



Ambidextrous leadership: A narrative literature review for theory development and directions for future research

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3 **Ambidextrous leadership: A narrative literature review for theory**
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6 **development and directions for future research**
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14 **Abstract**

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16 **Purpose** – This study seeks to provide a narrative literature review of existing empirical
17 research, in order to better understand the processes and theory of ambidextrous leadership, as
18 well as its influence on followers, employees and organizations.
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21 **Design/methodology/approach** – Data from 26 studies were extracted and synthesised
22 providing a critical discussion about the methodological and theoretical aspects of the studies
23 identified in the review.
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27 **Findings** – The ambidextrous leadership theory represents a novel and unique approach to the
28 domain of leadership for creativity and innovation. It is shared across hierarchical levels
29 throughout the organization. Leaders have a significant effect on employees' behaviors and
30 should determine its applicability to different situations. Organizations require ambidextrous
31 managers who combine flexible, situational and versatile leadership styles developing ever
32 increasingly new and divergent ideas. Many research gaps in the literature were also identified
33 that can guide academics in the development of ambidextrous leadership.
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39 **Practical implications** – Understanding that ambidextrous leadership is required to
40 significantly influence ambidexterity and innovation allows organisations to direct their
41 leadership selection and development.
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45 **Originality/value** – This review contributes to the ambidextrous leadership literature by
46 creating a holistic picture of where it has been and where it should go.
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48 **Keywords:** Leadership, ambidexterity, ambidextrous leader, literature review, exploitation,
49 exploration.
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51 **Paper type:** Literature review
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Introduction

The impact of leadership on employees' behavior or on organizational operations and outputs has long been a focus of management theorists (Samimi et al., 2021; Alghamdi, 2018). Various available leadership styles have been studied in literature (Huertas-Valdivia et al., 2019) and we have learned much from this vast and expanding field of research. But it is uncertain what constitutes effective leadership (Huertas-Valdivia et al., 2019; Berraies and Abidine, 2019; Luo et al., 2018) and what leadership strategies are needed to motivate the 21st-century workforce and to increase their positive psychological capital.

An interesting and promising area for theory building in the field of leadership research is that of ambidextrous leadership (Ma et al., 2019; Luo et al., 2018; Rosing et al., 2011). **Ambidextrous leadership, defined as leaders' complementary engagement in two distinct types of leadership activities, opening and closing, and finally achieving organizational ambidexterity (Bledow et al. 2011; Probst et al. 2011; Rosing et al. 2011).** It presents more challenges than other leadership models (Mueller et al., 2018) and it specifies conditions under which a leader's behavior will be effective (Rosing et al., 2011). The importance of ambidextrous leadership is that it significantly affects organizational excellence (Nasser, 2020). The results from previous studies indicated a positive and direct relationship between ambidextrous leadership and project performance, ambidextrous culture (Zheng et al., 2017), work crafting (Ma et al., 2019), team learning (Duc et al., 2020), ambidextrous employee behavior (Oluwafemi et al., 2020) and organizational reform (Tuan, 2017). Moreover, during the last decade, researchers such as Alghamdi (2018), Mueller et al. (2018) and Zacher and Rosing (2015) have reached a consensus that ambidextrous leadership is a good predictor of creativity and innovative performance in working environments. It was explicitly introduced as an innovation-specific leadership style that should more accurately predict employee innovation than the heterogeneous findings derived from studies on transformational leadership (Rosing et al., 2011). Taking into consideration the increased importance of ambidextrous leadership for firms and employees, we believe that there is a need for a comprehensive review of research on ambidextrous leadership for four main reasons.

First, since the pioneering work by O'Reilly and Tushman (2004) that laid the foundation for the development of ambidextrous leadership theory, research has demonstrated the empirical and theoretical differentiation of ambidextrous leadership from other forms of leadership (Oluwafemi et al., 2020; Hughes et al., 2018). Second, despite the increasing academic interest in ambidexterity, there is still a lack of coherence and clarity in the field of

ambidextrous leadership. Although there is a large volume of research focusing on ambidexterity, unfortunately, studies focusing on ambidextrous leadership are still limited (Ma et al. 2019). Third, ambidextrous leadership lacks theories that are primarily developed; it borrows theories from other areas that often are not customized to the specific characteristics of the field (Oluwafemi et al., 2020; Alghamdi, 2018; Zacher and Rosing, 2015; Zacher and Wilden, 2014). Fourth, with a body of empirical studies consistently demonstrating significant relationships between ambidextrous leadership and outcomes, we propose that the time is ripe to conduct a literature review in order to provide a replicable, rigorous, and transparent assessment of extant literature and answers for what we know and do not know about ambidextrous leadership.

The above issues are the motives behind and the gaps that are addressed in this paper. Thus, the aim of this study is to provide a narrative literature review of existing empirical research, as a methodological tool (Snyder, 2019), in order to better understand the processes and theory of ambidextrous leadership, as well as its influence on followers, employees and organizations outcomes'. Moreover, the scope is to investigate the benefits of and possibilities presented by ambidextrous leadership for the organizations and societies of today. In this article, a critique is also presented as this concept has received considerable attention, both empirically (Duc et al., 2020; Ma et al., 2019; Luu, 2017) and in terms of conceptual development (e.g. Kassotaki, 2019a; Zarb et al., 2017). As such, this study aims to identify and discuss previous studies of ambidextrous leadership. Further, we are looking for approaches to bridge the potential relevance gaps between research and practice and identify challenges and opportunities for future research. We approached our literature analysis with six overarching questions in mind to achieve these interrelated goals:

- (1) *How is ambidextrous leadership understood and defined within the leadership literature?*
- (2) *What does the ambidextrous leadership theory tell us about exploration and exploitation behaviors?*
- (3) *What do we already know about ambidextrous leadership through existing empirical research?*
- (4) *What are the attributes of an ambidextrous leader?*
- (5) *Are there any criticisms of research on ambidextrous leadership?*
- (6) *What do we need to explore more in the future about ambidextrous leadership?*

In essence, this study contributes to management literature by synthesizing published ambidexterity research findings and identifying the mechanisms of effective ambidextrous leadership. To make the above contributions the paper proceeds as follows: first, it sets out the

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3 methods and criteria that were used to review the literature. Second, the descriptive properties
4 of the studies reviewed are summarized and evaluated. Third, content and data synthesis of the
5 research is presented. Finally, directions for further research and discussion are given.
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9 **Methodology**

