

## **Ambidexterity in Strategic Alliances: An Integrative Review of the Literature**

### **Abstract**

Strategic alliances play a vital role in exploration and exploitation activities, otherwise known as the ambidextrous approach for value creation. This has led to an upsurge in studies on ambidexterity in strategic alliances by giving rise to various conceptualizations and theoretical challenges. However, we lack a systematic evaluation and synthesis of the theoretical and empirical insights from this growing body of research. In this paper, we use an integrative systematic literature review (SLR) approach to critically analyze 77 articles on ambidexterity in strategic alliances published in 38 leading journals across 13 disciplines. Findings from bibliometric and qualitative content analyses reveal three major research directions: 1) micro-foundation and organizational *antecedents* of ambidexterity in alliances, 2) governance *mechanisms* of ambidexterity, and 3) relational and performance *outcomes* of ambidexterity. We integrate these findings into a unified framework which provides a foundation for future research on ambidexterity in strategic alliances, with implications for academics, policymakers, and practitioners.

**Keywords:** Strategic alliances; Networks; Ambidexterity; Exploration; Exploitation; Systematic literature review

## Introduction

Given the uncertainty and complexity associated with many industries (Child et al., 2019, He et al., 2020, Bustinza et al., 2019), strategic alliances have become an important vehicle and means of sharing assets and coordinating value chain activities across the globe. Strategic alliances are defined as “*voluntary arrangements between firms involving exchange, sharing, or co-development of products, technologies, or services*” (Gulati, 1998, p. 293). Research has shown that strategic alliances can be a vital means of rapid market entry, revenue growth, and cost reduction due to the availability of idiosyncratic resources (Cui et al., 2018, Subramanian et al., 2018, Meyer et al., 2009). Alliance partners provide access to novel information and technological knowledge that can then facilitate inter-organizational learning of strategic importance (Vendrell-Herrero et al., 2018, Kumar and Zaheer, 2019), which can then enhance their innovativeness and competitiveness (Subramanian et al., 2018, Runge et al., 2022). Overall, the relational and informational features of alliances allow the partners to both compensate for the lack of resources required to explore novel knowledge trajectories as well as exploit existing resources for value creation (Rojo et al., 2016).

A growing stream of research suggests that strategic alliances are a source of ambidexterity as they enable firms to pursue and balance two opposing strategic directions/objectives simultaneously for long-term prosperity (Bresciani et al., 2018, Pereira et al., 2021). This phenomenon is labelled ‘*ambidexterity in strategic alliances*’ and is often defined in varied ways. Most authors appear to have interpreted ambidexterity in strategic alliances in terms of ‘*innovation ambidexterity*’ by adopting March’s (1991) dichotomy of pursuing two distinct activities such as exploration and exploitation (Andersen et al., 2020, Ojha et al., 2018a, Rojo et al., 2016). “*Exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Exploitation includes such things as refinement, choice, production, efficiency, selection, implementation, execution*” (cf.

March, 1991, p. 71). Both of these activities can be pursued through different organizational arrangements such as inside the firm or via acquisitions and alliances (e.g., Stettner and Lavie, 2014). On the one hand, alliances can be used to explore novel knowledge to support explorative activities (Hill and Rothaermel, 2003). On the other hand, they can be used to exploit the complementary resources of partners to reduce risks and promote stability (Inkpen, 2001). Through strategic alliances, firms can improve and complement explorative and exploitative activities (Kauppila, 2010, Im et al., 2019), hence “*making exploration and exploitation orthogonal to each other instead of two ends of a continuum*” (Ardito et al., 2021, p. 370). Others have defined ambidexterity in strategic alliances in terms of ‘*alliance ambidexterity*’ based on the portfolio or evolution of a firm’s strategic alliance activities (Lavie and Rosenkopf, 2006, Wassmer et al., 2017). It has been argued that firms need to engage in explorative and exploitative alliances concurrently (Stettner and Lavie, 2014), or align the project objective and adapt to new information over the course of alliance evolution and development (Tiwana, 2008).

The lack of consensus on the conceptualization poses two unanswered questions that hinder our understanding of ambidexterity in the context of strategic alliances. The first is what to balance. Is it only about the two opposing innovation approaches or beyond that (e.g., opposing types of alliance partner, opposing principles of supply chain management, opposing methods of governing alliance partnership)? The second is balance at what level. Can ambidexterity be achieved at the *partnership* level by simultaneously pursuing exploration and exploitation with a particular alliance partner, or are these two types of activity better pursued at the alliance *portfolio* level by separating them across alliances with different partners? The lack of consensus is problematic because the divergent views lead to vastly different implications for alliance formation and management. Without reconciling these views, we do not know if managerial attention should be focused on what balancing acts needed at the partnership level

and/or the portfolio level. In addition, the nature of alliances is changing due to external shocks, trade wars, protectionism and the rise of digital technologies, thus it is not clear how ambidexterity can be achieved in alliances dealing with new set of markets/technologies compared to alliances formed to serve current markets.

These divergent viewpoints impede a generic definition that encompasses all types of ambidexterity in strategic alliances. By operating at different levels (partnership vs. portfolio), these definitions make it difficult for researchers to identify the mechanisms through which strategic alliances enable ambidexterity. For example, some scholars argue that organizational resources and capabilities, such as entrepreneurial teams, organizational leaders, and data analytics capabilities, can influence partner selection and alliance formation in acquiring ambidextrous gains (Ardito et al., 2019, Dodourova et al., 2021, Roldán Bravo et al., 2018). Others have argued that relational governance mechanisms comprising of trust and commitment are vital for the continuous exchange of knowledge, whereas transactional governance mechanisms in the form of contracts and relations-specific investments are needed for greater autonomy in alliance relationships in order to manage contradictions and trade-offs between two different activities, thereby enabling ambidexterity (Aoki and Wilhelm, 2017, Im et al., 2019). It is currently unknown whether these variety of mechanisms operate at the partnership or the portfolio level. This poses further challenges for the empirical identification of these mechanisms.

This increasing breadth of research on strategic alliances and their role in ambidexterity leads to a growing diversity in theoretical perspectives, with researchers using perspectives with contradictory assumptions and findings. For instance, some studies apply the micro-foundations perspective, or dynamic capability theory to explain how strategic alliances are formed to promote ambidexterity (Heracleous et al., 2017, Seepana et al., 2020), whereas others adopt a relational view or transaction cost perspective to relate strategic alliances with

ambidexterity (Yang et al., 2014, Cofré-Bravo et al., 2019). This causes theoretical tensions associated with partial use of findings, which impedes cumulative knowledge-building within this important domain of research. Furthermore, this has also led to a serious problem of emphasizing what is already known instead of adding novel insights to the current body of knowledge (Rabetino et al., 2021).

Against this background, it is vital to examine the conceptual and theoretical developments and understand research gaps present in the literature on ambidexterity in strategic alliances (Ardito et al., 2021, Zahoor and Al-Tabbaa, 2020). In this regard, the systematic literature review (SLR) is a compelling way to synthesize the extant research and advance the field. The SLR allows the analysis and synthesizing of scholarly publications in a “*replicable, scientific, and transparent process*” (Tranfield et al., 2003, p. 209). To do this, we adopted an ‘*integrative SLR*’ approach to re-evaluate existing understandings of ambidexterity in strategic alliances, with a particular focus on reimagining the current ways of thinking about this phenomenon and expanding the extant literature (Torraco, 2016, Torraco, 2005). The integrative SLR is defined as “--- *a form of research that reviews, critiques, and synthesizes representative literature on a topic in an integrated way such that new frameworks and perspectives on the topic are generated*” (Torraco, 2005, p. 356). For this reason, there is value in using integrative SLR to narratively integrate the evidence in the research field to arrive at review-driven new insights (Elsbach and van Knippenberg, 2020, Bundy et al., 2016). Hence, following an integrative SLR approach, our aim was to explore and define the meaning of ambidexterity in strategic alliances and how strategic alliances enable ambidexterity. In doing this, we reviewed 77 articles published in 38 leading journals across 13 disciplines, which were operations and technology, innovation, general management, strategy, organization studies, marketing, international business, entrepreneurship and small business management, information management,

organization and management sciences, human resource management and employment, regional studies, and social sciences.

Our main contribution is the clarification and synthesis of the literature on ambidexterity in strategic alliances. We integrated evidence on the differing conceptualizations of ambidexterity in strategic alliances, including innovation, context, and structure-based, that lead to confusion about its definition. By delving into its cognitive aspects, we go beyond previous perspectives on ambidexterity in strategic alliances by theorizing how exactly the strategic alliances enable different types of ambidexterity. Our findings reveal that scholars have covered a diverse range of topics, including organizational-level capabilities (e.g., alliance management capabilities), alliance-level governance (e.g., trust, communication, contracts), and environmental-level characteristics (e.g., agglomeration, market uncertainty) by drawing insights from a wide variety of theoretical perspectives, such as the dynamic capability view, resource-based view (RBV), relational view, social network theory, and transaction cost economics. By building on these arguments, we call for a more rigorous application of the concept in future studies and provide concrete suggestions on how to use existing paradigms and alternative perspectives to investigate ambidexterity in strategic alliances to capture the four dimensions of dominant logic, both separately and in combination. In this regard, we suggest that firms need to consider managerial attributes and organizational capabilities to support digital transformations for achieving ambidexterity in strategic alliances. There is also a need for a more concerted effort by multiple stakeholders and institutional systems to overcome environmental challenges and to support ambidexterity in strategic alliances. Taken together, our synthesis of the literature facilitates a more theoretically and empirically sound application of ambidexterity in the strategic alliances concept for future application and contributes to enriching the concept from a vague metaphor to a more tangible construct.

Before describing the methodology of conducting the literature review, we begin with a brief introduction to the concept of ambidexterity in strategic alliances. The findings section of our paper is split into two parts: bibliometric findings and content-related findings. Then, we discuss the implications for theory and empirical assessment, as well as avenues for future research.

### **The Concept of Ambidexterity in Strategic Alliances**

The original concept of ambidexterity is defined as the ability of an individual to use both hands equally (Oxford Dictionary, 2021). It refers to an individual behavioral capability to engage in and simultaneously perform inconsistent or even paradoxically different activities (Kauppila and Tempelaar, 2016). Duncan (1976) used the term ‘ambidextrous organization’ to describe the dual structure that is implemented by organizations to manage the trade-off resulting from simultaneous focus on both alignment and adaptation. This concept was later picked up by O’Reilly, Tushman, and colleagues (Tushman and O’Reilly, 1996, Tushman et al., 2010) who argued that organizations can “*simultaneously pursue both incremental and discontinuous innovation that results from hosting multiple contradictory structures, processes, and cultures within the same firm*” (Tushman and O’Reilly, 1996, p. 24) and thus integrate exploitation and exploration activities for long-term survival. Tushman and O’Reilly (1996) idea instigated significant academic debates on the topic. Some other scholars built on March’s (1991) concepts of exploration and exploitation to explain organizational ambidexterity. While exploration includes “*things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation*”, exploitation includes “*such things as refinement, choice, production, efficiency, selection, implementation, execution*” (March, 1991, p. 71). Hence, the ambidexterity logic provides a balance between two contradictory strategic objectives simultaneously.

Introducing the concept of ambidexterity to the study of strategic alliances, Lavie and Rosenkopf (2006) studied the balancing exploration and exploitation activities in alliance formation. In their seminal work, Lavie and Rosenkopf (2006) separated the concept of ambidexterity from the organizational context and suggested that it is an emergent property of strategic alliances, which influences a firm to seek a balance when forming knowledge-generating R&D alliances and knowledge-leveraging marketing/production alliances, when forming an alliance with a new partner that has no prior ties to the firm and forming recurrent alliances with a partner that has prior ties to the firm, or when forming an alliance with a partner whose organizational attributes differ from existing partners and forming an alliance with a partner whose organizational attributes are similar to existing partners.

Im and Rai (2008) critically reflected on Lavie and Rosenkopf's development of the concept and added another aspect to strengthen the understanding of ambidexterity in strategic alliances. In doing this, Im and Rai (2008) extended Gibson and Birkinshaw's (2004) treatment of contextual ambidexterity at the firm-level to suggest that it could operate in strategic alliances to promote explorative and exploitative activities. The contextual elements of the overall management system were considered in terms of alignment and adaptation whereas Lavie and Rosenkopf (2006) focused on promoting coherence among goals and the efficient utilization of resources and Gibson and Birkinshaw (2004) promoted responsiveness to opportunities through reconfiguration. As such, alignment is deemed appropriate for exploitative activities to increase behavioral consistency, and adaptation facilitates explorative activities through experimentation and new ideas generation. Hence, it can be argued that ambidexterity in strategic alliances is a phenomenon that originates from organizational research. As our review suggests that scholars have examined different types of ambidexterity in alliances such as supply chain ambidexterity (cf. Aslam et al., 2018, Rojo Gallego Burin et al., 2020), alliance ambidexterity where the focus has been on examining the issues related to



the nature of alliances, their characteristics and alliance portfolio in achieving ambidexterity (e.g., Tiwana, 2008, Ardito et al., 2021), innovation ambidexterity where the focus has been on learning from exploration and exploitation activities for value creation (cf. Kauppila, 2015, Marco-Lajara et al., 2022), knowledge ambidexterity (Lee et al., 2020), and governance ambidexterity (Im et al., 2019). Yet, it is not clear from the extant literature how different alliance partners achieve ambidexterity by simultaneously pursuing exploration and exploitation activities with having different systems, processes, managerial mindsets and organizational cultures. Further, our review findings revealed that three different types of organizational designs, namely contextual, structural, and sequential, can support the realization of different forms of ambidexterity by structural changes, contextual adjustments, or temporal separation of two conflicting activities. However, the research rarely investigated hybrid organizational designs to attain ambidexterity in strategic alliances.

