

Ambidextrous leadership and collaborative networks in the organizational context

Liderazgo ambidiestro y redes colaborativas en el contexto organizacional

Ambidextrous liderança e redes colaborativas no contexto organizacional

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Abstract: Ambidextrous leadership allows to balance the exploitation of existing resources and processes with the exploration of new opportunities, being essential for innovation and adaptation to changing environments, while collaborative networks allow access to resources and knowledge shared by stakeholders to improve efficiency and effectiveness in project execution. The objective is to explore the relationship between ambidextrous leadership and collaborative networks in the organizational context. The research is exploratory, based on a bibliometric analysis in the Scopus and Google Scholar databases. The main results show the increase in innovation in organizations that practice ambidextrous leadership and encourage collaborative networks, and that those organizations that practice ambidextrous leadership tend to be more competitive in the market and generate value. It is concluded that ambidextrous leadership and collaborative networks contribute to organizational resilience and that organizations can face challenges more effectively due to their ability to adapt and collaborate with other actors.

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Keywords: Ambidextrous leadership; Collaborative networks; Bibliometric analysis; Exploration; Exploitation

Resumen: El liderazgo ambidiestro permite equilibrar la explotación de recursos y procesos existentes con la exploración de nuevas oportunidades, siendo esencial para la innovación y adaptación a entornos cambiantes, mientras que las redes colaborativas permiten acceder a recursos y conocimientos compartidos por los grupos de interés para mejorar la eficiencia y eficacia en la ejecución de proyectos. El objetivo es explorar la relación entre el liderazgo ambidiestro y las redes colaborativas en el contexto organizacional. La investigación es exploratoria, basada en un análisis bibliométrico en las bases de datos Scopus y Google Scholar. Los principales resultados muestran el aumento de la innovación en las organizaciones que practican el liderazgo ambidiestro y fomentan las redes colaborativas, y que aquellas organizaciones que practican el liderazgo ambidiestro tienden a ser más competitivas en el mercado y a generar valor. Se concluye que el liderazgo ambidiestro y las redes colaborativas contribuyen a la resiliencia organizacional y que las organizaciones pueden enfrentar desafíos, de manera más efectiva debido a su capacidad de adaptarse y colaborar con otros actores.

Palabras Clave: Liderazgo ambidiestro; Redes colaborativas; Análisis bibliométrico; Exploración; Explotación.

Resumo: A liderança ambidestra permite equilibrar a exploração dos recursos e processos existentes com a exploração de novas oportunidades, sendo essencial para a inovação e adaptação a ambientes em mudança, enquanto as redes colaborativas permitem o acesso a recursos e conhecimentos compartilhados por grupos de interesse para melhorar a eficiência e eficácia em execução do projeto. O objetivo é explorar a relação entre liderança ambidestra e redes colaborativas no contexto organizacional. A pesquisa é exploratória, baseada em análise bibliométrica nas bases de dados Scopus e Google Acadêmico. Os principais resultados mostram o aumento da inovação nas organizações que praticam a liderança ambidestra e fomentam redes colaborativas, e que aquelas organizações que praticam a liderança ambidestra tendem a ser mais competitivas no mercado e a gerar valor. Conclui-se que a liderança ambidestra e as redes colaborativas contribuem para a resiliência organizacional e que as organizações podem enfrentar os desafios de forma mais eficaz devido à sua capacidade de adaptação e colaboração com outros atores.

Palavras-Chave: Liderança ambidestra; Redes colaborativas; Análise bibliométrica; Exploração; Aproveitamento.

Codes JEL: D74, D81, L21

Introduction

The organizations can foster innovation and adaptation to the changing market conditions, making them more competitive globally, since territories are diverse and dynamic, with tremendous innovation potential, combining ambidextrous leadership with collaborative networks (Saleh et al., 2023). Some organizations face limited resources and economic threats, especially after the COVID-19 pandemic; this situation has had a meaningful impact all over the world, including how organizations approach ambidextrous leadership and collaborative networks (Berraies, 2023). A few of the effects of the pandemic on these concepts include the acceleration of digital transformation, for example, the pandemic has accelerated the adoption of digital technology in organizations and has led to an intensive approach to the exploitation of digital resources. The ambidextrous leadership has become essential to manage the adaptation to these technologies but the exploration of new digital opportunities as well (Saeed et al., 2023).

The pandemic has demonstrated the importance of resilience and adaptability, where organizations have rapidly adjusted their strategies and operations, requiring an ambidextrous approach to crisis management and preparation for the future. Indeed, companies relied on collaboration and the exploration of current ideas to find solutions to the challenges raised by the pandemic (Gouda & Tiwari, 2024). Outlining the necessity of continued individual but organizational knowledge and development, the COVID-19 pandemic has transformed the way organizations approach ambidextrous leadership and collaborative networks, besides that it has pointed out the urgency of adaptation, resilience, innovation, and effective collaboration in a constantly changing business and social environment.

