Review

Knowledge Ambidexterity within a Business Context: Taking Stock and Moving Forward

Ana María Serrano-Bedia *[ID] and Marta Pérez-Pérez [ID]

Business Administration Department (FFCCEE), University of Cantabria, 39005 Santander, Spain; perezpm@unican.es
* Correspondence: ana.serrano@unican.es

Abstract: Despite the increasing and recent interest in researching knowledge ambidexterity, there has been no attempt from scholarly research to map and structure extant research on this topic. The aim of this study is to fill this gap, thereby contributing to previous literature by increasing our understanding of the research on knowledge ambidexterity. This paper employs a systematic literature review analysis on a sample of 20 academic papers extracted from the Web of Science database in June 2021. After illustrating the size, growth trajectory, geographic distribution, and key publishing journals in the sample, the paper analyses the intellectual structure and main foci of the research domain. The results show that this topic emerged in the late 2000s with a boom in research in the last 5 years and a clear predominance of quantitative studies. Moreover, content analysis reveals that both a clear definition of knowledge ambidexterity and its main components, knowledge exploration and exploitation, and a valid and reliable scale for measuring this concept are still lacking. The review has also revealed that the research domain on knowledge ambidexterity can be grouped into three different research lines, each of which relates to a different level of analysis—teams, intraorganisational processes within individual firms, and interorganisational collaborations—and concludes by identifying potential areas for future research on this topic that may help to advance in the consolidation of this particularly vibrant field.

Keywords: knowledge management; knowledge ambidexterity; review; systematic review; exploitation; exploration

1. Introduction

In the contemporary disruptive and complex business environment, firms are constantly confronted with the need to operate more efficiently and effectively to generate a long-term competitive advantage and satisfy increasing market demands [1–3]. In doing so, knowledge and its effective management have emerged as the most crucial competitive assets due to the fact that they bring many positive outcomes to improve learning efficiency and effectiveness and to reduce costs [3–5], thus having the potential to affect a firm's organisational and innovation performance [6–12]. In fact, throughout history, knowledge management has been extensively applied, ranging from individual learning to small and medium enterprises (SMEs) to large multinational firms, in order to understand what information, activities, processes, and strategies are essential to taking full advantage of the value of knowledge [13].

Within this underlying context, current debates on the field of knowledge management have concurred with the seminal work of [14], which, drawing on the organizational learning perspective, distinguished between two distinct and mutually exclusive activities: exploration and exploitation. The former involves search, variation, risk taking, experimentation, and discovery to generate new knowledge, whereas the latter consists of refinement, generation, selection, implementation, and enforcement of existing knowledge [8,10]. From this seminal work, the exploration-exploitation framework has evolved to emphasise a

search for the pursuit of and balancing both activities simultaneously to achieve better business performance. In this vein, the term "knowledge ambidexterity" was coined as the state of being equally adapted in the use of both explorative and exploitative knowledge processes at the same time [3,15], as well as the creation of an effective balance between these for the long-term survival and success of organisations [3,8,15–17]. Moreover, different scholars have also debated about knowledge exploration and exploitation, recognising the importance of both to generate greater value [6,18–20], facilitating innovation performance, and ensuring firms' competitive advantage, but also highlighting the difficulties of their co-existence [14,21]. Thus, following [14], the simultaneous occurrence of exploration and exploitation at the organisational level is difficult for several reasons. First, the previous literature has traditionally conceived exploration and exploitation as opposite forces that often compete for scarce organisational resources. Second, exploration and exploitation need different processes and routines, thus making their co-existence difficult. Third, exploration and exploitation are path-dependent: exploitation leads to more exploitation, and exploration leads to more exploration [16]. Finally, knowledge exploration and exploitation lead to divergent results [16–25], so companies need to reconcile their organisational demands to achieve superior and sustainable long-term performance while maintaining short-term productivity [26–28]. As a result, the ambidexterity perspective has become increasingly important for analysing a variety of literature streams, including organisational theory [29,30], innovation management [31,32], and strategy [10,33], and for considering different levels of analysis, such as individuals, organisations, and alliances between firms or industries [10,21]. This relevance is also confirmed by the fact that, in recent years, several literature reviews have been published. Some of them comprehensively cover the entire field [34–37], also reviewing its microfoundations [38], whilst others have focused on specific literature streams such as organisational ambidexterity [28,39,40], individual ambidexterity [41], innovation ambidexterity [42], or business process management ambidexterity [43].

However, despite the increasing and recent interest in researching knowledge ambidexterity, a powerful driving force of sustainable product innovation performance [44] and a firm's profitability [45], to the best of our knowledge, there has been no attempt from scholarly research to map and structure extant research on this field. Hence, a systematic review of the literature on this topic is needed to take stock of what we currently know about how firms are designed to support knowledge ambidexterity for being competitive, as well as to help scholars trace a path for future research. This is an important gap considering that in the current environment, knowledge is a crucial resource that enables firms to create cultural, intellectual, social, and economic value [7,8] by continuously transforming their acquired knowledge through their dynamic capabilities, integrating exploitation and exploration activities [8,46]. Moreover, a literature review could enhance the effective progress within this field by highlighting strengths and weaknesses that could guide future scholars in producing high-quality research, ratifying the validity of findings, and delivering scientific evidence underpinning scholars' advice to practitioners [47]. Based on the above arguments, the aim of this study is to fill this gap, thereby contributing to the previous literature by increasing our understanding of the research on knowledge ambidexterity. Thus, the main objectives of this study are: (1) to systematically review and critically analyse the current patterns in knowledge ambidexterity research, synthesising the volume, growth trajectory, most prolific authors, and most influential journals and articles, as well as their main findings, and (2) to identify knowledge gaps and provide fruitful directions for future research. By doing so, our study not only advances scholarly research on this topic, but also provides a guide for executives aiming to develop knowledge ambidexterity within their organisations in order to benefit from its various outcomes.

To fulfil this goal, this paper starts with a description of the method for the literature review, including process, criteria, and analysis (Section 2). Then, a descriptive and thematic analysis of the sample analysed is given, describing its key findings (Section 3).

Lastly, conclusions and suggestions for further research, as well as main implications, are provided (Section 4).

2. Materials and Methods

The paper employed systematic literature review analysis. "Systematic reviews include an iterative cycle of determining primary and secondary search keywords for retrieving a sample of relevant literature followed up with a synthesis of the research to date as well as reflection on future opportunities" [48] (p. 2). In this vein, Figure 1 summarises the review protocol followed in this study to identify, evaluate, and interpret the existing body of recorded documents in this review, thus providing an explicit and transparent method which could be replicable and updatable.
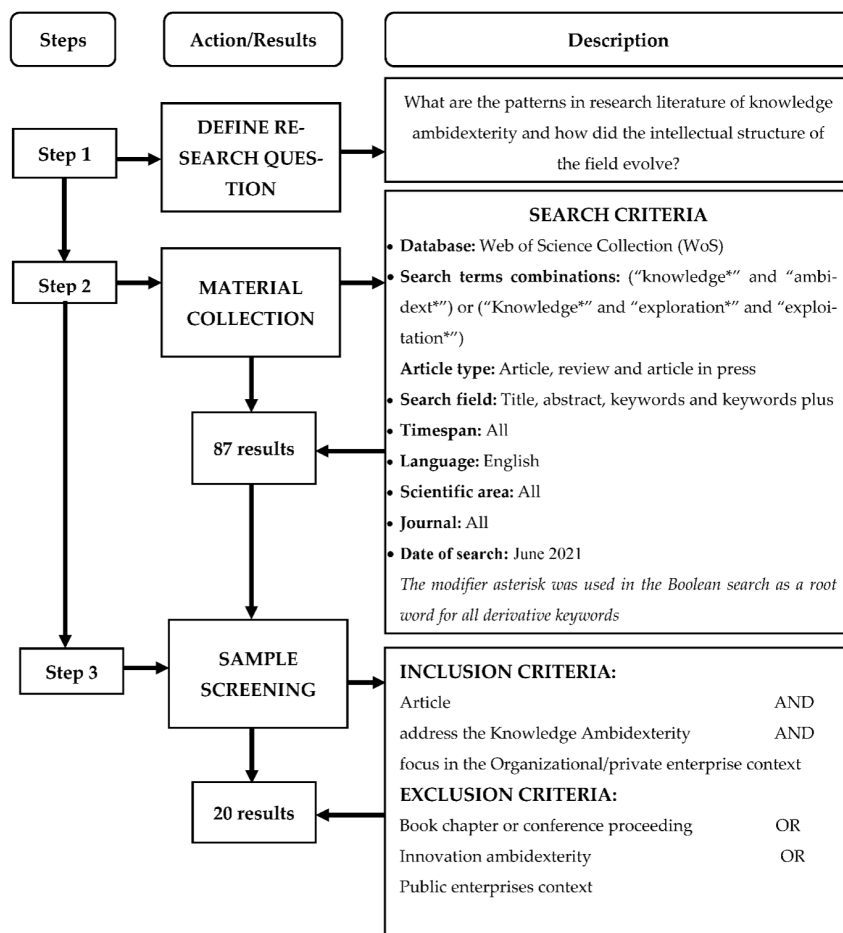
Steps	Action/Results	Description
Step 1	**DEFINE RESEARCH QUESTION**	What are the patterns in research literature of knowledge ambidexterity and how did the intellectual structure of the field evolve?
Step 2	**MATERIAL COLLECTION** → **87 results**	**SEARCH CRITERIA** • **Database:** Web of Science Collection (WoS) • **Search terms combinations:** ("knowledge*" and "ambidext*") or ("Knowledge*" and "exploration*" and "exploitation*") **Article type:** Article, review and article in press • **Search field:** Title, abstract, keywords and keywords plus • **Timespan:** All • **Language:** English • **Scientific area:** All • **Journal:** All • **Date of search:** June 2021 *The modifier asterisk was used in the Boolean search as a root word for all derivative keywords*
Step 3	**SAMPLE SCREENING** → **20 results**	**INCLUSION CRITERIA:** Article AND address the Knowledge Ambidexterity AND focus in the Organizational/private enterprise context **EXCLUSION CRITERIA:** Book chapter or conference proceeding OR Innovation ambidexterity OR Public enterprises context