Taken together, many scholars in the field have contributed to the understanding of ambidexterity in strategic alliances through various types of research, including conceptual and theoretical works (e.g., Haim Faridian and Neubaum, 2021, Lavie et al., 2010a, Petruzzelli, 2019), empirical investigations (e.g., Ojha et al., 2018b, Kaur et al., 2019, Rapp et al., 2013), and methodological development (e.g., Russo and Vurro, 2010, Chang et al., 2009, Park et al., 2020). To embrace the heterogeneity of ambidexterity concept, our SLR distinguishes the ambidexterity into different types by reviewing, critiquing, and synthesizing the literature, and develops an integrative framework (see figure 4 & 5) to advance the research forward.

### **Review Methodology**

We adopted an integrative literature review approach to generate new knowledge about ambidexterity in strategic alliances. This approach reviews, critiques, and synthesizes representative literature on the topic in an integrated way, such that new frameworks and

perspectives on the topic are generated (Torraco, 2016, Dwertmann and van Knippenberg, 2021). The integrative literature review is a particularly suitable approach when research on a topic is dispersed across different areas and has not been systematically analyzed and integrated (Elsbach and van Knippenberg, 2020). Such is the case with literature on ambidexterity in strategic alliances. Through an integrative literature review, the research on ambidexterity in strategic alliances would benefit from a holistic conceptualization and synthesis of knowledge to date.

Torraco (2016) argued that “*defining the topic of the review alone is often insufficient to establish the boundaries of the review*” (p. 413); instead, methodological boundaries should be established to ensure systematic methodology (Torraco, 2005). As argued by Fan et al. (2022), the integrative review “*approach aims to balance both the generative power of the narrative process, while being more systematic in the process of integration of the literature*” (p. 173). In this regard, we adopted a six phases approach by Jesson et al.’s (2011), which involves (1) mapping the field through review scoping; (2) comprehensive searches; (3) quality assessment; (4) data extraction; (5) synthesis; and (6) write up.

The first phase mapped the field through scoping the review in terms of research questions, keywords, and inclusion/exclusion criteria. Our study aimed to assess the contribution of the leading mainstream business and management journals in terms of research on strategic alliances and ambidexterity. Therefore, we set our review questions as: (1) *How is ambidexterity conceptualized in strategic alliances?* and (2) *What are the key antecedents, mechanisms, and outcomes of ambidexterity in strategic alliance literature?* Having established the research questions, we went on to identify the keywords based on a thorough review of the extant literature. We identified two groups of keywords: the first related to strategic alliances and the second related to ambidexterity, as shown in Table 1. A Boolean

operator was used between the two keyword groups. We further defined our inclusion and exclusion criteria as summarized in Table 1.

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The second phase focused on conducting searches to collect published material on ambidexterity in strategic alliances. There are several sources of bibliometric information including Web of Science (WoS), Scopus, and Mendeley. In this review, we used WoS as it is a powerful and comprehensive database of bibliometric information encompassing 2,900 journals across 50 social sciences disciplines (Schmitt et al., 2018, Linnenluecke, 2017, Dvoutely et al., 2021). It has been widely used in previous review studies (e.g., Loignon and Woehr, 2017, Yao et al., 2020) as well as in international rankings including the Times Higher Education World University Rankings and the Academic Ranking of World Universities as it is regarded as a gold standard database to measure the performance of scholars (Maseda et al., 2022). Although limiting our search to WoS can exclude some non-WoS-indexed journals, given the broad range of papers we intended to include in the review, we felt it reasonable to limit our search.

A search was conducted in the topic area (i.e., title, abstract, keywords, and research area) using keywords from both groups (i.e., strategic alliance and ambidexterity). Further, we focused only on full-length academic journal articles as they are most likely to gather scholarly advances (Child et al., 2022). Hence, we excluded other materials including books, book chapters, editorials, commentary essays, and conference proceedings (De Keyser et al., 2019). For the publication timeframe, we did not set any specific initial date and considered articles up to the date of writing the review (i.e., September 2021). Our search returned 334 results, which we imported into the bibliometric software EndNote.

The third phase assessed the quality of 334 articles following the Chartered Association of Business Schools (CABS) journal guide (2021). For consistency, we checked the ranking published by Anne-Wil Harzing's Journal Quality List 2020 and the Australian Business Deans Council (ABDC) 2019 (Child et al., 2022). To focus on studies with methodological and theoretical rigor, we opted for studies published in impactful and higher-ranked journals that were 4\*, 4, and 3-rated in the CABS journal guide (John and Lawton, 2018, Child et al., 2022, Paul et al., 2017). After the application of quality criterion, the sample was reduced to 169 articles. Next, we screened the articles based on the relevance of the contribution to our review questions. Our inclusion criteria facilitated the selection of those articles that focus on both strategic alliances and ambidexterity. Our exclusion criteria enabled the exclusion of articles that, while including the word '*ambidexterity*', did not conceptualize or provide logical evidence on ambidexterity in strategic alliance. For example, Cenamor et al. (2019) used the term ambidexterity, but conceptualized and tested the different influences of exploitation and exploration on networking capability and performance. To this end, we excluded the studies where the focus was not on ambidexterity and limited (or no) connection was made between ambidexterity and strategic alliances. Overall, the assessment of quality and relevance resulted in the selection of 80 articles for inclusion in the review.

The fourth phase focused on data extraction from these 80 articles. Initially, we created an Excel worksheet for bibliometric analysis. We recorded author details, publication year, publication outlet, methodology, geographical and industrial contexts, findings, and contributions. We summarized our search steps and selection process in Figure 1.

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For content analysis, we carefully read and reread all 80 articles to understand and identify initial patterns. Then, we coded these articles using the qualitative data analysis software

NVivo. Our coding focused on three aspects: (1) theoretical perspectives underpinning research on ambidexterity in strategic alliances; (2) conceptualization of ambidexterity, such as its definitions, key assumptions, etc., and (3) the link between ambidexterity and strategic alliances and the underlying mediators. During this process, we identified three articles that did not fit the study criteria of a link between ambidexterity and strategic alliances. Hence, these three articles were excluded from the study sample, thereby leaving 77 articles for final analysis. This sample size is in line with previous SLR articles published in leading journals (e.g., Fayezi et al., 2017, Okwir et al., 2018, Buengeler et al., 2020).

The fifth phase synthesized the data extracted from 77 articles by organizing the literature and developing the connections between studies. The sixth phase finalized the review process by presenting the findings.

### **Bibliometric Findings**

Prior to reviewing the literature on ambidexterity in strategic alliances and explaining our integrative framework, we will briefly describe the characteristics of the sample studies.

#### ***Publication year and outlet***

Figure 2 provides the growth rate of articles published on the topic of strategic alliances and ambidexterity. We identified that there was substantial growth from 2007 to 2022. More than half of the articles (n = 42) have been published during the last five years, indicating the growing importance of this topic.

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The prominent publication outlets for our selected 77 articles (as shown in Table 2) were the *International Journal of Production Economics* (n = 7) and *Technological Forecasting and Social Change* (n = 7), followed by *Organization Science* (n = 5), and the *Journal of Business*

*Research* (n = 3). Our findings suggest that although research regarding ambidexterity in strategic alliances has been published in leading journals, the number of articles in them is somewhat meagre. For example, there was only one article published in each of the following leading journals: the *Academy of Management Journal*, the *Academy of Management Annals*, the *Journal of Management*, the *Journal of Operations Management*, the *Journal of the Academy of Marketing Science*, and the *Journal of International Business Studies*. This suggests that there is still scope for researchers to study strategic alliances and ambidexterity in different settings and contexts.

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### ***Methodologies utilized***

Our sample comprised four conceptual articles, 20 qualitative articles, and 53 quantitative articles, all theoretically conceptualizing or empirically assessing the strategic alliance and ambidexterity linkage. The qualitative studies used single case studies (n = 9) or multiple case studies (n = 11). Amongst the 20 qualitative studies, only four used longitudinal design. Out of 53 quantitative papers, 38 utilized survey to collect data but these studies were almost exclusively cross-sectional. The remaining 15 quantitative studies used data from secondary sources. There is absence of studies using mixed method research methodologies which combine qualitative and quantitative data in effective and complementary ways.

Figure 3 further presents the analysis of the method used in each of the research disciplines. The conceptual articles were from Innovation (n = 2) and General Management (n = 2) domains. The qualitative studies were from General Management (n = 3), Innovation (n = 3), Organization Studies (n = 3), Operations and Technology (n = 2), Strategy (n = 2), Marketing (n = 2), International Business and Area Studies (n = 2), and Regional Studies (n = 1), Information Management (n = 1), and Human Resource Management and Employment (n =

1). The quantitative articles were published in all disciplines except Regional Studies and Human Resource Management and Employment.

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### ***Geographical and industrial contexts***

In terms of the empirical context, our sample studies collected data from five geographical regions, namely Europe (n = 24), Asia (n = 18), North America (n = 21), Australia (n = 2), and the Middle East (n = 1). A small number of studies (n = 7) considered multiple regions in a single study. The country analysis also identified that 20 studies were conducted in the United States. China, with 8 articles, ranked as the second largest geographical location where empirical studies were conducted. This was followed by Spain and Italy with five and five studies respectively. Other countries that were represented by at least two entries included Taiwan, Finland, France, Germany, and the UK. We note that some studies (n = 9) were conducted in cross-country contexts. We identified that the empirical contexts of Africa and the Middle East remain unexplored which requires future scholarly attention.

We checked the industrial contexts covered by sample studies. The most common industry was manufacturing, with 44 (57%) of the sample studies having been conducted in this industry. Within the manufacturing industry, the prominent focus was on high-technology sectors including pharmaceutical, information technology and software, automotive, biotechnology, and electronics. This suggests that strategic alliances and ambidexterity are a prominent feature in knowledge intensive sectors. 20 articles considered multiple industries from diverse sectors like manufacturing, services, retail, and distribution. Only nine studies focused on the services sector, such as professional services, logistics, airlines, and hotels. Given the importance of knowledge economy, there is scope to examine strategic alliances and ambidexterity in service sectors given the vital role services play in economic activities.

### ***Theoretical foundations***

We explored the theoretical perspectives employed in the sample studies. To provide a comprehensive analysis of how theory has been utilized, a recent typology of theory types was applied to categorize each article. Sandberg and Alvesson (2021) in their typology argued that not all theories can be classified as *explaining* theories, that is in line with traditional views of explaining a phenomenon (Shepherd and Suddaby, 2016). Other types of theory that can explain the phenomenon include *comprehending, ordering, enacting, and provoking* theories. We summarize the different types of theories represented in our review in Table 3.

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Beyond employing Sandberg and Alvesson's (2021) typology to categorize the reviewed studies, we investigated the key theories utilized by the sample studies. Our analysis revealed that there were 25 separate theories employed, with three major theories ( $n \geq 10$ ) and two minor theories ( $n < 10$  but  $\geq 3$ ). The key major and minor theories include the dynamic capability perspective ( $n = 15$ ); RBV ( $n = 12$ ); (social) network theory ( $n = 10$ ); the relational view ( $n = 5$ ); and the microfoundations perspective ( $n = 3$ ). Table 4 provides a summary of key findings based on these dominating theories.

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### **Content-related Findings**

We start our analysis of the 77 articles by elaborating on the conceptualization of ambidexterity in the strategic alliance research, followed by a review of the key theoretical perspectives adopted in this research. Lastly, we analyze the different factors that have been used to determine ambidexterity and its related outcomes.

### ***Conceptualization issues of ambidexterity in strategic alliance research***



The strategic alliance research suggests that firms are limited in their resources (Park et al., 2002). Firms need to move beyond their organizational boundaries and form alliances to explore new technologies and markets on one hand (Hill and Rothaermel, 2003) and to exploit the complementary resources of partners on the other (Grant and Baden-Fuller, 2004). While this notion is commonly referred to as ambidexterity in strategic alliances (Russo and Vurro, 2010, Ardito et al., 2021), literature so far lacks consensus on what ambidexterity really means in strategic alliances and how it is different from other similar notions including organizational ambidexterity. For example, Figure 4 shows that different studies in our review sample conceptualize ambidexterity in different ways by defining it in terms of supply chain activities, innovation, alliance, knowledge, or governance (Bresciani et al., 2018, Yadong and Huaichuan, 2009, Birkinshaw et al., 2016). Further, alliance literature has identified different organizational design approaches (i.e., contextual, structural, and sequential) that can be used to pursue different forms of ambidexterity in strategic alliances. Below we discuss these issues in detail.

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### *Forms of ambidexterity*

Table 5 provides an overview of the definitions and conceptualizations of ambidexterity from 77 sample articles. (Heracleous et al., 2017, Lavie et al., 2010a). In terms of *supply chain ambidexterity*, it has been argued that a firm's supply chain needs to be simultaneously agile to respond to short-term market changes and adaptable to configure their supply chain structure for achieving long-term efficiency gains (Wamba et al., 2020). Scholars have focused on *innovation ambidexterity* by adopting March's (1991) dichotomy of exploration and exploitation (Andersen et al., 2020, Ojha et al., 2018a, Rojo et al., 2016). They argue that alliance ties can help partners to jointly work and develop exploration and exploitation

activities simultaneously (Aoki and Wilhelm, 2017, Medlin and Törnroos, 2015). A handful of studies challenge the conventional view of exploration and exploitation in terms of radical and incremental innovation (Aslam et al., 2018). Moreover, *alliance ambidexterity* is commonly used and relates to the characteristics of alliances (e.g., balance between rivals and collaborators) to support learning and performance gains. By focusing on *knowledge ambidexterity*, scholars highlight that alliances are considered as a source of knowledge through simultaneously pursuing explorative and exploitative knowledge sharing (Im et al., 2019, Lee et al., 2020) and achieving complementarity between knowledge exchange and knowledge protection (Yang et al., 2014). *Governance ambidexterity* is another form of ambidexterity that relates to the use of both formal (contractual) and informal (relational norms and trust) governance mechanisms in order to mitigate partner opportunism as well as promoting cooperative behavior amongst alliance partners (Lin and Ho, 2021). However, it is not clear whether formal and informal governance mechanisms are complementary or substitutive in the simultaneous pursuit of exploration and exploitation activities or whether both governance mechanisms accommodate hybrid ambidexterity (such as structural and contextual) in alliances? Overall, the different forms of ambidexterity discussed in the strategic alliance literature have not yet been investigated in an integrative framework. As a result, the potential associations among these different forms remain unexplored. This is problematic because the balancing act promoting one form of ambidexterity can have unintended adverse consequences on other forms of ambidexterity. To solve this problem, we need an integrative framework that captures all major forms of ambidexterity relevant to strategic alliances and distinguish the mechanisms that promote the different forms.