In the context of a developing business environment in Latin America, collaboration and ambidexterity could potentially be fundamental for entrepreneurial and economic development in the region, where collaborative networks could improve governance by allowing different interested parties to collaborate in decision-making and foster transparency and accountability. In Colombia, as in other places, the advance regarding ambidextrous leadership and collaborative networks in the organizational context has experienced a remarkable increase and development in the last few years. Universities and research centers have led studies and projects around these concepts, analyzing local and regional contexts, additionally, leadership and collaboration training programs have been applied in academic institutions and organizations. These programs help leaders and professionals acquire the necessary skills to manage and foster effective collaboration.

Likewise, there are a variety of entrepreneurial networks and associations that promote collaboration and the exchange of knowledge between organizations, these

networks, which operate in different sectors, are examples of how collaboration principles are applied in the organizational context, experiencing an increase regarding entrepreneurship and innovation. Leaders and entrepreneurs have used ambidextrous and collaborative paths to create new enterprises and innovative solutions, hosting branches and operations of multiple multinational companies, applying ambidextrous leadership practices, and fomenting collaboration in local operations seeking aspects such as Corporate Social Responsibility (CSR), which is a priority in many enterprises in Colombia.

Despite these advances, is important to point out that the effective application of ambidextrous leadership and collaborative networks in Colombia, as in other places, is still a challenge. Indeed, continued effort is required to uphold a collaborative culture, raise ambidextrous leaders, and strengthen collaborative networks in the organizational context.

Therefore, the objective set for this article is the exploration of the relationship between ambidextrous leadership and collaborative networks in the organizational context. Then the approach is based on the exploration and comprehension of the main themes of “ambidextrous leadership” and “collaborative networks,” the methodology used, the main results, and the conclusions of this research are described.

Theoretical framework

Ambidextrous Leadership

It is defined as a leader’s capacity to effectively manage and equilibrate two opposite dimensions of leadership: exploration and exploitation (Berraies, 2023). Exploration is related to the search for new opportunities, innovation, and change adaptation, while exploitation implies the optimization of existent processes and resources (Zhao et al., 2023; Hou et al., 2022).

From an epistemological perspective, ambidextrous leadership is based on the idea that the knowledge and comprehension of these two opposite aspects of leadership are pivotal for organizational success (Ambilichu et al., 2022). Epistemology expresses how leaders acquire, apply, and develop knowledge around exploration and exploitation (Gouda & Tiwari, 2024). This may include the search and creation of new knowledge, even the management and application of expertise in an ambidextrous environment (Volberda, 1999).

Collaborative Networks

Collaborative networks refer to relationships and interpersonal connections between individuals, groups, and organizations working cooperatively to achieve common goals (Gómez & Verd, 2013). Moreover, these networks could be formal and informal designed to share information, knowledge, and resources (Benkler, 2015a).

From an epistemological perspective, collaborative networks involve the generation and distribution of knowledge through interaction and cooperation. Here epistemology concentrates on how knowledge is built and shared inside these networks (Gibbert et al., 2008). Finally, this involves the way knowledge is acquired, organized, stored, and spread, besides how people learn from their interactions (Benkler, 2015b).

Methodology

Exploration research has been used for this study regarding the ambidextrous leadership and collaborative network's themes, starting from a bibliometric analysis according to the PRISMA-2020 declaration (Page et al., 2021). The secondary sources are the methodological approach in this study and its methodological journey is shown in Figure 1.

Eligibility Criteria

Inside the eligibility criteria for this research, studies mentioning directly in their titles the ambidextrous leadership and collaborative networks were determined. The above was done to select the works related specifically to this topic.

On top of that, any kind of research products such as papers, book chapters, books, and conferences were considered to identify the shape, the context, and the impact of those products on the academic sector. In other matters, regarding the language of the products, no specific filter was applied since any language was important for the researchers.

The exclusion process was directly applied in the Scopus database for the variable "collaborative networks" since the number of academic products would bias the focus of the research, therefore it was classified from 51,235 initial products found to 4,633, where investigations related to Business, Management and Accounting, Social Sciences and Economic were filtered.

Sources of Information

For this research Scopus and Google Scholar databases were classified, aiming to use diverse studies related to the established themes, in addition to, the acknowledgment and the quality of the publications stored there.

The Scopus and Google Scholar databases were chosen due to their relevance and academic coverage. Scopus is recognized for the quality and rigor of its indexed publications, which guarantees a high level of reliability in bibliometric results. Google Scholar complements this search by offering a broader spectrum of literature, including books, chapters, and academic documents that enrich the analysis. The combination of both sources allows for the integration of scientific rigor with broad coverage, avoiding bias due to restriction to a single repository.