Figure 1. Review protocol for systematic review. Source: Authors.

Primarily, this literature review defines the problem to be studied in terms of the following research question: What are the patterns in research literature of knowledge ambidexterity and how did the intellectual structure of the field evolve?

Secondarily, a research strategy was defined to collect the material extracted from the Web of Science database. This database is "one of the largest repositories and frequently used in such research projects" [49] (p. 90), offering access to upwards of 100 million references from 33,000 indexed journals [50]. The search strategy was performed in June 2021, and it does not include a time limit. This means that the search included in its temporal universe articles that were published or were "in press" by June 2021. New articles that may have been published since then are not included in this work. The primary keywords used in the materials searched were as follows: ("knowledge*" and "ambidext*") or ("knowledge*" and "exploration*" and "exploitation*"). Keywords were used as selection criteria for the *topic* or *subject* (title, keywords, abstract, and keywords plus). Due to the fewer quality demands and limited impact of conference papers, book chapters, books, or theses compared to journals [51], and with the aim of identifying relevant and rigorous studies, only documents classified as "articles", "review", and "article in press" types were selected. Moreover, the search was made without any chronological filter, journal, or scientific area, and only scientific articles written in English were considered [52], as English is the prevalent language for scientific research [41]. The initial results comprised a sample of 87 documents.

After the process above, the initial sample was reviewed to guarantee reliability for selection by applying the eligibility inclusion/exclusion criteria of Figure 1. Although in most cases the lack of fit with article's scope could be identified from the title, abstract, and keywords, sometimes it was necessary to screen the full manuscript to ascertain its suitability. The articles considered were winnowed down to include only those whose scope involved knowledge ambidexterity in a business context. To avoid interpretation bias, the authors independently performed the entire process of selecting the documents. Then, results obtained by each of them were compared and articles for which their research domain was unclear were carefully screened until an agreement was reached. The final sample of this analysis included 20 documents as the basis for review.

3. Results and Discussion

3.1. Patterns in Research Literature

To illustrate the temporal evolution of the field, articles were categorised based on their publication year. Figure 2 shows the number of papers per year to illustrate the evolution of this area. Particularly, since the later 2000s, papers on knowledge ambidexterity have been published regularly. The number of articles peaked in the last five years (2017–2021), suggesting an enduring interest in the topic.
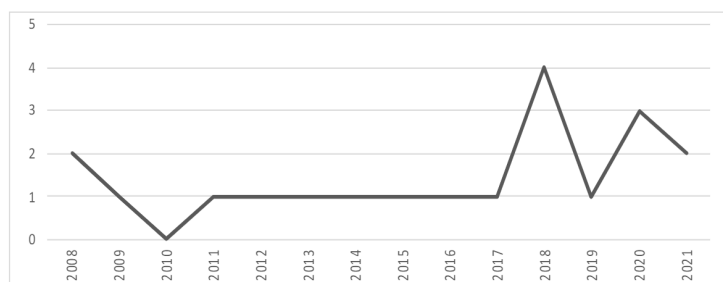

Figure 2. Temporal evolution of the reviewed literature, 2008–2021. Source: Authors.

Figure 3 illustrates the distribution of articles based on the type of study. There are no theoretical studies, which means that the topic of knowledge ambidexterity is not yet consolidated, thus needing more theoretical development. Empirical quantitative studies prevail (80% of the total), mainly using questionnaires for data collection and regression analysis and structural equation modelling for their analysis. Moreover, 20% of the total is qualitative studies, mainly case or multicase studies, through in-depth interviews and observation.
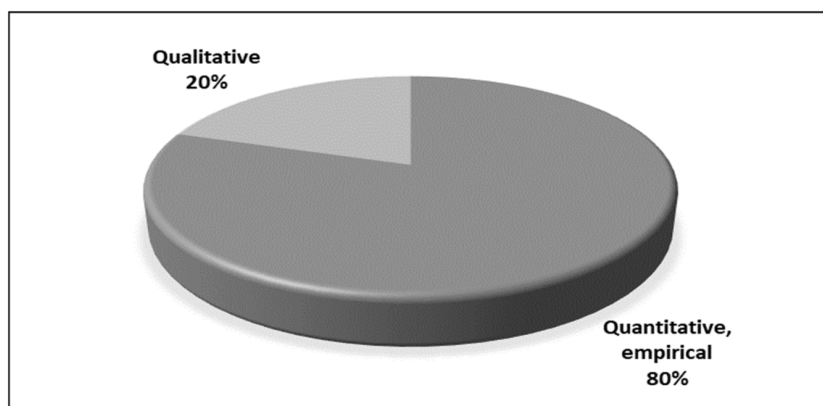

Figure 3. Types of study in the sample. Source: Authors.

Table 1 shows the journals that have published on knowledge ambidexterity, their impact factor, category, quartile, and JIF percentile, along with the total number of articles published on this topic. The results illustrate that a total of 17 different journals were identified within the sample analysed and that only the Journal of Knowledge Management and Journal of Business Research have published more than one paper. This broad dissemination, together with the relevance of the journals identified, confirms the incipient and growing interest on knowledge ambidexterity research. This is because the papers on the sample are being published mainly by top journals with a high impact factor in the business and management categories. More precisely, 58.82% of the journals identified are ranked in the first two quartiles.

Table 1. Journals' impact factor, category, quartile, JIF percentile, and productivity.

