

BIBLIOMETRIC ANALYSIS OF COMMUNITIES OF PRACTICE IN THE FIELD OF APPLIED
SOCIAL SCIENCESANÁLISE BIBLIOMÉTRICA DE COMUNIDADES DE PRÁTICAS NO CAMPO DAS CIÊNCIAS
SOCIAIS APLICADAS

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ABSTRACT

Objective: the objective of the study is to analyze the theoretical conceptual evolution of the construct communities of practices in the field of applied social sciences and to identify the main existing theoretical currents and the frontiers of knowledge on the subject. phenomenon.

Methodology/approach: this is a revisional study, elaborated through a bibliometric analysis, and this technique allows the mapping of the emergence and evolution of the concept of communities of practices (CoPs), including making it possible to identify the most cited/influential authors, authors' institutions and cooperation networks between authors.

Originality/Relevance: an absence in the literature that allows identifying the emergence and evolution of the topic of communities of practice, as well as understanding the development of emerging themes and trends in future studies.

Main conclusions: The bibliometric review carried out in this study made it possible to identify the main theoretical bases that contributed to the formation of the knowledge domain of communities of practices (CoP's), as well as the current theoretical currents (borderline and emerging) that are the avenues of future studies about the theme.

Theoretical/methodological contributions: The research findings contribute to the theoretical advancement of the topic, since with the identification of current emerging themes regarding communities of practice, new research can be developed to fill neglected gaps, in short revisional studies, such as bibliometrics and systematic reviews.

Keywords: Communities of Practice; Bibliometrics; Applied Social Sciences; Cocitation Analysis; Pairing Analysis.

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RESUMO

Objetivo: O objetivo do estudo é analisar a evolução conceitual teórica do construto comunidades de práticas no campo das ciências sociais aplicadas e identificar as principais correntes teóricas existentes e as fronteiras do conhecimento da temática, a presente investigação volta-se para o avanço da compreensão desse fenômeno.

Metodologia/abordagem: Trata-se de um estudo revisional, elaborado por meio de uma análise bibliométrica, sendo que esta técnica permite o mapeamento do surgimento e evolução do conceito de comunidades de práticas (CoPs), inclusive possibilita identificar os autores mais citados/influentes, instituições dos autores e, redes de cooperação entre autores.

Originalidade/Relevância: Existe uma ausência na literatura que impossibilita identificar o surgimento e evolução da temática de comunidades de práticas, como também compreender os desdobramentos de temas emergentes e tendências de estudos futuros.

Principais conclusões: A revisão bibliométrica realizada neste estudo possibilitou identificar as principais bases teóricas que contribuíram para a formação do domínio de conhecimento de comunidades de práticas (CoPs), como também as correntes teóricas atuais (fronteiriças e emergentes) que são as avenidas de estudos futuros sobre a temática.

Contribuições teóricas/metodológicas: As descobertas da pesquisa contribuem para o avanço teórico da temática, uma vez que com a identificação dos temas emergentes atuais sobre comunidades de práticas, novas pesquisas podem ser desenvolvidas para preencher lacunas negligenciadas, em síntese estudos revisionais, como bibliométricos e revisões sistemáticas

Palavras-chave: Comunidades de Prática; Bibliometria; Ciências Sociais Aplicadas; Análise de Cocitação; Análise de Pareamento

1. INTRODUCTION

In a globalized context, with markets characterized by intense competition among companies, interorganizational networks have become a strategy for organizations to enhance their competitiveness. This strategy allows organizations to maintain profitability through the innovation of processes (Guimarães, Severo & Dorion, 2022), products, or services, thereby positively affecting organizational performance (Quatrin et al., 2013; Campos et al., 2018). Interorganizational networks, in general, are defined as a strategic decision by organizations to minimize environmental pressures and uncertainties, enhancing collaboration among companies to address mutual problems (Wilbert, 2018).

In this context of integration between individuals and organizations in interorganizational networks, people and organizations are compelled to seek strategies for acquiring new knowledge. This is essential to minimize the impacts caused by the implementation of new technologies and to enable organizations to respond agilely to changes in the business environment in which they operate (Senge, 2017). Knowledge is perceived not as an exclusive resource of experts in their fields but as a resource that develops and is socially disseminated, constructed, and shared collectively (Pyrko et al., 2017).

Within the perspective of collective knowledge construction and sharing, there are communities of practice (CoPs) where individuals share explicit or tacit knowledge (Spoor & Chu, 2018). It is noteworthy that CoPs consist of groups of professionals in a particular field of knowledge, self-organized individuals engaged in similar practices. This interaction facilitates mutual learning and consequently organizational innovations, as professionals apply the acquired knowledge in their respective organizations (Spoor & Chu, 2018; Schulte et al., 2020). In other words, CoPs are formed by people engaged in a collective learning process within a shared space of human effort (Schulte et al., 2020).

From the perspective of Wenger & Snyder (2000), communities of practice are networks formed by professionals with prior knowledge or interest in a specific theme, often associated with the tasks they routinely perform. CoP members predominantly gather informally to share their experiences and work practices, fostering the improvement of their knowledge and organizational processes.