Search Management

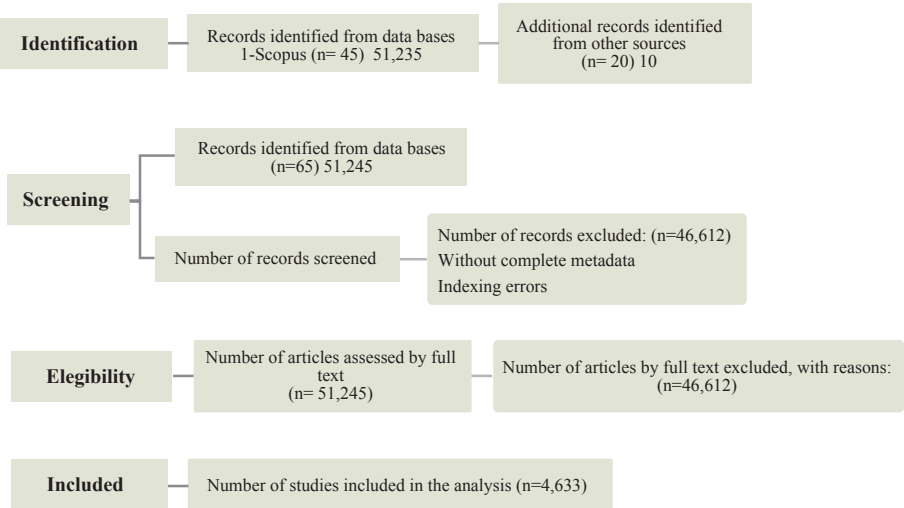
Search strategies were classified from the following equations in the Scopus database: (TITLE ((“ambidextrous leadership” OR “collaborative networks” OR “organization” OR “marketing”))).

For the Google Scholar database, the following data were classified: ((ambidextrous leadership), (collaborative networks), (business, companies, marketing)).

Data Management

The tool Microsoft Excel was implemented in the analysis of this study to extract the information directly from the Scopus database and analyze it, then process it in the VOS viewer software that is used for the analysis and visualization of bibliometric data (Katoch, 2022). The information is analyzed independently with the variables “ambidextrous leadership” and “collaborative networks” and subsequently they are organized in an articulated manner in the Scopus database in the following way “ambidextrous” and “leadership” and “collaborative” and “networks” to know the relationship of the variables in a structured way.

Figure 1. *PRISMA flowchart*.



Source: own elaboration.

Results

Ambidextrous leadership's origins

The ambidextrous leadership concept has evolved throughout the time since additional investigations had been developed and the changing organizational dynamics had been adopted.

The ambidextrous leadership has its roots in the organization theory, specifically in the context of “organizational ambidexterity” popularized by authors such as Duncan (1976) and Tushman & O'Reilly (1996; 2004). Initially, it focused on the company's capability to equilibrate resource exploitation and the exploration of new opportunities (Raisch & Birkinshaw, 2008a).

Eventually, the importance of leadership fostering organizational ambidexterity started to get recognition. It went from an exclusive approach to the organization to the consideration of the leader's role in ambidextrous approach facilitation (Simsek et al., 2009a). The evolution of the concept also involved higher attention to the individual ambidextrous leadership, that is, how leaders can balance the exploration and exploitation of their behavior and decision-making (Tushman & O'Reilly, 1996).

Ambidextrous leadership is closely related to the theory of change and innovation, furthermore, ambidextrous leaders are seen as innovation and organizational change boosters, which has led to a major integration of these concepts. The idea of ambidextrous leadership has been applied in a variety of contexts, from multinational enterprises to nonprofit organizations and the public sector (Lubatkin et al., 2006).

Recent evolutions have emphasized the necessity that leaders become flexible and adaptable in their ambidextrous approach, recognizing that there is no unique approach applicable to all cases (Simsek et al., 2009b). The rising influence of technology and globalization has led to an approach to how ambidextrous leadership can support organizations in the adaptation to a changing entrepreneurial environment (Birkinshaw & Gibson, 2004a).

The ambidextrous leadership has evolved from its roots in organizational ambidexterity to a more refined comprehension of how individual leaders can balance exploration and exploitation to support innovation and long-term success in diverse contexts (Tushman & O'Reilly, 2004). As the entrepreneurial environment continues to change, the ambidextrous leadership concept keeps evolving to adapt to new realities (Benner & Tushman, 2003).