10 *Narrative literature review*

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13 In this study, we choose the narrative literature review as a research method because it aims
14 to summarize or synthesize what has been written on a particular topic but does not seek
15 generalization or cumulative knowledge from what is reviewed (Paré et al., 2015). It can
16 broadly be described as a systematic way of collecting and synthesizing previous research,
17 meeting the requirement of developing clear and precise aims and objectives (Tranfield et al.,
18 2003). By integrating findings and perspectives from many empirical findings, a literature
19 review can address research questions with a power that no single study has (Snyder, 2019).
20 Following previous studies (e.g., Khosravi et al., 2019; Crossan and Apaydin, 2010) this search
21 included empirical studies from peer-reviewed journals because this can be considered
22 validated knowledge and they are likely to have the highest impact on the field. For an article
23 to be included in our review, it must have a focus on ambidextrous leadership as a key variable
24 or subject area.
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35 Following previous studies (e.g., Conz and Magnani, 2020; Khosravi et al. 2019; Okwir
36 et al., 2018; Crossan and Apaydin 2010; Sousa et al., 2008) we searched 4 databases (Emerald,
37 ScienceDirect, Scopus and Web of Science) using the keywords *ambidextrous leadership*,
38 *ambidextrous leader*, *ambidextrous behavior* and *ambidexterity leadership*. Our review spans
39 16 years (2004 to the last issue of 2020 that was available on-line on October 15, 2020) as 2004
40 was the year when the first peer-reviewed ambidextrous leadership paper was published by
41 O'Reilly and Tushman (2004). Based on the search criteria, we executed the main screening
42 resulting in roughly 1282 papers. After removing the duplicates from the list of articles, the
43 sample was reduced to 257 titles. To classify which of these 257 articles fit the focus and scope
44 of this study, the author meet and screened titles and abstracts of these sources for obvious
45 exclusions (e.g., those that clearly did not focus on “ambidextrous leadership”); this process
46 resulted in the exclusion of 175 studies from our database. In order to minimize subjective
47 interpretation biases, the author read each of the remaining 82 articles and analysed the research
48 focus, data and methods, variables (if applicable) and results. Ultimately, these combined
49 efforts resulted in only 26 papers based on the inclusion criteria being retained for our review
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(Snyder, 2019). This finding is not surprising, since Zhu et al. (2019) categorized ambidextrous leadership as a nascent leadership theme due to the fact that in their analysis of 200 influential leadership works during 1990–2017 they found only one work of Rosing et al. (2011) that used ambidextrous leadership to explain the leadership-innovation relationship. In the next stage, data from the 26 studies were extracted and synthesised for the purpose of a literature review (Khosravi et al., 2019). Figure 1 presents a flowchart of this literature search process based on the studies of Okwir et al. (2018) and Conz and Magnani (2020).

Insert figure 1 about here

The profile of the articles reviewed

Due to the interdisciplinary nature of leadership, ambidextrous leadership research has found a home in a number of different outlets. Table 1 summarizes information about the studies reviewed such as the publication journal and ABS journal rankings that we consider useful for the reader. Since 2004, research on ambidextrous leadership has increasingly been published in high impact factor journals, including *The Leadership Quarterly* and *Journal of Occupational and Organizational Psychology*. Furthermore, management journals such as *International Journal of Human Resource Management*, *Asia Pacific Journal of Management* and *Journal of Business Research* have also published works on ambidextrous leadership. Within the sample, there were 15 empirical papers, 5 conceptual papers, 3 literature review papers, 2 semi-structured interview papers and 1 meta-analysis.

Insert Table 1 about here

From the number of studies investigating ambidextrous leadership since 2004, we can notice a remarkable increase in publications from 2015 until 2020 as the appeal and significance of the ambidextrous leadership concept for academics and practitioners is growing; it has not remained frozen in time but rather has evolved over recent years. The vast majority of the studies reviewed involved samples drawn from multiple industries, including manufacturers and consumer products. From the selected studies, regression analysis was the most popular analytical approach used by researchers. Conceptual and literature reviews were also two common types of selected papers. Table 2 summarizes the characteristics of the 26 studies selected, as the findings are essential to an examination of the methodological aspects of the studies included in this review.

Insert Table 2 about here**Results**

After conducting the literature review and selecting the final sample, we proceeded to the stage of the data analysis and synthesis in order to condense texts into precise references to ambidextrous leadership characteristics (Wojcik, 2020; Khosravi et al., 2019).

Defining and understanding ambidextrous leadership within the leadership literature

The achievement of ambidexterity by an organization is primarily a leadership challenge that arises from the supportive organizational factors developed by leaders in the organization (Raisch et al., 2009). The existing literature on ambidexterity categorizes ambidextrous leadership into two categories: opening (exploration) and closing (exploitation) (Alghamdi, 2018; Zacher and Wilden, 2014). Opening leadership refers to the behavior that is aimed at enhancing variability in follower behaviors and is defined by their consequences (i.e., follower exploration behaviors, e.g., activities such as deviating from routine work) (Alghamdi, 2018; Zacher et al., 2016). Opening leadership behaviors lead to follower exploration activities such as generating new knowledge, encouraging alternative methods for task accomplishment, giving room for new ideas, allowing errors, skills and processes through search, variety, experimentation, risk, discovery and innovation to sustain future viability (Oluwafemi, et al., 2020; Rosing et al., 2011). In a similar way, closing leadership refers to reduced variability in follower behaviors and is conceptualized as antecedents of follower exploitation behaviors (e.g., engaging in standardized or routine activities, or focusing on implementing well-defined tasks; Alghamdi, 2018; Rosing et al., 2011). Closing leadership behaviors lead to follower exploitation activities such as taking corrective actions, setting specific guidelines, sticking to plans, monitoring goal achievement, establishing routines (Zacher and Rosing, 2015; Rosing et al., 2011), using existing knowledge, skills and processes through efficiency and execution to produce current results (Uhl-Bien and Arena, 2018). Ambidextrous leadership is the interaction between these two complementary leadership behaviors, opening and closing. The leader switches the behaviors according to the change in the situation. As a result, ambidextrous leadership is conceptualized as the ability to be competent with opposing but complementary poles of each flexibility type and to have the capability to alternate and move between these poles in a flexible way (Zarb et al., 2017).

Leadership continues to fascinate us (Zander, 2020); thus, various available leadership styles have been studied in literature and we have learned much from this vast and expanding

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3 field of research. For example, authoritative leadership concerns the style that is inspirational,
4 moving people towards a common goal, setting direction for the teams, and telling them where
5 they are going (Dinham, 2007). Transformational leadership inspires followers to develop
6 knowledge and skills and to be of greater value to the organization (Ghadi et al., 2013).
7 Transactional leadership can be defined as a leadership approach founded on a contractual
8 agreement between a leader and their followers (Penn, 2015), where each side expects the other
9 to fulfil the agreed terms of the transaction in order to ensure the survival of the relationship
10 which exists between them. The existing research on ambidextrous leadership supports the fact
11 that authoritative, transactional and transformational leaderships embody different leadership
12 behavior. Ambidextrous leadership theory states that leaders need to engage in opening and
13 closing behaviors in alignment with the requirements of innovation tasks to promote innovation
14 outcomes. Hence, if leaders encourage followers to exhibit these behaviors at the right point in
15 time, the outcomes of innovation tasks will be improved (Klonek et al., 2021). It is not generated
16 through top-down leadership, charisma, vision, or management-by-objectives; instead, it
17 requires many leaders, working together, across organizational levels (Birkinshaw and Gibson,
18 2004). Combining both the above types of leadership behaviors, ambidextrous leadership was
19 defined by Rosing et al. (2011) as “*the ability to foster both explorative and exploitative*
20 *behaviors in followers by increasing or reducing variance in their behavior and flexibly*
21 *switching between those behaviors*” (p. 957). Ambidextrous leadership is a leadership approach
22 where the leader supports employees during the innovation process acting in a flexible manner,
23 and seamlessly switches between supporting the exploration and exploitation stages of
24 innovation (Zacher et al., 2014; Rosing et al., 2011). Ambidextrous leadership can also imply
25 that a leader encourages a team to search broadly for new ideas unconstrained by the status quo
26 and the possibilities the leader is considering (Zacher et al., 2014). The concept of ambidextrous
27 leadership suggests that the strategies of providing autonomy and being directive can be
28 combined in an overall leadership approach. Creating such a synergy between autonomy and
29 directiveness has the potential to be most effective if leaders and team members manage to
30 coordinate their decisions (Bledow et al., 2011).