The existence of communities of practice contributes to the development of relationships that enable the generation and sharing of knowledge, assisting organizations in capturing external knowledge. Furthermore, it underlines the perception that informal learning occurs through people's engagement in the activities they perform (Wenger, 1998; Wilbert, 2018). People have different ways of understanding the world and learning, and CoPs provide conducive spaces for learning, regardless of individual peculiarities, as an informal environment where members negotiate and share knowledge according to their interests. In essence, members collectively discover the best way to share knowledge (Schulte et al., 2020). Lewis (2017) and Nistor et al. (2014) assert in their research that mutual engagement is a crucial factor in CoPs essential for knowledge transfer, highlighting it as a distinctive attribute of this arrangement.

One of the unique attributes of communities of practice is informality, a characteristic not found in formal work groups created by organizations, such as project teams and other teams formed within the organizational structure. In many cases, members participate obligatorily, meaning not all members are engaged with the organization's objectives (Wilbert, 2018; Giovanella et al., 2021). Informality, as highlighted in Wilbert's article (2015), is an exclusive characteristic of communities of practice that promotes knowledge sharing through member engagement, allowing for greater effectiveness in knowledge transfer. Another unique attribute of communities of practice pertains to organizational support, as the premise is that organizations where CoP members work encourage their participation in community meetings, even during working hours, as the organization utilizes the knowledge acquired and enhanced in CoPs to improve its processes, products, and services (Hartung & Oliveira, 2013; Silva & Odelius, 2018).

The problem addressed in this research concerns the scarcity of review studies that enable an understanding of how the communities of practice phenomenon has evolved over time in the field of applied social sciences. Specifically, an analysis of existing literature does not provide insight into the emergence, evolution, and converging and diverging theoretical currents. Therefore, the objective of this research is to analyze the theoretical conceptual evolution of the communities of practice construct in the field of applied social sciences. It aims to identify the main theoretical currents and the knowledge boundaries of the subject. Additionally, the study aims to identify clusters of contemporary research on the topic, indicating new possibilities for future researchers.

To achieve the proposed objectives, this research opted for a bibliometric analysis of scientific articles from journals indexed in the Web of Science (WoS) database. Bibliometric analysis allows mapping the formation and evolution of a scientific field, identifying existing theoretical currents, highly cited researchers, institutions, and frontier studies on a specific topic (Zupic & Cater, 2015).

2. THEORETICAL FRAMEWORK

Communities of practice (CoPs) encompass a diverse range of work situations characterized by shared knowledge and the use of knowledge in the routine activities of group members (Rennstam & Kärreman, 2020). CoPs consist of informal groups of professionals sharing mutual interests, formed to facilitate the exchange of knowledge and shared learning or to function as networks of professional support (Webber & Dunbar, 2020). Within this perspective, CoPs serve as an alternative for organizational knowledge management (Rivera, 2011; Schulte et al., 2020).

Despite various theoretical currents regarding the characteristics of CoPs, it is understood that they are informal groups with mutual interests in a specific area of knowledge. These groups share information, knowledge, and practices, leading to the emergence of new knowledge that is then shared within the group (Lave & Wenger, 1991; Engestrom, 2013; Wilbert, 2018). The seminal study on CoPs by Lave & Wenger (1991) asserts that in CoPs, learning and communication occur simultaneously. Being a member of a CoP requires more

than just exchanging information; it necessitates discipline, willingness, conduct, and a professional perspective.

The formation of CoPs is not a deliberate act by an organization; rather, it is voluntary and involves the sharing of a common area of interest, interacting through the exchange of information and knowledge. This sharing of learning occurs within the group, the broader society, and with organizations. According to Wenger (2010), CoPs are characterized by joint enterprise, mutual engagement, and shared repertoire. Terra (2005) emphasizes that mutual interests related to learning and personal development in CoPs are reasons why member interaction and connection are more effective compared to other similar arrangements. According to Wenger (1998), the dynamics in CoPs facilitate the creation and sharing of knowledge, and organizations come to realize that informal learning is based on the engagement of CoP members, which is not achievable in formal arrangements developed by organizations. Organizations such as Xerox, Monsanto, Accenture, and British Petroleum have implemented new knowledge developed in CoPs, leading to improvements in organizational performance.

Knowledge management studies in the literature often define knowledge as explicit and tacit (Nonaka & Takeuchi, 1995; Strong, Davenport & Prusak, 2008; Mazorodze & Buckley, 2020). Explicit knowledge can be codified and shared within the organizational environment, including through training. On the other hand, tacit knowledge is difficult to codify and is considered to reside in individuals' subconscious (Nonaka & Takeuchi, 1995; Del Giudice & Cillo, 2022). CoPs facilitate the sharing of tacit knowledge, breaking down physical boundaries, and reducing dependence on outdated organizational barriers. They encourage the creation of new knowledge and synergies by connecting knowledge workers from similar professions, irrespective of organizational unit or physical location (Spoor & Chu, 2018; Rossignoli et al., 2022).

There are numerous definitions in the literature regarding CoPs, with many conceptual differences, leading to the fragmentation of the construct. Some researchers perceive CoPs as a learning community, a knowledge community, a social practice community, or even a knowledge community. Given this diversity of definitions, Table 1 presents the main definitions found in this research.