Ambidextrous leadership is barely a new topic in leadership and management literature, due to this, different authors were identified in the exploration made as shown in Chart 1:

Table 1. *Representative authors in ambidextrous leadership*

Authors	Contributions
Michael Tushman and Charles O'Reilly (Tushman & O'Reilly, 1996; 2004)	These scholars have done important investigations regarding ambidextrous leadership and have written about how organizations can equilibrate exploration and exploitation.
Benjamin Oviatt and Patricia McDougall (Oviatt & McDougall, 1994, 1995, 1997)	They have investigated the relationship between ambidextrous leadership and innovation, especially in multinational enterprises.
Charles O'Reilly and Michael Tushman (Tushman & O'Reilly, 1996; 2004)	The authors of "Lead and Disrupt: How to Solve the Innovator's Dilemma," have deepened the theme of ambidextrous leadership and its relationship with innovation in organizations.
Julian Birkinshaw and Liisa Välikangas (Birkinshaw & Gibson, 2004)	They have written about ambidextrous leadership in their book "Becoming Ambidextrous," focusing on how organizations can balance exploitation and exploration.

Authors	Contributions
Robert Galavan, Kenneth Le Meunier-FitzHugh and Mark De Rond (Smith & Lewis, 2011)	The authors of “Toward a Temporally Contingent Theorization of Ambidexterity: A Review of the Literature,” have contributed to the comprehension of ambidexterity in time.
Michael Gibbert, Sebastian Knudsen, and Harald Bathelt (Gibbert et al., 2008)	They have investigated the relationship between ambidextrous leadership and innovative networks.
Kun Li, Kan Shi (Li, 2013)	The authors of “Leveraging Ambidextrous Innovation for Sustainability: The Role of Top Management Team Diversity,” have explored the role of diversity in ambidextrous leadership.

Note. Own elaboration.

These authors have developed meaningful investigations regarding ambidextrous leadership and have contributed to the comprehension of how organizations can equilibrate exploitation and exploration to achieve long-term success.

Why apply ambidextrous leadership in Colombia?

The application of ambidextrous leadership in Colombia, as in other places, implies the capability to equilibrate exploration and exploitation of resources and opportunities in a constantly changing entrepreneurial environment (Restrepo & Cuadra, 2022). In an increasingly competitive world, organizations in Colombia can apply ambidextrous leadership by fostering steady innovation. Indeed, leaders can promote an environment where innovative ideas and solutions are valuable, while processes and resources are optimized (Birkinshaw & Gibson, 2004b).

Ambidextrous leaders can be aware of the tendencies of the market and adapt their strategies in consequence (Gibbert et al., 2008). For example, in such sectors as technology, health, or energy, organizations in Colombia can benefit by exploring modern technologies and business models while their current assets are improved because ambidextrous leadership also implies the development of diverse talent and highly qualified. So that, leaders in Colombia can foster a learning environment and continued development preparing employees for future challenges.

At the same time, it is essential to stimulate collaboration networks both within organizations and with external partners. Ambidextrous leaders can establish strategic alliances that allow them to explore new opportunities and resources jointly; in a changing business environment, change management becomes crucial

(Tushman & O'Reilly, 1996; 2004). Surely ambidextrous leaders in Colombia can manage change processes effectively, balancing the need to adapt with the need to maintain stability.

The application of ambidextrous leadership requires constant evaluation and measurement of the performance in terms of exploration and exploitation. Leaders must establish key performance indicators (KPIs) that reflect these two aspects and adjust their strategies in consequence (Raisch & Birkinshaw, 2008b). Since Colombia can face economic and political threats, ambidextrous leadership could potentially play a pivotal role by helping organizations develop entrepreneurial resilience, implying the capability of crisis recovery and quick adaptations to new circumstances. To sum up, ambidextrous leadership in Colombia can be applied as in any other place. The key lies in the capability of leaders to equilibrate exploration and exploitation, adapting to local conditions and the specific demands of their organizations in a dynamic and competitive business environment.

Level of co-occurrence in ambidextrous leadership

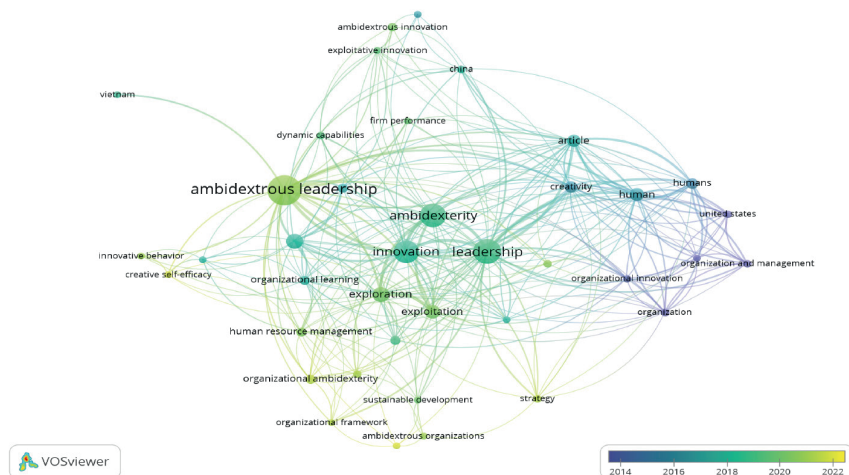
To demonstrate the prevalence of ambidextrous leadership in the Scopus database, one of the key themes of this study, Figure 2 illustrates that ambidextrous leadership, leadership, and innovation are the most researched topics.