Publication Name	Impact Factor	Category, Quartile, JIF Percentile	Productivity
Journal of Knowledge Management	8.182	Management, Q1, 90.04 Information Science & Library Science, Q1, 97.09	3
Journal of Business Research	7.550	Business, Q1, 82.03	2
European Journal of Innovation Management	4.691	Business, Q2, 57.84 Management, Q2, 59.07	1
International Journal of Entrepreneurial Venturing	0.35	Management, Q3, 27.73	1

Table 1. *Cont.*

Publication Name	Impact Factor	Category, Quartile, JIF Percentile	Productivity
Journal of Management Studies	7.388	Business, Q1, 80.72 Management, Q1, 84.73	1
Management Science	4.883	Management, Q2, 61.28 Operations Research and Management Science, Q1, 77.98	1
Management International Review	3.721	Management, Q3, 43.68	1
Total Quality Management & Business Excellence	3.824	Management, Q3, 49.34	1
IEEE Transactions on Engineering Management	6.146	Management, Q2, 61.59 Business, Q2, 62.28	1
Journal of Information & Knowledge Management	0.36	Information Science and Library Science, Q3, 44.82	1
Information & Management	0.683	Computer Science, Information Systems, n/a, n/a Management, n/a, n/a	1
International Journal of Contemporary Hospitality Management	6.514	Management, Q1, 75.88 Hospitality, Leisure, Sport & Tourism, Q2, 73.28	1
International Journal of Innovation Management	0.52	Management, Q3, 41.80	1
Knowledge Management Research & Practice	2.744	Information Science & Library Science, Q2, 58.72 Management, Q3, 30.75	1
Industrial Marketing Management	6.960	Business, Q1, 76.14 Management, Q1, 80.31	1
Management Decision	4.957	Business, Q2, 60.46 Management, Q2, 63.05	1
International Journal of Technology Management	1.667	Engineering, Multidisciplinary, Q3, 35.71	1
Total			20

n/a = not available. Source: Authors.

Table 2 summarises the reference authors in this field, as well as the main institutions that lead the research on this theme. From the 20 analysed publications, 18 are co-authored (90% of the sample). A total of 52 co-authors were identified, and most of them come from Spain (10 co-authors), Italy (8 co-authors), China (6 co-authors), the USA (5 co-authors), or Taiwan (4 co-authors). The co-authors with more than one contribution on this topic are Juan-Gabriel Cegarra-Navarro from the Technical University of Cartagena (Spain), Rodrigo-Valio Domínguez-González from the State University of Campinas (Brazil), and Antonella Martini from the University of Pisa (Italy), with two articles each.

Regarding the institutions that lead the research on this topic, the University of Castilla La Mancha (Spain), Xi'an Jiaotong University (China) and the University of Granada (Spain) are the main ones, with three co-authors each. Next, the University of Padua (Italy), the University of Pisa (Italy), Wageningen University and Research (Netherlands), and the University of Murcia (Spain) follow them with two co-authors each.

Table 2. Most prolific authors, number of contributions, institution, and country.

Author	Contributions	Institution	Country	Author	Contributions	Institution	Country
Cegarra-Navarro, J.G.	2	Technical University of Cartagena	Spain	Jiménez-Jiménez, D.	1	University of Murcia	Spain
Domínguez-González, R.V.	2	State University of Campinas	Brazil	Jiménez, A.	1	University of North Carolina at Greensboro	USA
Martini, A.	2	University of Pisa	Italy	Kesting, T.	1	Münster University of Applied Sciences	Germany
Aloini, D.	1	University of Pisa	Italy	Lannon, J.	1	University of Limerick,	Ireland
Annosi, M.C.	1	Wageningen University and Research	Netherlands	Lee, J.Y.	1	Chongqing Technology and Business University	China
Benítez, J.	1	Rennes School of Business	France	Li, D.	1	Xi'an Jiaotong University	China
Bierly, P.E.	1	James Madison University	USA	Lin, J.	1	Xi'an Jiaotong University	China
Braojos, J.	1	University of Granada	Spain	Llorens, J.	1	University of Granada	Spain
Casprinni, E.	1	University of Siena	Italy	Lyytinen, K.	1	Case Western Reserve University	USA
Castillo, A.	1	University of Granada	Spain	Martínez-Pérez, A	1	University of Castilla La Mancha	Spain
Choi, B.	1	Hankuk University of Foreign Studies	South Korea	Neirotti, P.	1	Polytechnic of Torino	Italy
Chou, C.-H.	1	Nan Kai University of Technology	Taiwan	Nosella, A.	1	University of Padua	Italy
Clauss, C.	1	Philipps-University Marburg	Germany	Özlen, M.K.	1	Global Humanistic University	Netherlands Antilles
Cui, W.	1	Xi'an Jiaotong University	China	Pattnaik, C.	1	University of Sydney Business School	Australia

Table 2. *Cont.*

Author	Contributions	Institution	Country	Author	Contributions	Institution	Country
Damanpour, F.	1	Rutgers University	USA	Petruzzelli, A.	1	Politecnico di Bari	Italy
De Melo, T.M.	1	Paulista State University Julio de Mesquita Filho	Brazil	Qian, Y.	1	Northwestern Polytechnical University	China
Elche, D.	1	University of Castilla La Mancha	Spain	Rai, A.	1	Georgia State University,	Georgia
Fang, S.-C.	1	National Cheng Kung University	Taiwan	Ramón-Torres, J.G.	1	Wageningen University and Research	Netherlands
Fang, S.-R.	1	Hsiuping University of Science and Technology	Taiwan	Rui, Z.	1	Tongji University	China
Filippini, R.	1	University of Padua	Italy	Sánchez-Vidal, E.	1	University of Murcia	Spain
García Villaverde, P.M.	1	University of Castilla La Mancha	Spain	Santoro, M.D.	1	Lehigh University	USA
García-Pérez, A.	1	Cranfield University	UK	Soosay, C.	1	University of South Australia,	Australia
Güttel, W.H.	1	Johannes Kepler University Linz,	Austria	Spieth, P.	1	University of Kassel,	Germany
Handzic, M.	1	International Burch University	Bosnia and Herzegovina	Taras, V.	1	Hongik University,	South Korea
Hyland, P.	1	The University of Queensland,	Australia	Walsch, J.N.	1	University of Limerick,	Ireland
Im, G.	1	Atlanta University	Georgia	Yang, S	1	Central Taiwan University of Science and Technology	Taiwan

Source: Authors.

3.2. Thematic Results

The following will present the thematic results of the literature review on knowledge ambidexterity. We begin by presenting an overview of the knowledge ambidexterity definitions offered in the literature that compose the sample of analysis (Section 3.2.1), in order to establish common ground in current understandings of the concept. Then, the results of content analysis are presented (Section 3.2.2).

3.2.1. Defining Knowledge Ambidexterity

Table 3 offers a synthesis of definitions identified from the analysis of the literature. Based on the review, the most common knowledge ambidexterity definition appears to suggest that it is the ability, the strategy, or the capacity of the firm to balance exploration and exploitation of knowledge, which emerge as the main components of this construct.

However, what do knowledge exploration and exploitation encompass? Knowledge management encompasses different processes related to the acquisition, creation, sharing, storage [53], and use of knowledge (e.g., [25]) and that play different roles in a firm's sustainable competitiveness. Some of these processes create conditions for using the firm's existing knowledge, favouring consistency, stability, and control, while other processes involve a search for new knowledge, thus enabling experimentation, flexibility, and risk-taking [54]. Then, this literature review illustrates that knowledge exploration refers to the process of learning that helps the firm to acquire/create, share, assimilate, and store new knowledge. For its part, the construct of knowledge exploitation indicates the process of learning that comes from reusing, transforming, applying, and leveraging existing/new knowledge in the firm [21].

Table 3. Overview of knowledge ambidexterity definitions.

Definition	Synchronous Emphasis	Tradeoffs	References
The simultaneous balanced pursuit of structures that are both explorative and exploitative in their relation to knowledge.	x		[8,10,15,55–58]
Describes a knowledge strategy based on the synchronous combination of exploration and exploitation.			[6]
A dynamic organizational capability including both integration and differentiation of exploration and exploitation.		x	[9]
Ambidextrous organisations are able to manage both simultaneous and contradictory knowledge management processes by exploiting their existing proficiencies and exploring new domains with equal dexterity.	x		[17]
Ambidextrous firms are able to both generate and manage familiar, mature, current, or proximate knowledge (exploitation) and unfamiliar, distant, and remote knowledge (exploration).		x	[25]
A potential strategy based on building capabilities by generating new knowledge and recombining existing knowledge to exploit existing resources.		x	[59]
The capability of a firm to acquire or develop new knowledge and competencies in both exploration and exploitation endeavours.		x	[60]
An organization's ability to do two different things dexterously at the same time (in this case knowledge exchange and knowledge protection in interorganizational learning).	x		[61]

Source: Authors.