Table 1 – Definitions of Communities of Practice (CoPs)

CONCEPTS/DEFINITIONS	AUTHORS
CoPs are informal groups with a common interest in a particular area of knowledge, sharing information, knowledge, and practices, resulting in the emergence of new knowledge that is shared within the group.	Lave and Wenger (1991)
CoPs are networks formed by actors with common knowledge and interest in a specific subject, often related to the work they perform. They gather to share their work experiences and practices, facilitating the improvement of their knowledge.	Wenger (2000)
Another concept of CoPs is a group of people sharing concerns, common problems, or passion about a topic, seeking to deepen their knowledge through continuous interaction.	Wenger, McDermott & Snyder (2002)
The term "community of practice" originates from sociology, indicating stable, geographically situated, unintentional, and comprehensive groupings. This contrasts with the community's characteristics, emphasizing small groupings, dynamic features, diffuse location, and intentionality.	Cox (2005)
CoPs can be translated as a learning partnership between people who navigate the same knowledge domain, recognizing the value of sharing and learning from each other.	Wenger, Trayner & Laat (2011)

Source: Authors (2022)

The existence of diverse definitions about communities of practice, as presented in this study, is shared by Mendes & Urbina (2015) and Nelson (2022), who stated in their study that the term "communities of practice" is a broad, ambiguous, and complex construct, lacking consensus on its definition. Despite being a central topic in discussions about organizational

learning in various research works in Europe, the United States, Canada, Italy, among other countries, literature on this subject in Brazil remains incipient and multifaceted.

3. METHODOLOGY

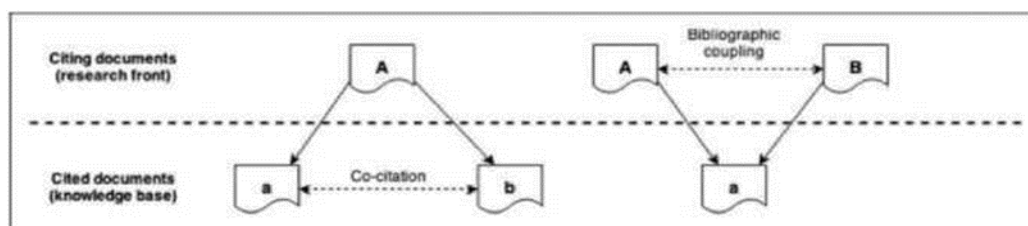
This is a review paper conducted through bibliometric analysis, a technique that allows the mapping of the emergence and evolution of a scientific field. It also enables the identification of the most cited/influential authors, author institutions, cooperation networks among authors, keyword recurrence, and frontier studies on a specific topic (Zupic & Cater, 2015). Bibliometric research is generally conducted to identify the growth trend of knowledge in a particular discipline, existing theoretical currents, and obsolescence (Zhu et al., 2021).

The use of bibliometrics (Ribeiro & Lima, 2022), especially in publications, has increased over the years, with an average of 1021 publications in the last decade. This growth can be attributed to the expansion of scientific research. Bibliometrics provides an alternative for analyzing large sets of bibliographic data (Lima & Ribeiro, 2023), as traditional review methods are complicated and impractical due to the volume of information (Ramos-Rodríguez & Ruíz-Navarro, 2004). It's worth mentioning that the emergence of scientific databases such as Scopus and Web of Science has made it relatively easy to acquire large volumes of bibliometric data. Bibliometric software like Gephi, Leximancer, and VOSviewer facilitates the pragmatic analysis of this data, increasing academic interest in bibliometric analysis in recent times (Donthu et al., 2021).

Bibliometric reviews can be conducted using five main techniques: a) citation analysis; b) co-citation analysis; c) bibliographic coupling (pairing); d) co-authorship analysis, and e) co-word analysis (Zupic & Carter, 2015; Donthu et al., 2021). In this study, we will use the techniques of citation analysis and bibliographic coupling, which are considered predominant techniques for analyzing relationships between citations in studies (Marshakova, 1981). The choice of these two techniques was made based on the scope and objectives of this research.

Regarding the choice of the techniques of co-citation analysis and bibliographic coupling, it is worth highlighting the emphasis of these techniques on analyzing relationships between the citations of the selected studies in the sample. This allows mapping the knowledge domain in a specific scientific field (Börner; Chen; Boyack, 2003; Zupic & Carter, 2015). Scientific literature is defined as an objective manifestation that represents a domain, the result of the social activity of research. Figure 1 illustrates these two techniques.

Figure 1 – Co-citation and Bibliographic Pairing



Source: (Zupic & Cater, 2015)