31 *Ambidextrous leadership theory for exploration and exploitation behaviors*

32 While there is no shortage of concepts comprising the many leadership theories, there is
33 little consensus on what constitutes effective leadership (Gordon and Yukl, 2004).
34 Ambidextrous leadership theory has recently been proposed as a new approach to
35 understanding and managing the leadership of explorative and exploitative innovation
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3 behaviors. It is formed by two complementary sets of leadership behaviors, opening and closing
4 behaviors, that fit the organizational and environmental requirements (Oluwafemi et al., 2020).
5 Leadership theorists consider leader behavior to be one of the best predictors of employee
6 creativity and innovation in the workplace (Zacher et al., 2014; Zhou and Hoever, 2014).
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10 Nine years after Rosing et al. (2011) discussed the concept of ambidextrous leadership,
11 their ideas continue to have a substantial impact on how we think about and apply leadership
12 theory. Rosing et al. (2011) focused on determining the leaders' behaviors that influenced
13 business innovation most effectively and looked specifically at the behaviors of leaders who
14 had direct contact with innovation teams (Probst et al. 2011). In the years that followed,
15 leadership scholars sought to refine, expand, and empirically validate the theory of
16 ambidextrous leadership into what has arguably become one of the most widely researched
17 leadership paradigms (Ma et al. 2019; Mueller et al., 2018).
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24 The ambidextrous leadership theory has been widely applied in business research during
25 the past few years (Duc et al., 2020). For example, Zarb et al. (2017) in order to support theory,
26 propose that ambidextrous leadership is more than a unique style and is in fact a combination
27 of three leadership styles, namely, flexible, situational and versatile leadership. Zacher et al.
28 (2016), Zacher and Rosing (2015) and Rosing et al. (2011) employed the ambidextrous
29 leadership theory to study leaders' exploration and exploitation approaches to innovativeness.
30 The ambidexterity theory of leadership therefore stated that the interaction of two different
31 leadership behaviors could predict or promote the outcomes at the individual or organizational
32 level, in such a way that organizational outcomes were high when both types of leadership
33 behaviors were high. Organizational ambidexterity may be promoted and fostered by
34 ambidextrous leadership, the behaviors of which could switch flexibly and reconcile the
35 conflicts or tensions (Baškarada et al., 2016).
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45 To build on ambidextrous leadership theory, we can explore how leaders' attributes (i.e.
46 shared vision, social integration, and team contingency rewards) and leaders' behaviour (i.e.
47 transformational leadership) enable organizations to reconcile conflicting demands and
48 combine exploratory and exploitative activities (Jansen et al., 2008). The central idea of
49 ambidextrous leadership is that complex organizational activities are matched by an equally
50 complex leadership approach, i.e., the complementary leadership behaviors (e.g., opening and
51 closing behaviors, or transformational and transactional leadership) (Zacher and Rosing, 2015).
52 But what is the relationship between ambidextrous leadership and transformational and
53 transactional leadership? These leadership styles are the most investigated in relation to
54 explorative and exploitative innovation behaviors (Oluwafemi et al., 2020). Scholars have made
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3 comparisons between the two leadership approaches and they have provided evidence
4 indicating that ambidextrous leadership could be formed by combining transformational and
5 transactional leadership (Schreuders and Legesse, 2012). For example, Baškarada et al. (2016)
6 and Luo et al. (2018) point out that ambidextrous leadership is a merger of both transformational
7 and transactional leadership styles. Ambidextrous leadership could execute transformational
8 behaviors (e.g., provide a vision) to obtain the identification and support of employees, and
9 adopt transactional behaviors (e.g., personnel training, performance appraisal and reward
10 systems) to manage conflicts and contradictions and guarantee organizational order and
11 consistency (Probst et al., 2011).
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19 In sum, the ambidextrous leadership theory represents a novel and unique approach to the
20 complex domain of leadership for innovation that outlines two distinct, yet complementary,
21 behaviors through which leaders may enhance employee exploration and exploitation behaviors
22 which, in turn, combine to facilitate employee innovation. Leaders with high levels of both
23 opening and closing behaviors should be the most capable of fulfilling innovation requirements
24 because they foster high levels of exploration and exploitation behaviors among their
25 employees (Rosing et al., 2011). Moreover, we need more theories that explore how leaders
26 can cope with radical uncertainty and make decisions where the margin of error is high and the
27 consequences of failure potentially catastrophic (Tourish, 2014).
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34 *Measures and outcomes of ambidextrous leadership through existing research*

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37 While progress has been made in identifying group and organizational level outcomes,
38 the majority of empirical studies on ambidextrous leadership included in this paper have
39 focused on how ambidextrous leadership influences people's outcomes and the mechanisms
40 that explain these relationships. This includes followers' innovative behaviors (Wang et al.,
41 2020; Kung et al., 2020) and team innovation behaviors (Zuraik et al., 2020; Zacher and Rosing,
42 2015). Additionally, ambidextrous leadership has been found to be positively associated with
43 employees' daily self-reported innovative performance (Zacher and Wilden, 2014).
44 Ambidextrous leadership produces followers who will likely serve their organization and
45 people around them. In the same vein, ambidextrous leadership is also found to be positively
46 related with employee ambidexterity (Oluwafemi et al., 2020), ambidextrous innovation
47 (Berraies and Abidine, 2019) and the ambidexterity of top management team members (TMT)
48 (Luo et al., 2018). The achievement of organizational ambidexterity is primarily a leadership
49 challenge that arises from the supportive organizational factors developed by leaders in the
50 organization (Raisch et al., 2009).
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3 Research has shown that organizations with high levels of both exploration and
4 exploitation activities have higher sales growth rates and organizational performance (Karman
5 and Savaneviciene, 2020; Raisch and Birkinshaw, 2008) than organizations with low levels in
6 either or both of these activities. Companies' leaders can improve the growth and
7 competitiveness of their business by demonstrating opening leadership behaviors, closing
8 leadership behaviors and a combination of both leadership behaviors to foster employee
9 innovation behaviors (Oluwafemi et al., 2020). Moreover, ambidextrous leadership affects
10 positively organizational capabilities such as team learning (Duc et al., 2020), organizational
11 reform (Tuan, 2017), work crafting (Ma et al., 2019), project performance (Zheng et al., 2017),
12 entrepreneurial orientation (Luu, 2017) and innovation performance (Gerlach et al., 2020) (see
13 table 2). Rosing et al. (2011) argued that leaders need to foster both exploration and exploitation
14 behaviors among their subordinates, and that the combination of high levels of both employee
15 exploration and exploitation behaviors should lead to high innovative performance. There is
16 also a growing body of literature linking ambidextrous leadership to innovation-oriented
17 outcomes (Gerlach et al., 2020) and knowledge-sharing among employees (Duc et al., 2020).
18 Ambidextrous leaders foster and stimulate creativity among the employees while ensuring that
19 the business remains stable (Bledow et al. 2011; Rosing et al. 2011), and finally achieve
20 organizational ambidexterity (Prieto-Pastor and Martin-Perez, 2015; Probst et al., 2011; Rosing
21 et al. 2011; Tushman et al. 2011). Ambidextrous leadership entails an emotional balance of
22 continuity and change, which reduces employees' fear of uncertainty, promotes proactiveness
23 and increases employees' self-efficacy to undertake innovative, risky actions (Martínez-
24 Climent et al., 2019).