The analysis of Table 3 also reveals that despite the consensus regarding its two main components, a fundamental difference in the way knowledge ambidexterity is defined appears to emerge. Thus, some definitions emphasise the synchronous combination of exploration and exploitation in the definition of the concept (e.g., [6]), thus capturing the

need for a complementary effect between both activities or encouraging organisations to have relatively equal emphasis on knowledge exploratory and exploitative processes. However, other definitions maintain that the simultaneous pursuit of knowledge exploration and exploitation is notably difficult, it being necessary to analyse the tension and tradeoffs between exploitation and exploration implementation, in an effort to consider more comprehensively both the magnitude and the balance of exploration and exploitation.

The greater or lesser emphasis on the synchronous character of the definitions previously mentioned concurs with the existence of two distinctive types of knowledge ambidexterity conceptualisations: combined ambidexterity and imbalanced ambidexterity. Combined ambidexterity refers to the interaction between exploration and exploitation, which captures the complementary effect between explorative activities and exploitative activities. Imbalanced ambidexterity refers to the absolute difference between exploration and exploitation, which estimates the relative imbalance between explorative activities and exploitative activities The content analysis of the empirical studies identified in the sample (see Table 4) evidences that only nine articles have operationalized knowledge ambidexterity according to one of these two streams. The remaining empirical studies include measures for separate constructs of knowledge exploration and exploitation, thus making it impossible to prescribe them to one or another school. More precisely, the way that predominates for operationalising knowledge ambidexterity is the combined view (frequently measured as the interaction or multiplication of the exploration and exploitation activities or through a second-order construct). Two empirical papers have measured the imbalanced ambidexterity modelled as a quadratic function [21] or a subtraction: the absolute difference between knowledge exploration and exploitation [33]. For its part, only the study by [55] compares both measurements (combined and imbalanced). Overall, these results evidence that there is not a clear and solid measurement of knowledge ambidexterity and that future research is needed to address theoretical studies and conceptual developments to clarify terms and to achieve a solid definition to be able to consolidate its measurement.

Table 4. Operationalisations of knowledge ambidexterity within empirical studies.

References	Combined Ambidexterity	Imbalanced Ambidexterity	Compares Combined and Imbalanced Ambidexterity Effects
[6]	x		
[10]	x		
[15]	x		
[21]		x	
[33]		x	
[55]			x
[60]	x		
[61]	x		
[62]	x		
Total	6	2	1

Source: Authors.

3.2.2. Content Analysis

Table 5 provides a general and comprehensive portrayal of the 20 articles selected based on their content analysis. The articles have been grouped into three different research lines, each of which relates to a different level of analysis: teams, intraorganisational processes of individual firms, and interorganisational collaborations. In the following, a description of the content of each of the three research lines identified is presented.

Table 5. Summary of content analysis per category.

References		Type Study	Theory	Type of Analysis	Sector/Country	Sample	Survey
Intraorganizational processes	[3]	Empirical	N/a	CS. Descriptive statistics	Turkish companies	372	Yes
	[6]	Empirical	SC	CS. Structural equation Model (PLS)	Hospitality/tourism industry (Spain)	215	Yes
	[8]	Empirical	KBV	CS. Structural equation Model (Lisrel)	Brazilian automotive industry	234	Yes
	[10]	Empirical	OL	CS. Structural equation Model (PLS)	USA	100 SMEs	No, Forbes database
	[15]	Empirical	KBV	CS. Structural equation Model (PLS)	Spanish Banking sector	215 employees	Yes
	[21]	Empirical	N/a	CS. Negative binomial model	USPTO	5575 patents (283 firms)	No, USPTO database
	[25]	Qualitative	MT	CS. Case study	Multinational firms, Italy	16	No, interviews
	[58]	Empirical	OL	CS. Structural equation Model	SMEs. Metal industry. Spain	229	Yes
	[59]	Qualitative	DC	CS. Case study	Engineering firm, Australia	1	No, interviews
	[60]	Empirical	OL/KBV	CS. Hierarchical regression Stata 11.0	Medium-large hi-tech firms in Italy	112	Yes
Interorganizational relationships	[9]	Qualitative	PT	CS. Case study	Africa-based partnerships	3 case studies	No, interviews
	[54]	Qualitative	KBV	CS. MAXQDA 2018 software. Case study	Food service sector (Dutch company)	1	No, interviews
	[56]	Empirical.	KBV	CS. Structural equation Model (AMOS)	China	167 Chinese start-ups	Yes
	[57]	Empirical	N/a	CS. Structural equation Model (CBSEM)	Mechanical engineering sector	100	Yes
	[62]	Empirical	N/a	CS. OLS regression analysis	USA firms from 11 sectors	180	Yes
	[63]	Empirical	N/a	CS. Structural equation Model (PLS)	Logistics industry	238 customers/76 vendors	Yes
	[61]	Empirical	CRP	CS. Hierarchical regression analysis	High-tech Taiwanese firms	127	Yes

Table 5. *Cont.*

References		Type Study	Theory	Type of Analysis	Sector/Country	Sample	Survey
Teams	[33]	Empirical	SNT	LA. (1990–2004). Logistic regressions	Technology firms. USPTO	1,251,726 patents (433 firms)	No, USPTO database
	[55]	Empirical	N/a	LA. (2013–2015). OLS regression	China	1468 multinational firms	Yes
	[64]	Empirical	N/a	CS. Structural equation Model (PLS)	Brazilian capital goods industry	252	Yes

CS = Cross section analysis. CRP = Cognitive and relational perspective. DC = Dynamic capabilities theory. KBV = Knowledge-based theory. LA = Longitudinal analysis. MT = Microfoundations theory. N/a = not available. OL = Organizational learning. PT = Paradox theory. SC = Social capital theory. SNT = Social network theory. USPTO = United States Patent and Trademark Office.

Intraorganisational Processes Research Line

This research line is composed of 10 articles aiming to analyse how firms' internal processes, knowledge management practices, or contextual factors sustain knowledge ambidexterity. All the studies are cross-sectional, and regarding the methodological approaches used, quantitative analysis predominates, mostly using the structural equation model and hierarchical regression analysis. Only two papers develop qualitative approaches, using in-depth case studies. More precisely, the paper by [25] identifies knowledge management (KM) initiatives related to knowledge transfer, experience exchange, structured problem solving, or knowledge creation that concurrently facilitate exploration and exploitation and that follow a path characterized by an increasing variety of purposes and a decreasing variety of structures. In other words, the underlying structures of KM initiatives (guidelines, methods, practitioners) do not substantially change over time, while their purpose (the application of these initiatives either for exploitation or exploration) does. As a result, firms create a learning context in which the embedded learning routines and methods of the KM initiatives enable them to be flexible enough to develop these initiatives ambidextrously according to the aims pursued by the firms. For its part, ref. [59] presents an exploratory case study that investigates the sources of knowledge in an Australian firm. More precisely, the paper illustrates the role that absorptive capacity plays in building capabilities for continuous innovation by enabling the firm to acquire, assimilate, transform, and integrate knowledge using both exploration and exploitation approaches and involving a reconfiguration of resources.

Regarding the quantitative studies, a first paper by [3] develops a descriptive analysis of KM drivers and strategies in a sample of Turkish firms across different industries. Exploration is defined in terms of knowledge capture and sharing processes, and exploitation in terms of discovery and creation processes. The study provides evidence that most of the firms tend to focus similarly on both exploration and exploitation of knowledge and that, in line with the contingency view, organizations need to be ambidextrous because no approach is best under all conditions.