This elevated level of co-occurrence is because ambidextrous leadership involves balancing exploration (innovation) and exploitation (efficiency) in an organization, making it a natural intersection point between leadership, which focuses on decision-making, and innovation, which pertains to the creation of new products, processes, and solutions.

Innovation is crucial for the sustainability and long-term growth of organizations. Ambidextrous leadership is an approach that allows organizations to effectively lead change and innovation while maintaining efficiency and profitability. Research on ambidextrous leadership, leadership, and innovation is related to the interest in organizational and management theory. Understanding how these concepts intertwine is essential to developing effective theories and practices for leadership and management.

Furthermore, the elevated level of co-occurrence in investigations about ambidextrous leadership, leadership, and innovation is because of the strategic importance of these concepts in the current business environment. Ambidextrous leadership has become a fundamental approach to leading and promoting innovation, which has led to an increase in investigations and academic literature related to these topics.

Figure 2. Co-occurrence network, keywords in ambidextrous leadership



Source: own elaboration, based on Scopus database October 18, 2023, and VOSviewer.

The co-occurrence graph shows that “ambidextrous leadership” is positioned as a central node, primarily connected to “innovation” and “leadership.” This confirms that the scientific literature directly associates ambidextrous leadership with innovation as a balancing mechanism between exploration and exploitation.

Collaborative network’s origins

Collaborative networks are structures of interaction between individuals, groups, organizations, or any other entities working cooperatively and coordinated to achieve common goals or mutual benefits (Rodríguez & Cervilla, 2020). These networks can have a considerable number of purposes and can manifest in diverse contexts, from entrepreneurial and academic paths to nonprofitable sectors and government (Lafont-Castillo et al., 2021a).

Collaboration is the cornerstone of these networks, beginners work together actively and cooperatively, sharing resources, knowledge, and abilities to achieve joint goals (Autio, 2005), these systems of networks imply connections and relationships between parties, these connections can be formal or informal and can vary their scope and complexity (Calzadilla, 2002).

The origin of collaborative networks can be tracked throughout history, but its development and proliferation have been influenced by a series of factors

and evolutions in different fields (Baquero-Galvis & Cárdenas-García, 2020), throughout history, people and communities have collaborated in common projects such as the construction of monuments, collective agriculture, and mutual defense, where ancient civilizations like Rome and Egypt, used collaboration to achieve meaningful works of architecture and engineer.

In the XIX century, cooperative movements appeared in Europe and North America. The agricultural saving, credit, and consumption cooperatives were created for the members to share resources and benefits in equal conditions, which is why the economy network, based on the idea that a network's value increases whenever more people join it (Burt, 1992), has been an important factor in the proliferation of collaborative networks and telephony, computing and the expansion of the Internet have been key drivers of this evolution, along with globalization and information technology that have accelerated connectivity and collaboration between organizations and people around the world, due to the ability to instant communication and access to information that has made more effective collaboration possible on a global scale (Ferraris & Leguizamón, 2013).

Since nonprofitable organizations and NGOs have focused on approaching social and environmental problems, and have used collaborative networks to unite efforts, share resources, and search for joint solutions. Besides, strategic alliances have been formed to develop products, share technology, and explore new markets. These collaborations frequently involve the creation of business networks that work together in specific areas.

The origin of collaborative networks is found in the need of people and organizations to work jointly and approach challenges (Lafont-Castillo et al., 2021b), take advantage of common resources and create value. Technology and globalization have extended the opportunities for collaboration in different contexts (Rodríguez & Cervilla, 2020), from the entrepreneurial path to the academic and social. Some representative authors in this theme are presented in Chart 2.

Table 2. *Representative authors of collaborative networks*

Authors	Contributions
Ronald S. Burt (Burt, 1992)	He is recognized for his investigations regarding social media and social capital. He has examined how collaborative networks affect access to resources and opportunities, and how connections between individuals and organizations influence performance and innovation.
Mark S. Granovetter (Gómez & Verd, 2013)	He is known for his work "The Strength of Weak Ties," a fundamental concept in the formation of collaborative networks. His research has contributed to comprehending how connections between people, weak or strong, impact collaboration and information spread.

