings (see Table A2). We, then, synthesized the research output of our sample, while also including Group 1. We concluded by identifying gaps and inconsistencies, which we discuss in the final section.

4. Discussion

There are two streams of research on ambidextrous leadership. While the one stream emphasizes the role of the individual actor on the micro-level, the other stream seeks to achieve a balance between individual actions and organizational factors on the macro-level (Birkinshaw & Gupta, 2013; Jansen, Vera, et al., 2009; Junni et al., 2015; Kassotaki, 2019; Lavie et al., 2010; Mueller et al., 2020; Turner et al., 2013).

Existing theoretical models of ambidextrous leadership emphasize how important it is for senior teams and managers to be ambidextrous to achieve sustainable organizational performance. Scholars argue, though, that one of the hardest managing tasks can be the achievement of this - right mental balancing act – the active exploration of new opportunities, while diligently exploiting existing capabilities (Tushman & O'Reilly,

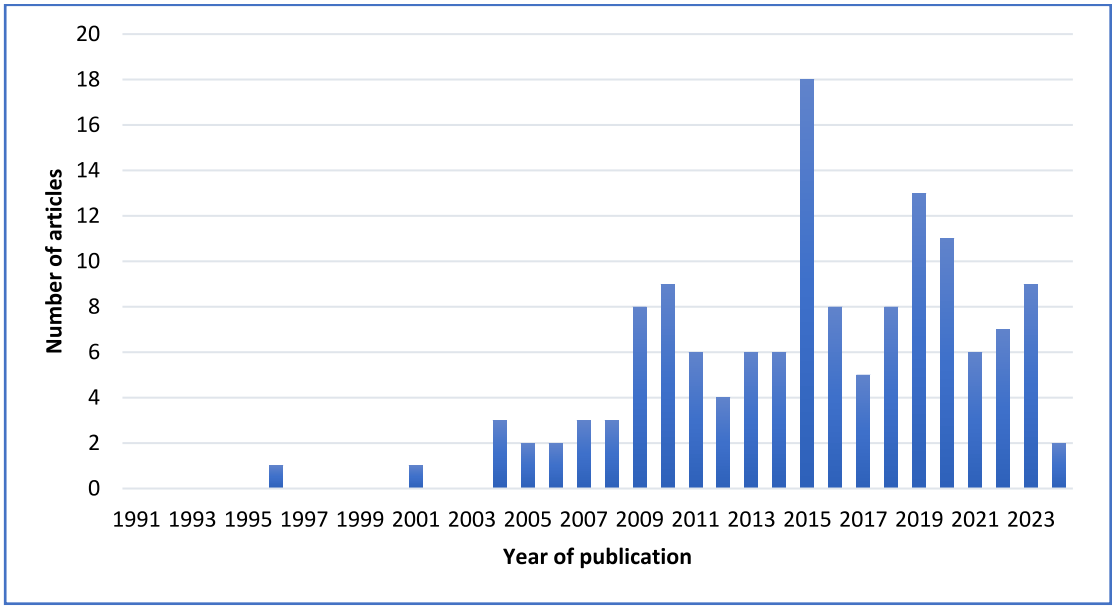


Fig. 2. Research Output on Ambidextrous Leadership.

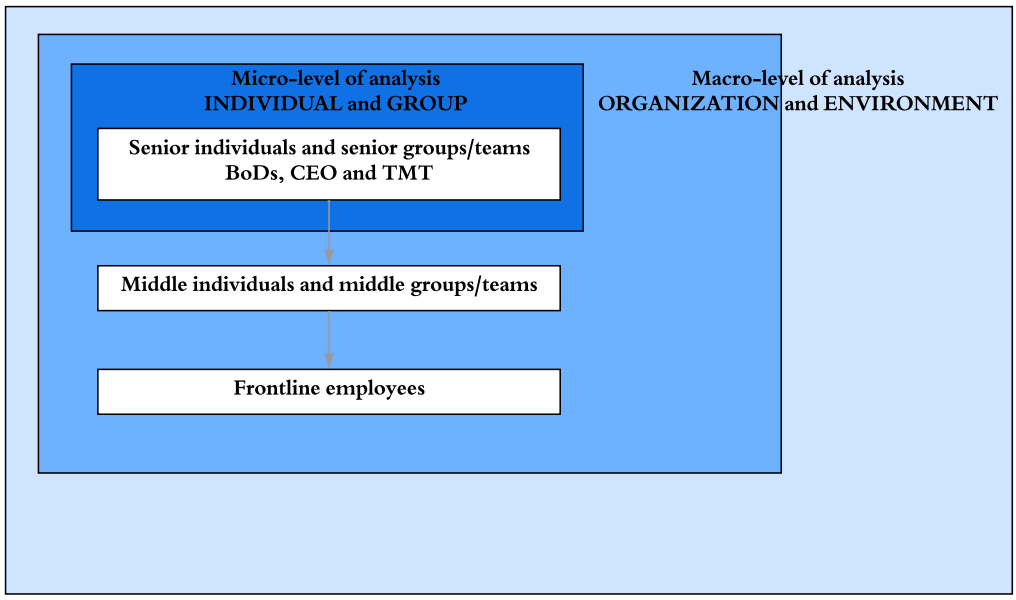


Fig. 3. Multilevel Framework of Ambidextrous Leadership (The antecedents in this relationship are incorporated in both the highest management (ambidextrous leaders) as well as the organizational and external environment. The mediators of this relationship are again the highest management (ambidextrous leaders). The consequences are the products or services that result from ambidextrous actions of all the individuals (see also (Volberda et al., 2010)).

1996). They further explain that in order for leaders to be successful at ambidexterity, they must be able to plan how resources are distributed between the traditional and novel business areas (Smith et al., 2016; Tushman et al., 2011; Tushman & O'Reilly, 2013). They must also support their subordinates (Rosing et al., 2010), even if these subordinates are not ambidextrous themselves (O'Reilly & Tushman, 2004).

Finally, they need to be able to tolerate and resolve the tensions that result from different alignments, have a strong strategic intent, a shared vision and values, and distinct but aligned organizational architectures (business models, structure, incentives, metrics, and cultures) (Lechner et al., 2010; O'Reilly & Tushman, 2011; Smith & Tushman, 2005). Ambidextrous leaders, therefore, require a wide variety of behaviors, because the significance of such behaviors changes not only over time but also in different settings. Depending on the context, ambidextrous leadership can take on several forms. For instance, a national culture might encourage or inhibit innovation in different ways (Bledow et al., 2011).

Scholars employ a variety of conceptual models to further explain how ambidextrous leadership works. Nemanich, Keller and Vera (2007), for instance, have employed a structuration theory to show how senior executives may use exploration and exploitation to guide their company's new product development strategy (NPD). They have underlined the effectiveness of transactional leadership in keeping a steady strategic course while describing how senior executives' transformational leadership behaviors can be helpful in managing the paradox of an NPD strategy's explorative or exploitative activities. Similar to this, Alexander and Van Knippenberg (2014) have utilized a state goal orientation theory to explain the processes of team innovation. They have explained that teams working on radical rather than incremental innovations run a higher chance of failure and they face a higher degree of uncertainty. They frequently run across obstacles that force them to work together to overcome these obstacles to keep the project going forward and avoid termination.