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*Organizational design approaches to achieve ambidexterity in strategic alliances*

Our review findings suggest that different forms of ambidexterity in strategic alliances are the result of three organizational design approaches: *contextual-based*, *structural-based*, and *sequential-based* ambidexterity (Lavie and Rosenkopf, 2006).

First, *contextual-based ambidexterity* emphasizes on the quality of context in terms of culture, routines, and processes to simultaneously seek different activities within an alliance (Pereira et al., 2021). When studying alliance ambidexterity, contextual ambidexterity design is considered vital as it allows management systems to align partners' activities and resources for short-term goals and adapt partners' cognitions and actions for long-term viability (Im and Rai, 2013). This is also useful design as it allows partners to allocate their time for exploration (i.e., hunting) of new partners as well the exploitation (i.e., farming) of existing partners (Lam et al., 2019). Further, contextual ambidexterity design is suitable to seek innovation ambidexterity as the processes and routines enable partners to synergically pursue co-exploration through cooperation with customers, suppliers, and competitors, and co-exploitation through cooperation with the agents (Marco-Lajara et al., 2022, Kauppila, 2015). In terms of governance ambidexterity, Cao et al. (2013) considered contextual ambidexterity as an appropriate design as it helps to develop systems and processes that are conducive for partners to make decisions for balancing competing demands. Specifically, there should be a balance between relational governance and contractual governance to manage outsourcing of information technology to partners based in different institutional settings. In addition, supply chain ambidexterity can be supported by contextual design as the behavioral attributes of leaders help to design supply chain exploration practices and supply chain exploitation practices (Ojha et al., 2018a). The key challenge prevalent in contextual-based ambidexterity is that research does not consider how a firm simultaneously seeks exploration and exploitation in an alliance relationship (Kauppila, 2010). Rather, it assumes that an alignment between alliance partner tasks is shaped in the specific context and adapted to the processes of the

organization. These are important limitations of contextual-based ambidexterity as Gupta et al. (2006) have posited, in that alignment/adaptation, exploration/exploitation, or marketing/R&D are likely mutually exclusive within a single domain.

Second, *structural-based ambidexterity* looks at the disparate structures and their harmonization to encourage the synergistic pursuit of contradictory activities in alliances (Lin et al., 2007). This conceptualization aligns with Tushman and O'Reilly's (1996) view of separating structural business units to manage paradoxical activities simultaneously. Within this research stream, some scholars focused on structural ambidexterity to pursue alliance ambidexterity (Lavie and Rosenkopf, 2006, Wu et al., 2019). For example, extant research has emphasized on the importance of forming new alliance to offset resource dependence, introduce new knowledge, and expand organizational boundaries, but at the same time, it is critical to maintain repeated ties with existing partners to enhance efficiency and maintain stability (Lin et al., 2007, Lavie and Rosenkopf, 2006, Heracleous et al., 2017). Others have argued that simultaneous presence of weak ties for accessing new knowledge and redundant resources from partners as well as strong ties to exploit knowledge and make use of established technologies (Michelfelder and Kratzer, 2013, Tiwana, 2008, Wu et al., 2019). When studying supply chain ambidexterity, scholarship highlighted the importance of differentiated structural units that can rapidly respond to short-term changes in supply chain (i.e., agility) but also adjust to long-term market changes through supply chain restructuring (i.e., adaptability) (Aslam et al., 2018, Wamba et al., 2020). For governance ambidexterity, research suggests to set up a control structure to reduce transaction cost and avoid opportunism by simultaneously seeking contractual governance and relational governance (Chi et al., 2017, Blome et al., 2013) or explicitness in goal settings and ambiguity in the implementation process for maintaining supplier (Aoki and Wilhelm, 2017).

Third, sequential-based ambidexterity focuses on temporal dimension where firms move sequentially between exploration and exploitation as an iterative process, indicating that firms may explore at one point in time and then exploit at another (Lavie et al., 2010b, Andersen et al., 2020). However, research in this domain is still limited. Related to supply chain ambidexterity, it has been argued that firms should make a strategic choice whether to explore supply chain practices or exploit supply chain practices (Partanen et al., 2020). For innovation ambidexterity, sequential design suggests that resources needed to develop different types of innovation may vary and firms should decide which innovation type should be pursued first (Purchase et al., 2016).

These different design approaches suggest that ambidexterity may be achieved at the partnership level (e.g., the contextual based approach) or at the portfolio level (e.g., the structural and sequential based approaches). However, without an integrative framework linking the different forms of ambidexterity, it is unclear what approach works optimally at what level and whether alliance partners need static or dynamic approaches for resolving these tensions. As such, current literature offers limited insights about managerial attention and allocation of resources required for alliance formation and management for achieving desired ambidexterity.

### **Key research insights on Ambidexterity in Strategic Alliance Research**

We have classified the studies based on their key research emphasis in terms of (1) antecedents of ambidexterity, (2) mediators of ambidexterity, (3) forms of ambidexterity, and (4) outcomes of ambidexterity. The antecedent category focuses on the determinants of ambidexterity in strategic alliances. The mediators act as intervening factors to link antecedents with the ambidexterity in strategic alliances. The outcome category captures the results a firm attains due to ambidexterity in strategic alliances. Our analysis of antecedents-mediators-outcomes

yielded a wide variety of insights and provided an understanding of key gaps in ambidexterity and strategic alliance research. We summarize the findings in an integrative framework as shown in Figure 5.

---- *Insert Figure 5 About Here* ----

### ***Antecedents of ambidexterity in strategic alliances***

The first category of antecedents focuses on the factors that facilitate ambidexterity in strategic alliances. Our integrative review revealed a wide range of antecedents from different types of ambidexterity (see Figure 5). Some studies have taken a micro-level perspective, including the upper echelons and the micro-foundations perspective, to contend that individuals (i.e., managers/employees) in a firm play an important role in facilitating ambidexterity in alliances. Other scholars have used an organizational-level perspective by utilizing the RBV and the dynamic capability view to explain that a firm's dynamic capabilities allow the reconfiguration of resources to achieve ambidexterity. Additionally, the network-level perspective is utilized with an emphasis on social network theory, relational view, and transaction cost economics. We discuss the findings in detail below.

The *antecedents of supply chain ambidexterity* include factors at firm-level (i.e., digital technology usage, organizational capabilities, and strategic actions), and environment-level (i.e., dynamic environments). First, scholars emphasizing on firm-level factors explained that digital technology usage have deduced that big data analytics and information & communication technology (ICT) provide information on supply chain activities in order to facilitate supply chain ambidexterity (Wamba et al., 2020). Similarly, organizational capabilities including desorptive capacity, creation capacity, dispersion capacity, and market sensing capability can allow firms to seek supply chain ambidexterity. Studies have clarified that firms with desorptive capacity of knowledge transfer, creation capacity of learning and

team orientations, dispersion capacity of system and memory orientations, and market sensing capability are better able to seek supply chain ambidexterity (Ojha et al., 2018b, Roldán Bravo et al., 2018, Aslam et al., 2018). Moreover, strategic actions have attracted attention amongst supply chain scholars that include internal integration among team members and the presence of transformational leadership that allow partners to achieve supply chain ambidexterity (Ojha et al., 2018a, Benzidia et al., 2021). Second, at the environmental-level, dynamic environment is considered as a determinant of supply chain ambidexterity because changing market situations require ambidextrous actions with partners (Birkinshaw et al., 2016). It is interesting to note that scholars studying antecedents of supply chain ambidexterity considered all types of ambidexterity design including contextual, structural, and sequential. For example, Wamba et al. (2020) emphasized on structural-based design with a focus on simultaneous seeking of agility and adaptability, whereas Zimmermann et al. (2015) focused on sequential-based ambidexterity design to elaborate on how alterations between objective would be enacted.

Birkinshaw et al. (2016) considered contextual-based ambidexterity design in terms of exploration with upstream partner and exploitation with downstream partners simultaneously.

Research on *antecedents of innovation ambidexterity* has demonstrated how innovation ambidexterity is associated with different antecedents at firm-level (organizational systems and structures, and knowledge management) and alliance-level (alliance management capability). First, at the firm-level, organizational systems and structures have been documented as a determinant of innovation ambidexterity. In this regard, human resource management (HRM) system is considered vital to manage social relations among partners in order to achieve innovation ambidexterity in strategic alliances (Ferraris et al., 2019). Also, firm status is conducive to innovation ambidexterity in alliances such that a firm with low status search for high status ones to utilize their competencies in order to explore and exploit simultaneously—that is structural-based ambidexterity design (Petruzzelli, 2019). Further, it has been argued

that knowledge management capabilities of a firm allows effective integration of different set of knowledge both internally and externally that may improve innovation ambidexterity (Bresciani et al., 2018). Second, research on alliance-level regarded the role of alliance management capability to coordinate and manage innovation tasks of co-exploration and co-exploitation simultaneously (Kauppila, 2015). Third, research on environmental-level factors remained limited. Only one study considered the role of agglomeration to create knowledge in tourist districts for innovation ambidexterity due to the interaction with agents like companies, training centers, and management organizations (Marco-Lajara et al., 2022). It is worthwhile to note that most of the research on antecedents of innovation ambidexterity considered contextual or structural-based ambidexterity approaches, thus neglecting sequential-based ambidexterity approach.

In terms of *antecedents of alliance ambidexterity*, the prominent antecedents are at firm-level (i.e., organizational contingencies), alliance-level (alliance management capability), and environmental-level (i.e., environmental characteristics). First, with an emphasis on organizational contingencies at firm-level, scholars suggest that frontline managers who engage in complementary explorative or exploitative knowledge processes can initiate alliance ambidexterity (Zimmermann et al., 2015). Also, strategic intent to proactively fulfil objectives and enhance organizational skills to design and govern global activities encourages firms to engage in alliance ambidexterity (Yadong and Huaichuan, 2009, Seepana et al., 2020). However, majority of this work remained limited to structural-based ambidexterity approach where alliance ambidexterity is viewed in terms of simultaneous pursuit of explorative and exploitative alliances, thereby disregarding contextual and sequential-based ambidexterity approaches. Second, alliance management capability is the most commonly studied alliance-level antecedent of alliance ambidexterity. In this regard, some scholars suggest that the alliance management capability of learning, coordination, contract negotiation, and



communication enable firms to form alliances and to seek alliance ambidexterity (Pereira et al., 2021). Others have considered alliance management capability in the form of an alliance operation support system (Im and Rai, 2013) and behavioral control mechanisms (Tiwana, 2010) to support synergies between two different tasks (i.e., contextual-based ambidexterity). Finally, for environmental-level antecedents, prior research suggests that market development, institutional environment, and international market openness encourage firms to seek alliance ambidexterity by following structural-based ambidexterity approach (Yadong and Huaichuan, 2009).

The *antecedents of knowledge ambidexterity* have received limited scholarly attention. Only two studies in our review sample have considered joint tasks as a determinant of knowledge ambidexterity. It is suggested that joint sense-making and problem-solving activities allow relational identification that ultimately leads to knowledge ambidexterity (Yang et al., 2014, Lee et al., 2020). One study focused on alliance-level antecedents and considered alliance management capability (i.e., an ICT design) as an enabler of knowledge ambidexterity (Im and Rai, 2008).

### ***Mediators of ambidexterity in strategic alliances***

Mediators are intervening factors that link antecedents with ambidexterity outcome. Although the presence of mediators represents the complexity of research linkages, only a handful of studies examined the impact of a narrow set of mediators (see Figure 5).

For *supply chain ambidexterity*, scholars viewed supply chain agility, adaptability, and learning as mediating factors to link antecedents with supply chain ambidexterity. For example, Aslam et al. (2018) examined supply chain agility and adaptability as intervening mechanisms through which market sensing capability is linked to supply chain ambidexterity. When considering

supply chain learning as a mediating factor, Ojha et al. (2018a) suggested that transformational leadership is linked to supply chain ambidexterity via learning orientation.

The research on *innovation ambidexterity* regarded social capital and ICT capabilities as mediating factors. For social capital, it has been argued that agglomeration leads to relational capital through interaction and exchanges, which in turn result in simultaneous pursuit of co-exploration and co-exploitation. Bresciani et al. (2018) argued that ICT capabilities act as an intervening factor to link knowledge management capabilities with complementary innovation gains.

With regard to *alliance ambidexterity*, the key mediating factor include knowledge integration. Tiwana (2008) suggested that the configuration of alliance ties (strong and bridging ties) leads to knowledge integration, thereby facilitating alliance ambidexterity.

In terms of *knowledge ambidexterity*, only one study considered relational identification in alliances as a mediating mechanism for the relationship between joint task activities and knowledge ambidexterity (Feng et al., 2019).

### ***Outcomes of ambidexterity in strategic alliances***

The outcomes of ambidexterity in strategic alliances have always been prevalent in the literature. Of particular interest have been strategic outcomes and performance outcomes; however, relational outcomes have received limited attention.