Authors	Contributions
Elinor Ostrom (Alford, 2014)	Ostrom also made important contributions to the study of collaborative networks. His work points out the importance of cooperation and governance in the effective management of resources.
Yochai Benkler (Benkler, 2015)	He is known for his investigation regarding the information economic and online collaboration. He has explored how technology has allowed the creation of common goods and he has influenced online collaboration in different fields.
David Lazer (Russell, Madera-Jaramillo & Ainsworth, 2009)	He has focused on the analysis of social media and media collaboration. His investigation has contributed to understanding how collaboration in media can have an impact on politics, organization, and other paths.

Note. Own elaboration.

These authors represent a diverse selection of perspectives and approaches in the study of collaborative networks, and their investigations have had a meaningful impact on the comprehension of how collaborative networks function in different disciplines.

What is the functionality of collaborative networks?

They are usually formed around common objectives and interests, where participants share a specific purpose and work together to achieve it. Collaborative networks may include a variety of participants, such as individuals, organizations, academic institutions, government agencies, enterprises, NGOs, and so on. The diversity of the members can contribute different perspectives and resources to the network (Ferraris & Leguizamón, 2013).

The participants of the collaborative networks share resources, information, and knowledge, including task distribution, funding joint projects, technological transfer, and education, they can be flexible and adaptative to approach challenges and emergent opportunities, and collaboration can evolve with time and adjust when necessary.

Participants of collaborative networks look for a mutual benefit or a shared value, this may include economic advantages, research improvements, provision of services developments, and so on. Frequently these require governance structure to coordinate and make decisions, including shared leadership, executive committees, or collaboration agreements.

Collaborative networks also include alliances between enterprises to develop products together, research consortia in academic institutions, coalitions of nongovernment organizations working on environmental and social issues, and collaborations between government agencies to approach public interest issues. These are effective paths to approach complex threats and opportunities by taking advantage of collaboration and diversity in resources and knowledge from multiple actors to achieve common goals.

Level of co-occurrence in collaborative networks

As a result of this study on collaborative networks, an important increase in research aspects that support academia and enterprises is evidenced, consequently, a co-occurrence in collaborative aspects, knowledge management, collaborative work, and strategic networks is observed in Figure 3.

The co-occurrence of collaborative aspects, knowledge management, collaborative work, and strategic networks in the investigation and entrepreneurial practice and academic contribute in various manners. For example, collaboration and work in nets are fundamental for innovation, when enterprises and academia foster collaboration and knowledge management, opportunities are created for the generation of the latest ideas and innovative solutions.

Knowledge management implies the capture, storage, and effective distribution of knowledge inside every organization. Indeed, this allows companies and academia to take advantage of all the possible knowledge, which can result in informed decision-making and a major efficiency in project execution.

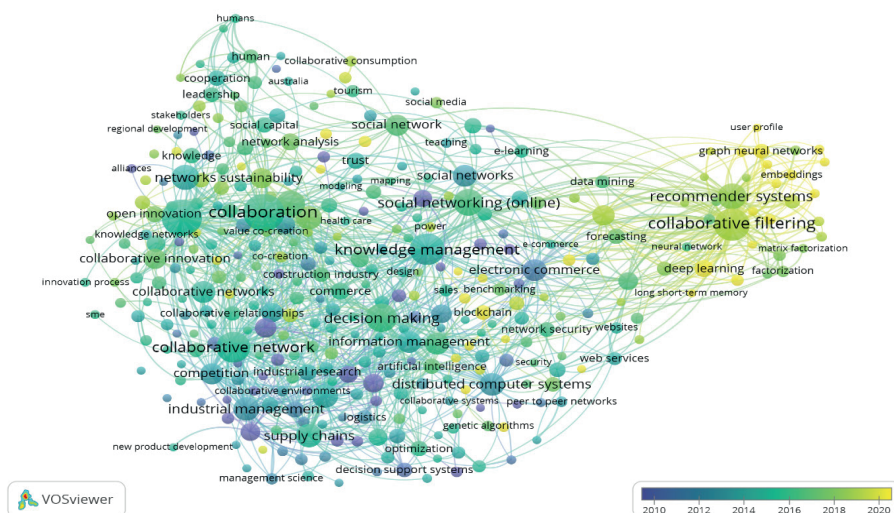
Collaborative work and effective collaboration through strategic networks can help both academia and businesses to approach complex issues and challenges efficiently. Through such collaborations, solutions can be developed by involving diverse interest parties with different knowledge and perspectives. This fosters a learning environment for companies and academia, where they can share lessons, good practices, and experiences. Strategic networks and effective collaboration also help enterprises and academia to expand their contact network and collaborators. This can result in business opportunities, access to additional resources, and the possibility of participating in joint research projects.