4.1. Ambidextrous leadership on the individual level of analysis (micro-Level)

4.1.1. Senior individuals

Scholars also employ empirical data to describe ambidextrous leadership. On the individual level of analysis, they argue that dominant leadership hinders explorative activities (Matsuo, 2022), whereas supportive leadership promotes ambidextrous actions (Gibson & Birkinshaw, 2004; Hu et al., 2020; Sariol & Abebe, 2017). From this angle, neither formal organizational structures, nor strong cultures, nor even charismatic leadership are the primary means of achieving superior business-unit performance. Instead, it is accomplished by constructing a carefully chosen collection of processes and systems, which together provide a framework supporting the simultaneous growth of the *meta*-capabilities of alignment and adaptability and, consequently, business-unit performance (Gibson & Birkinshaw, 2004).

Other scholars use paradox theory to describe how individuals manage to achieve a balance between explorative and exploitative activities (Ambos et al., 2020; Beletskiy & Fey, 2021; Hahn et al., 2016; Lewis et al., 2014; Smith, 2014; Smith et al., 2010; Zhang et al., 2015). Paradoxical leadership refers to individuals who engage in competing while interrelated behaviors to satisfy structural and follower needs simultaneously and over time (Atuahene-Gima, 2005; Pearce et al., 2019; Pradies et al., 2021; Wei et al., 2023; Zhang et al., 2015). This leadership must be able to make judgments depending on the circumstances of the situation, adhere to visions and goals, and foster creative thinking in order to effectively manage complex business environments (Revilla & Rodríguez-Prado, 2018; Shao et al., 2019; Smith et al., 2010).

Researchers also employ other empirical models to describe how individuals promote ambidexterity (Billinger et al., 2021; Han et al., 2022; Harrison et al., 2024; Van Doorn et al., 2022). For instance, Zhang, Cao and Tjosvold (2011) have used a conflict management approach to connect transformational leadership with team performance and ambidexterity management (for similar work see Jansen et al., 2008; Nemanich and Vera, 2009; Zacher and Rosing, 2015). They have shown in their study that transformational leadership can improve team coordination and, in turn, team performance by motivating teams to resolve conflicts in a cooperative rather than a competitive manner for the good of all involved. Other scholars have used psychological models and behavioral strategy literature to link leaders' regulatory focus with exploration and exploitation (Kammerlander et al., 2015; Kiss et al., 2020; Tuncdogan et al., 2015). For instance, Kammerlander et al. (2015) have shown that a CEO's promotion focus has a beneficial impact on the firm's engagement in both exploration and exploitation, whereas a CEO's prevention focus has a negative impact on the firm's exploration but has no apparent connection with its exploitation (for similar work on the team level see Tuncdogan et al., 2017). Other researchers have used

unabsorbed slack resource deployment in relation to exploration and exploitation innovation (Tabesh et al., 2019). For example, Tabesh et al. (2019) have shown that when it comes to unabsorbed slack deployment, the features of the upper echelon are important. Slack deployment is influenced by technical education, background breadth, and CEO tenure, while unabsorbed slack produces different effects on exploration and exploitation.

Finally, scholars have also examined the cognitive processes that allow decision makers to move between making exploitative and explorative decisions (Annosi et al., 2024; Huang et al., 2021; Kiss et al., 2020; Laureiro-Martínez et al., 2015; Mammassis & Kostopoulos, 2019; Mazzelli et al., 2020; Zimmermann et al., 2020). For instance, Laureiro-Martínez et al., (2015) have found that exploitation uses reward seeking brain regions to track and assess the value of present choices, while exploration uses attentional control brain regions to track the value of alternative choices. A greater activation of the attentional control-related brain regions enables people to perform better when making decisions (Laureiro-Martínez et al., 2015).

4.2. Ambidextrous leadership on the group level of analysis (micro-level)

4.2.1. Senior groups/teams

On the group level of analysis, researchers have focused their attention on how team members influence leadership actions when promoting ambidexterity (Li et al., 2023; Malik et al., 2019; Pattinson et al., 2023; Úbeda-García et al., 2018). Many scholars have examined the heterogeneity of board of directors and senior executives. Studies have indicated that when the board of directors' functional background heterogeneity is taken into account in the strategy-making process, their knowledge resources are a significant factor in the organization's relative exploration orientation (Heyden et al., 2015; Oehmichen et al., 2017). In the same vein, senior executives' heterogeneity decreases the influence of obtaining advice from both internal and external sources on exploratory innovation (Alexiev et al., 2010).

Researchers have also examined other moderators, such as members' diverse prior company affiliations (Beckman, 2006), team cohesion and efficacy (Jansen et al., 2016), functional and age diversity (Garcia-Granero et al., 2018), team size and invention experience (Wang et al., 2017), cognitive structure and processes (Heavey & Simsek, 2014; van Neerijnen et al., 2022; Wilms et al., 2019), shared leadership (Knight & Cuganesan, 2020; Mihalache et al., 2014), behavioral integration (Carmeli & Halevi, 2009; Lubatkin et al., 2006; Luo et al., 2018; Venugopal et al., 2020), social networks (Cao et al., 2010; Fernández-Mesa et al., 2023; Heavey et al., 2015; Rogan & Mors, 2014), company shareholdings (Gedajlovic et al., 2012), corporate governance orientation (Kwee et al., 2011), and strategic planning (Posch & Garaus, 2020). They have found that all these moderators are important for team's strategic renewal and ambidexterity, both of which influence corporate longevity.

4.3. Ambidextrous leadership on the organizational level of analysis (macro-level)

4.3.1. Middle individuals and middle groups/teams

Effective middle managers have distinct priorities from top managers (Yukl & Mahsud, 2010), which means that their roles and behaviors differ significantly (Andriopoulos & Lewis, 2009; Greven et al., 2023; Papachroni et al., 2016; Vera & Crossan, 2004). According to research, formalization of a managers' tasks has little effect on their ambidexterity, while managers' decision-making authority has a positive relationship with ambidexterity (Mom et al., 2009). Further investigation has revealed that frontline managers' configuration practices carry a notably greater weight than top managers' initial design decisions. To handle exploration–exploitation tensions in their everyday activities, frontline managers employ these practices to continuously adapt and align the organizational contexts of their efforts (Hirst et al., 2018; Mom et al., 2009; Ossenbrink et al., 2019; Taylor & Helfat, 2009; Zimmermann et al., 2015, 2018). They also make use of personal and contextual factors including social capital, a holistic professional orientation, and professional legitimacy (Burgess et al., 2015) in addition to diverse behavioral demands such as role segmentation and integration (Tempelaar & Rosenkranz, 2019) to promote ambidexterity.