For *outcomes of supply chain ambidexterity*, scholars considered strategic outcomes including supply chain flexibility (Rojo Gallego Burin et al., 2020), supply chain competence, (Roldán Bravo et al., 2018, Kristal et al., 2010), supply chain resilience (Gu et al., 2021), business model innovation (Amankwah-Amoah et al., 2019), innovation capacity (Benzidia et al., 2021), and supply chain performance. It has been argued that supply chain ambidexterity promotes strategic outcomes due to the ease of capturing relevant information from partners at any

moment in a more precise way (Rojo et al., 2016, Gu et al., 2021). In terms of performance outcomes, research suggests that the engagement in supply chain ambidexterity allows firms to continuously cater to a customer's changing demands and achieve increased operational performance (Wamba et al., 2020), market share (Gualandris et al., 2018), innovation performance (Blome et al., 2013, Benzidia et al., 2021), and financial performance (Rojo et al., 2016, Ojha et al., 2018b, Liu et al., 2018). Studies on negative performance implications of supply chain ambidexterity are limited and warrant further scholarly attention; however, Partanen et al. (2020) found that small and medium-sized enterprises (SMEs) face difficulties in reaping the benefits of effective supply chain ambidexterity due to their relatively weak bargaining positions, thereby leading to negative firm performance.

The *outcomes of innovation ambidexterity outcomes* are investigated in terms of strategic and performance outcomes. For strategic outcomes, it has been argued that innovation ambidexterity in strategic alliances enables a firm's agenda to internally pursue innovation ambidexterity activities (Úbeda-García et al., 2020). In terms of performance outcomes, prior research documented the importance of innovation ambidexterity for firm growth (Choi et al., 2021) and firm profitability (Kauppila, 2015).

The *outcomes of alliance ambidexterity* relate to relational, strategic, and performance outcomes. First, the literature highlights that alliance ambidexterity helps partners to avoid conflict and co-create value effectively to enhance R&D project performance (Mani et al., 2022), relational quality (Im and Rai, 2013), and relational performance (Hoang and Rothaermel, 2010). However, the joint sharing of information for alliance ambidexterity can increase coordination costs. This suggests the need for future studies to investigate negative outcomes associated with alliance ambidexterity such as partner exhaustion, cognitive strain, opportunism, or R&D project failure. Second, prior research suggests that alliance ambidexterity enables partners to realize the strategic outcomes of increased knowledge

absorption speed (Yu et al., 2022) as well as technology invention (Heracleous et al., 2017, Russo and Vurro, 2010). Moreover, alliance ambidexterity allows partners to access relevant knowledge that is conducive to not only explorative innovation (Colombo et al., 2015) but also exploitative innovation (Michelfelder and Kratzer, 2013). Considering innovation ambidexterity as an outcome, Haim Faridian and Neubaum (2021) argued that symbiotic relationship between exploitation- and exploration-oriented actors is associated with the simultaneous development of both explorative and exploitative capabilities. Finally, a large body of literature on alliance ambidexterity suggests that alliance ambidexterity is a source of firm performance (Lavie et al., 2010a, Lin et al., 2007, Wassmer et al., 2017, Stettner and Lavie, 2014).

Research on *outcomes of knowledge ambidexterity* focused on relational outcomes and performance outcomes. For relational outcomes, Im and Rai (2008) and Yang et al. (2014) highlighted that knowledge ambidexterity promotes the exchange of ideas and the reduction of coordination costs, thereby improving relational performance. There was only one study (Lee et al. (2020) which considered performance outcomes and argued that knowledge ambidexterity enhances a firm's international performance.

The *outcomes of governance ambidexterity* were limited to relational outcomes. Scholarly efforts revealed that governance ambidexterity reduces the opportunistic behavior of partners and encourages mutual development activities, which in turn leads to relational benefits (Lin and Ho, 2021, Im et al., 2019).

## **DISCUSSION AND A WAY FORWARD**

Sparked by the observation that there is an absence of a systematic integration of extant research on ambidexterity in strategic alliances, the key aim of this integrative review was to integrate the evidence on ambidexterity and strategic alliance. Although the research on

ambidexterity in strategic alliances is vast, we have found that over the years, it has developed an internal structure due to changes in conceptualization of ambidexterity in the context of strategic alliances. The indications of this were present in earlier scholarly work focusing on different aspects of ambidexterity in strategic alliances (e.g., innovation ambidexterity, governance ambidexterity, alliance ambidexterity) and reaching conclusions about the maturity of the field (Zhao et al., 2021b, Wamba et al., 2020, Roldán Bravo et al., 2018, Feng et al., 2019). Yet the characteristics and structure have remained hidden, eliciting observations about the confusion, disconnectedness, fragmentation and disintegration of the field.

The results of the SLR of ambidexterity in strategic alliance literature indicate an overlap between the conceptualizations of ambidexterity and reveal a low uptake of research that focuses on supply chain, knowledge, and governance ambidexterity. This section reflects upon the findings of our review and argues for extending the scope of ambidexterity in strategic alliance research.

#### ***Advancement of research on antecedents***

Our integrative review indicated that most of the research considered antecedents of ambidexterity in strategic alliances. However, there is a lack of research in some areas, particularly regarding the drivers of supply chain ambidexterity, knowledge ambidexterity, and governance ambidexterity. We suggest four areas that are of particular interest.

First, a firm's CEOs and frontline managers can support ambidexterity (Heavey et al., 2015, Ardito et al., 2019). Future research could investigate this line of enquiry by exploring how top management heterogeneity as well as managerial motivations, cognition, and prior knowledge interact with supply chain, knowledge, and governance ambidexterity. The human capital, board capital, and managerial cognition of senior managers could shape the ambidextrous activities in strategic alliances (Kaur et al., 2019). Managers could develop shared visions and

facilitate the meaningful behavioral integration of conflicting activities in a single strategic alliance (Ochie et al., 2022). Research would therefore need to account for the role of the top and middle/functional level managers. In this regard, the micro-foundations perspective (Felin et al., 2012), the attention based view (cf. Ocasio, 1997, Ocasio, 2010), and the upper echelons theory (Hambrick and Mason, 1984) can offer useful insights on *the extent to which the normative influence and interactions between hierarchical levels of senior managers shapes their behaviors to mold ambidexterity in strategic alliances; the role of paradoxical cognitive frames of Strategic Business Unit (SBU) managers in fostering ambidexterity in strategic alliances; the shift of managers between complementary sets of leadership behaviors to enable ambidextrous activities in strategic alliances; the role of leaders in alleviating the potential negative consequences of individual ambidexterity (e.g., exhaustion or dissatisfaction of employees) while engaging in alliances and balancing both exploration and exploitation activities; and, the relevance of characteristics of top managers (e.g., age, gender, nationality) to promote ambidexterity in strategic alliances.*

Second, a related research opportunity is to link individual-level considerations to the wider organization by considering organizational culture and systems. A shared understanding and strong identity of what is “*central, distinctive, and enduring about an organization*” may guide “*key strategic decisions such as whether to make an acquisition, enter a new market, or divest a division*” (Tripsas, 2009, p. 441) and in this way inspire or discourage the decision to engage in ambidextrous strategic alliances. While a large body of research agrees on the significance of alliances for ambidexterity (e.g., Seepana et al., 2020, Vrontis et al., 2017, Yu et al., 2022, Purchase et al., 2016), firms need to have the intent to explore and exploit in alliances for the purposes of ambidexterity (Mazloomi Khamseh et al., 2017). As such, future studies could explore how a firm’s intent to simultaneously explore and exploit shape organizational learning and knowledge management systems to support alliance ambidexterity. When firms have the

intention to engage in ambidexterity, their learning and knowledge systems could allow the timely sharing of knowledge to support exploration and also store that knowledge for exploitation (Santoro et al., 2018).

In a similar vein, alliance management capability has been highlighted as a determinant of alliance ambidexterity due to its role in communication and commitment between alliance partners (Zahoor et al., 2021, Kauppila, 2015). This line of research could be further extended by integrating insights from the dynamic capability view with a focus on rapid creation, implementation, and transformation of business models in the changing and dynamic business world (Teece et al., 1997). Further research could produce an understanding as to how firms reconfigure their portfolio of strategic alliances to support the concurrent realization of exploration and exploitation. Our review findings further revealed that digital technologies could be conducive to ambidexterity in strategic alliances given their role in the rapid exchange of new ideas as well as the exploitation of existing knowledge (Nambisan et al., 2018). Additionally, digital technologies could enable accurate information about supply chain activities and assist firms in making informed decisions about ambidexterity in strategic alliances (Hartley and Sawaya, 2019). However, employee skepticism could obstruct the pace of digital transformations necessary to achieve ambidexterity in strategic alliances (Scuotto et al., 2022). The rejection or acceptance of digital technologies by employees and their cognitive skills plays a vital role in the transformation of organizations towards technology systems, and subsequently achieving ambidexterity in strategic alliances (Warner and Wäger, 2019, Mubarak and Petraite, 2020). Therefore, the micro-foundations perspective needs to be extended further to enhance our understanding of why and how employees engage in digital transformation processes to influence ambidexterity in strategic alliances, as well as how digital technologies enable alliance partners to balance exploration and exploitation. Taken together, research on ambidexterity in strategic alliances should draw upon insights from the RBV

(Barney, 1991) and the dynamic capability view (Teece, 2007), and explore *how ambidexterity intention shapes organizational learning and knowledge management systems to support alliance ambidexterity; the extent to which alliance management capability shapes different kinds of ambidexterity (e.g., innovation, alliance, knowledge, and governance ambidexterity); the role of digital sensing capability (digital scouting, digital scenario planning, and digital mindset crafting), digital seizing capability (i.e., strategic agility, swift prototyping, and balanced digital portfolios), and digital transformation capability (i.e. navigating innovation ecosystems, redesigning internal structures, and digital maturity) in shaping ambidexterity in strategic alliances; the extent to which employees are open to new technologies in open innovation activities; and, the employee behaviors that encourage the development of digital capabilities oriented towards ambidexterity in strategic alliances.*

Third, a noticeable area of research could be the exploration of the role of environmental shocks, such as the COVID-19 pandemic, that have a profound effect on the world economy (Zahra, 2021, Sheng et al., 2021). The studies of Yadong and Huaichuan (2009) and Birkinshaw et al. (2016) in our review sample suggests that ongoing market changes and institutional environments shape the ambidextrous activities in strategic alliances. For example, the outbreak of COVID-19 has led to changes in the business models through the level of cooperation between different stakeholders (Crick and Crick, 2020). Firms established alliances with research centers and institutions to explore ideas for vaccinations, perform trials in laboratories, exploit existing solutions, and improve the efficiency of vaccination processes. Alliances with public organizations allowed for the obtainment of funding to support exploration and exploitation activities to cope with external environmental shocks. Competitors also formed cooperative agreements to share information and enhance supply chain responsiveness to meet market demand.



Taken together, alliances with diverse stakeholders have been mostly important in resolving multifaceted problems as in the case of COVID-19 (Canhoto and Wei, 2021). However, the presence of multiple stakeholders will likely lead to stakeholders having conflicting interests and this requires managers to prioritize their devotion based on the importance of each stakeholder. Hence, future studies need to adopt the perspectives of stakeholders (Freeman, 1984) to study *how attributes of stakeholders (e.g., legitimacy, power, and perseverance) are perceived by managers to attain ambidexterity in strategic alliances; the extent to which the choice of a firm between aggressive and cooperative strategies in managing stakeholder relationships supports ambidexterity in strategic alliances; and, how firms determine the appropriate value distribution between multiple stakeholders for realizing ambidexterity in strategic alliances.* In addition, balancing the conflicting demands and power of different stakeholders could be vital for firms to create value for their stakeholders. Thus, scholars could pay more attention to *the ways in which exploratory versus exploitative alliances could manage the demands of their diverse stakeholders and balance exploration and exploitation for long-term common benefits over supporting an individual alliance partner in pursuing their private gains* (cf. Ostrom, 1990). Researchers also need to think carefully about *the institutional designs and systems in world economies that may help to establish ambidextrous alliances with multiple stakeholders or alternatively impede ambidextrous alliances due to differences in institutional environments* (Loi et al., 2021). In this context, scholarly efforts should also focus on understanding the optimal and desirable levels of exploration versus exploitation in alliances across different markets (cf. Lavie, 2017). Such studies could draw upon comparative institutional approaches (Hall and Soskice, 2001), and examine the optimal levels of both activities in equity versus non-equity-based alliances given that non-equity based and multi-partner alliances are on the rise.

Fourth, future studies could combine different level of antecedents—that are individual, firm, alliance, and environmental levels and link with different forms of ambidexterity. In this regard, structural contingency theory (cf. Shenkar and Ellis, 2022, Puthusserry et al., 2022) could be useful to not only operationalize the concept of ambidexterity in strategic alliances but also pay more attention to the contingencies that drive ambidexterity. For example, managerial competencies and organizational structure can dictate the coordination mechanisms for managing complexity rooted in ambidexterity, whereas environmental contingencies could be in the form of dynamic versus stable market structures that require reconfiguration to deal with different tasks simultaneously with alliance partners (Van de Ven et al., 2013). Further, our review findings suggest that antecedents were linked with different forms of ambidexterity by focusing on contextual, structural, or sequential-based approaches. For example, some studies suggest that structural solutions are required to meet different needs (e.g., exploration and exploitation) simultaneously in joint projects (Lin et al., 2007, Lavie and Rosenkopf, 2006), whereas others argued that contextual changes (i.e., culture, management systems, or routines) are needed to achieve synergies in two activities like alignment and adaptation (Im and Rai, 2008, Bresciani et al., 2018). To advance the field forward, future studies could examine how multi-alliance partners balance and achieve hybrid ambidexterity such as structural, contextual and temporal/sequential for instance under dynamic environments (Park et al., 2020). The use of digitization and emerging technologies could be useful to simultaneously pursue structural and contextual ambidexterity in alliances. In addition, future studies could examine how top management team's (TMT) dynamics (*e.g., characteristics, diversity, strategic and social context-* cf. Carpenter, 2002) and their cognition influence the pursuit of exploration and exploitation activities in alliances operating under turbulent environments such as trade wars and economic sanctions. Such studies could examine how different alliance partners (*both large and small partners from manufacturing and service*

*sectors*) balance different types of ambidexterity while operating across developed and emerging markets. It would also be interesting to examine to what extent alliance partners imitate ambidexterity approaches of their competitors when operating in turbulent environments. Such studies could also examine the institutional environments of home and host markets of alliance partners and the way formal and informal institutions influence alliance ambidexterity.