Academia, collaborations, and knowledge management are essential to share investigations and discoveries with the academic community and society in general. In a business environment, the transfer of knowledge can enhance capacitance and personal development. Collaboration provides access to information and relevant

data, which can improve decision-making based on entrepreneurial and academic institution experience.

The convergence of these factors leads to better teamwork, productivity, creativity, and the creation of worth in both academia and businesses. These collaborative strategies and knowledge management are essential in tackling modern-day problems, and in promoting research and the creation of efficient solutions.

Figure 3. *Co-occurrence network, keywords in collaborative networks.*



Source: own elaboration, based on Scopus database, October 18, 2023, and VOSviewer.

In the case of collaborative networks, the strongest relationship is observed with “knowledge management” and “strategic networks”, indicating that the essential function of networks is to facilitate the circulation of knowledge and strategic coordination between actors.

Relationship between ambidextrous leadership and collaborative networks in the organizational context

The relationship between ambidextrous leadership and collaborative networks within an organization is significant and strategic. Both concepts are interlinked and work together to complement one another. However, some aspects are inclined towards leadership or networks intentionally. To clarify the relationships, Chart 3 has been provided.

Table 3. Relationship between ambidextrous leadership and collaborative networks

Ambidextrous Leadership	Collaborative Networks
Innovation Support	
Ambidextrous leadership implies the capability of equilibrating the exploitation of resources with the exploration of new opportunities.	Collaborative networks provide an effective means for exploration and the generation of innovative ideas because they allow collaboration with diverse internal and external partners, which can lead to innovation in products, services, and processes.
Resources and Shared Knowledge	
Ambidextrous leaders can take advantage of these networks to get access to resources and knowledge that support both exploration and exploitation.	Collaborative networks usually involve partners, suppliers, experts, and other actors with knowledge and resources that can be valuable to the organization.
Diversity Strategy	
Ambidextrous leaders should be capable of fostering an inclusive teamwork environment and tolerate different opinions. Besides, ambidextrous leadership envelops the capability to manage this diversity and use it in decision-making and solving problems.	Collaborative networks often reunite individuals with backgrounds, experiences, and diverse perspectives.
Scope and Coordination	
Ambidextrous leaders can use networks to expand the scope of the organization and coordinate efforts in multiple fields of approach.	Collaborative networks allow a major coordination among multiple participants.
Support Culture	
Ambidextrous leadership aims to foster an organizational culture that values collaboration and the opening to the latest ideas.	Collaborative networks are a mean to promote and feed that culture by allowing interactions and collaborative learning
Decision-Making Improvement	
Ambidextrous leaders can use these networks to get access to relevant information and ensure that decisions are based on evidence and diverse perspectives.	Collaborative networks can provide information and valuable data to support decision-making within both exploitation and exploration.

Note. Own elaboration, based on Mastio et al., 2019a; Saeed et al., 2023; Raisch & Birkinshaw, 2008.

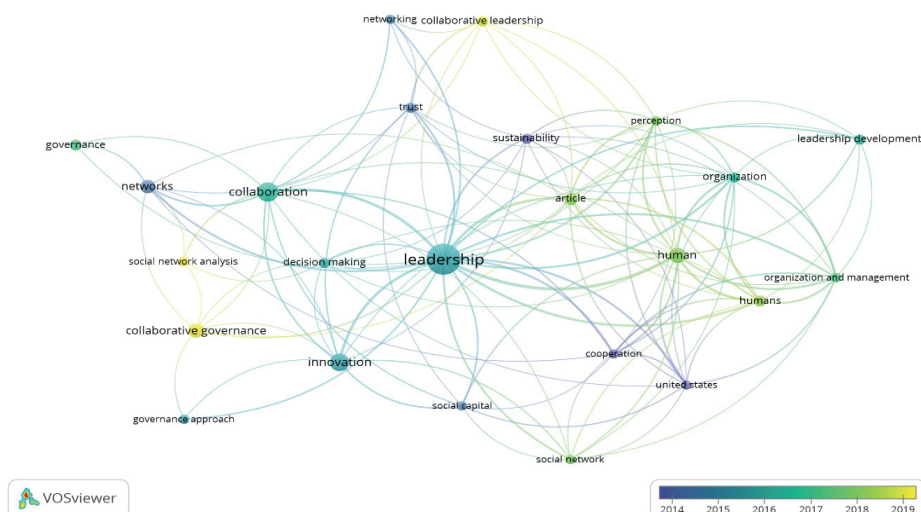
Both ambidextrous leadership and collaborative networks are fundamental to the resilience and adaptation of organizations to changes and challenges. Collaborative networks can be a great support in crisis, and ambidextrous leadership allows organizations to adjust their strategy in response to changing situations (Raisch & Birkinshaw, 2008c).