Research on managing ambidexterity across organizational levels has revealed that middle managers' exploitative and explorative information exchange is crucial for the long-term firm performance (Im & Rai, 2008; Kang & Snell, 2009; Prieto & Pérez Santana, 2012). For example, their explorative activities benefit from bottom-up and horizontal information inflows from peers and employees, and their exploitative activities benefit from top-down knowledge inflows from senior executives (Chen et al., 2016; Knight & Paroutis, 2017; Mom et al., 2007, 2019).

4.3.2. Frontline employees

On the employee level, research has shown that psychological variables and the group managers' paradoxical leadership can predict employees' ambidextrous behavior (Bidmon & Boe-Lillegraven, 2020; Boemelburg et al., 2023; Jasmand et al., 2012; Kauppila & Tempelaar, 2016; Oluwafemi et al., 2020; Rosing & Zacher, 2016; Zacher et al., 2016; Zhang & Liu, 2022). For instance, ex-ante incentives, which are based on past performance, and ex-post incentives, which are based on future performance, have the potential to affect employees' productivity, motivation, and performance while also making them feel - comfortable. This can help create an ambidextrous environment (Ahammad et al., 2015). Also, when employees perceive formalization (in the form of written guidelines, protocols, and directives) and technological turbulence (in the form of fast and unpredictable technological changes) as high, their ambidexterity is at its highest level (Boemelburg et al., 2023; Folger et al., 2022).

4.4. Ambidextrous leadership on multiple levels

Finally, when examining ambidextrous leadership from multiple levels, many scholars express the opinion that the concept of strategic leadership can be utilized to describe how firms manage ambidexterity (Simsek et al., 2015). Strategic leadership is used to describe the actions of top management teams, chief executive officers, and boards of directors. This concept emphasizes leadership behaviors from both the micro- and macro- perspectives (Crossan et al., 2008; Samimi et al., 2022).

At the micro-level of analysis, scholars describe ambidexterity management using transformational and transactional leadership styles (Wang et al., 2023; for alternative leadership behaviors see Klonek et al., 2023; Rosing et al., 2011), while at the macro-level, they use specific variables, including the external environment, organizational size, structure, and strategy (Jansen, Vera, et al., 2009; Kassotaki et al., 2019; Qian et al., 2013; Volberda et al., 2001). Additionally, some studies use a multi-dimensional framework of dynamic capabilities to describe contextual ambidexterity and long-term firm performance (Eisenhardt et al., 2010; Farzaneh et al., 2022; Havermans et al., 2015; Teece, 2014), while others use short-term and long-term tensions to explain temporal ambidexterity (Wang et al., 2019).

In terms of size, it appears that larger firms require transformational leadership to compensate for their complexity, while smaller, less complex organizations seem to benefit from transactional leadership in realizing innovation (Kahn & Candi, 2021; Vaccaro et al., 2012). Depending on the structure, formal organizational integration procedures and informal senior team interactions appear to have a direct impact on managing ambidexterity (Jansen, Tempelaar, et al., 2009). It also appears that organizations frequently move towards efficiency over time. As a result, unbalancing in favor of flexibility is necessary for achieving a balance between efficiency and flexibility (Eisenhardt et al., 2010).

In addition, ambidextrous leaders adjust their approaches within a company to prioritize either exploration or exploitation based on external factors (Gieske et al., 2019; Havermans et al., 2015; Kassotaki,

2019). For instance, during the first stage of organizational change, an authoritarian management style is more appropriate to promote exploitation learning, whereas during the second stage, a more participatory management style is more appropriate to promote exploration learning. Therefore, in the initial stages, exploration and exploitation occur sequentially rather than simultaneously (Dixon et al., 2007).

Researchers have also employed other complex models and multilevel methodologies to explain the positive or negative relationship between leadership behaviors and ambidexterity (Patel et al., 2013; Stokes et al., 2015). For example, the attention-based view of the firm has been used to explain, in terms of the principles of focus of attention, situated attention, and structural distribution of attention, how top management teams manage ambidexterity within the framework of an organization (Koryak et al., 2018). In environmentally dynamic contexts, scholars have used cognitively sophisticated, single solutions (Eisenhardt et al., 2010; Good & Michel, 2013; Osiyevskyy et al., 2020), and behavioral integration mechanisms (Halevi et al., 2015; Katou et al., 2021; Meglio et al., 2015) to describe how senior executives effectively balance efficiency and flexibility. Finally, researchers have examined how organizational and functional tenure (Mom et al., 2015), as well as intellectual capital facets (Kostopoulos et al., 2015), such as human, social, and organizational affect unit ambidexterity.

5. Future research directions

Despite the large number of studies on ambidextrous leadership that have been published, the findings can at times be contradictory and challenging to understand (Junni et al., 2015; Mueller et al., 2020). The concept of ambidextrous leadership combines two research fields: leadership and ambidexterity (Mueller et al., 2020). Consequently, the state of confusion might be ascribed to the discrepancies noted in these two domains, including problems with definition (Mueller et al., 2020; Tushman & O'Reilly, 2013), differences in approaches (e.g., transformational and transactional leadership, opening and closing behaviors) (Kassotaki, 2019; Rosing et al., 2011), the existence of different types of ambidexterity on the individual level (e.g., contextual and sequential) (Raisch et al., 2009), the difficulty to measure ambidexterity from a static or a dynamic perspective (Mathias et al., 2018), the simplistic explanations (Eisenhardt et al., 2010), and the narrow focus of most research (Andriopoulos & Lewis, 2009). In order to address some of the aforementioned issues, we suggest the following future research avenues for the study of ambidextrous leadership.

5.1. Strategic leadership

When discussing whether and how ambidexterity adds value, it is important to establish an association between leadership and firm performance. But a limitation of most studies on the effects of leadership skills and behaviors is that they rely more on the subjective assessments of efficacy provided by subordinates than they do on objective metrics of team or firm performance. Another prevalent shortcoming is the failure to assess a wide range of behaviors and context-related variables (Rogan & Mors, 2014; Yukl & Mahsud, 2010).

Different settings call for different levels of ambidexterity from leaders. The variance is contingent upon individual characteristics and the organizational environments in which they operate. When managing competing demands, individuals may choose to pay attention to these demands simultaneously or sequentially. Sequential ambidexterity is easier to attain on an individual level than simultaneous one, as it allows for greater attention and lowers the possibility of confusion (Raisch et al., 2009).

There are currently few studies examining the cognitive processes that CEOs use to manage ambidextrous activities (5 % of our sample). Also, there are few studies that deal with the dominant or supportive leadership of CEOs in the promotion of organizational ambidexterity (3 % of our sample). Additional investigation is needed to determine the influence of ambidextrous leadership on unit performance, as well as how this influence differs depending on the context and managerial level. More studies are also needed to examine ambidextrous leadership in similar firms across various industries. These studies could examine leaders who successfully or unsuccessfully handle trade-offs and conflicting demands, or they might entail survey research that connects patterns of behavior among leaders to measures of effective leadership (Yukl & Mahsud, 2010). Finally, studies that examine the role of BoDs in the promotion of ambidexterity are also required.