### ***Need for more research on mediators***

Research has begun to explore the intervening factors that link antecedents with ambidexterity in strategic alliances. This work is reflected in Block 2 in Figure 5. However, this field of research is under-developed and therefore presents an important gap in our understanding. While some studies have examined learning orientation and its role in alliance ambidexterity, there is a need for future studies to pay greater attention to the mediating role played by potential and realized absorptive capacity and how these two dimensions shape alliance ambidexterity (cf. Khan et al., 2019). The role of learning and knowledge integration mediators is vital for achieving alliance ambidexterity, and thus future studies could integrate learning intent as a potential mediating variable in shedding light on how alliance partners balance ambidexterity (e.g., Hamel, 1991, Lane et al., 2001). The role of leadership is also important in achieving ambidexterity, and therefore future studies could pay attention to different types of leadership styles such as strategic versus transactional (cf. Vera and Crossan, 2004), and how these act as mediating mechanisms and support ambidexterity in alliances. Additionally, alliance strategic and marketing orientation could act as mediators and facilitate ambidexterity in alliances, and therefore future studies could examine alliance strategic and marketing orientation as potential mediators, and how these enable a balance between exploration and exploitation activities (e.g., Noble et al., 2002, Talke et al., 2011).

Another issue worth considering is the governance of ambidexterity in strategic alliances in the era of digital transformation. The changing environment has shifted the focus from skill development towards digital technologies, e.g., blockchain, big data analytics, artificial intelligence, and 3D printing (He et al., 2020). With digital transformation, it is possible to seek ambidexterity through alliances with diverse partners including competitors, customers, suppliers, consultants, research institutions, government bodies, and public institutions. As a consequence, firms need to reconsider their governance mechanisms to coordinate ambidexterity in complex strategic alliances and ecosystems in order to meet dynamic market expectations (Galera-Zarco et al., 2020). On the one hand, there is an intense need to develop trust-worthy relationships to ensure the transparency and accuracy of relational exchanges. On the other hand, alliance partners need to initiate culture for ensuring privacy, security, trust building, and data sharing, particularly in contexts with weak intellectual property protection systems. Therefore, future studies need to address effective governance mechanisms for ambidexterity in digital strategic alliances and ecosystems. The mechanism design theory could be a useful perspective that recognizes the importance of ensuring desired outcomes not only by a firm but also by its stakeholders (Maskin, 2008), which points to the increasing power of a firm and the declining power of its stakeholders in a digital network (Chen et al., 2020). Some firms might adopt a centralized governance structure by enjoying exclusive governance control and prioritizing their self-interests over those of alliance partners (Rietveld et al., 2019). Others might adopt decentralized governance control, where a firm and its alliance partners collectively employ a governance structure, although this might reduce collective actions of actors due to dispersed activities (Reischauer and Mair, 2018). Researchers could examine how centralized or decentralized governance structures facilitate ambidexterity in digital strategic alliances. Another fruitful avenue for future studies could be to explore the implications of

simulation software, databases, and web repositories as governance mechanisms to align the interests of alliance partners during the ambidexterity process (Cavallo et al., 2021).

### ***Opportunities for conceptualization of ambidexterity in strategic alliances***

A great deal of research has demonstrated the confusion about what the term ‘*ambidexterity in strategic alliances*’ denotes. As discussed above, the strategic alliance literature diverges on the conceptualization of ambidexterity, as existing studies focus on different forms of ambidexterity, creating a problem of neglecting their potential connections. We propose that future research can develop a more holistic conceptualization of ambidexterity for the strategic alliance context, rather than simply adopting the concept from firm-level innovation activity. Informed by some studies in the literature, we believe that when the term ambidexterity is applied to the strategic alliance phenomenon, it should capture the balancing acts in different forms of alliance formation and management, namely the different design approaches at partnership and portfolio levels, that allow the focal firm to explore and exploit simultaneously with its alliance partners (Kauppila, 2015, Úbeda-García et al., 2020, Yadong and Huaichuan, 2009). More specifically, exploration relates to the use of alliances for experimentation, pursuit of new knowledge, and creation of new competencies, whereas exploitation is related to the use of alliance for utilizing and refining existing knowledge and competencies (Kauppila, 2010). The innovation activities in strategic alliances are potentially different from internal innovation efforts (Hagedoorn et al., 2018, Shaikh and Levina, 2019). As such, we believe that merely adapting the concepts of exploration and exploitation from a single organization to strategic alliances may result in the loss of the underlying meaning of the term, and thus lead to a deviation from the original concept.

Although strategic alliance research has conceptualized ambidexterity in terms of exploration and exploitation activities (Lavie et al., 2010a, Wu et al., 2019, Kristal et al., 2010, Partanen et

al., 2020), a wide variety of other concepts have been considered including alignment and adaptability (Im and Rai, 2008, Im and Rai, 2013, Kaur et al., 2019), and agility and adaptability (Wamba et al., 2020). This broad conceptualization has given rise to confusion as *“ambidexterity literature has departed from the original definition of the construct as a capability for resolving tensions”* (O'Reilly and Tushman, 2013, p. 331). This has also led to the lack of transparency in vocabulary, as well as a deficiency in clarity on what ambidexterity means in strategic alliances. Therefore, we posit that there is a need to carefully define the boundaries of theorizing ambidexterity in strategic alliances, with an appropriate measurement description to enhance the internal and external validity of the concept. In doing this, researchers could rely on theoretical studies and also use qualitative methods by adopting diverse approaches, such as ethnography, grounded theory, fuzzy-set qualitative comparative analysis, and so on. In addition, scholars could pay greater attention to the role of contexts when examining how different institutional contexts define ambidexterity.

There is also a need for certainty that the concept of ambidexterity in strategic alliances is consistent under different environmental conditions. For example, Birkinshaw et al. (2016) argues that firms deal with the discontinuities in external environments through sequential alterations between exploration and exploitation, whereas Lin and Ho (2021) found that firms need to pursue efficiency and flexibility in alliances simultaneously in order to respond to technological uncertainties. Hence, one implication for future researchers could be to consider different environmental uncertainty (i.e., cultural, economic, political, and government), industry uncertainty (i.e., demand, competition, input, technological), and firm uncertainty (behaviors, operations, resources, and R&D) and decide whether sequential or simultaneous pursuit of two contradictory activities is an ideal approach to deal with environmental shocks in the future. Relatedly, some environmental shocks (e.g., global pandemic, natural disasters, and conflicts) create disconnectedness between domestic and international alliance partners,

thereby affecting joint projects and performance outcomes (Amankwah-Amoah et al., 2021, Liu et al., 2022, Huang, 2020). Future studies could consider the role of governance ambidexterity versus other types of ambidexterity to monitor distant relationships while realizing potential gains.

To take a step further conceptually, we propose that scholars need to appreciate the unique characteristics of emerging economies. For example, emerging economies are more volatile, unstable, institutionally weak, and resource constrained. Hence, firms in emerging economies are likely to face different environmental and technological conditions as compared to their counterparts in more advanced economies. These differences between firms from emerging and advanced economies may give rise to the relevance and validity of the definition and conceptualization of ambidexterity in strategic alliances. For example, the technology and economic landscape of emerging economies might encourage firms to explore and exploit knowledge differently across different alliances, and hence use differentiated ambidexterity (Zhao et al., 2021a). Therefore, the conceptualization of ambidexterity in strategic alliances from advanced economies may not be relevant and significant for firms from emerging economies. We propose that future research could conceptualize ambidexterity in strategic alliances from an emerging economy perspective by considering their specific political, economic, legal, social, and technological systems.

#### ***Advancement of research on outcomes of ambidexterity***

A large body of research on outcomes of ambidexterity in strategic alliances focuses on performance outcomes in terms of profitability and growth (Ojha et al., 2018b, Kauppila, 2015, Wassmer et al., 2017); however, the focus on international performance remains limited (Monferrer et al., 2021). To extend the research on international outcomes, one interesting perspective might be to explore how regionalization, globally emerging pivots, and friend-

shoring shape the ambidextrous activities in strategic alliances and impact on a firm's international gains. Firstly, there are tectonic shifts in the choice of strategic alliance partners. Secondly, there are sanctions and limitations for technology transfer and hence joint innovation activities. Finally, clearly emerging political divisions may have a long-lasting effect on the ability of firms to engage in ambidextrous strategic alliances, especially involving knowledge exploration. These are phenomena that cannot be traced back in the literature on strategic alliances and ambidexterity but may be found in the more distant research history. Hence, adopting a business history perspective or a political economic perspective may shed some more light on the international performance outcomes of ambidexterity in strategic alliances.

Relatedly, while most studies have focused on the positive outcomes of ambidexterity in strategic alliance, there is some evidence of negative performance implications such as higher alliance coordination costs and lower financial performance in the case of innovation and supply chain ambidexterity (Partanen et al., 2020). This suggests the need for greater scholarly efforts to understand how alliance ambidexterity, innovation ambidexterity, or governance ambidexterity lead to negative consequences, such as partner burnout, employee exhaustion, knowledge hiding, and alliance failure, given the focus on different sets of activities at the same time. This understanding would help firms to develop appropriate strategies to respond to these negative consequences.

Further, our results revealed that a firm's involvement in alliances to seek ambidextrous activities could help to attain strategic outcomes of dynamic capability development and knowledge absorption speed enhancement (Yu et al., 2022, Haim Faridian and Neubaum, 2021). To this end, more research is needed to consider other strategic outcomes of ambidexterity such as green initiatives, alliance survival, learning speed, team productivity, internal process productivity, and employee training and development (Mauboussin, 2012, Martínez-Noya and García-Canal, 2021). For example, with a focus on a global greening



agenda, scholars could investigate how and what type of ambidexterity would develop in circular economy strategic alliances and how these may drive the greening agenda forward. Researchers could also understand the dimensions of value co-creation, value capture, and value destruction from alliance ambidexterity. Such an insight could adopt a value multidimensional perspective in terms of types of value (economic, psychological, sociological, and environmental) and levels of analysis (individuals, organizations, ecosystems, and societies which make contributions to ambidexterity in strategic alliances) to uncover complex interdependencies and relationships, performance mediators, and outcomes.

A final recommendation for the study of ambidexterity in strategic alliances is the need for increased consideration of relational outcomes. The ambidextrous activities in strategic alliances involve the efforts of all partners for joint outcomes (Im and Rai, 2008, Im and Rai, 2013). It would be interesting to understand the effect of different types of ambidexterity (e.g., supply chain ambidexterity, alliance ambidexterity, governance ambidexterity) and how these drive alliance project successes and promote relational benefits. Researchers could also identify the role of the Triple Helix innovation system's actors (governments, businesses, and universities) in shaping ambidextrous actors and their activities to facilitate relational outcomes.

## **Conclusion**

The aim of this article was to systematically examine ambidexterity in strategic alliances, given the vital role alliances play in the exchange of valuable resources and knowledge, as well as speed to market entry. Our research adopted an integrative review to systematically integrate and challenge the assumptions underpinning ambidexterity in strategic alliance research. We reviewed 77 articles published in 38 leading journals across 13 disciplines. The two-tiered approach, consisting of bibliometric and qualitative content analyses, generated diverse

insights from which we explained the coverage and problems of the research. We developed an integrative framework that could inform future research on this important topic. Overall, we suggest that studies could adopt a more dynamic and processual view of ambidexterity in alliances and examine how ambidexterity unfolds during the entire life cycle of an alliance and across all the alliance value chains.

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**Table 1.** Keywords, search strings, and inclusion/exclusion criteria.

<b>Keywords</b>		
<b>Group 1</b>	<b>Group 2</b>	<b>Search strings</b>
“strategic alliance” OR “collaboration” OR “cooperation” OR “coopetition” OR “network” OR “customer-supplier relationship” OR “customer-supplier alliance” OR “customer-supplier network” OR “customer-supplier collaboration” OR “buyer-supplier alliance” OR “buyer-supplier network” OR “buyer-supplier collaboration” OR “horizontal alliance” OR “vertical alliance” OR “horizontal collaboration” OR “vertical collaboration” OR “horizontal partnership” OR “vertical partnership” OR “inter-firm alliance” OR “inter-firm cooperation” OR “inter-firm linkage” OR “inter-firm partnership” OR “inter-organizational alliance” OR “inter-organizational relationship” OR “inter-organizational cooperation” OR “inter-organizational linkage” OR “inter-organizational partnership” OR “consortia”	“ambidexterity” OR “ambidextrous” OR “exploration and exploitation” OR “exploitative and exploitative” OR “simultaneous”	“strategic alliance” OR “collaboration” OR “cooperation” OR “coopetition” OR “network” OR “customer-supplier relationship” OR “customer-supplier alliance” OR “customer-supplier network” OR “customer-supplier collaboration” OR “buyer-supplier alliance” OR “buyer-supplier network” OR “buyer-supplier collaboration” OR “horizontal alliance” OR “vertical alliance” OR “horizontal collaboration” OR “vertical collaboration” OR “horizontal partnership” OR “vertical partnership” OR “inter-firm alliance” OR “inter-firm cooperation” OR “inter-firm linkage” OR “inter-firm partnership” OR “inter-organizational alliance” OR “inter-organizational relationship” OR “inter-organizational cooperation” OR “inter-organizational linkage” OR “inter-organizational partnership” OR “consortia” AND “ambidexterity” OR “ambidextrous” OR “exploration and exploitation” <sup>a</sup> OR “exploitative and exploitative” OR “simultaneous”
<b>Inclusion and exclusion criteria</b>		
<b>Description</b>	<b>Inclusion criteria</b>	<b>Exclusion criteria</b>
<i>Time-frame</i>	<ul style="list-style-type: none"> <li>No bottom limit – upper limit was to include articles being published to the date of writing</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
<i>Search terms</i>	<ul style="list-style-type: none"> <li>Boolean operator to include keywords from strategic alliance and ambidexterity groups</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
<i>Database</i>	<ul style="list-style-type: none"> <li>ISI web of science</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
<i>Quality criteria</i>	<ul style="list-style-type: none"> <li>Articles ranked 3, 4, or 4* based on CABS journal guide 2021</li> </ul>	<ul style="list-style-type: none"> <li>Articles ranked 1 or 2 in CABS journal guide 2021</li> <li>All non-scholarly peer-reviewed articles, books, book sections, editorials, commentary essays, and conference proceedings</li> </ul>
<i>Relevance</i>	<ul style="list-style-type: none"> <li>Articles focusing on ambidexterity and strategic alliance relationship in a single study.</li> </ul>	<ul style="list-style-type: none"> <li>Articles not focusing on strategic alliances and ambidexterity linkage</li> <li>Articles exclusively focusing on ambidexterity or strategic alliances but not addressing these concepts simultaneously</li> <li>Articles not conceptualizing ambidexterity in a strategic alliance study</li> </ul>

*Note:* a. We searched for exploration and exploitation together to reflect ambidexterity in sample studies.