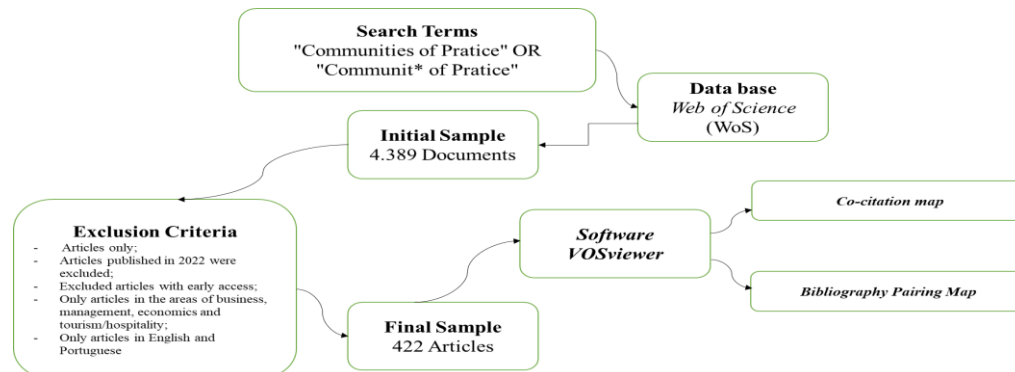
The Web of Science database was chosen for collecting articles for the sample in this study. This choice considered the database's importance in scientific research, as it is the oldest database with important journals indexed (Birkle et al., 2021). Web of Science (WoS) is the oldest, most widely used, and reliable research publication and citation database globally. Based on the Science Citation Index, founded by Eugene Garfield in 1964, it has expanded its selective, balanced, and comprehensive coverage of the world's leading research to encompass about 34,000 journals currently (Birkle et al., 2021).

To create a graphical mapping of co-citation and bibliographic coupling analysis, we will use the VOSviewer software. Despite various software options capable of analyzing co-citations and conducting bibliographic coupling analysis, we chose VOSviewer because it

allows high-resolution graphical outputs, and its access is free, facilitating researchers' access (Van Eck & Waltman, 2018).

For the selection of articles in the sample, the terms "communities of practice" and "communit* of practice" were searched in the topic field (title, abstract, and keywords) in the main search interface of the Web of Science database (WoS). The initial results were 4,389 documents. After applying filters in the first stage, considering only articles, the sample was reduced to 3,063 articles. We then selected only articles in the field of applied social sciences (business, management, economics, and tourism), leaving 443 articles. We excluded articles published in 2022 to ensure replicability of the research, resulting in 422 articles. Finally, only articles in English and Portuguese were considered, resulting in a final sample of 418 articles. The methodological design of the research is presented in figure 2.

Figure 2 – Methodological Design of the Research



Source: Authors (2022).

4. RESULTS AND DISCUSSIONS

Next, we present our results on theoretical currents, border studies and on the construction and evolution of the thematic communities of practice in the field of applied social sciences based on co-citation and bibliographic pairing analyses. It is worth noting that the analysis of articles in each cluster was carried out based on the link strength of the article within the co-citation and pairing map. This metric refers to the number of links that the article has with other studies and the number of times that the article was cited by articles in the co-citation map.

It is also worth explaining that the two articles used to discuss each cluster took into account the link strength, number of citations and number of links with other studies of co-citation and pairing maps. These metrics are those recommended in the VOSviewer software manual, that is, the two most influential studies from each group were selected for the development of the discussion.

Co-citation analysis

The result of the co-citation analysis resulted in the mapping of six theoretical clusters (see Figure 3) that will be discussed in the analysis below. To identify the theme and theoretical current of each cluster, the two main studies of each cluster will be adopted as the main source.

Organizational Knowledge Creation Processes and Communities of Practice (Red Cluster): the main cluster of the co-citation map is red according to the VOSviewer software manual (Van Eck & Waltman, 2018), this cluster is made up of 71 studies, The study group in this cluster emphasized the analysis of the processes of creating organizational knowledge and communities of practice. The main study of this cluster was prepared by Wenger (1998), the author states in the study that knowledge is a fundamental source of competitive advantage in the business world, but we still have little understanding of how to create and use it in practice. Traditional knowledge management approaches attempt to capture existing knowledge in formal systems such as databases. However, systematically addressing the kind of dynamic "knowledge" that makes a difference in practice requires the participation of people fully

engaged in the process of creating, refining, communicating and using knowledge, and so communities of practice truly become organizational assets when its core and its edges are active in complementary ways. To develop the ability to create and retain knowledge, organizations must understand the processes by which these learning communities evolve and interact. We need to build organizational and technological infrastructures that do not discard or impede these processes, but rather recognize, support and leverage them. This study has a link strength of 2,022 and was cited 174 times by other studies in the sample.

The second most influential study in this cluster was prepared by Nonaka & Takeuchi (1995), it is the seminal study on organizational knowledge creation, the authors analyzed how Japanese organizations create knowledge in comparison to Western organizations, the work refers to a book in which the authors also present a model called “Knowledge Spiral” which generally summarizes practices for extracting and codifying tacit knowledge, including using the company Honda Motors as a case for codifying tacit knowledge. Finally, in addition to providing a historical contextualization of the creation of knowledge and its evolution, the authors present knowledge management strategies and provide an essential contribution to the literature on knowledge sharing by presenting the “Knowledge Spiral” model. This study has a link strength of 726 and was cited 53 times by other studies in the sample.

Organizational Learning and Communities of Practice (Green Cluster): The green cluster is considered the second most important cluster in the co-citation analysis, this cluster is made up of 67 studies. The theme analyzed by the studies in this cluster refers to the relationship between organizational learning and communities of practice.

The main study of this cluster is an article written by Brown & Duguid (1991), the authors discovered that conventional job descriptions mask not only the ways in which people work, but also the learning and innovation that are generated. in the informal communities of practice in which they work. By reassessing work, learning and innovation in the context of real practical communities, they suggest that these three elements become inseparable. This study was cited 151 times by other studies in the sample and has a link strength of 2.110.