5.2. Multiple levels of analysis

The level issue is a challenging one. The understanding of a multilevel ambidextrous leadership has been limited by studies conducted at a single level within an organization. According to our sample, a single level of analysis — individual, group, or organizational — was used in 75 % of the published studies on ambidextrous leadership.

At the higher level of analysis, individual role requires that the person is both able and willing to be ambidextrous (Tushman & O'Reilly, 1996). Whether a person will engage in such activity depends on the specific job characteristics (Garcia-Granero et al., 2018; Mom et al., 2015). At the team level, because the resources (knowledge, skills, and abilities) primarily reside with the team members and in their willingness to embrace the explorative and exploitative activities of their leaders (Anderson et al., 2004; Kwee et al., 2011; Luo et al., 2018), team composition (heterogeneity) is most important (this depends on the team structure, cohesion, climate, culture etc.) (Heyden et al., 2018). At the organizational level, ambidexterity management is probably the most complex level of analysis. Here, the management of ambidexterity may be affected by a variety of factors, ranging from personal characteristics like the CEO's open-mindedness, to organizational characteristics like organizational structure, strategy (Crossan et al., 2008; Kassotaki, 2019), and culture (Bledow et al., 2011).

The utilization of practice-based view theory (PBV), therefore, which integrates the individual, company, contextual, and process variables commonly found in the literature, may be an effective method to combining micro- and macro-levels (Bromiley & Rau, 2014; Crossan & Apaydin, 2010).

5.3. Dynamic ambidextrous leadership

As organizational life is becoming more and more dynamic, a firm's ability to adjust to changing environmental conditions across time is essential to its long-term firm performance. However, when measuring ambidexterity, while the static measurement makes data collecting easier, treating ambidexterity as a static construct ignores environmental changes that could lead managers to reconsider their efforts more heavily on exploration or exploitation (Mathias et al., 2018). Using time as a key variable might help overcome difficulties in static conceptualization and measurement by improving analysis of dynamic processes related to ambidexterity management (Raisch et al., 2009; Raisch & Tushman, 2016). Therefore, additional research is required to understand how ambidextrous leadership changes with time, how it allows leaders to manage competing demands while adjusting to new situations, and how it helps organizations perform well and survive. Longitudinal research could be utilized to determine the skills and behavioral patterns of leaders who effectively adapt to shifting circumstances while remaining in the same position as conditions change (Luger et al., 2018; Raisch et al., 2009; Yukl & Mahsud, 2010). Dynamic capabilities view could also be employed to reveal how leaders align their knowledge practices to develop dynamic capabilities when pursuing innovation ambidexterity (Farzaneh et al., 2022).

In Table 1 below, we present a list of some suggested research questions when studying ambidextrous leadership. There is also reference to protentional contributions that could arise from addressing those questions.

Table 1
List of some suggested research questions and potential contributions.

Research questions	Potential contributions
Ambidextrous Leadership on the Individual Level of Analysis (Micro-Level)	
Senior individuals	
• What are the cognitive processes CEOs use to manage ambidextrous activities? • What is the dominant or supportive leadership of CEOs in the promotion of organizational ambidexterity?	• Examination of the cognitive processes that CEOs use to manage ambidextrous activities. • Examination of the dominant or supportive leadership of CEOs in the promotions of ambidexterity.
Senior groups/teams	
• What is the role of BoDs in the promotion of ambidexterity? • How ambidextrous leaders influence unit performance depending on the context and managerial level? • What are the differences between ambidextrous leadership activities in similar firms across various industries? • How ambidextrous leadership changes with time? How can patterns of behavior be examined through the use of survey research to measure effective leadership? • How leaders successfully or unsuccessfully handle trade-offs and conflicting demands over time? How are these dynamic processes carried out? • How ambidextrous leadership allows leaders to manage competing demands while adjusting to new situations, a fact that helps organizations perform well and survive? • How can the behavioral patterns of leaders be examined through the use of longitudinal research design to determine whether they effectively adapt to shifting circumstances while remaining in the same position as conditions change? • How can the dynamic capabilities view be used to examine effective ambidextrous leadership? • How can leaders align their knowledge practices to develop dynamic capabilities when pursuing innovation ambidexterity?	• Examination of the role of the BoD in the promotion of ambidexterity. • Investigation of the influence of ambidextrous leadership on unit performance, depending on the context and managerial level. • Examination of ambidextrous leadership activities in similar firms across various industries. • Examination of how ambidextrous leadership changes with time. Use of survey research to examine patterns of behavior among leaders to measures of effective leadership. • Examination of how leaders successfully or unsuccessfully handle trade-offs and conflicting demands over time. Examination of the dynamic processes related to ambidexterity management. • Examination of ambidextrous leadership in allowing leaders to manage competing demands while adjusting to new situations, a fact that helps organizations perform well and survive? • Use of longitudinal studies to determine the skills and behavioral patterns of leaders who effectively adapt to shifting circumstances while remaining in the same position as conditions change. • Use of dynamic capabilities view to examine effective ambidextrous leadership. • Examination of the alignment of leadership knowledge practices when pursuing innovation ambidexterity.
Ambidextrous Leadership on Multiple Levels	
How can practice-based view theory (PBV) be used to examine ambidextrous leadership from multiple levels?	• Use of practice-based view theory (PBV) in the examination of ambidextrous leadership from multiple levels.

5.4. Limitations

There is no study without limitations. This study is no exception. Even though we have conducted a thorough search of the literature using bibliographic databases, bias in the selection of studies may have arisen because not all relevant research on our subject has been found or examined (Boutron et al., 2019). There may have also occurred risk of bias in assessing studies during our quality assessment step (by using the number of citations), which is a defining characteristic of systematic reviews (Drucker et al., 2016). Finally, because the thematic analysis is by its very nature interpretive and involves biases and judgments, it might have affected the accuracy of our data presentation (Mackieson et al., 2019). We must stress that we have used a large sample size to reduce the possibility of random error and enhance the reliability of our review. In this way, the results have become more representative of the population (Akobeng, 2016).

6. Conclusion

This research conducts a thorough systematic review of the literature, compiling 141 theoretical and empirical studies into two distinct research streams: ambidextrous leadership on the micro-level and ambidextrous leadership on the macro-level. It classifies the existing research, exposes new perspectives on ambidextrous leadership across organizational levels, and creates an agenda for future research that builds upon and integrates existing knowledge (Alegre et al., 2023). It uses a thematic analysis and synthesis technique to combine the studies. Thematic synthesis is presented as an established method that upholds conventional key elements of systematic reviews by maintaining an explicit and transparent relationship between conclusions and the text of original research (Thomas & Harden, 2008). The study also proposes a definition of ambidextrous leadership to integrate the diverse research and to resolve some of the discrepancies observed in the field (Mueller et al., 2020). As such, the study is willing to accept the complexity of the subject without seeing the need to oversimplify (Alegre et al., 2023).

CRediT authorship contribution statement

Olga Gianzina: Writing – review & editing, Writing – original draft, Methodology, Investigation, Conceptualization. **Sotirios Paroutis:** Writing – review & editing, Supervision.