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41 To sum up, it is obvious that the positive relationship between ambidextrous leadership
42 and multiple levels of performance has been demonstrated through employee, team and
43 organizational performance. Ambidextrous leadership formulates the aim of making an
44 organization ambidextrous, implements the strategy of organizational ambidexterity, ensures
45 ambidexterity as a capability at the micro level, and transforms the processes of
46 exploration/exploitation to organizational ambidexterity at the macro level (Mueller et al.
47 (2018). Ambidextrous leadership is not about a single leader at the top, but rather it is shared
48 across hierarchical levels and requires addressing tensions and managing contradictions
49 throughout the organization.

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To the best of our knowledge, there are currently 2 kinds of measures for ambidextrous
leadership in extant literature. The first measure of ambidextrous leadership is observed in 12
studies (Oluwafemi et al., 2020; Wang et al., 2020; Gerlach et al., 2020; Zuraik et al., 2020;

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3 Kung et al., 2020; Duc et al., 2020; Ma et al., 2019; Alghamdi, 2018; Luu, 2017; Tuan, 2017;
4 Zacher and Rosing, 2015; Zacher and Wilden, 2014) and includes two dimensions: opening and
5 closing leadership behaviors. These dimensions were measured using the two scales developed
6 by the examples of opening and closing leadership behaviors provided by the theory of Rosing
7 et al. (2011). This scale was first used empirically by Zacher and Rosing (2015). Luo et al.
8 (2018) were the only ones that measured ambidextrous leadership by a combination of the
9 transformational and transactional leadership styles. Transformational leadership was assessed
10 using 16 items and transactional leadership was measured using 5 items. All items were drawn
11 from the Multifactor Leadership Questionnaire, form 6-S (MLQ-6S).
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19 *The attributes of an ambidextrous leader*

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21 Leadership is recognised as a key factor in firm performance, organizational
22 transformation, and embedding cultural values and norms (Haffar et al., 2019). Leaders with
23 specific dispositions—traits, ideals, values, skills, or interests—influence followers by showing
24 effective leadership behaviour to reach organisational goals (Alvesson and Jonsson, 2018).
25 Thus, organizations need tried and true qualities of good leaders, such as persistence,
26 benevolence, inspiration, and analytical thinking, to take ownership of the people-development
27 process as a driver of successfully executed growth strategies to create and sustain
28 ambidextrous leadership (Probst et al., 2011). In contrast to having specialized managers,
29 ambidextrous organizations require ambidextrous managers who have a more generalist
30 behavior profile and are therefore flexible enough to coordinate specialized domains (O'Reilly
31 and Tushman, 2004). Ambidextrous leaders combine flexible, situational and versatile
32 leadership styles (Mueller et al., 2018) and they realize if members of a team move to the
33 extremes of developing ever increasingly new and divergent ideas (Bledow et al., 2011). Being
34 ambidextrous, the leaders are able to move from opening leadership behaviors when exploration
35 is needed, to closed leadership behaviors when exploitation is required. They are able to support
36 their followers in the attempt to be ambidextrous (Rosing et al., 2011) and they pay attention
37 and act according to their surroundings, organizational life stage, performance and vision in
38 order to facilitate organizational learning. Ambidextrous leaders use opening leadership
39 behaviors to encourage employees to proactively search for novel ideas and solutions and then
40 switch to closing leadership behaviors to encourage employees to implement them. Therefore,
41 ambidextrous leaders have a propensity to foster proactiveness, innovativeness, and risk taking
42 among employees (Martínez-Climent et al., 2019; Luu, 2017). Leaders who engage in both
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3 opening and closing behaviors should be most successful in terms of encouraging high levels
4 of exploration and exploitation behaviors and, in turn, innovation among their employees.

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6 Moreover, ambidextrous leaders can determine the applicability of leadership behavior to
7 different situations and display high-level transformational and transactional leadership
8 behavior accordingly (Luo et al., 2018). They must also be sensitive enough to understand and
9 pursue a range of seemingly conflicting behaviors. Ambidextrous leaders must search for new
10 market needs and technological opportunities while continually reinforcing existing product-
11 market positions. They must be able to identify the right time to switch from one type of
12 behavior to the other (Kassotaki, 2019a).

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Ambidextrous leaders should consider all the internal factors, such as tensions, organizational structure, and the external factors, such as the dynamism of the environment, to promote ambidexterity. They must have the ability to possess a behavioural portfolio that is best suited to reacting to a complex, yet ambiguous organizational and environmental context (Kassotaki, 2019b) and pay attention and act according to their surroundings, organizational life stage, performance and vision in order to facilitate organizational learning. Uhl-Bien and Arena (2018) point out that ambidextrous leaders must allow diverse, seemingly paradoxical, ideas to conflict and connect in ways that generate the emergence of novelty. They have to bring diverse ideas, activities and units together and enable integration by acting as “organizational connectors” that create linkages that support transitions from one system to another (Taylor and Helfat, 2009). Granting sufficient autonomy to explore new opportunities and providing support for new business activities, ambidextrous leaders foster ambidexterity in followers, searching for and adapting to alternatives, taking risks and carrying out experimentation, reducing variance, adhering to rules, practising risk avoidance, and alignment (Mueller et al., 2018).

Criticisms of research on ambidextrous leadership

Our review of the ambidextrous leadership literature suggests numerous criticisms that limit the validity of conclusions that can be drawn from many researches. We discuss these critiques here and summarize them in table 3. First, the studies on ambidextrous leadership focus on one country or sector, which can limit the generalizability of results. Most studies have collected data from only the company’s leaders or followers, raising concerns about common method bias, self-report bias and the confounding of leadership behaviors with their intended outcomes (Oluwafemi et al., 2020; Berraies and Abidine, 2019). Second, there is also criticism of the ambidextrous leadership measurement scales, as there is only one basic measurement

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3 scale in extant literature for ambidextrous leadership that measures how often leaders engage
4 in opening and closing behaviors in general, rather than addressing if these behaviors are
5 properly sequenced based on the current innovation situation or if leaders are switching from
6 one to another for no clear reason (Wang et al., 2020). Thus, a systematic approach to the
7 development of new measurement scales of ambidextrous leadership is required. Third, some
8 important variables on a wider range of employee and organizational outcomes have not been
9 controlled (Luo et al., 2018). Mediating elements such as employees' behavior or moderating
10 variables such as employees' characteristics were not considered in the current studies
11 (Martínez-Climent et al., 2019). Fourth, much of the empirical research on ambidextrous
12 leadership suffers from small sample sizes reducing the appropriateness of statistical
13 conclusions. This issue is common to this area and in the broader literature on organizational
14 behavior (e.g., Aguinis and Vandenberg, 2014). Fifth, current literature investigated
15 ambidextrous leadership's influence on followers' behaviour and firm performance. Different
16 leadership styles and other climate factors that may influence innovation and followers'
17 behaviour cannot be determined based on the present results. Dynamic and fluid interaction
18 between leadership and followership inherently generates ambiguity, contradiction, and conflict
19 (Tourish, 2014). It is not clear if there is an advantage to ambidextrous leadership in comparison
20 with other forms of leadership that foster a climate of innovation and frequently demonstrate
21 greater tolerance toward errors and mistakes. Overemphasizing the importance of ambidextrous
22 leadership risks viewing it as a panacea and neglecting the importance, adoption and
23 implementation of other leadership styles that benefit firms (e.g. authentic leadership,
24 transformational or servant leadership).

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There is an intuitive, appealing message underlying the studies reviewed – leaders can do
“things” which directly influence both their followers' ambidextrous behaviour and companies'
innovation. Nevertheless, the literature is not sufficiently developed to warrant all of the
attention that this concept has received. That said, we see a variety of opportunities to improve
research in this area.