**Table 2.** Number of publications in leading journals.

<b>Journal</b>	<b>CABS journal ranking 2021</b>	<b>No. of papers</b>
<b>General Management</b>		
Academy of Management Journal	4*	1
Academy of Management Annals	4*	1
Journal of Management	4*	1
Academy of Management Perspectives	4	1
California Management Review	3	1
European Management Review	3	2
Journal of Business Research	3	3
<b>Organizational and Management sciences</b>		
Management Science	4*	2
Decision Sciences	3	1
<b>Human Resource Management and Employment</b>		
The International Journal of Human Resource Management	3	1
<b>Operations and Technology</b>		
Journal of Operations Management	4*	1
Journal of Supply Chain Management	4	1
International Journal of Operations & Production Management	4	3
IEEE Transactions on Engineering Management	3	2
International Journal of Production Economics	3	7
Production Planning & Control	3	1
Supply Chain Management: An International Journal	3	1
Journal of Purchasing and Supply Management	3	1
<b>Marketing</b>		
Journal of the Academy of Marketing Science	4*	2
Industrial Marketing Management	3	5
<b>Innovation</b>		
Research Policy	4*	1
Journal of Product Innovation Management	4	1
Technological Forecasting and Social Change	3	7
The Journal of Technology Transfer	3	2
Technovation	3	2
<b>Information Management</b>		
Information Systems Research	4*	2
Journal of Management Information Systems	4	2
<b>International Business and Area</b>		
Journal of International Business Studies	4*	1
International Business Review	3	3
<b>Entrepreneurship and Small Business Management</b>		
Small Business Economics	3	1
International Small Business Journal	3	1
Journal of Small Business Management	3	1
<b>Regional Studies, Planning and Environment</b>		

Journal of Rural Studies	3	1
<b>Strategy</b>		
Strategic Management Journal	4*	4
Long Range Planning	3	2
Strategic Organization	3	1
<b>Organization Studies</b>		
Organization Science	4*	5
<b>Social sciences</b>		
Business Strategy and the Environment	3	2
<i>Total</i>		<i>77</i>



**Table 3.** Theory types used in ambidexterity in strategic alliances research

<b>Theory types</b>	<b>Purpose of theory</b>	<b>Number of studies</b>	<b>Exemplary studies</b>
Explaining	to generate knowledge about the inner workings of phenomena – that is, their causal relations; logically linked variables.	49	Aslam et al. (2018); Bresciani et al. (2018); Lee et al. (2020); Lin and Ho (2021); Partanen et al. (2020); Tiwana (2008); Zhao et al. (2021b)
Comprehending	Meanings are considered constitutive of phenomena; offer an interpretation of the meaning of phenomena.	9	Aoki and Wilhelm (2017); Birkinshaw et al. (2016); Kauppila (2010); Michelfelder and Kratzer (2013)
Ordering	To explain the phenomena or to articulate the meaning of them in theoretically useful ways.	5	Amankwah-Amoah et al. (2019); Dodourova et al. (2021); Ferraris et al. (2019); Yadong and Huaichuan (2009)
Enacting	To articulate how phenomena are continuously produced and reproduced: that is, the processes through which they emerge, evolve, reoccur, and decline over time.	2	Im and Rai (2013)
Provoking	To show alternative, often eye-opening and disruptive ways of seeing phenomena.	2	Ojha et al. (2018a)
No theory	Not applicable	10	Ardito et al. (2021); Colombo et al. (2015); Lavie and Rosenkopf (2006); Purchase et al. (2016)

*Note.* Total number of studies = 77.

**Table 4.** Key theories used in ambidexterity and strategic alliance literature.

<b>Theory</b>	<b>Ambidexterity terms used</b>	<b>Central idea</b>	<b>Source</b>
RBV	Organizational ambidexterity through alliances; Ambidextrous collaboration; Resource ambidexterity; Ambidexterity in R&D; ambidextrous innovation; Supply chain ambidexterity.	A firm's strategic resources help to balance between two objectives that holds significant promise for firm performance.	Bresciani et al. (2018); Chang and Gotcher (2020); Ojha et al. (2018b); Payán-Sánchez et al. (2022)
Dynamic capability	Ambidextrous supply chain; Ambidextrous business model; Organizational ambidexterity; Innovation ambidexterity.	The ambidexterity can act as a dynamic capability or be a source of dynamic capability generation in strategic alliances for achieving competitive advantage.	Benzidia et al. (2021); Hoang and Rothaermel (2010); Kristal et al. (2010); Roldán Bravo et al. (2018)
Social network theory	Ambidextrous work in alliances; Ambidextrous alliance formation; Inter-organizational ambidexterity; Ambidextrous inter-organizational R&D collaboration; Individual-level ambidexterity; Strategic ambidexterity.	The heterogeneity of social network ties can promote novel recombination of resources and enhance knowledge for ambidexterity.	Lin et al. (2007); Michelfelder and Kratzer (2013); Sharma et al. (2019); Wu et al. (2019)
Relational view	Marketing in the marketing function; Cross-boundary ambidexterity; Ambidextrous governance	The firms can gain ambidexterity through synergistic combination of relational assets, knowledge-sharing routines, and governance mechanisms in alliance relationships.	Im et al. (2019); Russo and Vurro (2010)
Microfoundations perspective	Ambidextrous practices; Innovation ambidexterity	The actions taken by individuals and groups in a firm promotes knowledge sourcing from alliance partners to promote ambidexterity.	Ardito et al. (2019); Dodourova et al. (2021)

**Table 5.** Overview of definitions and conceptualizations of ambidexterity in strategic alliance research.

<b>Ambidexterity types</b>	<b>Definition</b>	<b>Key conceptualizations</b>
Supply chain ambidexterity	It refers to a firm's strategic choice to simultaneously pursue both supply efficiency and flexibility practices simultaneously.	Supply chain efficiency and supply chain responsiveness (Aslam et al., 2018); supply chain exploration and supply chain exploitation (Amankwah-Amoah et al., 2019, Gualandris et al., 2018, Rojo et al., 2016); Blockchain technology and supplier relational social capital (Benzidia et al., 2021); ICT use for exploration and ICT use for exploitation (Gu et al., 2021); Supply chain agility and supply chain adaptability (Wamba et al., 2020)
Innovation ambidexterity	It is related to the use of alliances to simultaneously pursue explorative and exploitative innovation activities.	Explorative innovation and exploitative innovation (Bresciani et al., 2018, Aoki and Wilhelm, 2017); co-exploration and co-exploitation (Kauppila, 2015, Úbeda-García et al., 2020)  (Chen and Liu, 2019, Dezi et al., 2021); radical innovation and incremental innovation (Ardito et al., 2020); environmental explorative innovation and exploitative innovation (Chang and Gotcher, 2020); variety of product innovation and intensity of product innovation (Mei et al., 2021); adaptation, absorption and innovation capability (Monferrer et al., 2021)
Alliance ambidexterity	The alliance ambidexterity refers to concurrent domain separation of alliances (e.g., upstream and downstream alliances; rivals and collaborators) to offer learning advantage.	Downstream position and upstream position in alliance (Ardito et al., 2021); external exploration experience and external exploitation experience (Hoang and Rothaermel, 2010); alignment and adaptation of goals in alliances (Im and Rai, 2013, Tiwana, 2008); explorative alliance formation and exploitative alliance formation (Lavie et al., 2010a, Lin et al., 2007); internal alliance and external alliance (Wong et al., 2013); balance between revenue enhancement and cost reduction through partner resources (Wassmer et al., 2017); rivals and collaborators within alliance portfolio (Yu et al., 2022); balance between new and old alliance partners (Payán-Sánchez et al., 2022)
Knowledge ambidexterity	It is defined as the concurrent knowledge exploration and knowledge exploitation within alliances.	Knowledge protection and knowledge exchange success (Yang et al., 2014); knowledge exploration and knowledge exploitation (Feng et al., 2019, Lee et al., 2020)
Governance ambidexterity	Governance ambidexterity is the alliance partners' efforts to simultaneously use of formal and relational governance mechanisms to achieve alliance efficiency and flexibility.	Relational governance and contractual governance (Blome et al., 2013, Lin and Ho, 2021)

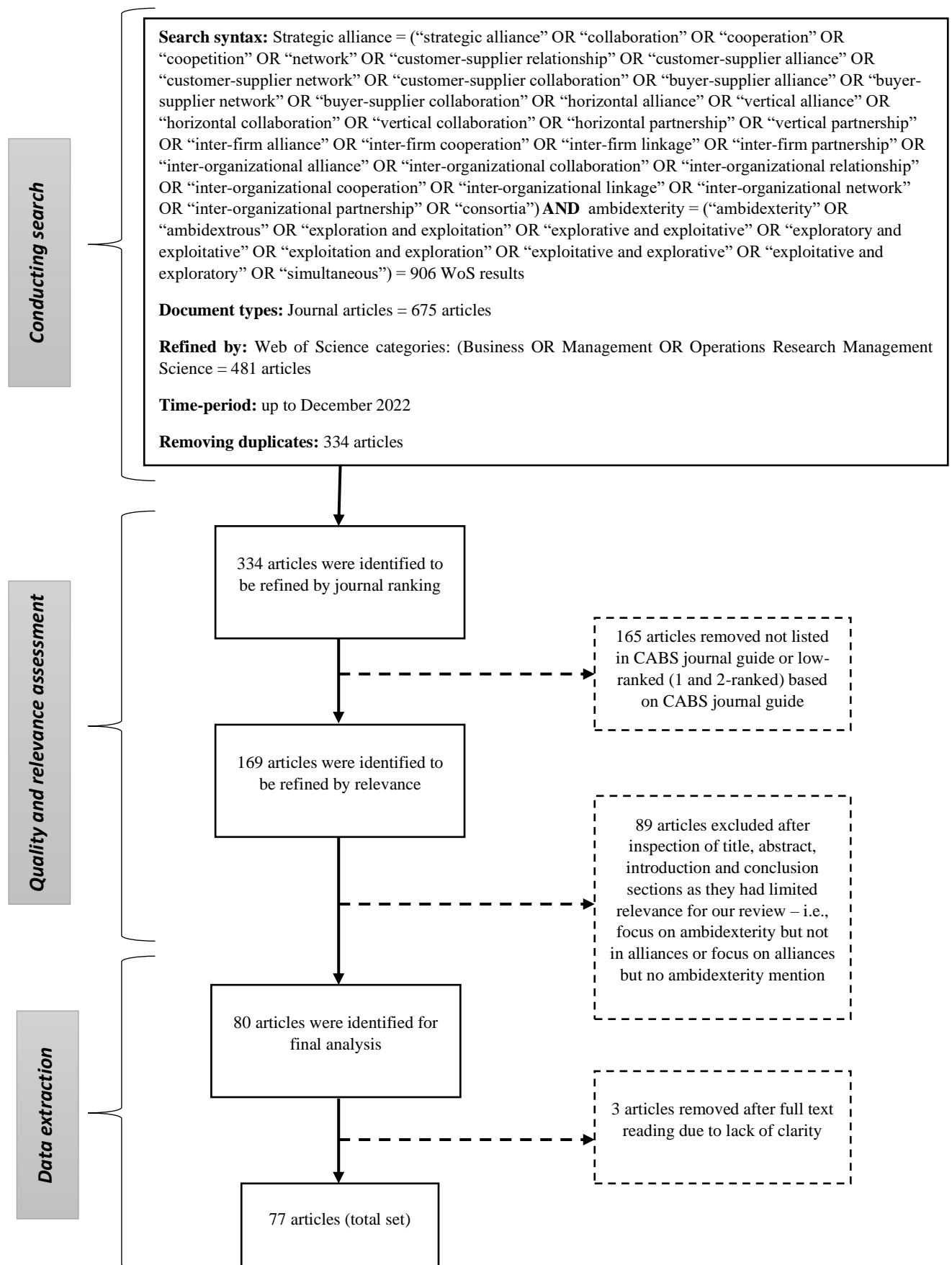
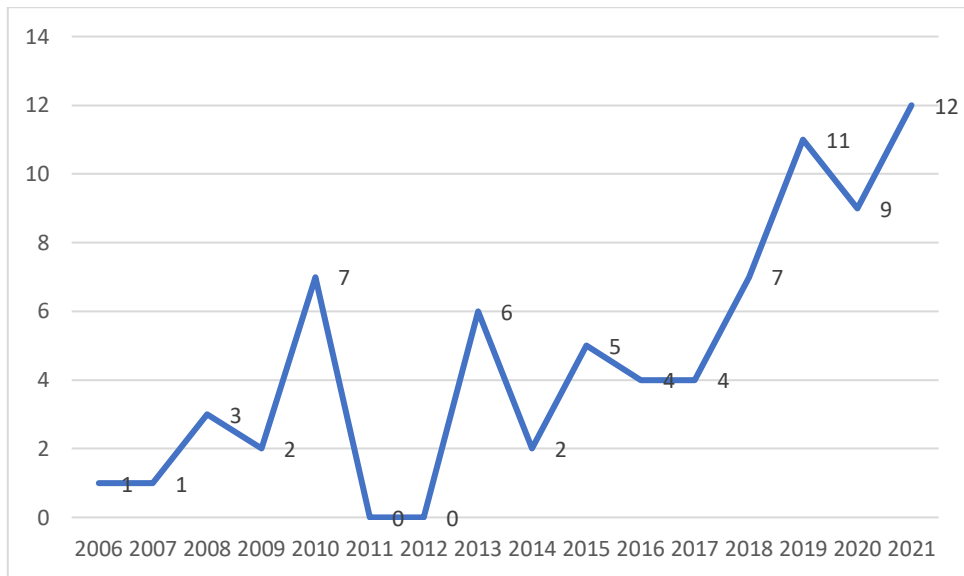
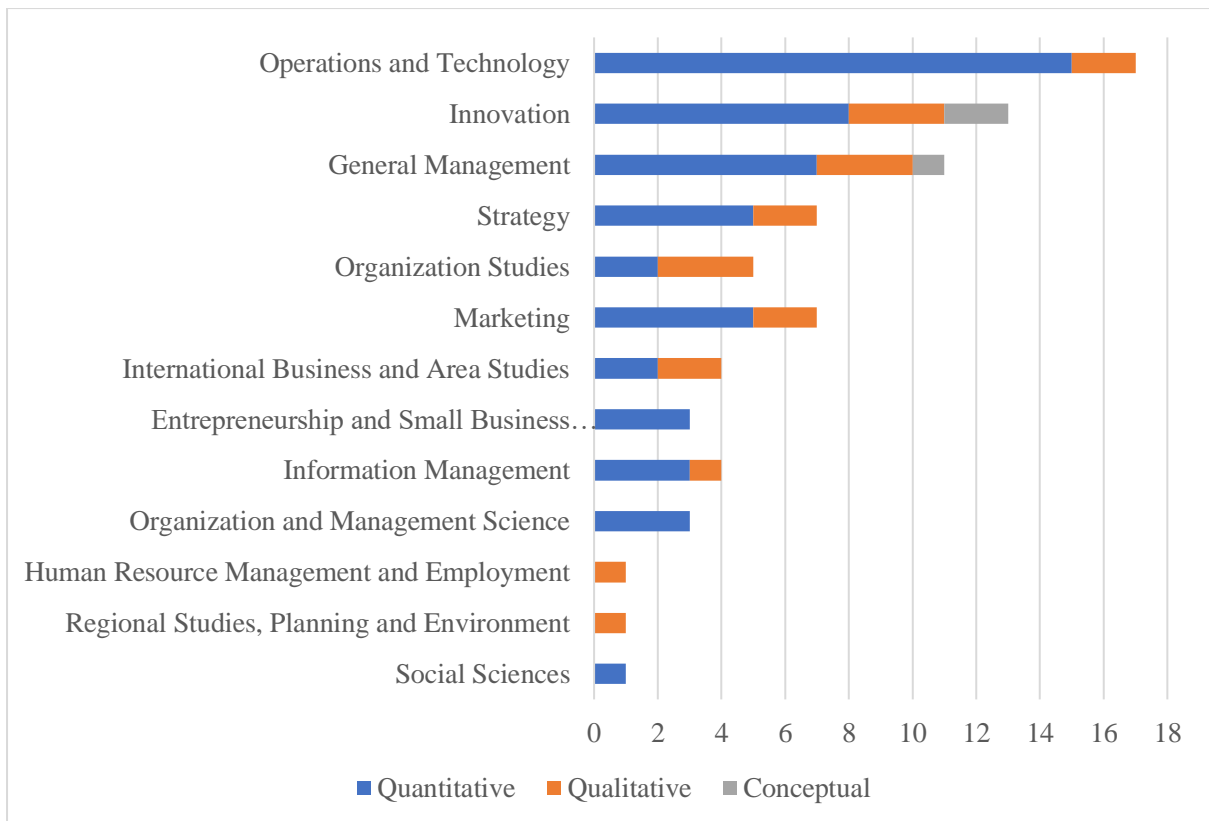