The second main study of the organizational learning cluster was developed by the same authors Brown & Duguid (2001), this study was cited 77 times by other studies in this research sample and has a link strength of 1.304. The authors found in this study that the community of practice is a unifying unit of analysis for understanding knowledge in the company. The article suggests that too much attention is often given to the idea of community, and too little to the implications of practice. The practice, in the authors' view, creates epistemic differences between communities within a company, and the company's advantage over the market lies in dynamically coordinating the knowledge produced by these communities despite such differences.

Seminal Studies on CoPs and their differences with other organizational arrangements (Blue Cluster): the third most important cluster in the co-citation analysis is the blue one, this cluster is made up of 60 studies. The theoretical current of the studies that make up this cluster refers to the introduction of the concepts of CoPs in the literature, and the themes analyzed in this cluster are the pillars of communities of practice and their unique characteristics that differentiate them from other organizational arrangements. The main study of this cluster is the seminal study by Lave & Wenger (1991), which introduced the concept of structured CoPs into the literature. The book written by the authors relates how the organization learns based on capturing external knowledge that members perform when participating in communities of practice and throughout the book they present exclusive attributes of CoPs, such as the informality and spontaneous participation of CoP members. The study has a link strength of 2,189 and was cited 185 times by other studies in the sample.

The second main study in this cluster was developed by Wenger et al. (2002). This study is a book published in 2002, the work generally portrays the value of communities of practice for organizations, especially in innovation processes and the improvement of organizational processes. The authors also discuss the importance of communities of practice in the extraction and codification of tacit knowledge, including providing a historical contextualization of the

nature and dimensions of knowledge. In chapter 2 of the book, the authors present the structural elements of communities of practice, the domain (mutual subject of interest), the community and practice, they also discuss the importance of informality in this type of network. This study was cited 139 times by other studies in the sample and has a link strength of 1.684.

Limits of Communities of Practice, Situated Learning and Social Aspects of Learning (Yellow Cluster): it is the fourth cluster in terms of influence of the co-citation map, this cluster is composed of 26 studies, the studies in this cluster analyzed the theme of the limits of learning in communities of practice, situated learning and social aspects of learning. The most influential study in this cluster was prepared by Roberts (2006), this study has a link strength of 933 and was cited 57 times by other studies that make up the co-citation map sample. The aim of this study was to critically explore the communities of practice approach to knowledge management and its use among academics and management professionals in recent years. With this, identify the limits of the approach in the field of knowledge management. The article begins with a brief description of the communities of practice approach. This is followed by a review of criticisms of the approach evident in the management literature. A series of other challenges are then drawn up. The limits of communities of practice are subsequently discussed and brief conclusions are drawn.

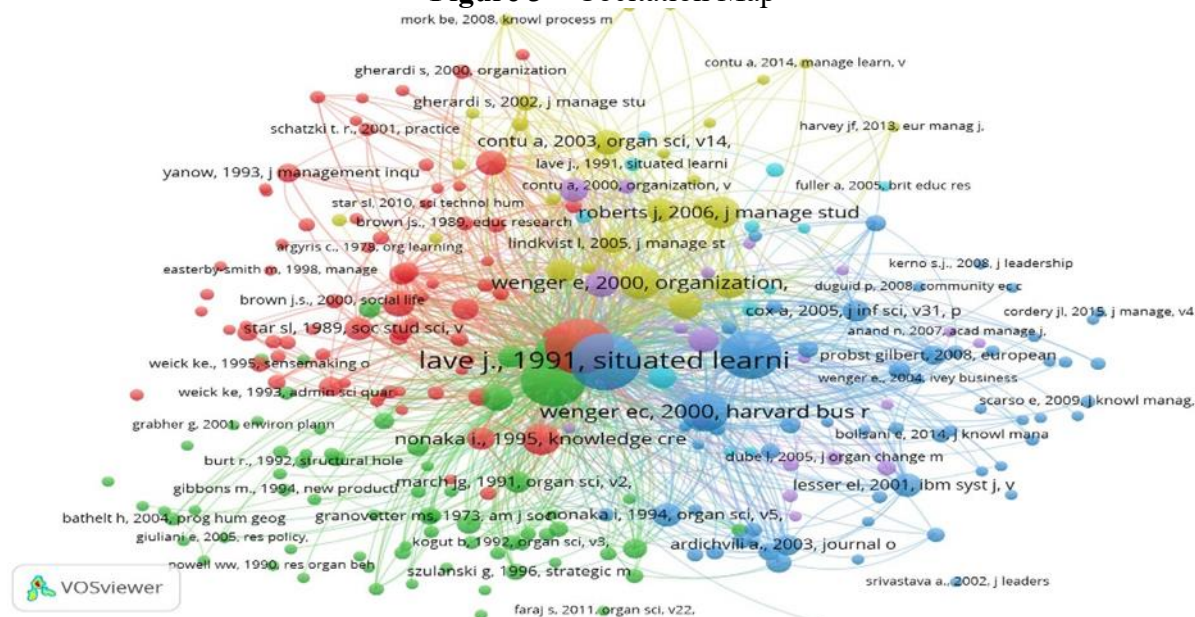
The second most important study of the yellow cluster was developed by Wenger, William & Snyder (2000), this study has a link strength of 906 and was cited 65 times by other studies in the sample. The authors analyze conventional knowledge sharing techniques, such as project teams, training, integration of new employees and compare them with communities of practice, concluding that communities of practice are the new frontier for acquiring organizational knowledge. They may have seemed unfamiliar in 2000, but the authors emphasized that in five to ten years CoPs could be as common in discussions about organizing as business units and teams are today – if managers learn how to make them a central part of the organization. success of their companies.