Insert table 3 about here

*Recommendations for theory development and empirical research in the future for
ambidextrous leadership*

In this section, we offer several specific avenues of future research that could contribute to
the advancement of ambidextrous leadership, building stronger theory, better measures, and

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3 more actionable leader and leadership models. In reviewing the literature on ambidextrous
4 leadership, we were encouraged by the initial steps that have been taken to advance this theory,
5 but as identified, there are still considerable gaps. Ambidextrous leadership provides an
6 interesting concept in the field and may present more challenges than other leadership models.
7 It is up to future research to understand this concept in its full variety (Mueller et al., 2018).
8 Below, we offer an agenda for a number of actionable recommendations for future theoretical
9 advancements, in order to reshape the way in which we analyse ambidextrous leadership and
10 enhance our understanding of the contexts in which ambidextrous leadership impacts followers,
11 teams, and organizations. Moreover, we propose a methodological, empirical, and practical
12 work on ambidextrous leadership.

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21 Theory development is important as scholars focus on a better understanding of a broader
22 and unified ambidextrous leadership theoretical framework which is specific and testable. As a
23 general consideration, the management theories in ambidextrous leadership should be
24 improved. One general criticism levelled against existing ambidextrous leadership frameworks
25 is that on the one hand, they have not investigated all important variables (Martínez-Climent et
26 al., 2019; Alghamdi, 2018; Luo et al., 2018), and on the other hand, the analysis of
27 ambidextrous leadership is isolated (Gerlach et al., 2020; Wang et al., 2020; Ma et al., 2019).
28 To address the need for enhanced theory, we propose some research directions of ambidextrous
29 leadership and encourage ambidextrous leadership scholars to address the issues below in future
30 studies.

- 31 ● Test theories with multiple performance measures and theorize ambidextrous leadership
32 effects on different performance measures (such as firm performance, innovative behavior,
33 well-being, and job satisfaction) (Wang et al., 2020; Luo et al., 2018).
- 34 ● Use multiple variables (e.g. followers, teams, and organizations) as outcomes of
35 ambidextrous leadership and examine different mediating mechanisms proposed by the
36 ambidexterity theory (Kung et al., 2020; Ma et al., 2019; Berraies and Abidine, 2019;
37 Zacher and Wilden, 2014; Rosing et al., 2011).
- 38 ● Examine important variables such as organizational culture and employee job
39 characteristics in the model of ambidextrous leadership that may influence employee
40 innovation behaviors and explorative or exploitative activities in organizations (Oluwafemi
41 et al., 2020; Kassotaki, 2019b).
- 42 ● Examine temporal variation in opening and closing leadership behaviors using daily or
43 weekly diary study designs to test whether switching between opening and closing

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3 leadership behaviors within leaders over time influences employee innovation (Zacher and
4 Rosing, 2015).

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- 6 ● Integrate moderating variables such as collaborative climate or organizational trust in the
- 7 model of ambidextrous leadership (Berraies and Abidine, 2019; Zacher and Wilden, 2014).
- 8
- 9 ● Control other leadership approaches (e.g. transformational, transactional, servant or
- 10 authentic leadership) to determine the incremental validity of ambidextrous leadership over
- 11 these other established leaderships (Wang et al., 2020; Berraies and Abidine, 2019).
- 12
- 13 ● Consider the influence of ambidextrous leaders on multiple stages of innovation (e.g. how
- 14 ambidextrous leaders influence generation or implementation of innovative ideas).
- 15
- 16 ● Study how we can implement ambidexterity in an organization that is not ambidextrous
- 17 (Mueller et al., 2018).
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23 Ambidextrous leaders, beyond the fact that they can unify, motivate, and encourage
24 followers to adopt opening and closing behaviors, are expected to fulfil specific roles and
25 responsibilities. These roles have to be relevant for strategic leadership in the 21st century
26 (Samimi, et al., 2021). This body of research on ambidextrous leadership, remains understudied
27 as no one has explored the involvement of ambidextrous leaders in specific, operational
28 decisions that are made on a day-to-day basis. Studying the specific behavioral style that
29 ambidextrous leaders display is valuable. Thus, we present the following research directions to
30 explain how ambidextrous leaders influence important functions in their firms.

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- 33 ● Study how ambidextrous leaders' attributes and behaviors affect other organizational
- 34 functions beyond opening and closing employees' behaviors (eg. product quality, talent
- 35 management).
- 36
- 37 ● Explore how ambidextrous leaders are able to adapt their leadership style according to
- 38 situational settings such as environmental uncertainty, pandemics or a financial crisis.
- 39
- 40 ● Examine how often and under what conditions ambidextrous leaders change the
- 41 organizational structure.
- 42
- 43 ● Consider how ambidextrous leaders balance short- and long-term horizons of strategic
- 44 decisions.
- 45
- 46 ● Study if there is a relationship between the leader's age, gender, education, and tenure and
- 47 ambidextrous leadership behaviors.
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- 49 ● Clearly differentiate those attitudes, values, and behaviors that are classified as
- 50 ambidextrous leadership.
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3 In the design phase of ambidextrous leadership measurement, researchers should be aiming
4 to collect data from multiple time points and multiple sources to explain the relationships
5 between ambidextrous leadership and outcomes and assist with common method bias. What is
6 especially needed in ambidextrous leadership research is longitudinal designs in which time 1
7 captures the beginning of the relationship between leader and follower, and time 2 captures the
8 relationship between the ambidextrous leader and the follower when it matures over time. This
9 would allow the researcher to test for reverse causation. Thus, we recommend that future
10 studies:

- 11 ● Collect data across longer time periods to enhance generalizability of ambidextrous
12 leadership influence (Zacher and Wilden, 2014).

13 The level of analysis in empirical studies needs further attention rather than the level of the
14 concept of ambidextrous leadership (Mueller et al., 2018). We propose:

- 15 ● Examining ambidextrous leadership theory in different countries, business sectors, cross-
16 cultural settings, different sizes and ages as well as assessing whether the findings are
17 consistent across different contexts (Oluwafemi et al., 2020; Kassotaki, 2019b; Ma et al.,
18 2019; Luo et al., 2018).
- 19 ● Using objective assessment of innovative behavior such as peer-rate, supervisor-rate or
20 expert-rate data to ensure construct validity (Kung et al., 2020).
- 21 ● Developing measurement scales that have been modified and enriched in order to address
22 the changing opening and closing behaviors based on different organizational situations
23 (Mueller et al., 2018; Zheng et al., 2017).
- 24 ● Collecting larger and more representative samples to extend the current findings, reduce the
25 bias or error and ensure the reliability and validity of the measurements (Zheng et al., 2017).

26 Discussion

27 Ambidextrous leadership has become an interesting topic within the management area. This
28 study organizes the ambidextrous leadership field through an integrative framework related to
29 leaders' behaviour, practical results and challenges, as there is a considerable fragmentation of
30 leadership theory and the effect of ambidextrous leadership on organizational outcomes is
31 unexplored (Wu and Chen, 2020; Luo et al., 2018; Zacher and Wilden, 2014). Ambidextrous
32 leadership means leading with an active flexibility, a high level of responsibility, being sensitive
33 to the staff's needs and wellbeing, and being focused on the organizational goals (Rosing et al.,
34 2011). Moreover, it is proactive, clarifies objectives and provides support, empowerment, and
35 encouragement to the team (Latif et al., 2017; Rosing et al., 2011). This increases the chances
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3 for the creation and maintenance of a safe psychosocial climate, which, in turn, is a moderator
4 for increasing a creative team climate for innovativeness at work (Al Dari et al., 2018).