Along with these papers, another group of studies explores the mediating effects of knowledge ambidexterity on different relationships. Beginning with those papers that use innovation performance as a dependent variable, the paper by [10] confirms a full mediation of knowledge ambidexterity in the impact of IT infrastructure on innovation performance. In a similar vein, paper [6] finds that an ambidextrous knowledge strategy (AKS) partially mediates the relationship between bonding and bridging social capital and innovation performance. This result reinforces previous studies stressing the need to develop an ambidextrous knowledge strategy using both dimensions of social capital to generate both incremental and radical innovations. For its part, ref. [60] finds evidence that the degree of knowledge ambidexterity fully mediates the impact of the organisational context on innovation ambidexterity. Finally, within this group, the paper by [15] proposes a model in which the development of a balance between explorative (knowledge acquisition, knowledge dissemination, and knowledge transfer) and exploitative (assimilation, declarative memory, and procedural memory) knowledge processes mediates the relationship between a commitment to learning, supported by a learning culture, and a firm's performance. The authors obtain empirical support for the ambidextrous theories, suggesting the existence of synergies derived from the joint use of both knowledge processes. The analysis of mediating relationships is also found in [58], although in this case focusing on the existence of possible underlying variables that could mediate the relationship between knowledge ambidexterity and organisational performance. In particular, the paper offers empirical evidence that the effects of exploration and exploitation of knowledge on organisational performance are mediated through an unlearning context. Put another way, any firm aiming to achieve an appropriate balance between exploration and exploitation to attain a competitive advantage needs to create an unlearning context by reorientating organisational values, norms, and core assumptions. These changes facilitate that firm's members unlearning outdated knowledge and relearning updated knowledge,

thus opening the way for new habits, patterns, and ways of doing and interpreting things that positively impact business performance

The last two papers that integrate this research line analyse how different contextual factors sustain the balance between knowledge exploration and exploitation, making such integration successful. Beginning with paper [8], this empirical study provides evidence that knowledge exploration and exploitation processes are differently impacted by five contextual factors. More precisely, factors such as autonomy and IT systems have more of an impact on exploration processes, while supportive leadership is more associated with exploitation processes. Regarding learning culture and human resources management, they are found to be positively associated with both knowledge exploration and exploitation, with a greater impact from the former. Therefore, both factors create an environment that stimulates the proposition and sharing of ideas, leveraging new innovation opportunities and eliminating focuses of resistance to change. For its part, ref. [21] explores how the capability of firms to find a trade-off between knowledge exploration and exploitation (knowledge searching and acquisition) within and across technological and geographical domains allows firms to develop more valuable innovations. This empirical analysis reveals that balancing exploration and exploitation is always beneficial for the firms, since it permits a trade-off between novelty of the acquired knowledge and its effective absorption.

Interorganisational Networks Research Line

This research line is compiled by seven articles aiming to analyse knowledge ambidexterity management in interorganizational networks, a knowledge-based collaboration linkage which has been gaining relevance in the last years. This is due to the fact it allows actors to gain access to and share specialised knowledge to maintain their competitiveness, as well as to allocate risks and large-scale projects [57,65,66], thus enhancing the performance of cooperation, including both common and private benefits [61]. More precisely, articles that compose this research line explore how to effectively balance knowledge exploration and exploitation within the network, usually through enabling internal processes or KM practices. Among the methodological approaches used within this research line, quantitative analysis prevails, in most of the cases using the structural equation model. Moreover, all the studies are cross-sectional, and only two studies present qualitative approaches, using in-depth case studies.

On the one hand, quantitative studies try to test the predictors of knowledge exploration and exploitation [57,61,62], as well as the mediator role of knowledge exploration and exploitation, within different contextual factors and performance relationships [56,63]. In more concrete terms, among the predictors analysed, it is confirmed that learning (experience, technological, and technological relatedness), strategic capabilities (strategic posture, or financial leverage) [62], contextual factors (relational norms or interaction intensity [57]), or governance mechanisms (interactive learning and reciprocal commitment) [61] can act as enablers of knowledge ambidexterity components. However, the results evidence that predictors of exploration and exploitation can differ. For its part, the mediation model by [63] confirms that the effect of contextual ambidexterity and ontological commitment on relationship performance was partially mediated by explorative and exploitative knowledge [63]. In a similar vein, the study by [56] confirms that the effect of knowledge base (knowledge breadth and knowledge depth) of the firm on innovation performance is partially mediated by exploitative and explorative knowledge integration.

On the other hand, qualitative studies [9,54] outline how organisational partnerships balance knowledge exploration and exploitation in post-acquisitions or international alliances, two important ways for firms to enhance their knowledge diversity [67,68] but are difficult to manage. In more concrete terms, ref. [54] exemplifies how the acquirer integrates and exploits knowledge from the target and how this integration affects the innovation activities during post-acquisition, revealing three extremely important aspects for successful knowledge integration: the involvement of middle management, the creation

of a new cross-functional department, and the empowerment of the target's employees. In the same line, ref. [9] adopts a paradox perspective to examine, through three international African partnerships, the explore-exploit dilemma by focusing on organisational mechanisms for balancing the tensions between both elements [30]. The results demonstrate that knowledge exploration and exploitation can be mutually reinforcing and can exist as a duality if networks enhance organisational stability.

Knowledge Ambidexterity within Teamwork Context

This stream of research is composed of three studies that adopt the premise that knowledge exploration and exploitation are supported by teamworks. Teamworks are understood as a team of individuals with complementary competences, common work organisation models, and performance goals [64,69] that have a certain autonomy to make decisions and organise their work [70]. The papers within this line empirically analyse, mostly using OLS regressions and longitudinal studies, the impact of cultural factors or teamwork characteristics on the two main processes of knowledge ambidexterity.

Beginning with the papers by [33,55], they aim to deepen an understanding of how the 'cultural distance' or team effort allocation strategy of multinational enterprises influences the association between knowledge ambidexterity and firm performance or firm innovation, respectively. The study by [55] explores, within a virtual knowledge sharing context, the effect that combined ambidexterity and imbalance ambidexterity have on an R&D team's performance. They confirm that, although combined ambidexterity enhances a team's performance, it is negatively affected by imbalanced ambidexterity. Moreover, the cultural value gap between the team and the regions where the team operates positively moderates the association between imbalanced ambidexterity and firm performance, thus alleviating a negative effect by imbalanced ambidexterity. More specifically, when the R&D team has a higher uncertainty avoidance level than the region does, the association between combined ambidexterity and firm performance is weaker. In contrast, when the team's uncertainty avoidance is lower than that of the region, the association between imbalanced ambidexterity and firm performance is stronger. Similarly, ref. [33] focuses on understanding the relationship between team members' collaboration networks and knowledge learning. They confirm that allocating greater team effort to knowledge exploration than to exploitation is beneficial for achieving breakthrough innovations. Moreover, cohesive relationships among team members are beneficial for assimilating and recombining new knowledge acquired through knowledge exploration. For its part, [64] linked the three constructs that characterise the development of teams (members, context, and organisation) with the processes of knowledge exploitation and exploration. The results reveal that team context variables of interdependence, autonomy, and cohesion and the organisational variables of collaborative culture and autonomy present a greater positive impact on knowledge exploitation and exploration. Variables related to integration, interdependence, and cohesion also impose a high positive impact on knowledge exploitation, although on a smaller scale when compared with knowledge exploration. The team member variables of multifunctionality and skills have less impact on the two processes.

4. Conclusions

This article constitutes the first attempt to carry out a systematic overview of the academic research on knowledge ambidexterity within the business context, a particularly vibrant topic that is gaining increasing attention in the academic world. The concept of ambidexterity, broadly referred to as an ability to pursue two disparate things at the same time [71], has been applied and discussed in various contexts, including that of firms. Thus, from an organisational perspective, "ambidextrous organisations (...) are capable of simultaneously exploiting existing competencies and exploring new opportunities" [29] (p. 685). From this starting point, the extant organisational learning literature recognises the importance of explorative and exploitative processes for implementing innovation strategies that influence the performance and sustained competitive advantage of firms.

However, the extension of the current organisational learning, knowledge management [72] and innovation research that analyses the ambidexterity challenge faced by organizations regarding their KM processes and strategies, is a topic that still remains in an evolutionary phase. Within this general context, this paper adds value not only by describing the patterns and trends in the knowledge ambidexterity literature with the purpose of examining the main dimensions, antecedents, and consequences of knowledge ambidexterity, but also by identifying potential areas for future research that may help to advance the consolidation of the field. It uses as a basis the literature published on this topic in the Web of Science database. A number of conclusions spring from the analysis.

First, regarding the patterns of the academic literature on the topic, the main results obtained from this review confirm the incipient and growing interest on knowledge ambidexterity research. This statement is supported by several facts. They include the scant number of publications found in the review; the temporal evolution of the academic research, with the first article on the topic published in 2008 and a boom in research between 2017 and 2021; the broad dissemination of the sample identified in terms of authors, journals, and institutions; and the relevance of the journals that have published this research. As far as the methodology is concerned, most of the studies in the sample are quantitative, and, when they explicitly indicate a theoretical framework, they build their models on Knowledge Based View and Organizational Learning theories and use structural equation modelling as the main research methodology.