CoPs as knowledge networks, technology and the work environment (Purple Cluster): the fifth cluster identified in the co-citation map is the purple cluster, 19 studies make up this cluster, the theoretical current of the studies in this group are CoPs as knowledge networks, technology and the work environment, the main study in this cluster is the book published by Orr (1996), this study has a link strength of 666 and was cited 42 times by other studies in the sample, the researcher analyzed in 1996 the role of the work environment and the technology adopted by organizations in the creation and sharing of organizational knowledge, it is worth mentioning that in 1996 globalization was still occurring in the markets and technological changes were not occurring at the speed they currently occur, with Duguid (2006) states that, contrary to what was proposed by Orr (1996), the first studies on the workplace could barely conceive of autonomy or improvisation in the workplace as something less counterproductive. By attacking the theoretical demarcation between mental and manual labor implicit in this assumption, Orr's analysis presents both management and theorists with the surprisingly uncomfortable challenge of the knowledgeable worker. A brief analysis of the EUREKA project's support for workplace learning suggests how Orr's (1996) work challenged and still challenges more complacent views of knowledge organization and 'knowledge management'.

The second most influential study in this cluster was prepared by Fox (2000), this study has a link strength of 581 and was cited 31 times by other studies in the sample. The article discusses some of the main contributions to the theory of communities of practice (COP theory), especially with regard to organizational learning. The article does not attempt a complete overview, but focuses on the notion of power relations. Early COP theory was formulated as part of situated learning theory and promised to work on issues of social context and unequal power relations. Foucault's work and actor-network theory (ANT) are introduced and form the basis of a constructive critique of CoP theory.

Organizational Knowledge (Light Blue Cluster): the sixth and last cluster identified in the co-citation analysis is light blue, 12 studies form this cluster. The theme analyzed by studies in this cluster refers to organizational knowledge. The studies in this cluster, unlike the previous clusters, are not concentrated in the co-citation map, that is, they are dispersed and with connections with studies from other clusters, naturally this is coherent, since organizational knowledge is related to CoPs and studies on knowledge creation and the theme of organizational learning, which are the theoretical currents of the previous clusters. The main study of this cluster was developed by Brown & Duguid (1998), the study states that organizational knowledge constitutes the “core competence” it is more than “knowing what”, explicit knowledge that can be shared by many. An essential competence requires the most elusive “know-how” – the specific ability to put know-how into practice, that is, organizational knowledge must take into account that in addition to knowing how to do it, knowledge must be put into practice by through the attitude of employees.

Figure 3 – Cocitation Map



Source: Authors (2022).

Bibliographic Pairing Analysis

The result of the analysis of the bibliographic matching map made it possible to identify five theoretical clusters (see Figure 4) that will be analyzed below. The two main studies in each cluster were analyzed in depth to identify the theme/theoretical current of each cluster in the bibliographic pairing map.

The Role of Communities of Practice in Innovation, Technology Transfer and Organizational Performance (Red Cluster): the main cluster of the bibliographic matching map is the red cluster, this cluster is formed by 177 studies and the theme analyzed predominantly by studies from this reference. the role of communities of practice in innovation, technology transfer and organizational performance. The main study of this cluster was prepared by Pattinson & Preece (2014), this study connects with studies of the green cluster which is the second most important cluster in the bibliographic matching map, has a link strength of 1.015 and was cited 30 times by studies of the bibliographic matching sample. The study stated that Recent research in 2014 on communities of practice (CoPs) has focused on analyzing large organizations, suggesting that they can be built for the purposes of knowledge acquisition and innovation. The study by Pattinson & Preece (2014) found that, for small businesses, CoPs are more likely to emerge in an unplanned way to support incremental innovation in the form of problem-solving activities. The author concludes that both intra- and

inter-organizational CoPs have been leveraged for diverse purposes in small businesses, including knowledge acquisition and enhancing organizations' ability to generate innovative solutions.

The second most influential study in this cluster was carried out by Randhawa et al. (2017). This study has a link strength of 960 and has been cited 45 times by other studies. The authors examined how open innovation (OI) intermediaries facilitate knowledge collaboration between organizations and online user communities. Drawing on a Community of Practice (CoP) perspective on knowledge, the study establishes a framework of knowledge boundary management mechanisms (and associated practices) that intermediaries deploy to enable client organizations to engage in online OI. community-based line. The results reveal that OI intermediaries implement three knowledge limit management mechanisms – syntactic, semantic and pragmatic – each supported by a set of practices. Together, these mechanisms enable knowledge transfer, translation, and transformation, respectively, and therefore lead to cumulatively richer outcomes of knowledge collaboration at the organizational-community boundary.