Appendix

Table A1
Analysis of the Methodology for Each of the Groups.

Theoretical papers

n	Authors	Year	Title	Research design	Number of citations until June 2024	Journal/Book
1	Tushman & O' Reilly	1996	Ambidextrous organizations: Managing evolutionary and revolutionary change	Conceptual	7457	California Management Review
2	O' Reilly and Tushman	2004	The ambidextrous organizations	Conceptual	3998	Harvard Business Review
3	Smith and Tushman	2005	Managing strategic contradictions: A top management model for managing innovation streams	Conceptual	3246	Organization Science
4	Nemanich et al.	2007	Managing the exploration/exploitation paradox in new product development: How top executives define their firms innovation trajectory	Conceptual	50	International Journal of Innovation and Technology Management
5	Lavie et al.	2010	Exploration and exploitation within and across organizations	Qualitative review	2184	Academy of Management Annals
6	Rosing et al.	2010	Ambidextrous leadership in the innovation process	Book chapter	95	Innovation and International Corporate Growth
7	Bledow et al.	2011	Ambidextrous leadership for innovation: The influence of culture	Book chapter	122	Advances in Global Leadership
8	Rosing et al.	2011	Explaining the heterogeneity of the leadership-innovation relationship: Ambidextrous leadership	Review and *meta*-analysis	1633	The Leadership Quarterly
9	O' Reilly and Tushman	2011	Organizational ambidexterity in actions: How managers explore and exploit	Conceptual	996	California Management Review
10	Tushman et al.	2011	The ambidextrous CEO	Conceptual	244	Harvard Business Review
11	Turner et al.	2013	Mechanisms for managing ambidexterity: A review and research agenda	Qualitative review	706	International Journal of Management Reviews
12	Tushman & O' Reilly	2013	Organizational ambidexterity: Past, present and future	Qualitative review	3218	Academy of Management Perspectives
13	Birkinshaw and Gupta	2013	Clarifying the distinctive contribution of ambidexterity to the field of organizational studies	Qualitative review	1003	Academy of Management Perspectives
14	Alexander and van Kippenberg	2014	Teams in pursuit of radical innovation: A goal orientation perspective	Descriptive study	393	Academy of Management Review
15	Junni et al.	2015	Guest editors' introduction: The role of human resources and organizational factors in ambidexterity	Qualitative review	188	Human Resource Management
16	Simsek et al.	2015	Strategic leadership and leaders in entrepreneurial contexts: A nexus for innovation and impact missed?	Special issue editorial	156	Journal of Management Studies
17	Smith et al.	2016	Both/and leadership	Conceptual	294	Harvard Business Review
18	Mueller et al.	2018	Ambidextrous leadership: A *meta*-review applying static and dynamic multi-level perspectives	Meta-review	72	Review of Managerial Science

Highly cited papers (>5 per year)

n	Authors	Year	Title	Number of citations until June 2024	Research areas	Journal
1	Volberda et al.	2001	Mastering strategic renewal mobilising renewal journeys in multi-unit firms	490	Strategic management	Long Range Planning
2	Gibson and Birkinshaw	2004	The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity	6199	Leadership and organization context	Academy of Management Journal
3	Vera and Crossan	2004	Strategic leadership and organizational learning	2569	Leadership, strategy	Academy of Management Review
4	Atuahene-Gima	2005	Resolving the capability-rigidity paradox in new product innovation	2287	Management, innovation	Journal of Marketing
5	Beckman	2006	The influence of founding team company affiliations on firm behavior	1185	Organizational behavior	Academy of Management Journal
6	Lubatkin et al.	2006	Ambidexterity and performance in small- to medium-sized firms: The pivotal role of top management team behavioral integration	3097	Organizational behavior	Journal of Management
7	Dixon et al.	2007	Exploitation and exploration learning and the development of organizational capabilities: A cross case analysis of the Russian oil industry	123	Strategy, organizational behavior, international business	Human Relations
8	Mom et al.	2007	Investigating managers' exploration and exploitation activities: The influence of top-down, bottom-up, and horizontal knowledge inflows	1009	Knowledge management	Journal of Management Studies
9	Crossan et al.	2008	Transcendent leadership: Strategic leadership in dynamic environments	383	Leadership, strategy	The Leadership Quarterly
10	Im and Rai	2008	Knowledge sharing ambidexterity in the long-term inter-organizational relationships	690	Knowledge management, organizational behavior	Management Science
11	Jansen et al.	2008	Senior team attributes and organizational ambidexterity: The moderating role of transformational leadership	898	Leadership	Journal of Management Studies
12	Andriopoulos and Lewis	2009	Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation	3070	Innovation	Management Science

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Table A1 (*continued*)

Highly cited papers (>5 per year)						
n	Authors	Year	Title	Number of citations until June 2024	Research areas	Journal
13	Carmeli and Halevi	2009	How top management team behavioral integration and behavioral complexity enable organizational ambidexterity: The moderating role of contextual ambidexterity	553	Leadership, organizational behavior	The Leadership Quarterly
14	Jansen et al.	2009	Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism	1391	Leadership, management, strategy	The Leadership Quarterly
15	Jansen et al.	2009	Structural differentiation and ambidexterity: The mediating role of integration mechanisms	1497	Organizational behavior	Organization Science
16	Kang and Snell	2009	Intellectual capital architectures and ambidextrous learning: A framework for human resource management	947	HRM	Journal of Management Studies
17	Mom et al.	2009	Understanding variation in managers' ambidexterity: Investigating direct and indirect effects of formal structural and personal coordination mechanisms	1034	Organizational behavior	Organization Science
18	Nemanich and Vera	2009	Transformational leadership and ambidexterity in a context of an acquisition	521	Leadership, global management	The Leadership Quarterly
19	Taylor and Helfat	2009	Organizational linkages for surviving technological change: Complementary assets, middle management and ambidexterity	654	Inovation, change management	Organization Science
20	Alexiev et al.	2010	Top management team advice seeking and exploratory innovation: The moderating role of TMT heterogeneity	454	Innovation, strategic entrepreneurship	Journal of Management Studies
21	Cao et al.	2010	Modeling the joint impact of the CEO and the TMT on organizational ambidexterity	442	Strategic management	Journal of Management Studies
22	Eisenhardt et al.	2010	Microfoundations of performance: Balancing efficiency and flexibility in dynamic environments	1138	Leadership, strategy, management	Organization Science
23	Lechner et al.	2010	Task contingencies in the curvilinear relationships between intergroup networks and initiative performance	335	Management	Academy of Management Journal
24	Smith	2010	Dynamic decision making: A model of senior leaders managing strategic paradoxes	900	Leadership, strategy	Academy of Management Journal
25	Smith et al.	2010	Complex business models: Managing strategic paradoxes simultaneously	871	Strategy, organizational behavior	Long Range Planning
26	Yukl and Mahsud	2010	Why flexible and adaptive leadership is essential	1177	Leadership	Consulting Psychology Journal: Practice and Research
27	Kwee	2011	The influence of top management team's corporate governance orientation on strategic renewal trajectories: A longitudinal analysis of Royal Dutch Shell plc, 1907–2004	151	Strategy, organizational behavior, international business	Journal of Management Studies
28	Zhang et al.	2011	Linking transformational leadership and team performance: A conflict management approach	358	Leadership, management	Journal of Management Studies
29	Gedajlovic et al.	2012	Corporate shareholdings and organizational ambidexterity in high-tech SMEs: Evidence from a transitional economy	144	Economics, entrepreneurship, international business	Journal of Business Venturing
30	Jasmand et al.	2012	Generating Sales While Providing Service: A Study of Customer Service Representatives' Ambidextrous Behavior	418	Organizational context, management	Journal of Marketing
31	Prieto and Perez Santana	2012	Building ambidexterity: The role of human resource practices in the performance of firms from Spain	259	HRM, international business	Human Resource Management
32	Vaccaro et al.	2012	Management innovation and leadership: The moderating role of organizational size	1110	Management, innovation, leadership	Journal of Management Studies
33	Good and Mitchel	2013	Individual ambidexterity: Exploring and exploiting in dynamic contexts	269	Psychology, neuroscience	The Journal of Psychology Interdisciplinary and Applied
34	Patel et al.	2013	Walking the tightrope: An assessment of the relationship between high performance work systems and organizational ambidexterity	653	HRM, organizational behavior	Academy of Management Journal
35	Qian et al.	2013	Top management team functional diversity and organizational innovation in China: The moderating effects of environment	389	Innovation, international business	Strategic Management Journal
36	Heavy and Simsek	2014	Distributed cognition in top management teams and organizational ambidexterity: The influence of transactive memory systems	286	Leadership, psychology	Journal of Management
37	Lewis et al.	2014	Paradoxical leadership to enable strategic agility	598	Leadership, strategy	California Management Review
38	Mihalache et al.	2014	Top management team shared leadership and organizational ambidexterity: A moderated mediation framework	315	Entrepreunership, management	Strategic Entrepreneurship Journal
39	Rogan and Mors	2014	A network perspective on individual-level ambidexterity in organizations	289	Leadership	Organization Science
40	Teece	2014	The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms	2173	Economics, strategic management, entrepreneurship	Academy of Management Perspectives
41	Ahammad et al.	2015	Behavioral ambidexterity: The impact of incentive schemes on productivity, motivation, and performance of employees in commercial banks	169	HRM	Human Resource Management