Second, content analysis of the sample has focused on two main aspects, namely the conceptualisation and operativisation of knowledge ambidexterity and the main lines that integrate this research domain. Regarding the first aspect, the findings of the literature review highlight several key theoretical and methodological issues. Thus, a clear consensus exists in that knowledge ambidexterity is the firm's ability or capacity to balance exploration and exploitation of knowledge, which emerge as the two main components of the construct. Despite this, some debate is open about how these components should be defined and the degree to which they should be developed to consider an organisation as ambidextrous in relation to knowledge. More precisely, two divergent schools of thought coexist. The first school of thought, proposing an imbalanced strategy, advocates specialising in either exploration or exploitation of knowledge [21]. This is because it maintains that they are divergent strategies that compete for scarce resources and require significantly different structures, organisational routines, and cultures [14,16], thus requiring different approaches for their management. In general, exploration is associated with an organic structure, systems that are not rigid, improvisation, and autonomy, while exploitation is associated with mechanical structures, more rigid systems, routine, control, and bureaucracy. For its part, proponents of the combined school consider that, despite the competing nature of knowledge exploration and exploitation and the difficulties in their coexistence at the organisational level [24], knowledge exploration and exploitation are complementary [40,58]. Consequently, organisations can transform knowledge by combining exploitation, that is, using the same primary knowledge base in order to achieve incremental improvements, and exploration, which focuses on research, discovery, and experimentation, in order to modify the primary knowledge acquired [1,14].

This open debate in terms of the concept of knowledge ambidexterity and its components of knowledge exploration and exploitation is also reflected in a great diversity regarding the way these constructs are operationalised. Thus, the interaction/multiplication of the exploration and exploitation constructs or the development of a second-order construct is the predominant way to measure knowledge ambidexterity. Only two papers in the sample have modelled the construct in terms of a quadratic function or the absolute difference between exploration and exploitation, and only one study compares both types of measures to analyse which one could be more effective. Overall, the analysis carried out suggests that if scholars think about knowledge ambidexterity in terms of developing high levels in both knowledge exploration and exploitation, they should measure it as an interaction term. In contrast, if they consider both dimensions of knowledge ambidexterity

as competing but mutually dependent, then the subtraction measure emerges as a better option. However, this issue should be addressed in future studies.

As illustrated, it appears that both a clear definition of knowledge ambidexterity and its main components and a valid and reliable scale for measuring this concept are still lacking. These gaps raise the issue whether the actual conceptualisation and operationalisation of knowledge ambidexterity provides value to consolidating this research domain or whether it is leading to a dispersed field of study without solid foundations. One way to solve this issue in future research might be by addressing more theoretical studies and conceptual developments to clarify terms and to achieve coherence with measures in empirical studies. It would also be important that these future studies clearly identify the theoretical framework in which they conduct their research to add rigor and a better understanding of both the concepts and measures applied and the results achieved.

With regard to the second aspect of the content analysis, the review has also revealed that the research domain on knowledge ambidexterity can be grouped into three different research lines, each of which relates to a different level of analysis: teams, intraorganisational processes within individual firms, and interorganisational collaborations. Within the three lines, the research at both the organisational and interorganisational levels has received more attention. However, the research on exploration or exploitation of knowledge at the team level, focused on teamwork characteristics (e.g., interdependence, autonomy, cohesion, multifunctionality, and skills) that support the development of knowledge ambidexterity, as well as on the effects of ambidexterity on an R&D team's performance, is still very scarce and needs to be examined in further detail. In particular, individual aspects such as gender, motivation, commitment to learning, and learning orientation; organisational aspects such as leadership style and culture of the firm; IT aspects such as enabled knowledge processes and governance structures; and external or contextual aspects such as geographical domain and sector are variables that could enable or inhibit the development of knowledge ambidexterity at the team level and should be better explored in future studies. Additionally, the effect of a team's knowledge ambidexterity on a firm's performance improvements in terms of both tangible (e.g., financial) and intangible (e.g., bringing into common usage routines and practices that contribute to a learning-oriented culture) benefits, as well as on some firm innovation outcome variables, is an issue that deserves more attention. Finally, the inclusion in research models of variables that could mediate or moderate these relationships could provide a more complete understanding of knowledge ambidexterity at the team level.

Regarding the intra and interorganisational research lines, most of the previous research identifies a positive relationship between the presence of exploration and exploitation of knowledge and the impact it has on firm performance as well as on firm innovation. While this finding points to the company's knowledge ambidexterity as a key element for the improvement of the firm's competitiveness, research has also found that such a relationship is not always direct. In fact, only a few papers in the sample confirm a direct relationship of knowledge ambidexterity with regard to firm performance and innovation. Most of the existing research has explored the mediating effects of this construct on the relationships between resources (IT infrastructure, social capital, the knowledge base of the firm), individual and organisational variables (commitment to learning, organisational context), and innovation or, more scarcely, firm performance. As a result, more research is required to examine knowledge ambidexterity more deeply at the firm level in terms of both its antecedents and consequences. Regarding the antecedents, different variables related to leadership style, IT systems, and management support may explain knowledge exploration and exploitation, and their role should be better explored in future studies. Additionally, we encourage further research to investigate the role of culture and the family dimensions in knowledge management practices to explore and exploit the firm's knowledge base. In terms of consequences, more research is also needed to explore the impact of knowledge ambidexterity not only on firm innovation but also on different firm

performance variables, e.g., social or sustainable performance, firm internal and external flexibility, and excellence.

Regarding the interorganisational network research line, the range of perspectives considered on it is relatively narrow, and the generalisability of their results is subject to limitations, given that most of the studies identified are cross-sectional; focus on specific contexts, business sectors, or regions (e.g., China, Africa, SMEs, mechanical engineering businesses); and use qualitative methods for their analyses, thus depicting static relationships. In this vein, we encourage future research to explore broader contexts (e.g., advanced economies, service sector, or larger companies) and the use of longitudinal data (e.g., panel data) to examine the dynamic effects of how companies keep a balance of knowledge ambidexterity. Moreover, a more comprehensive framework is required involving a multi-level perspective; thereby, future studies could perform a deeper discussion of the role of socio-cultural dynamics, macro-level factors (i.e., entrepreneurial ties, local markets, and policy institution), family dimensions [73], or the incentive mechanisms that reconcile disparate learning interests and encourage collaboration between partners. Furthermore, further studies exploring the interaction between different forms of partnerships (e.g., between for-profit as well as non-profit organisations) and governance modes [57] under varying institutional contexts are required.

This literature review also has a number of implications for management practice. The most important of these is the confirmation that firms can enhance their short-term and long-term benefits by being ambidextrous in relation to knowledge management. In light of the findings of this literature review, managers should carefully consider the idea that, although knowledge exploration and exploitation compete for scarce resources, both are a necessary part of firms' operation and they can be mutually reinforcing. As a result, it would be interesting for managers to consider the benefits of balancing knowledge exploration and exploitation contingent upon environmental factors, such as competitive intensity, market uncertainty, or technological dynamism. Another main implication that emerges from this review is that organisational contexts based on teams that encompass different individuals may succeed in stimulating the creation and the acquisition of knowledge, as well as the exploitation of existing know-how, thus favouring conditions for creating applicable knowledge in these dual domains. Additionally, managers should consider the implementation of management and information systems that foster the sharing of exploratory and exploitative knowledge, thus facilitating the examination of how to adjust their knowledge strategies to better achieve their goals.