External Knowledge Acquisition Processes in CoPs and the role of Absorptive Capacity in Innovations (Green Cluster): the second most important cluster in the bibliographic matching map is the green cluster, 62 studies were identified as members of this cluster. The main theme of the studies refers to external knowledge acquisition processes in CoPs and the role of absorptive capacity in innovations. The most influential study in this cluster was carried out by Jones et al. (2010), the study was cited 55 times by other studies and has a link strength of 6.221. The authors identified three core concepts for creating strategic knowledge sharing space, first, social capital, which refers to network relationships that provide access to a wide range of resources and information. Secondly, absorptive capacity, which describes the way organizational members identify, acquire and use knowledge from external sources. Third, the mediation of artifacts, which represent existing knowledge but also facilitate the translation and transformation of understanding within and between communities of practice.

The second most important study in the cluster was developed by Bertels et al. (2011), the study has a link strength of 4,425 and is cited 43 times in other studies. The study focuses on analyzing how dispersed collaboration provides many benefits, such as bringing members closer to local cultures and markets and reaching talent around the world. So it's no surprise that dispersed collaboration is frequently being used by product development teams. A necessary but not sufficient condition for innovation performance is the sharing of tacit, uncodified, and explicit and codified knowledge by the team. Situated learning theory, however, predicts that tacit knowledge sharing will be largely impeded by "decontextualization." Therefore, increased use of dispersed collaboration will decrease levels of tacit knowledge—crucial for innovation and organizational performance—in the business unit. This research investigates the moderating role of mechanisms believed to enable tacit knowledge transfer on the innovation front.

Communities of Practice as Social Networks for Knowledge Sharing (Blue Cluster): the blue cluster is the third cluster in terms of importance in the bibliographic matching map, consisting of 29 studies. The main theme of analysis of studies in this cluster is communities of practice as social networks for sharing knowledge. The most important study in this cluster was written by Grabher & Ibert (2006) the study was cited 144 times by other studies, with a link strength of 1.223. The study asserts that recent debates about learning have shifted the analytical focus from formal organizational arrangements to informal personal ties. Personal knowledge networks, however, are mainly perceived as homogeneous, cohesive and local personal ties. Furthermore, a functionalist tone appears to prevail in accounts in which personal knowledge networks are seen to compensate for the deficiencies of formal organization. This article sets out to expand the dominant construction of networks, which is

largely shaped by the notion that they are formed only to meet formal needs, first in the neglected sphere of thin, ephemeral and global personal knowledge networks, differentiating between networks of connectivity, sociality and communality. Second, the article not only elucidates the supporting functions of these ties, but also explores the tensions between personal interests, project goals, and company goals that are induced by these personal knowledge networks.

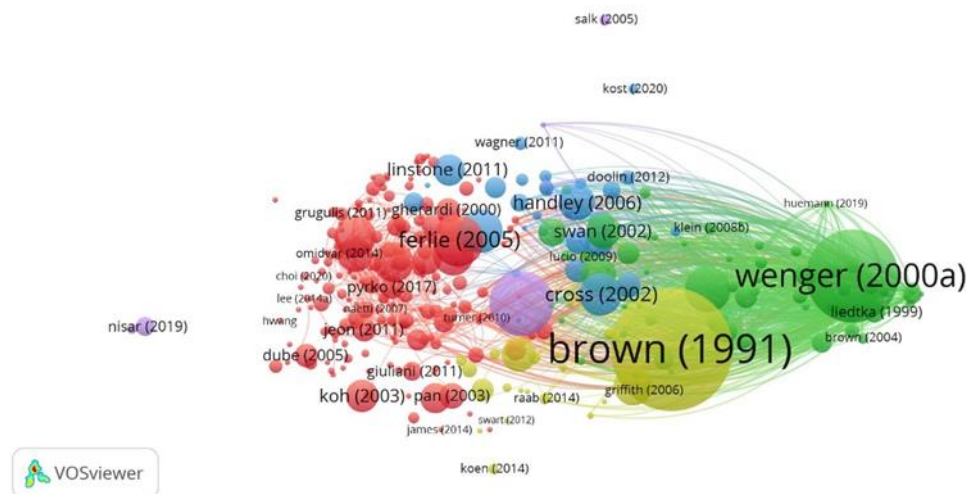
The second most important study in this cluster was prepared by Cross, Borgatti & Parker (2002), the study has a link strength of 1,063 and was cited 419 times by other studies in the sample. The authors state in the study that network relationships are critical anchor points for employees, whose loyalty and commitment may be more to sets of individuals in their network than to a particular organization. The study concludes that these informal networks are increasingly important contributors to employee job satisfaction and performance. However, despite their importance, these networks are rarely well supported or even understood by the organizations in which they are embedded. Social network analysis provides a means to identify and assess the health of strategically important networks within an organization.

The role of Organizational Learning through CoPs and Project Management in Innovations (Yellow Cluster): the main quarter of the bibliographic pairing map is yellow, formed by 25 studies. The main theme investigated by studies in this cluster is the role of organizational learning through CoPs and project management in innovations. The most influential study in this cluster was written by Brown & Duguid (1991), this study has a link strength of 360 and was cited 3,469 times in the references cited in the sample of this study, the authors analyze in this study organizational learning and by reevaluating the mechanisms conventional knowledge sharing mechanisms (training, project teams and job descriptions), they found that learning and innovation in the context of practical communities is more intense compared to traditional mechanisms.