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Table A1 (*continued*)

Highly cited papers (>5 per year)						
n	Authors	Year	Title	Number of citations until June 2024	Research areas	Journal
42	Burgess et al.	2015	Organizational ambidexterity and the hybrid middle manager: The case of patient safety in UK hospitals	127	HRM	Human Resource Management
43	Halevi et al.	2015	Ambidexterity in SBUs: TMT behavioral integration and environmental dynamism	95	HRM	Human Resource Management
44	Havermans et al.	2015	Exploring the role of leadership in enabling contextual ambidexterity	210	HRM, leadership	Human Resource Management
45	Heavy et al.	2015	Managerial social networks and ambidexterity of SMEs: The moderating role of proactive commitment to innovation	128	HRM, innovation	Human Resource Management
46	Heyden et al.	2015	Board background heterogeneity and exploration–exploitation: The role of the institutionally adopted board model	92	Strategy	Global Strategy Journal
47	Kammerlander et al.	2015	Exploration and exploitation in established small- and medium-sized enterprises: The effect of the CEOs' regulatory focus	281	Psychology	Journal of Business Venturing
48	Kostopoulos et al.	2015	Ambidexterity and unit performance: Intellectual capital antecedents and cross-level moderating effects of human resource practices	110	HRM	Human Resource Management
49	Laureiro-Martínez et al.	2015	Understanding the exploration–exploitation dilemma: An fMRI study of attention control and decision-making performance	441	Leadership	Strategic Management Journal
50	Meglio et al.	2015	Improving acquisition outcomes with contextual ambidexterity	97	HRM	Human Resource Management
51	Mom et al.	2015	Managers' work experience, ambidexterity and performance: The contingency role of the work context	312	HRM	Human Resource Management
52	Stokes et al.	2015	The micro-dynamics of intra-organizational and individual behavior and their role in organizational ambidexterity boundaries	82	HRM	Human Resource Management
53	Tuncdogan et al.	2015	Regulatory focus as a psychological micro-foundation of leaders' exploration and exploitation activities	117	Leadership, psychology	The Leadership Quarterly
54	Zacher and Rosing	2015	Ambidextrous leadership and team innovation	516	Leadership, innovation	Leadership and Organization Development Journal
55	Zhang et al.	2015	Paradoxical leader behaviors in people management: Antecedents and consequences	770	Leadership, psychology	Academy of Management Journal
56	Zimmermann et al.	2015	How is ambidexterity initiated? The emergent charter definition process	264	Management	Organization Science
57	Chen et al.	2016	How does executive strategic human resource management link to organizational ambidexterity? An empirical examination of manufacturing firms in China	49	HRM, strategy	Human Resource Management
58	Hahn et al.	2016	Ambidexterity for Corporate Social Performance	185	Management	Organization Studies
59	Jansen et al.	2016	A socio-psychological perspective on team ambidexterity: The contingency role of supportive leadership behaviors	198	Leadership, psychology	Journal of Management Studies
60	Kaupila and Tempelaar	2016	The socio-cognitive underpinnings of employees' ambidextrous behaviour and supportive role of group managers' leadership	239	Leadership, psychology	Journal of Management Studies
61	Papachroni et al.	2016	In pursuit of ambidexterity: Managerial reactions to innovation-efficiency tensions	154	Psychology, innovation	Human Relations
62	Rosing and Zacher	2016	Individual ambidexterity: The duality of exploration and exploitation and its relationship with innovative performance	252	Psychology, innovation	European Journal of Work and Organizational Psychology
63	Zacher et al.	2016	Ambidextrous leadership and employee self-reported innovative performance: The role of exploration and exploitation behaviors	276	Organizational behavior, leadership, innovation	The Journal of Creative Behavior
64	Knight and Paroutis	2017	Becoming salient: The TMT leader's role in shaping the interpretive context of paradoxical tensions	213	Management and strategy	Organization Studies
65	Oehmichen et al.	2017	Board of directors and organizational ambidexterity in knowledge intensive firms	105	HRM	The Internaional Journal of Human Resource Management
66	Sariol and Abebe	2017	The influence of CEO power on explorative and exploitative organizational innovation	167	Leadership, strategic management, innovation	Journal of Business Research
67	Tuncdogan et al.	2017	Management teams' regulatory foci and organizational units' exploratory innovation: The mediating role of the coordination mechanisms	60	Innovation	Long Range Planning
68	Wang et al.	2017	Balancing exploration and exploitation in inventions: Quality of inventions and team composition	61	Innovation, knowledge management	Research Policy
69	Garcia-Granero et al.	2018	Top management team diversity and ambidexterity: The contingent role of shared responsibility and CEO cognitive trust	99	Organizational behavior	Long Range Planning
70	Hirst et al.	2018	Exploitation and Exploration Climates' Influence on Performance and Creativity: Diminishing Returns as Function of Self-Efficacy	83	Management, innovation	Journal of Management