The following concepts can help organizations balance their exploitation and exploration efforts, encourage innovation, leverage resources and shared knowledge, and foster a collaborative culture (Mastio et al., 2019b). By establishing effective relationships, organizations can achieve higher performance and competitiveness in the market, as well as greater adaptability to changing social and entrepreneurial conditions (Saeed et al., 2023).

It is also possible to identify the relationship between ambidextrous leadership and collaborative networks. As shown in Figure 4, leadership is the most relevant aspect of organizational management, where despite collaboration, innovation, sustainability, and network management are critical components for organizational success, leadership is the catalyst that boosts these aspects.

Effective leadership creates the necessary direction and environment for organizations to be relevant in those paths. Because of that, leadership is considered the most relevant aspect of organizational management due to its direct influence on all other components and its capacity to guide organizations to achieve their mission.

Figure 4. *Co-occurrence network within ambidextrous leadership and collaborative networks*



Source: own elaboration, based on Scopus database October 18, 2023, and VOSviewer.

The figure demonstrates how leadership acts as a catalyst for the other variables (innovation, collaboration, and sustainability), showing that a leader's ability to manage these interactions is the key to organizational resilience.

Discussion

Thematic and meeting points are evidenced by analyzing the results obtained from bibliometric between applied investigations, however, some studies present challenges both to effectively exercise ambidextrous leadership and collaborative networks to be more efficient (Olga-Vélez et al., 2023), it is the case that tactics related to the tracking and control over activities developed together with other partners, where leadership in both operative actions and innovative actions are determinant.

In projects conducted by the organization and other members of the network, assertive communication both internally and externally is necessary for success. In operational activities, transactional leadership should be applied, while in innovative activities, transformational leadership should be used. Both leadership styles are crucial factors for the organization's success.

Ambidextrous leadership poses significant challenges, particularly in terms of fostering effective communication between human talent within the organization who participate in network activities. This requires maintaining an environment of respect and dialogue while ensuring that communication channels remain accurate concerning the project's personnel. It also involves promoting internal team communication among people within the network who are part of other organizations. The challenge for the leader is to motivate and develop strategies that enable the creation of bonds of trust, responsibility, and credibility between members of a joint project within a collaborative network.

However, the results have certain limitations. The bibliometric analysis depends largely on the indexing criteria of the databases used, which may exclude relevant research not registered in Scopus or Google Scholar. Furthermore, the use of co-occurrences reflects frequent, but not necessarily causal, associations, which requires cautious interpretation of the findings. These aspects could influence the generalizability of the results and open the door to future studies that include additional sources or qualitative methods that deepen our understanding of the links between ambidextrous leadership and collaborative networks.

In the context of ambidextrous leadership and collaborative networks, it is important to consider tracking and communication as crucial variables. However, these

variables should also be studied within the business model. When combined with strategic management, the projects implemented should align with the business model of the organization. This means that the value created by the organization should not only benefit the organization itself and its stakeholders but also the collaborative networks that the organization is a part of.

Conclusions

It is concluded that ambidextrous leadership boosts innovation, performing a crucial role in fostering innovation inside organizations, by optimizing the capability to equilibrate exploration and exploitation of resources and opportunities, stimulating the development of current ideas and solutions. On the other hand, by facilitating the co-creation of value, collaborative networks allow organizations to collaborate with stakeholders, suppliers, and other participants, leading to an eventual co-creation of value. Finally, it is possible to state that this effective collaboration can improve competitiveness and organizational performance. According to the bibliometric analysis, the terms “leadership” and “innovation” co-occurred more than 1,200 times in the Scopus database, demonstrating the strong link between ambidextrous leadership and innovation. Similarly, the nodes related to “collaborative networks” and “knowledge management” totaled more than 900 occurrences, suggesting that collaboration and knowledge management are determining factors in the innovative capacity of organizations.

Similarly, it is concluded that the balance between exploration and exploitation is key. In a changing entrepreneurial environment, ambidextrous leadership becomes essential to equilibrate the exploration of new opportunities and the exploitation of existing resources. Indeed, both ambidextrous leadership and collaborative networks contribute to organizational resilience, where entities can adapt more efficiently to changes and overcome unexpected threats.

The practice of ambidextrous leadership and the promotion of collaborative networks can lead a cultural change in the organization, focusing on collaboration, innovation, and the opening to current ideas. Because of this, collaboration in networks and knowledge management are closely related, sharing information and knowledge in collaborative networks can improve knowledge management in the organization.

For future investigations, it would be interesting to study these variables but include in a proposed model, different intervenient variables as the one mentioned in the discussion, which allows us to show the consequences or effects on organizational performance.

It is important to point out that, in general, both ambidextrous leadership and collaborative networks are strategic approaches that can have a meaningful impact on the capacity of an organization to innovate, collaborate effectively, and prosper in an evolving entrepreneurial environment.

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