Despite these theoretical and managerial implications, the authors acknowledge that there are certain limitations in the paper. Thus, this article may have ignored some relevant knowledge as it focused only on peer-reviewed, English published articles available at the time of searching through the accessed Web of Science article database, because these are considered 'certified knowledge'. Moreover, although the inclusion/exclusion criteria for article selection is clearly explicit, it may have been subject to researcher biases. Finally, the sample and subsequent analysis are exclusively restricted to literature on knowledge ambidexterity in a business context and not on other forms of knowledge or subfields within the ambidexterity field, e.g., innovation ambidexterity, individual ambidexterity, or organisational ambidexterity, or different contexts, such as public enterprises, which could be explored in further research.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Grant, R.M. Towards a knowledge-based theory of the firm. *Strateg. Manag. J.* **1996**, *17*, 109–122. [CrossRef]
2. Torugsa, N.A.; O'Donohue, W. Progress in innovation and knowledge management research: From incremental to transformative innovation. *J. Bus. Res.* **2016**, *69*, 1610–1614. [CrossRef]
3. Özlen, M.K.; Handzic, M. Ambidextrous Organisations from the Perspective of Employed Knowledge Management Strategies: Evidence from Turkey. *J. Inf. Knowl. Manag.* **2020**, *19*, 2050003. [CrossRef]
4. García-Piqueres, G.; Serrano-Bedia, A.M.; Pérez-Pérez, M. Knowledge management practices and innovation outcomes: The moderating role of risk-taking and proactiveness. *Adm. Sci.* **2019**, *9*, 75. [CrossRef]
5. Pérez-Pérez, M.; López-Férnandez, M.C.; Obeso, M. Knowledge, renewal and flexibility: Exploratory research in family firms. *Adm. Sci.* **2019**, *9*, 87. [CrossRef]
6. Martínez-Pérez, Á.; García-Villaverde, P.M.; Elche, D. The mediating effect of ambidextrous knowledge strategy between social capital and innovation of cultural tourism clusters firms. *Int. J. Contemp. Hosp. Manag.* **2016**, *28*, 1484–1507. [CrossRef]
7. Zack, M.; McKeen, J.; Singh, S. Knowledge management and organizational performance: An exploratory survey. *J. Knowl. Manag.* **2009**, *13*, 392–409. [CrossRef]
8. Gonzalez, R.V.D.; de Melo, T.M. The effects of organization context on knowledge exploration and exploitation. *J. Bus. Res.* **2018**, *90*, 215–225. [CrossRef]
9. Lannon, J.; Walsh, J.N. Paradoxes and partnerships: A study of knowledge exploration and exploitation in international development programmes. *J. Knowl. Manag.* **2019**, *24*, 8–31. [CrossRef]
10. Benitez, J.; Castillo, A.; Llorens, J.; Braojos, J. IT-enabled knowledge ambidexterityand innovation performance in small US firms: The moderator role of social media capability. *Inf. Manag.* **2018**, *55*, 131–143. [CrossRef]
11. Lee, P.K.C.; To, W.M.; Ty, B.T.W. Team attributes and performance of operational service teams: An empirical taxonomy development. *Int. J. Prod. Econ.* **2013**, *142*, 51–60. [CrossRef]
12. Lin, H.F. Contextual factors affecting knowledge management diffusion in SMEs. *Ind. Manag. Data Syst.* **2014**, *114*, 1415–1437. [CrossRef]
13. Gao, T.; Chai, Y.; Liu, Y. A review of knowledge management about theoretical conception and designing approaches. *Int. J. Crowd Sci.* **2018**, *2*, 42–51. [CrossRef]
14. March, J.G. Exploration and exploitation in organizational learning. *Organ. Sci.* **1991**, *20*, 71–87. Available online: https://www.jstor.org/stable/2634940 (accessed on 14 September 2021). [CrossRef]
15. Cegarra-Navarro, J.G.; Jiménez-Jiménez, D.; García-Pérez, A. An integrative view of knowledge processes and a learning culture for ambidexterity: Toward improved organizational performance in the banking sector. *IEEE Trans. Eng. Manag.* **2021**, *68*, 408–417. [CrossRef]
16. Levinthal, D.A.; March, J.G. The myopia of learning. *Strateg. Manag. J.* **1993**, *14*, 95–112. [CrossRef]
17. Ganzaroli, A.; De Noni, I.; Belussi, F. The combined effect of technological relatedness and knowledge utilization on explorative and exploitative invention performance post-M & A. *Eur. J. Innov. Manag.* **2016**, *19*, 167–188. [CrossRef]
18. Siggelkow, N.; Levinthal, D.A. Temporarily divide to conquer: Centralized, decentralized, and reintegrated organizational approaches to exploration and adaptation. *Organ. Sci.* **2003**, *14*, 650–669. [CrossRef]
19. Lavie, D.; Rosenkopf, L. Balancing exploration and exploitation in alliance formation. *Acad Manag. J.* **2006**, *49*, 797–818. [CrossRef]
20. Jansen, J.J.P.; Tempelaar, M.P.; van den Bosch, F.A.J.; Volberda, H.W. Structural differentiation and ambidexterity: The mediating role of integration mechanisms. *Organ. Sci.* **2009**, *20*, 797–811. [CrossRef]
21. Petruzzelli, A.M. Balancing knowledge exploration and exploitation within and across technological and geographical domains. *Knowl. Manag. Res. Pract.* **2014**, *12*, 123–132. [CrossRef]
22. Sorensen, J.; Stuart, T. Aging, obsolescence, and organizational innovation. *Adm. Sci. Q.* **2000**, *45*, 81–112. [CrossRef]
23. Auh, S.; Menguc, B. Balancing exploration and exploitation: The moderating role of competitive intensity. *J. Bus. Res.* **2005**, *58*, 1652–1661. [CrossRef]
24. Gupta, A.K.; Smith, K.G.; Shalley, C.E. The interplay between exploration and exploitation. *Acad. Manag. J.* **2006**, *49*, 693–706. [CrossRef]
25. Filippini, R.; Güttel, W.H.; Nosella, A. Ambidexterity and the evolution of knowledge management initiatives. *J. Bus. Res.* **2012**, *65*, 317–324. [CrossRef]
26. Ferraris, A.; Monge, F.; Mueller, J. Ambidextrous IT capabilities and business process performance: An empirical analysis. *Bus. Process. Manag. J.* **2018**, *24*, 1077–1090. [CrossRef]
27. Luger, J.; Raisch, S.; Schimmer, M. Dynamic balancing of exploration and exploitation: The contingent benefits of ambidexterity. *Organ. Sci.* **2018**, *29*, 449–470. [CrossRef]
28. Raisch, S.; Birkinshaw, J. Organizational ambidexterity: Antecedents, outcomes, and moderators. *J. Manag.* **2008**, *34*, 375–409. [CrossRef]

29.　Raisch, S.; Birkinshaw, J.; Probst, G.; Tushman, M.L. Organizational ambidexterity: Balancing exploitation and exploration for sustained performance. *Organ. Sci.* **2009**, *20*, 685–695. [CrossRef]

30.　Knight, E.; Harvey, W. Managing exploration and exploitation paradoxes in creative organisations. *Manag. Decis.* **2015**, *53*, 809–827. [CrossRef]

31.　Rosenkopf, L.; Nerkar, A. Beyond local search: Boundary spanning, exploration, and impact in the optical disk industry. *Strateg. Manag. J.* **2001**, *22*, 287–306. [CrossRef]

32.　Bauer, M.; Leker, J. Exploration and exploitation in product and process innovation in the chemical industry. *R&D Manag.* **2013**, *43*, 196–212. [CrossRef]

33.　Li, D.; Lin, J.; Cui, W.; Qian, Y. The trade-off between knowledge exploration and exploitation in technological innovation. *J. Knowl. Manag.* **2018**, *22*, 781–801. [CrossRef]

34.　Turner, N.; Swart, J.; Maylor, H. Mechanisms for managing ambidexterity: A review and research agenda. *Int. J. Manag. Rev.* **2013**, *15*, 317–332. [CrossRef]

35.　García-Lillo, F.; Úbeda-García, M.; Marco-Lajara, B. Organizational ambidexterity: Exploring the knowledge base. *Scientometrics* **2016**, *107*, 1021–1040. [CrossRef]

36.　Asif, M. Exploring the antecedents of ambidexterity: A taxonomic approach. *Manag. Decis.* **2017**, *66*, 1489–1505. [CrossRef]

37.　Snehvrat, S.; Kumar, A.; Kumar, R.; Dutta, S. The state of ambidexterity research: A data mining approach. *Int. J. Organ. Anal.* **2018**, *26*, 343–367. [CrossRef]

38.　Christofi, M.; Vrontis, D.; Cadogan, J.W. Micro-foundational ambidexterity and multinational enterprises: A systematic review and a conceptual framework. *Int. Bus. Rev.* **2021**, *30*, 101625. [CrossRef]

39.　Bernal, O.V.; Toro-Jaramilo, I.D. Organizational Ambidexterity: Exploration and Exploitation. *Int. J. Innov. Technol. Manag.* **2019**, *16*, 1950033. [CrossRef]