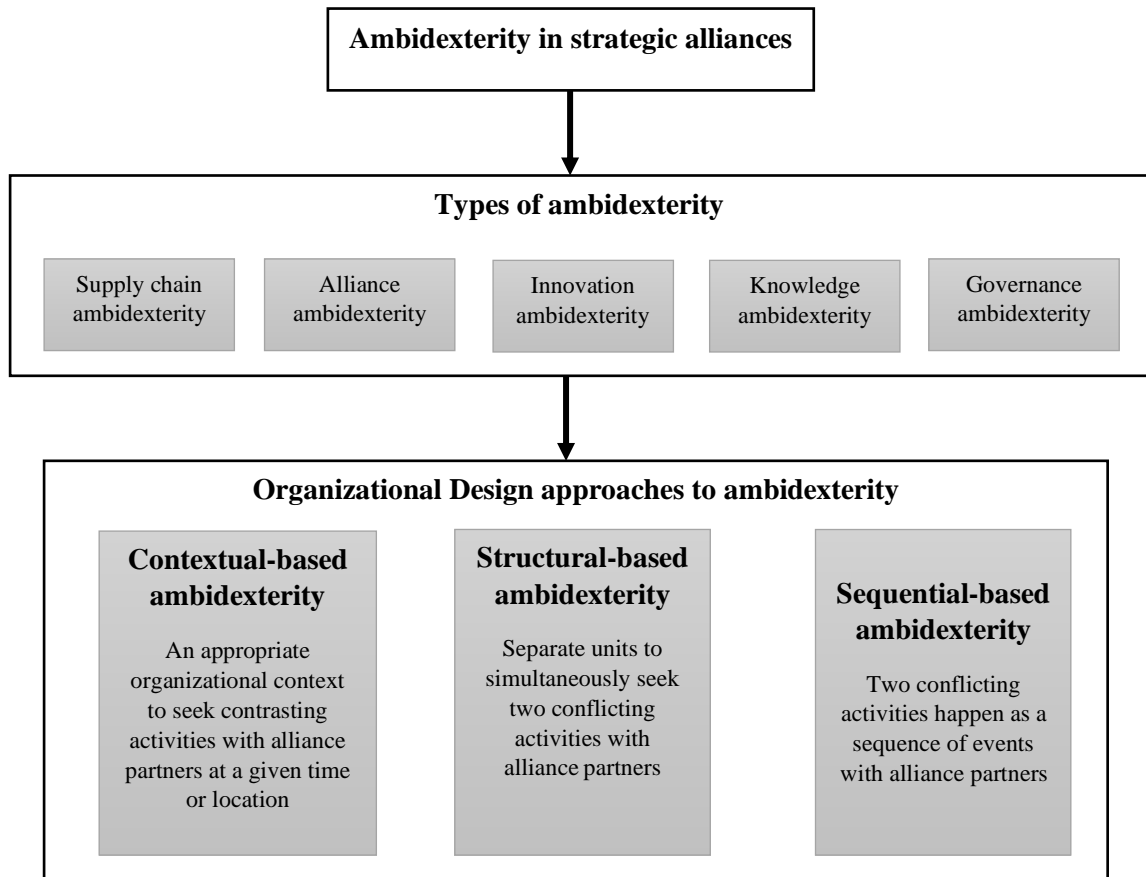
Figure 1. Search strategy and selection process.



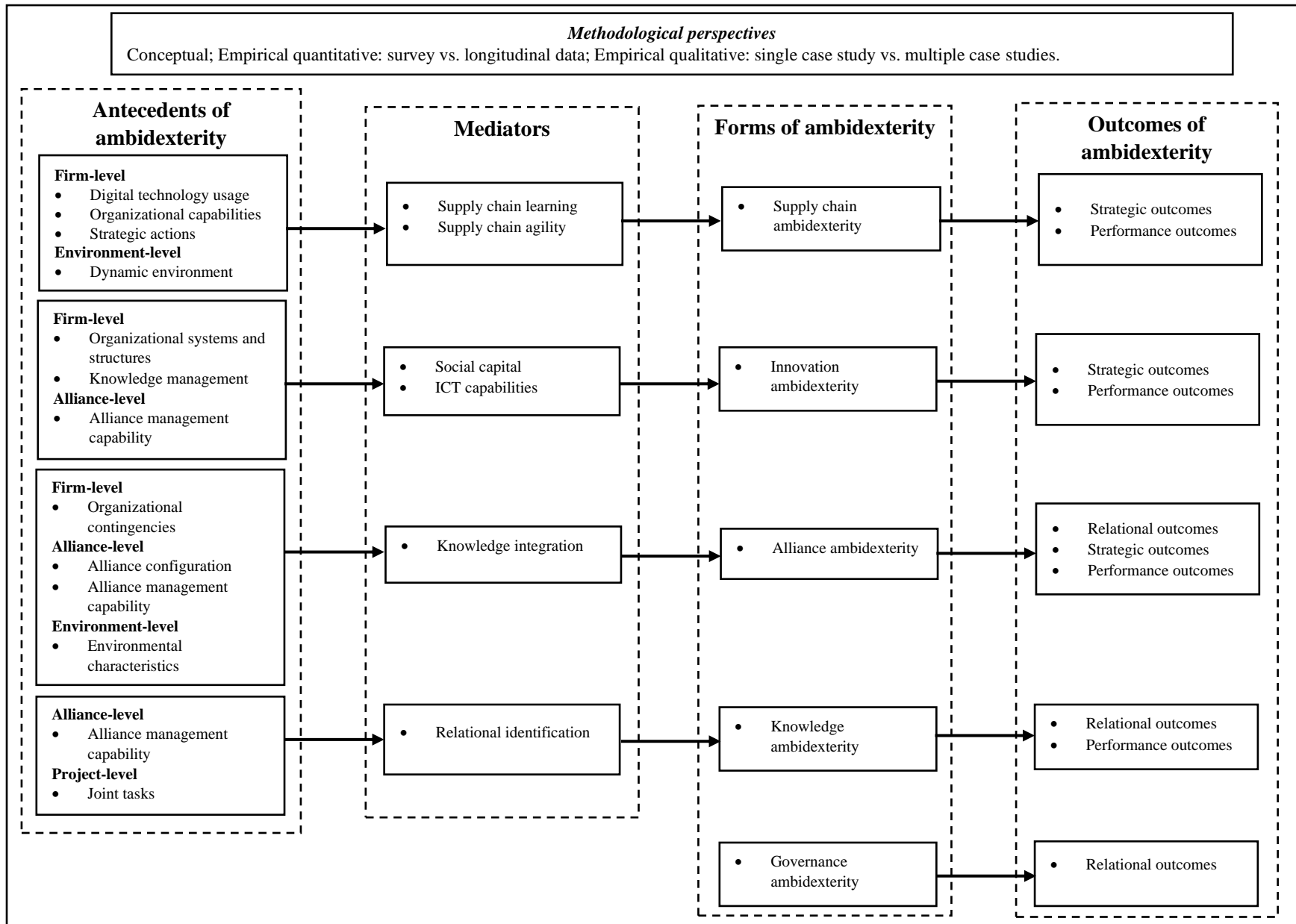
**Figure 2.** Growth of peer-reviewed articles.



**Figure 3.** Type of articles and disciplines.



**Figure 4.** Conceptualization of ambidexterity in strategic alliance literature.



**Figure 5.** Integrative framework of ambidexterity in strategic alliances research.

## Appendix A. Overview of studies included in our review.

Author	Journal	Aim	Methodology
Amankwah-Amoah et al. (2019)	Long Range Planning	The paper examines how firms develop supply chain financing model to help overcome institutional voids and become ambidextrous.	Qualitative; single case study; 40 interviews
Andersen et al. (2020)	Production Planning & Control	The aim of study is to understand how purchasing department managers contribute to the organizational pursuit of organizational ambidexterity.	Qualitative; multiple case studies; 60 interviews
Aoki and Wilhelm (2017)	Organization Science	This study explores how buying firms can simultaneously achieve short-term and long-term benefits with their long-standing supplier.	Qualitative; single case study (Toyota); 38 interviews
Ardito et al. (2019)	Technological Forecasting and Social Change	The paper seeks to unveil the influence of the decision to ally with partners of diverse types and from different geographical locations (i.e., the internationalization of alliance portfolio diversity) on the ability of firms to balance radical and incremental innovation efforts (i.e., innovation ambidexterity).	Quantitative; secondary data; Italian innovation survey 2008-2010; 5897 firms
Ardito et al. (2021)	IEEE Transactions on Engineering Management	This study aims at covering this gap by empirically analysing the relationship between alliance ambidexterity and innovation performance.	Quantitative; secondary data; 1982–2011; 1017 companies
Aslam et al. (2018)	International Journal of Operations & Production Management	The paper focuses on understanding how dynamic supply chain capabilities interrelate and their effect on supply chain ambidexterity.	Quantitative; survey; 277 responses; 8.2% response rate
Benzidia et al. (2021)	Technological Forecasting and Social Change	How buyers perceive the role of blockchain technology in exploring and exploiting innovation management in the industry 4.0 era.	Quantitative; survey; 379 responses; 23.6% response rate
Birkinshaw et al. (2016)	California Management Review	This paper develops a conceptual integration of the dynamic capabilities and ambidexterity perspectives in order to understand how firms adapt to discontinuous change.	Qualitative; multiple case studies 3; longitudinal; 8 to 12 interviews in each company
Blome et al. (2013)	Journal of Supply Chain Management	The authors investigate the effect of ambidextrous governance on innovation and cost performance.	Quantitative; survey; 97 responses; 41% response rate
Bresciani et al. (2018)	Technological Forecasting and Social Change	The aim of the study is to add new knowledge to the IoT and Smart City alliance research, measuring and clarifying the effect of knowledge management and ICT capabilities on ambidexterity	Quantitative; survey; 80% (146/182) individual- and 78% (43/51) project-level response rates.