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6 The poor development of the ambidextrous leadership-related literature over the last
7 decade indicates that it is still little understood. To our knowledge, the present study offers the
8 first systematic and transparent review of extant research, followed by a synthesis on
9 ambidextrous leadership which maps extant literature, underlining main concepts, making
10 criticisms and supporting theories as well as evaluating findings. Thus, a holistic picture of what
11 existing empirical studies have found has been developed.

12
13 Consistent with recent suggestions that the methodological rigor of reviews of
14 ambidextrous leadership should be strengthened (e.g. Ma et al. 2019), we analysed 26 articles
15 published in 21 journals which are constitutive of the ambidextrous leadership field over the
16 period 2004– 2020. This review demonstrates an appropriate strategy for selecting articles,
17 capturing data and insights to offer something beyond a recitation of previous research (Mueller
18 et al., 2018). Together, these articles can be considered representative of the present knowledge
19 about ambidextrous leadership. From these analyses, we have charted out promising
20 opportunities for future research, which may contribute substantially to the development of the
21 field. Such an analysis may reveal important properties of ambidextrous leadership that have
22 not yet received adequate research attention. This paper comes to present and discuss the main
23 issues reported in the ambidextrous leadership field and contributes to the leadership literature
24 in at least seven important ways.

25
26 First, it organizes the extant literature, offers a clear definition of ambidextrous leadership
27 and provides a clear picture of the recent trends in the ambidextrous leadership literature by
28 classifying and comparing papers according to several relevant features, such as the inclusion
29 of independent and dependent variables, methodology context, country investigated and main
30 results. Moreover, it provides a better understanding within and across multiple levels of
31 analysis. Second, it presents the recently proposed concept of ambidextrous leadership theory
32 as a new approach that scholars have used to understand and manage the explorative and
33 exploitative behaviors. Nevertheless, ambidextrous leadership, as a growing field, is
34 underdeveloped and it lacks theory that advances knowledge across multiple fronts. Comparing
35 the ambidextrous leadership literature with research on other more established leadership styles
36 and its rich body of theories, reveals the need for theories exclusively developed to study
37 leadership at the ambidextrous level considering its uniqueness and its context.

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39 Third, it presents a critical evaluation of the ambidextrous leadership research, as it raises
40 significant concerns about previous interpretations and future applications of this nascent
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3 theory. Our general advice to organizational practitioners is that they should likewise adopt a
4 critical attitude toward existing research on ambidextrous leadership, taking into account the
5 criticisms of previous research with respect to theory, methods and, sometimes, unclear, and
6 uncritical reporting of findings. Fourth, scholars have emphasized the importance of
7 ambidextrous leaders' competencies (Martínez-Climent et al., 2019; Luu, 2017), assuming that
8 the effective execution of leadership functions requires superior competencies (Samimi et al.,
9 2021). The existing studies give valuable information to companies as to what the critical
10 attributes for ambidextrous leaders are which can enable them to drive employee innovation
11 behaviors in order to distinguish themselves from their competitors. It seems that there is a
12 combination of different leaders' attributes which drive ambidextrous innovation behaviors,
13 and leaders need to engage in complex, wide-ranging and sometimes opposing behaviors to
14 facilitate employee innovation behaviors (Oluwafemi et al., 2020). Sixth, this study presents
15 and discusses the main conclusion of the existing research including independent variables and
16 outcomes. Thus, it extends our knowledge on how ambidextrous leadership can exert positive
17 influences not only on employees' attitudes and behavior but also on organizational
18 performance (Tuan, 2017; Luu, 2017; Zacher and Rosing, 2015; Zacher and Wilden, 2014).
19 Finally, we identified theoretical inconsistencies and knowledge gaps that future research
20 should resolve in many topics of ambidextrous leadership.

21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 *Managerial implications*

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37 This study provides important implications for managers, as it can assist organizational
38 leaders to better account for the various factors that might facilitate or hinder employees'
39 innovative behaviors and innovation performance in practice. The present review highlights the
40 fact that leadership practices, processes and attitudes are daily activities performed by managers
41 as part of their duties in the company (Gerlach et al., 2020; Kung et al., 2020). It suggests
42 leaders combine different leadership approaches in a context sensitive manner to drive a
43 company to creativity and innovation success (Rosing et al., 2011). Our results support the view
44 that leaders are immediately and directly responsible for introducing changes in employees'
45 behavior, thus, they should consider which specific behaviour or activity they are trying to
46 encourage in their attempts to foster creativity and innovation. Ambidextrous leaders should
47 provide organizations with ideas about what can be done, foster desired behaviours and affect
48 employee creativity and innovation (Mascareño et al., 2021). They should display opening
49 behaviours, support autonomy and a positive climate (Hülshager et al., 2009) contributing to a
50 context in which it is beneficial for employees to generate ideas. These generated ideas can then
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3 serve as input for the subsequent innovation activities (Axtell et al., 2000). Organizations which
4 want to adopt the ambidextrous leadership approach to its fullest, should focus on selecting
5 leaders who have a demonstrated capacity to switch between priorities. A good leader must
6 therefore be ambidextrous and have the ability to carry out different actions simultaneously and
7 undergo multiple multi-level learning processes. Moreover, leaders should look to hire
8 employees who have a demonstrated capacity to multi-task, be able to switch priorities often,
9 and have a passion for creativity and innovation. Then innovation can flourish within
10 organizations (Wang et al., 2020). Adopting the right managerial attributes, as described by this
11 research, is a key success factor for ambidexterity. Leaders have to adopt an ambidextrous
12 attitude, viewing opening and closing behaviour as a safe path to team and employee innovative
13 performance, organizational reform and entrepreneurial orientation. Leaders need to develop a
14 broad set of leadership tactics to enable the dualities of innovation captured by terms such as
15 creation and implementation (Bledow et al., 2011). Therefore, they need to constantly adapt
16 their approach to the dynamics of innovation and need to take into account the strengths and
17 weaknesses of their followers to ensure an overall balance of forces (Rosing et al., 2011;
18 Bledow et al., 2009).

31 **Conclusions**

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33 Our review has shown that ambidextrous leadership is an active and growing area of
34 enquiry that has yielded numerous interesting and intriguing findings. In particular, there is
35 clear theoretical and empirical evidence demonstrating that leaders should adjust their behavior
36 and adapt a leadership style according to the situational requirements of creativity and
37 innovation (Huertas-Valdivia et al., 2019; Berraies and Abidine, 2019; Luo et al., 2018; Rosing
38 et al., 2011). Effective ambidextrous leadership should include the ability to conceive and
39 perform contradictory but complementary demands (Luo et al., 2018). Ambidextrous leadership
40 is one of the main contributors to organizational creativity and innovation, given leaders' ability
41 to encourage creative thinking and establish an innovation-supporting organizational climate
42 that promotes new ideas (Alblooshi et al., 2020). Nevertheless, we should take into
43 consideration that the methodology process of this study was conducted by only one reviewer,
44 which is a limitation that may bias the quality of methodology. The opportunities for future
45 research that we have identified should also spur on the emergence of useful insights that can
46 inform executives about management and policy options. Our study may further serve as a basis
47 on which to begin a discourse on how ambidextrous leadership is understood from a strategic
48 management perspective.