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Table A1 (*continued*)

Highly cited papers (>5 per year)						
n	Authors	Year	Title	Number of citations until June 2024	Research areas	Journal
71	Koryak et al.	2018	Disentangling the antecedents of ambidexterity: Exploration and exploitation	366	Entrepreunership	Research Policy
72	Luo et al.	2018	Ambidextrous leadership and TMT-member ambidextrous behavior: The role of TMT behavioral integration and TMT risk propensity	129	Leadership	The Internaional Journal of Human Resource Management
73	Osiyevskyy et al.	2018	Exploration and exploitation in crisis environment: Implications for level and variability of firm performance	194	Crisis management	Journal of Business Research
74	Revilla and Rodriguez-Prado	2018	Bulding ambidexterity through creativity mechanisms: Contextual drivers of innovation success	106	Management, innovation	Research Policy
75	Ubeda-Garcia et al.	2018	High performance work system and performance: Opening the black box through the organizational ambidexterity and human resource flexibility	142	HRM, strategic management	Journal of Business Research
76	Zimmermann et al.	2018	Managing persistent tensions on the frontline: A configurational perspective on ambidexterity	206	Management and strategy	Journal of Management Studies
77	Gieske et al.	2019	Ambidextrous practices in public service organizations: Innovation and optimization tensions in Dutch water authorities	80	Innovation, public management	Public Management Review
78	Kassotaki	2019	Explaining ambidextrous leadership in the aerospace and defense organizations	48	Management and strategy	European Management Journal
79	Kassotaki et al.	2019	Ambidexterity penetration across multiple organizational levels in the aerospace and defense organizations	50	Strategic management	Long Range Planning
80	Malik et al.	2019	Implementing global–local strategies in a post-GFC era: Creating an ambidextrous context through strategic choice and HRM	53	HRM, strategic management, internationalization	Journal of Business Research
81	Mammassis and Kostopoulos	2019	CEO goal orientations, environmental dynamism and organizational ambidexterity: An investigation in SMEs	63	Leadership	European Management Journal
82	Mom et al.	2019	A multi-level integrated framework of HR practices, individual ambidexterity, and organizational ambidexterity	275	Management and strategy	Journal of Management
83	Ossenbrink et al.	2019	Hybrid Ambidexterity: How the Environment Shapes Incumbents' Use of Structural and Contextual Approaches	106	Management	Organization Science
84	Pearce et al.	2019	Toward a theory of *meta*-paradoxical leadership	77	Leadership	Organizational Behavior and Human Decision Processes
85	Shao et al.	2019	Creativity under workload pressure and integrative complexity: The double-edged sword of paradoxical leadership	169	Management, organizational behavior	Organizational Behavior and Human Decision Processes
86	Tabesh et al.	2019	Unabsorbed slack resource deployment and exploratory and exploitative innovation: How much does CEO expertise matter?	77	Leadership, innovation	Journal of Business Research
87	Tempelaar and Rosenkranz	2019	Switching hats: The effect of role transition on individual ambidexterity	126	Management and strategy	Journal of Management
88	Wang et al.	2019	Achieving temporal ambidexterity in new ventures	80	Management and strategy	Journal of Management Studies
89	Wilms et al.	2019	Top Managers' cognition facilitates organisational ambidexterity: The mediating role of cognitive processes	45	Management	European Management Journal
90	Bidmon and Boe-Lillegraven	2020	Now, switch! Individuals' responses to imposed switches between exploration and exploitation	36	Management	Long Range Planning
91	Kiss et al.	2020	CEO cognitive flexibility, information search, and organizational ambidexterity	103	Leadership	Strategic Management Journal
92	Knight and Cuganesan	2020	Enabling organizational ambidexterity: Valuation practices and senior management team	34	Management and strategy	Human Relations
93	Ambos et al.	2020	Managing interrelated tensions in headquarters–subsidiary relationships	90	Management, internationalization	Journal of International Business Studies
94	Hu et al.	2020	Ambidextrous leaders helping newcomers get on board: Achieving adjustment and proaction through distinct pathways	39	Leadership	Journal of Business Research
95	Mazzelli et al.	2020	Behind ambidextrous search: The microfoundations of search in family and non-family firms	57	Strategic management	Long Range Planning
96	Oluwafemi et al.	2020	Leading innovation: Empirical evidence for ambidextrous leadership from UK high-tech SMEs	104	Leadership, innovation	Journal of Business Research
97	Posch and Garaus	2020	Boon or curse? A contingent view on the relationship between strategic planning and organizational ambidexterity	98	Strategic management	Long Range Planning
98	Venugopal et al.	2020	Finding the microfoundations of organizational ambidexterity – Demystifying the role of top management behavioural integration	108	Microfoundations, management	Journal of Business Research
99	Zimmermann et al.	2020	Complements or substitutes? A microfoundations perspective on the interplay between drivers of ambidexterity in SMEs	55	Strategic management	Long Range Planning

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Table A1 (*continued*)

Highly cited papers (>5 per year)						
n	Authors	Year	Title	Number of citations until June 2024	Research areas	Journal
100	Beletskiy and Fey	2021	HR ambidexterity and absorptive capacities: A paradox-based approach to HRM capabilities and practice adoption in MNC subsidiaries	17	HRM, strategic management	Human Resource Management
101	Billinger et al.	2021	Exploration and exploitation in complex search tasks: How feedback influences whether and where human agents search	61	Leadership and organization context	Strategic Management Journal
102	Huang et al.	2021	CEO regulatory focus as the microfoundation of organizational ambidexterity: A configurational approach	35	Microfoundations, management	Journal of Business Research
103	Kahn and Candi	2021	Investigating the relationship between innovation strategy and performance	34	Innovation, strategy	Journal of Business Research
104	Katou et al.	2021	A trilogy of organizational ambidexterity: Leader's social intelligence, employee work engagement and environmental changes	96	Leadership, management, industrial environment	Journal of Business Research
105	Pradies et al.	2021	From Vicious to Virtuous Paradox Dynamics: The Social-symbolic Work of Supporting Actors	94	Management	Organization Studies