40.　O'Reilly III, C.A.; Tushman, M.L. Organizational ambidexterity: Past, present, and future. *Acad. Manag. Perspect.* **2013**, *27*, 324–338. [CrossRef]

41.　Pertusa-Ortega, E.M.; Molina-Azorín, J.F.; Tarí, J.J.; Pereira-Moliner, J.; López-Gamero, M.D. The microfoundations of organizational ambidexterity: A systematic review of individual ambidexterity through a multilevel framework. *BRQ Bus. Res. Q.* **2020**, 2340944420929711. [CrossRef]

42.　Alizadeh, Y.; Jetter, A.J. Pathways for balancing exploration and exploitation in innovations: A review and expansion of ambidexterity theory. *Int. J. Innov. Technol. Manag.* **2019**, *16*, 1950032. [CrossRef]

43.　Helbin, T.; Van Looy, A. Is Business Process Management (BPM) Ready for Ambidexterity? Conceptualization, Implementation Guidelines and Research Agenda. *Sustainability* **2021**, *13*, 1906. [CrossRef]

44.　Muñoz-Pascual, L.; Galende, J. Ambidextrous knowledge and learning capability: The magic potion for employee creativity and sustainable innovation performance. *Sustainability* **2020**, *12*, 3966. [CrossRef]

45.　Cardoni, A.; Zanin, F.; Corazza, G.; Paradisi, A. Knowledge management and performance measurement systems for SMEs' economic sustainability. *Sustainability* **2020**, *12*, 2594. [CrossRef]

46.　Brion, S.; Mothe, C.; Sabatier, M. Managing competences to enhance the effect of organizational context on innovation. In *From Knowledge Management to Strategic Competence: Assessing Technological, Market and Organisational Innovation*, 3rd ed.; Tidd, J., Ed.; World Scientific Publishing Company: Singapore, 2012; pp. 225–251.

47.　Finnegan, C.; Runyan, R.C.; Gonzalez-Padron, T.; Hyun, J. Rigor Trends in Retailing Research: Assessment and Guidelines. *Int. J. Manag. Rev.* **2016**, *18*, 51–68, 2016. [CrossRef]

48.　Pérez-Pérez, M.; Kocabasoglu-Hillmer, C.; Serrano-Bedia, A.M.; López-Fernández, M.C. Manufacturing and supply chain flexibility: Building an integrative conceptual model through systematic literature review and bibliometric analysis. *Glob. J. Flex. Syst. Manag.* **2019**, *20*, 1–23. [CrossRef]

49.　Rodrigues, M.; Mendes, L. Mapping of the literature on social responsibility in the mining industry: A systematic literature review. *J. Clean. Prod.* **2018**, *181*, 88–101. [CrossRef]

50.　Martins, C.L.; Pato, M.V. Supply chain sustainability: A tertiary literature review. *J. Clean. Prod.* **2019**, *225*, 995–1016. [CrossRef]

51.　Thunnissen, M.; Gallardo-Gallardo, E. Rigor and relevance in empirical TM research: Key issues and challenges. *BRQ Bus. Res. Q.* **2019**, *22*, 171–180. [CrossRef]

52.　López-Fernández, M.C.; Serrano-Bedia, A.M.; Pérez-Pérez, M. Entrepreneurship and family firm research: A bibliometric analysis of an emerging field. *J. Small Bus. Manag.* **2016**, *54*, 622–639. [CrossRef]

53.　Mueller, J.; Hutter, K.; Fueller, J.; Matzler, K. Virtual world as knowledge management platform -a practice-perspective. *Inf. Syst. J.* **2011**, *21*, 479–501. [CrossRef]

54.　Annosi, M.C.; Casprini, E.; Martini, A.; Torres, J.G.R. Post-acquisition knowledge management practices for exploration and exploitation: Insights from a food service organization. *J. Knowl. Manag.* **2021**, *25*, 129–148. [CrossRef]

55.　Lee, J.Y.; Taras, V.; Jiménez, A.; Choi, B.; Pattnaik, C. Ambidextrous knowledge sharing within R&D teams and multinational enterprise performance: The moderating effects of cultural distance in uncertainty avoidance. *Manag. Int. Rev.* **2020**, *60*, 387–425. [CrossRef]

56.　Rui, Z.; Lyytinen, K. How do ventures become more innovative? The effect of external search and ambidextrous knowledge integration. *Eur. J. Innov. Manag.* **2019**, *22*, 845–865. [CrossRef]

57. Clauss, T.; Spieth, P.; Kesting, T. Relational determinants of ambidextrous knowledge sharing in innovation networks of businesses. *Int. J. Entrep. Ventur.* **2018**, *10*, 597–618. [CrossRef]
58. Cegarra-Navarro, J.G.; Sánchez-Vidal, M.E.; Cegarra-Leiva, D. Balancing exploration and exploitation of knowledge through an unlearning context: An empirical investigation in SMEs. *Manag. Decis.* **2011**, *49*, 1099–1119. [CrossRef]
59. Soosay, C.; Hyland, P. Exploration and exploitation: The interplay between knowledge and continuous innovation. *Int. J. Technol. Manag.* **2008**, *42*, 20–35. [CrossRef]
60. Martini, A.; Neirotti, P.; Aloini, D. Finding the way to ambidexterity: Exploring the relationships among organisational design, knowledge creation and innovation. *Int. J. Innov. Manag.* **2015**, *19*, 1550045. [CrossRef]
61. Yang, S.M.; Fang, S.C.; Fang, S.R.; Chou, C.H. Knowledge exchange and knowledge protection in interorganizational learning: The ambidexterity perspective. *Ind. Mark. Manag.* **2014**, *43*, 346–358. [CrossRef]
62. Bierly, P.E., III; Damanpour, F.; Santoro, M.D. The application of external knowledge: Organizational conditions for exploration and exploitation. *J. Manag. Stud.* **2009**, *46*, 481–509. [CrossRef]
63. Im, G.; Rai, A. Knowledge sharing ambidexterity in long-term interorganizational relationships. *Manag. Sci.* **2008**, *54*, 1281–1296. [CrossRef]
64. Gonzalez, R.V.D. Knowledge exploration and exploitation in team context. *Total Qual. Manag. Bus. Excell.* **2019**, *30*, 1654–1674. [CrossRef]
65. Bouncken, R.B. Ambiguity and knowledge transfer in innovation alliances. *Int. J. Entrep. Ventur.* **2015**, *7*, 309–322. [CrossRef]
66. Bouncken, R.B.; Kraus, S. Patterns of knowledge conversion: Effects on the degree of novelty in project-based alliances. *Int. J. Entrep. Ventur.* **2016**, *8*, 119–142. [CrossRef]
67. Korbi, F.B.; Chouki, M. Knowledge transfer in international asymmetric alliances: The key role of translation, artifacts, and proximity. *J. Knowl. Manag.* **2017**, *21*, 1272–1291. [CrossRef]
68. Koka, B.R.; Prescott, J.E. Strategic alliances as social capital: A multidimensional view. *Strateg. Manag. J.* **2002**, *23*, 795–816. [CrossRef]
69. Salas, E.; Sims, D.E.; Burke, C.S. Is there a big five in teamwork? *Small Group Res.* **2005**, *36*, 555–599. [CrossRef]
70. Bikfalvi, A.; Jäger, A.; Lay, G. The incidence and diffusion of teamwork in manufacturing–evidences from a Pan-European survey. *J. Organ. Chang. Manag.* **2014**, *27*, 206–231. [CrossRef]
71. Gibson, C.B.; Birkinshaw, J. The antecedents, consequences and mediating role of organizational ambidexterity. *Acad. Manag. J.* **2004**, *47*, 209–226. [CrossRef]
72. Alexandru, V.A.; Bolisani, E.; Andrei, A.G.; Cegarra-Navarro, J.G.; Martínez Martínez, A.; Paiola, M.; Scarso, E.; Vătămănescu, E.M.; Zieba, M. Knowledge management approaches of small and medium-sized firms: A cluster analysis. *Kybernetes* **2019**, *49*, 73–87. [CrossRef]
73. Sarala, R.M.; Vaara, E.; Junni, P. Beyond merger syndrome and cultural differences: New avenues for research on the 'human side' of global mergers and acquisitions (M&As). *J. World Bus.* **2019**, *54*, 307–321. [CrossRef]