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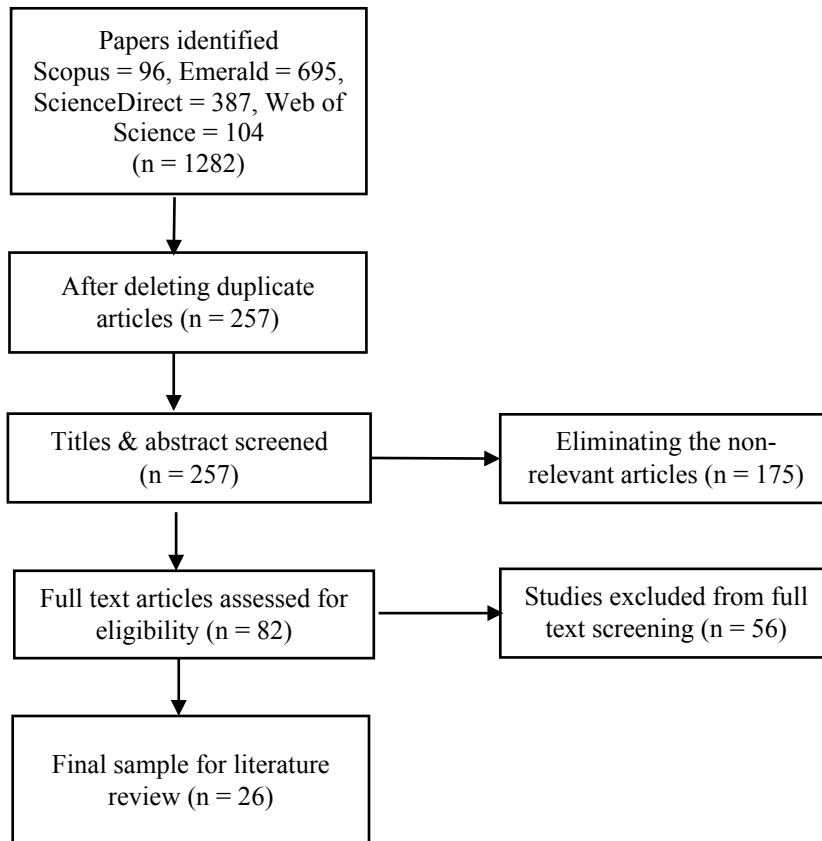


Fig. 1: Step-by-step process for sample selection

Table 1. Journal sources of referenced papers

Qty	Journals
3	Leadership and Organization Development Journal (1*)
2	Organizational Dynamics (2*)
2	International Journal of Human Resource Management (3*)
2	Sustainability (2*)
1	The Leadership Quarterly (4*)
1	Journal of Occupational and Organizational Psychology (4*)
1	Asia Pacific Journal of Management (3*)
1	Harvard Business Review (3*)
1	International Journal of Hospitality Management (3*)
1	Journal of Business Research (3*)
1	Chinese Management Studies (-)
1	European Management Journal (2*)
1	Journal of Innovation and Entrepreneurship (-)
1	Journal of Knowledge Management (2*)
1	Journal of Management Development (1*)
1	Management and Entrepreneurship (-)
1	Management Decision (2*)
1	Marketing and Management of Innovations (-)
1	Public Management Review (3*)
1	Review of Managerial Science (2*)
1	Service Business (-)
Total selected papers: 26. Total journals: 21	

Note: Information in brackets represent the rankings of ABS 2018 list journal

Table 2. Summary of the n=26 studies of “ambidextrous leadership” included in the literature review

Study/year	Focus	Type of study	Statistical analysis	Independent variables	Dependent variables	Main conclusions
Oluwafemi et al. (2020)	How leadership facilitates employee innovation behaviors in SMEs.	Empirical	Regression Analyses	Ambidextrous leadership	Employee Ambidexterity	<ul style="list-style-type: none"> Leadership facilitates employee innovation behaviors in SMEs by providing support for ambidextrous leadership in SMEs SME leaders drive employee innovation behaviors.
Duc et al. (2020)	The impact of ambidextrous leadership on both team exploratory and exploitative learning and, subsequently, on team innovation in the retail service industry	Empirical	SEM	<ul style="list-style-type: none"> Opening behavior Closing behavior 	<ul style="list-style-type: none"> Team exploratory Learning Team exploitative learning 	<ul style="list-style-type: none"> The interaction between opening and closing leadership behaviors has a positive relationship with both team exploratory and exploitative learning.
Wang et al. (2020)	How ambidextrous leadership influences followers' innovative behaviors	Empirical	Regression Analyses	Ambidextrous leadership	Followers' innovative behaviors	<ul style="list-style-type: none"> Ambidextrous leadership contributes to the innovative behaviors of followers, but it also increases followers' job stress and role ambiguity, which subsequently reduces innovative behaviors.
Gerlach et al (2020)	The relevance of the ambidextrous leadership model with respect to leadership in innovation processes.	Empirical	Regression Analyses	<ul style="list-style-type: none"> Opening leadership behavior Closing leadership behavior 	Innovation performance	<ul style="list-style-type: none"> Opening and closing leader behaviors were positively related to innovation performance. Transformational and transactional leadership as well as leader-member exchange did not show significant associations with innovation performance.
Zuraik et al (2020)	The impact of gender on team leadership style and how it impacts team innovation outcomes using the ambidexterity theory of leadership for innovation.	Empirical	Regression Analyses	<ul style="list-style-type: none"> Opening behavior Closing behavior 	Team innovation	<ul style="list-style-type: none"> Female team leaders are engaged in less opening behaviors of ideation, risk-taking and exploration than their male counterparts. When female leaders engaged in closing behaviors, they had less impact than the closing behaviors of their male colleagues did. Female team leaders were perceived as less effective in leading innovation than males.
Kung et al. (2020)	The impact of ambidextrous leadership on employees' innovative behaviors in public museums. It also examines the mediating mechanism of organizational climate for innovation in public museums.	Empirical	Regression Analyses	Ambidextrous leadership	<ul style="list-style-type: none"> Employees' innovative behaviors Organizational climate for innovation 	<ul style="list-style-type: none"> Ambidextrous leadership has the most significant effect on employees' innovative behaviors. Organizational climate for innovation has a mediating effect on the relationship between ambidextrous leadership and employees' innovative behaviors.
Kassotaki (2019a)	How ambidextrous leadership actions are implemented in high technology organizations	Conceptual	-	-	-	<ul style="list-style-type: none"> It facilitates a better understanding of the ambidextrous leadership concept and its importance in high technology organizations
Martínez-Climent at al. (2019)	A review of the literature examines how ambidextrous leadership is linked to social entrepreneurial orientation and how this in turn affects operational performance.	Literature review	-	-	-	<ul style="list-style-type: none"> The combination of exploration and exploitation enhances innovation The reciprocity has an impact on organizational culture and opening leader behaviors, creating innovation through exploration