Recent papers (2022–2024)					
n	Authors	Year	Title	Research areas	Journal
1	van Doorn et al.	2022	Ambidexterity in family firms: The interplay between family influences within and beyond the executive suite	Management, strategy	Long Range Planning
2	van Neerijnen et al.	2022	Embracing Paradox: TMT paradoxical processes as a steppingstone between TMT reflexivity and organizational ambidexterity	Management	Organization Studies
3	Farzaneh et al.	2022	Dynamic capabilities and innovation ambidexterity: The roles of intellectual capital and innovation orientation	Innovation, strategy	Journal of Business Research
4	Folger et al.	2022	Perceived technological turbulence and individual ambidexterity – The moderating role of formalization	Management, strategy	European Management Journal
5	Samimi et al.	2022	What is strategic leadership? Developing a framework for future research	Leadership	The Leadership Quarterly
6	Zhang and Liu	2022	Balancing employees' extrinsic requirements and intrinsic motivation: A paradoxical leader behaviour perspective	Leadership	European Management Journal
7	Fernandez-Mesa et al.	2023	Knowledge network structure and middle management involvement as determinants of TMT members' ambidexterity: A multilevel analysis	Management, strategy	Long Range Planning
8	Klonek et al.	2023	A Conceptual Replication of Ambidextrous Leadership Theory: An Experimental Approach	Strategic management	Long Range Planning
9	Li et al.	2023	Online-offline channel integration and innovation ambidexterity: Roles of top management team and environmental dynamism	Innovation, strategy	Journal of Business Research
10	Matsuo	2023	When a dominant CEO hinders exploration in a firm: A longitudinal case study from Japan	Leadership	Journal of Business Research
11	Pattinson et al.	2023	Harnessing creative tensions: A micro-level study of value creation	Management, strategy	Journal of Business Research
12	Wei et al.	2023	Learning to integrate conflicts: Paradoxical leadership fosters team innovation	Leadership, innovation	Journal of Business Research
13	Han et al.	2022	Creating team ambidexterity: The effects of leader dialectical thinking and collective team identification	Leadership	European Management Journal
14	Greven et al.	2023	Achieving Product Ambidexterity in New Product Development: The Role of Middle Managers' Dynamic Managerial Capabilities	Management, strategy	Human Resource Management
15	Boemelburg et al.	2023	Regulatory focus climate, organizational structure, and employee ambidexterity: An interactive multilevel model	Management, strategy	Human Resource Management
16	Wang et al.	2023	Wear glasses for supervisors to discover the beauty of subordinates: Supervisor developmental feedback and organizational ambidexterity	Management, strategy	Journal of Business Research
17	Annosi et al.	2024	The micro-foundations of ambidexterity for corporate social performance: A study on sustainability managers' response to conflicting goals	Strategic management	Long Range Planning
18	Harrison et al.	2024	Inventor CEO involvement and firm exploitative and exploratory innovation	Leadership, innovation	Strategic Management Journal

Table A2
Classification of recent and highly cited papers by level.

Levels				
Micro-level			**Macro-level**	**Multi-level**
Individual	**Group**		**Organization**	
Senior individuals	**Senior groups/teams**		**Middle individuals, middle groups/teams,**	
CEO	**BoD**	**TMT**	**frontline employees**	
Ambos et al. 2020	Heyden et al., 2015	Alexiev et al., 2010	Ahamad et al., 2015	Crossan et al., 2008
Annosi et al. 2024	Oehmichen et al., 2017	Beckman, 2006	Andriopoulos & Lewis, 2009	Dixon et al., 2007

(*continued on next page*)

Table A2 (*continued*)

Levels				
Micro-level			**Macro-level**	**Multi-level**
Individual	**Group**		**Organization**	
Senior individuals	**Senior groups/teams**		**Middle individuals, middle groups/teams, frontline employees**	
CEO	**BoD**	**TMT**		
Atuahene-Gima, 2005		Cao et al., 2010	Bidmon & Boe-Lillegraven, 2020	Eisenhardt et al., 2010
Beletskiy & Fey, 2021		Carnelli & Halevi, 2009	Boemelburg et al., 2023	Farzajeh et al., 2022
Billinger et al., 2021		Fernandez-Mesa et al., 2023	Burgess et al., 2015	Gieske et al., 2019
Gibson & Birkinshaw, 2004		Garcia-Granero et al., 2018	Chen et al., 2016	Good & Michel, 2013
Hahn et al., 2016		Gedailovic et al., 2012	Folger et al., 2022	Halevi et al., 2015
Han et al. (2022)		Heavey & Simsek, 2014	Greven et al., 2023	Havermans et al., 2015
Harrison et al., 2024		Heavey et al., 2015	Hirst et al., 2018	Jansen et al., 2009
Hu et al., 2020		Jansen et al., 2016	Im & Rai, 2008	Jansen et al., 2009b
Huang et al., 2021		Knight & Cuganesan, 2020	Jasmand et al., 2012	Kahn & Candi, 2021
Jansen et al., 2008		Kwee et al., 2011	Kang & Snell, 2009	Kassotaki, 2019
Kammerlander et al., 2015		Li et al., 2023	Kauppila & Tempelaar, 2016	Kassotaki et al., 2019
Kiss et al., 2020		Lubatkin et al., 2006	Knight & Paroutis, 2017	Katou et al., 2021
Laureiro-Marinez et al., 2015		Luo et al., 2018	Mom et al., 2019	Klonek et al., 2023
Lewis et al., 2014		Malik et al., 2019	Mom et al., 2007	Koryak et al., 2018
Mammasis & Kostopoulos, 2019		Mihalache et al., 2014	Mom et al., 2009	Kostopoulos et al., 2015
Matsuo, 2022		Pattinson et al., 2023	Oluwafemi et al., 2020	Meglio et al., 2015
Mazzelli et al., 2020		Posch & Garaus, 2020	Ossenbrink et al., 2019	Mom et al., 2015
Nemanich & Vera, 2009		Rogan & Mors, 2014	Papachroni et al., 2016	Osiyevskyy et al., 2020
Pearce et al., 2021		Ubeda-Garcia et al., 2018	Prieto & Perez Santana, 2012	Patel et al., 2013
Pradies et al., 2021		Van Neerijnen et al., 2022	Rosing & Zacher, 2016	Qian et al., 2013
Revilla & Rodriguez-Prado, 2018		Venugopal et al., 2020	Taylor & Helfat, 2009	Rosing et al., 2011
Sariol & Abebe, 2017		Wang et al., 2017	Tempelaar & Rosenkranz, 2019	Samimi et al., 2022
Shao et al., 2019		Wilms et al., 2019	Vera & Crossan, 2004	Simsek et al., 2015
Smith, 2014			Yukl & Mahsud, 2010	Stokes et al., 2015
Smith et al., 2010			Zacher et al., 2016	Teece, 2014
Tabesh et al., 2019			Zhang & Liu, 2022	Vaccaro et al., 2012
Tuncdogan et al., 2017			Zimmermann et al., 2015	Volberda et al., 2001
Tuncdogan et al., 2015			Zimmermann et al., 2018	Wang et al., 2023
Van Doorn et al., 2022				Wang et al., 2019
Wei et al., 2023				
Zacher & Rosing, 2015				
Zhang et al., 2011				
Zhang et al., 2015				
Zimmermann et al., 2020				
Percentage (123 articles in total)				
51 %			24 %	25 %
Main disciplines or areas of specialization				
Organizational behavior, leadership, HRM, (global) management & strategy, psychology, innovation, knowledge management, entrepreneurship, neuroscience			Management & strategy, innovation, entrepreneurship, innovation, public management, change management	Leadership, HRM, Management & strategy, organizational behavior, innovation, economics, entrepreneurship, international business

Data availability

Our research data is freely available to everybody.

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