		performance at a specific level of analysis (the project).	
Cao et al. (2013)	Journal of Management Information Systems	This study explores the relevance of a balance between relational and contractual governance to achieve ambidexterity in IT outsourcing governance.	Qualitative; single case study; semi-structured interviews
Chang et al. (2009)	Research Policy	This paper examines the relationship between organizational ambidexterity and research commercialization in universities.	Quantitative; secondary data; 474 academic patent inventors
Choi et al. (2021)	Small Business Economics	This study examines when small- and medium-sized enterprises benefit from innovation ambidexterity for their growth.	Quantitative; secondary data; 912 firm-years for the 2000–2017 period
Cofré-Bravo et al. (2019)	Journal of Rural Studies	How different types of social capital (bonding, bridging, and linking) are used to achieve what has been called ambidexterity (i.e. open networks and closed networks)?	Qualitative; interviews with
Colombo et al. (2015)	The Journal of Technology Transfer	The study examines the innovation performance of hybrid alliances, that is, alliances that combine exploration and exploitation activities	Quantitative; survey; 149 responses; 13% response rate
Dodourova et al. (2021)	International Business Review	This study addresses the question as whether and how MNCs seek explorative and exploitative knowledge differently within the same emerging economy.	Qualitative; multiple case studies; 11 interviews
Feng et al. (2019)	International Small Business Journal	This paper investigates the role of relational identification in the relation between joint actions and small-firm ambidexterity in asymmetric alliances.	Quantitative; survey; 205 responses; 41.5% response rate
Ferraris et al. (2019)	The International Journal of Human Resource Management	To understand how ambidextrous work in smart city work is supported through human resource management systems.	Qualitative; multiple case studies 7; 21 interviews
Gu et al. (2021)	International Journal of Production Economics	This study explores how to build supply chain resilience and whether supply chain resilience can enhance firm performance and bring values to customers.	Quantitative; survey; 206 responses; 25.4% response rate
Gualandris et al. (2018)	International Journal of Operations & Production Management	The purpose of this paper is to introduce and define the concept of purchasing ambidexterity in terms of two dimensions: balance dimension and combined dimension.	Quantitative; survey; 95 purchasing functions;
Guo et al. (2020)	Technological Forecasting and Social Change	This study seeks to examine how the combined dimension and the balance dimension of the ambidexterity of technological learning routine affect innovation performance of cluster firms.	Quantitative; survey; 217 industrial clusters

Haim Faridian and Neubaum (2021)	Technovation	To highlight the implications of interorganizational ties for value capturing and value creating.	Conceptual
Heracleous et al. (2017)	Technological Forecasting and Social Change	This study investigates the organizational dysfunctions that can interfere with the implementation of structural ambidexterity as a dynamic capability.	Qualitative; single case study; historical data
Ho and Lu (2015)	Journal of Business Research	The authors consider firms' ambidexterity in marketing to consist of exploratory and exploitative marketing activities and examines the individual and joint impact of these activities on market performance.	Quantitative; survey; 220 responses;
Hoang and Rothaermel (2010)	Strategic Management Journal	This study investigates the role of internal and external exploration and exploitation paradox for R&D project performance.	Quantitative; secondary data; 415 new biotechnology-based drug discovery and development projects by 43 pharmaceutical companies between 1980 and 1998
Im and Rai (2008)	Management Science	This study examines whether the boundary condition for ambidextrous learning can be extended from firms to long-term alliance relationships.	Quantitative; survey; 331 responses; 10% response rate
Im and Rai (2013)	Information Systems Research	To what extent the coordination of alliances, information technology (IT)-enabled operations and sensemaking, along with interdependent decision making, promote the alliance contextual ambidexterity.	Quantitative; survey; 76 suppliers and 238 customers;
Im et al. (2019)	Decision Sciences	This study investigates how long-term partners can establish successful supply chain collaboration to accrue relationship benefits.	Quantitative; survey; 238 customers
Kauppila (2010)	Strategic Organization	How a firm's ambidexterity evolves from external partnership resources?	Qualitative; single case study; historical data
Kauppila (2015)	Long Range Planning	This paper investigates the process by which firms can realize the potential value of their alliance management capability.	Quantitative; survey; 172 responses; 11.7% response rate
Kaur et al. (2019)	Technological Forecasting and Social Change	The study explores the potential role cognitive computing can play in an organizational context with global partnerships.	Qualitative; multiple case studies; 20 interviews
Kristal et al. (2010)	Journal of Operations Management	This study investigates the influence of an ambidextrous supply chain strategy on manufacturers' combinative competitive capabilities and, in turn, on business performance.	Quantitative; survey; 214 responses; 9% response rate

Lam et al. (2019)	Journal of the Academy of Marketing Science	What factors determine when orientation ambidexterity is synergistic for or counterproductive to productivity?	Quantitative; survey; 357 responses; 30.4% response rate
Lavie and Rosenkopf (2006)	Academy of Management Journal	Do firms balance exploration and exploitation in their alliance formation decisions and, if so, why and how?	Conceptual
Lavie et al. (2010a)	Organization Science	This study examines the role of organizational separation between exploring and exploiting units and understand the performance implications of exploration and exploitation in alliances.	Quantitative; secondary data; 1990 to 2002; 367 U.S.-based publicly traded software firms
Lavie et al. (2010b)	Academy of Management Annals	This study reviews the growing literature on exploration and exploitation, discuss various perspectives, raise conceptual and empirical concerns.	Conceptual
Lee et al. (2020)	International Business Review	What is the role of dual dimensions of ambidextrous knowledge sharing among group-affiliated companies on the global performance of group-affiliated companies?	Quantitative; survey; 337 responses; 87.5% response rate
Lin and Ho (2021)	Technovation	This study investigates ambidextrous governance in alliance to simultaneously pursue alliance efficiency and flexibility.	Quantitative; survey; 163 responses;
Lin et al. (2007)	Management Science	This study examines the ambidexterity hypothesis and its boundary conditions with a unique research method.	Quantitative; secondary data; 1988 to 1995, covering 95 firms
Liu et al. (2018)	International Journal of Production Economics	This study explores how complementary and balance configurations of technological and marketing capabilities influence alignment and adaption and improve firm performance.	Quantitative; survey; 250 responses; 40% response rate
Lô and Theodoraki (2021)	IEEE Transactions on Engineering Management	This study examines the mechanisms through which corporations can achieve ambidexterity based on entrepreneurial ecosystems.	Qualitative; single case study; 43 interviews
Mani et al. (2022)	Industrial Marketing Management	This research examines the effects of alliance portfolios on joint R&D project performance.	Quantitative; secondary data; 596 alliances formed by 83 biotech-pharmaceutical industry firms
Marco-Lajara et al. (2022)	Journal of Business Research	This study investigates how agglomeration (of firms and institutions) affects the development of ambidexterity (co-exploration and co-exploitation) through the mediating effect of social capital.	Quantitative; survey; 210 responses
Medlin and Törnroos (2015)	Industrial Marketing Management	This study seeks to understand how ambidexterity of exploring and exploiting is managed in an innovation context.	Qualitative; single case study; semi-structured interviews

Mei et al. (2021)	Journal of Small Business Management	This study examines the role of strategic ambidexterity in product innovation through effectively exploiting internal and external resources as well as their combination.	Quantitative; survey; 600 responses; 60% response rate
Petruzzelli (2019)	Technological Forecasting and Social Change	This paper understands how the status of partnering firms may affect the explorative or exploitative content of alliances.	Conceptual
Michelfelder and Kratzer (2013)	Journal of Product Innovation Management	The purpose of this paper is to demonstrate why and how an ambidextrous R&D collaboration outperforms other collaboration structures in the creation of innovation.	Qualitative; single case study; 35 interviews
Ojha et al. (2018a)	International Journal of Production Economics	This paper examines the impact of top management transformational leadership on supply chain organizational learning and supply chain ambidexterity.	Quantitative; survey; 128 responses; 42.6% response rate
Ojha et al. (2018b)	International Journal of Production Economics	This study addresses the question as how firms organize learning orientations to pursue exploration and exploitation in supply chains.	Quantitative; survey; 128 responses; 42.6% response rate
Park et al. (2020)	Information Systems Research	This study investigates the role of digitization in achieving organizational structural ambidexterity within inter-firm and intra-firm relationships.	Quantitative; fuzzy-set comparative analysis; 1325 firms
Partanen et al. (2020)	International Journal of Production Economics	The paper investigates the relationships among supply chain ambidexterity, network capabilities, strategic information flow, and firm performance.	Quantitative; survey; 200 responses; 16.83% response rate
Payán-Sánchez et al. (2022)	Business Strategy and the Environment	The objective of this paper is to analyze the impact of horizontal collaboration on the environmental performance of airlines through network ambidexterity.	Quantitative; secondary data; 149 airlines from 2012-2016
Pereira et al. (2021)	International Business Review	This paper explores the development of an ambidextrous context in a rapidly growing emerging market multinational.	Qualitative; case study; longitudinal design; 8 interviews
Purchase et al. (2016)	Industrial Marketing Management	The purpose of this paper is to investigate innovation paths, their events and resource use for a wave energy development within the renewable energy sector.	Qualitative; single case study; Mixed method
Raisch and Tushman (2016)	Organization Science	This paper analyzes new corporate units' evolving interactions with their core organizations during the transition to scale.	Qualitative; multiple case studies 6; longitudinal; 72 interviews
Rapp et al. (2013)	Journal of the Academy of Marketing Science	The role of social media use among suppliers, retail channel members, and consumers is considered for supplier performance in the presence of service ambidexterity.	Quantitative; survey; 28 salespersons 100% response rate; 144 retailers 47.4%

			response rate; 445 consumers 4.45% response rate
Rojo et al. (2016)	Supply Chain Management: An International Journal	The purpose of this paper is to analyze whether supply chain ambidexterity improves supply chain flexibility and its impact on SC competence and firm performance.	Quantitative; survey; 302 responses; 12% response rate
Rojo Gallego Burin et al. (2020)	Journal of Purchasing and Supply Management	This paper explores the influence of ambidexterity on supply chain flexibility/.	Quantitative; survey; 302 responses; 12% response rate
Roldán Bravo et al. (2018)	International Journal of Operations & Production Management	The purpose of this paper is to explain how a buying organization's desorptive capacity relative to its supply network enhances the organization's supply chain competence.	Quantitative; survey; 270 responses; 13.5% response rate
Rothaermel and Alexandre (2008)	Organization Science	This paper examines the relationship between a firm's technology sourcing mix and its performance.	Quantitative; survey; 141 responses; 30% response rate
Russo and Vurro (2010)	European Management Review	Whether, how, and with what consequences firms can balance explorative and exploitative technology-learning activities across their organizational boundaries?	Quantitative; secondary data; 664 FC-based alliances between 1999-2006
Seepana et al. (2020)	Industrial Marketing Management	The study investigates the significance of strategic intent, manager's ambidexterity, and knowledge sharing routines for firms in their quest to pursue cooperation.	Quantitative; survey; 313
Sharma et al. (2019)	Journal of International Business Studies	The impact of structural characteristics of a firm's buyer-supplier network is investigated.	Quantitative; secondary data; Bloomberg database, firms' financial reports, and firms' sustainability reports
Stettner and Lavie (2014)	Strategic Management Journal	This study determines the relevance of balancing different modes of exploration and exploitation for performance.	Quantitative; secondary data; 1,952 firm-year observations during 1990-2001
Tiwana (2008)	Strategic Management Journal	This study examines the tensions and complementarities between bridging ties and strong ties in innovation-seeking alliances.	Quantitative; survey; 82 percent (142/173) individual- and 91 percent (42/46) project-level response rate
Tiwana (2010)	Journal of Management Information Systems	This study investigates the role of informal and formal control mechanisms ambidexterity for performance.	Quantitative; survey; 120 responses; 19.1% response rate
Úbeda-García et al. (2020)	Journal of Business Research	The role of strategic alliances is investigated to promote organizational ambidexterity and performance.	Quantitative; survey; 120 responses from hotels; 12% response rate

Vrontis et al. (2017)	The Journal of Technology Transfer	The paper investigates the relationship between organizational ambidexterity, external knowledge sourcing, and firm performance.	Quantitative; survey; 189 responses; response rate of 37.8%
Wamba et al. (2020)	International Journal of Production Economics	The role of big data analytics in untangling the supply chain ambidexterity and organizational performance is investigated.	Quantitative; survey; 281 responses
Wassmer et al. (2017)	Strategic Management Journal	The focus of this paper is on balancing revenue enhancement and cost reduction through partner resources for firm performance.	Quantitative; secondary data; 724 firm-year observation
Wong et al. (2013)	International Journal of Production Economics	This research examines the individual and combined effects of internal integration and external integration on product innovation.	Quantitative; survey; 151 responses; 20.8% response rate
Wu et al. (2019)	European Management Review	This paper explores the interactive relationship between exploration-exploitation strategy and alliance portfolios evolution.	Qualitative; case study; 20 years longitudinal data
Yadong and Huaichuan (2009)	Academy of Management Perspectives	This paper presents an ambidexterity perspective on the international expansion of emerging economy enterprises.	Qualitative; multiple case studies; interviews
Yang et al. (2014)	Industrial Marketing Management	This study explores how two conflicting goals of inter-organizational learning improve firm performance.	Quantitative; survey; 135 responses; 25.71% response rate
Yu et al. (2022)	Journal of Management	How the configuration of rivals and collaborators within a firm's alliance portfolio affects its speed of absorbing external knowledge?	Quantitative; secondary data; 2,089 dyadic alliances formed by 467 firms from 1990 to 2010
Zhao et al. (2021b)	Business Strategy and the Environment	The study examines whether firms respond to competitors' green success through green supplier integration and under condition of organizational ambidexterity.	Quantitative; survey; 206 responses; 34.3% response rate
Zimmermann et al. (2015)	Organization Science	This study understands the interaction between frontline managers with senior executives for the adoption of ambidextrous charter with a focus on strategic alliances.	Qualitative; multiple-paired case study design; interviews 143