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3	Ma et al. (2019)	It extends investigations of work crafting antecedents (i.e., individual personality and work characteristics) in relation to leadership style.	Empirical	Regression Analyses	Ambidextrous leadership	Subordinates' work crafting	<ul style="list-style-type: none"> • Ambidextrous leadership positively influenced work crafting partially by enhancing harmonious passion and reducing obsessive passion.
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7	Kassotaki (2019b)	It explains the key properties of ambidextrous leadership and associates transformational leadership with exploration, whereas transactional leadership is linked to exploitation.	Conceptual	-	-	-	<ul style="list-style-type: none"> • Ambidextrous leadership comprises two leadership styles: transformational and transactional leadership.
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11							<ul style="list-style-type: none"> • Exploratory innovation is linked to transformational leadership and in particular to individualized consideration, intellectual stimulation and inspirational motivation.
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13	Berraies and Abidine (2019)	It examines the effect of the transformational and transactional leadership styles and its sub-dimensions on exploitative and exploratory innovations.	Empirical	Regression Analyses	Ambidextrous leadership	Ambidextrous innovation	<ul style="list-style-type: none"> • Exploitative innovation is promoted by transformational and transactional leadership styles and particularly by attributed idealized influence and contingent rewards. • Ambidextrous leadership affects ambidextrous innovation positively.
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18	Mueller et al. (2018)	It presents a meta-review of the field of ambidextrous leadership research	Literature review	-	-	-	<ul style="list-style-type: none"> • It identifies new areas for future investigation and they develop an agenda for systematizing leadership research by explicitly considering the micro and macro level of an organization.
19							
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21							<ul style="list-style-type: none"> • CEO ambidextrous leadership predicts TMT-member ambidextrous behavior.
22	Luo et al. (2018)	How the ambidextrous leadership of chief executive officers (CEOs) influences the ambidextrous behavior of top management team (TMT) members	Empirical	Regression Analyses	Ambidextrous leadership	TMT-member	<ul style="list-style-type: none"> • The relationship is mediated by TMT behavioral integration • The indirect relationship is moderated by TMT-member risk propensity.
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29	Alghamdi (2018)	The association between opening and closing leadership behaviors and exploration and exploitation behaviors, respectively. Moreover, the interaction between leader opening and closing behaviors and their influence on employee innovative performance.	Empirical	Regression Analyses	<ul style="list-style-type: none"> • Leader opening behavior • Leader closing behavior 	Employee innovative performance	<ul style="list-style-type: none"> • The relationship between leader opening behavior and employee exploration behavior was positive and statistically significant • The relationship between leader closing behavior and employee exploitation behavior was positive and statistically significant
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35	Kraft (2018)	It analyses existing studies on the antecedents and potentials of ambidextrous leadership on business targets	Literature review	-	-	-	<ul style="list-style-type: none"> • It identified promising potentials for management issues and many actual problems within terminology and implementation.
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39	Luu (2017)	It investigates the role of ambidextrous leadership in fostering entrepreneurial orientation (EO) and operational performance. It also seeks an insight	Empirical	Regression Analyses	Ambidextrous leadership	Entrepreneurial orientation	<ul style="list-style-type: none"> • A positive effect of ambidextrous leadership on EO, which was positively moderated by OSC. • The predictive role of EO in the organization's operational performance.
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2		into the moderating role that				
3		organizational social capital (OSC)				
4		plays in the relationship between				
5		ambidextrous leadership and EO.				
6		It investigates the concept that				
7		ambidextrous leadership is a composite				
8		of three leadership styles: flexible				
9	Zarb et al. (2017)	leadership, situational leadership and versatile leadership.	Conceptual	-	-	-
10						Ambidextrous leadership is the sum of flexible leadership, situational leadership and versatile leadership.
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12		It investigates the role of ambidextrous				
13		leadership in catalysing organizational				
14	Tuan (2017)	reform. It also seeks an insight into moderating mechanisms on this effect.	Empirical	Regression Analyses	Ambidextrous leadership	Organizational reform
15						• The results from the data analysis shed light on the effect of ambidextrous leadership on organizational reform.
16		It assesses the direct relationship among				
17		ambidextrous leadership, ambidextrous				
18	Zheng et al., (2017)	culture and project performance. Moreover, it analyses the mediating effect of ambidextrous culture on the above relationships.	Empirical	Regression Analyses	Ambidextrous leadership	Project performance
19						• The results indicated the positive and direct relationship between ambidextrous leadership and project performance and ambidextrous culture. In addition, there was also a mediating impact of ambidextrous leadership on project performance via ambidextrous culture.
20						
21		How leaders promote organizational				
22		ambidexterity (i.e. exploitation and				
23	Baškarada et al. (2016)	exploration), and how such behaviors relate to transactional and transformational leadership styles	Semi- structured interviews	-	-	-
24						• It identifies three organizational mechanisms that leaders rely on to promote exploitation, and five behaviors that leaders rely on to promote exploration.
25						• These mechanisms and behaviors closely match transactional and transformational leadership styles respectively.
26						
27	Cunha et al. (2016)	It explores the presence of paradox in the ambidextrous leadership process.	Semi- structured interviews	-	-	-
28						• Paradoxes appear as intriguing and possibly sometimes paralyzing. • This may lead to the preference of selection over other, more fruitful possibilities of articulating the poles of the paradox.
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30		It explores the interaction between two				
31	Zacher and Rosing (2015)	complementary leadership behaviors – opening and closing – to predict team innovation	Empirical	Regression Analyses	• Opening leadership behavior • Closing leadership behavior	• Team innovation • Transformational leadership behavior
32						• Opening leadership behavior positively predicted team innovation. • Closing leadership behavior did not have a significant main effect. • Team innovation was highest when both opening and closing leadership behaviors were high.
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34		It explores the interaction between				
35	Zacher and Wilden (2014)	leaders' daily opening and closing behaviours and employees' daily self- reported innovative performance.	Empirical	Regression Analyses	leaders' daily opening and closing behaviours	Employees' daily self-reported innovative performance
36						• On days that leaders use ambidextrous leadership, followers are more innovative.
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38		It reviews and meta-analytically				
39	Rosing et al. (2011)	integrates the existing literature on leadership and innovation	Meta- analysis	-	-	-
40						• An ambidexterity theory of leadership for innovation that specifies two complementary sets of leadership behavior that foster exploration and exploitation in individuals and teams — opening and closing leader behaviors respectively.
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Probst et al. (2011)	How one organization successfully created a new growth business through ambidextrous leadership and a discussion of the related challenges for business and HR leaders.	Conceptual	-	-	-	• Ambidextrous leadership challenges both business and HR leaders.
O'Reilly and Tushman (2004)	What ambidextrous organizations are.	Conceptual	-	-	-	• Building an ambidextrous organization is by no means easy, but given the executive will to make it happen, any company can become ambidextrous.

Baltic Journal of Management

Table 3. Summary of critiques against the ambidextrous leadership literature.

Criticism of ambidextrous leadership research & theory	Description of criticism from existing literature
Biased measurement	It may be possible that team leaders' and employees' ratings were biased in some way. Moreover, the findings are country, sector or context specific (Oluwafemi et al., 2020; Duc et al., 2020; Berraies and Abidine, 2019; Alghamdi, 2018; Zacher and Rosing, 2015).
Measurement scale suffers from lack of validation	The measures of ambidextrous leadership are inherently imperfect. Measurement scale has to be modified and enriched to address the changing opening and closing behaviors based on the current innovation situation (Wang et al., 2020).
Non-investigated all-important variables	Some important variables have not been investigated in the existing literature, such as organizational culture, structure, employee job characteristics, employee confidence, intrinsic and extrinsic motivations or the supporting environment (Oluwafemi et al., 2020; Martínez-Clement et al., 2019; Alghamdi, 2018; Luo et al., 2018; Luu, 2017; Rosing et al., 2011).
Poor methodology of small sample sizes	Failing to report all necessary information to gauge the appropriateness of statistical conclusions. Many small sample sizes in existing studies increase sampling error and reduce the power to detect statistically significant effects (Oluwafemi et al., 2020; Zheng et al., 2017).
Isolated analysis of ambidextrous leadership	Overemphasizing and analysis of ambidextrous leadership in isolation, failing to control the effects of other established leadership approaches and other climate factors that may influence innovation and followers' behaviour (Gerlach et al., 2020; Wang et al., 2020; Ma et al., 2019; Berraies and Abidine, 2019; Zacher and Rosing, 2015; Rosing et al., 2011).