The second most influential study in this cluster was prepared by Bresnen (2016), has a link strength of 797 and was cited 17 times by other studies in the sample. Its objective focused on investigating insights from theory and research into communities of practice and forms of knowledge production in the field of project management practice. This research leverages these insights to highlight the opportunities and tensions this diversity creates. When considering the implications for the institutionalization of project management as a professional body of knowledge and academic discipline, the argument develops that not only is there great value to be gained by further pursuing these lines of inquiry, but also that it is important recognize diversity within the field and encourage criticality in perspective.

Virtual Communities of Practice and Knowledge Sharing (Purple Cluster): the last cluster on the co-citation map is purple, this cluster is made up of 7 studies. The group of studies belonging to the cluster focused on analyzing virtual communities of practice and knowledge sharing. The most important study in this cluster was developed by Wasko & Faraj (2000), with a link strength of 810 and with 968 citations of studies in this sample. The authors reviewed current knowledge management practices and found that organizations are treating knowledge as a private asset, owned by the organization or its members. We propose that knowledge can also be considered a public good, owned and maintained by a community. When knowledge is considered a public good, the exchange of knowledge is motivated by moral obligation and community interest rather than narrow self-interest.

The second main one in this cluster was written by Tallman & Chacar (2011), the link strength of this study is 776 and it was cited 46 times by other studies in the sample. The main objective of the study was to develop a model of the microprocess of knowledge acquisition, dissemination and application in alliance networks that have become important sources of external knowledge for multinational companies. Based on the concept of communities of practice as sources of highly tacit know-how, this model addresses the use of alliances with local partners to acquire tacit knowledge at the subunit level and then sharing that knowledge across the enterprise through a internal network of community-level alliances through virtual communities of practice.

Figure 4 – Bibliographic Pairing Map

Source: Authors (2022)

5. FINAL CONSIDERATIONS

The bibliometric review carried out in this research made it possible to identify the main theoretical bases that contributed to the formation of the knowledge domain of communities of practices (CoPs), as well as current theoretical currents (borderline and emerging) that are avenues for future research on the subject. Through the analysis of the co-citation map, six theoretical clusters were identified. The most influential cluster in the co-citation map emphasized the analysis of the themes of organizational knowledge creation processes and communities of practice. This cluster consists of 71 articles, which generally investigated how organizational knowledge arises and the role of communities of practice in facilitating the creation and sharing of organizational knowledge. Through the analysis of the bibliographic matching map, five theoretical clusters were identified, with the most important cluster in the analysis analyzing the theme of the role of communities of practice in innovation, technology transfer and organizational performance, this cluster is composed of 171 studies and has connections with other clusters, for example, with the blue and purple cluster.

The main contribution of this article refers to the direction for new research, since through the identified results, future research can be developed to analyze in depth the results presented, especially results from the bibliographic matching map. More specifically, the research findings contribute to the theoretical advancement of the topic, since with the identification of current emerging themes regarding communities of practice, new research can be developed to fill neglected gaps, in short revisional studies, such as bibliometrics and systematic reviews contribute for the systematization of fragmented research within a scientific field.

The findings of this research can contribute to the advancement of knowledge on the topic of communities of practice through the mapping and clustering of theoretical currents on the topic and the theoretical evolution of the concept in recent decades. The findings of this research regarding the identified theoretical currents (through co-citation analysis) and existing theoretical frontiers and emerging currents (through bibliographic coupling) can also provide managerial contributions, and can also take advantage of this stock of knowledge to understand the importance of communities of practice in organizational innovation processes and consequently the effects that CoPs can generate on organizational competitiveness.

This research has some limitations. Firstly, data collection only considered the Web of Science (WoS) database. Although Web of Science is considered a robust database, with a wide

range of important journals indexed and is a frequently used source for bibliometric and bibliographic reviews (Zupic & Carter, 2015), several journals are not indexed in this database. and these journals may contain some studies on the topic that were not included in the sample of this research. However, it is likely that many of these periodicals are aimed at a restricted or local audience and are therefore cited occasionally. Therefore, these studies, which in theory were not identified, do not have the potential to change the findings of this research. In summary, it is likely that the sample of this research will not be exhaustive as it includes all articles published in the literature on the topic of communities of practice, but the selected sample will certainly comprise the most influential journals and articles with the greatest probability of impact. Future searches may include articles from other databases to include lower status journals, journals with no impact factor, journals with a regional focus, and other types of source documents such as books, chapters, and conference proceedings.

The second limitation of this research refers to the search terms or keywords used, and we adopted a delimitation criterion for the selection of articles. Therefore, it is likely that some articles may, to a certain extent, deal with the topic of communities of practices in a secondary way. and the terms were not made available in the title, abstract and keywords field (Web of Science topic field), as there may also be other variations and even other expressions that also provide information on this topic. Future research should overcome this limitation, expanding the sample with the inclusion of new articles. The advantage of larger samples is that they enable a deeper analysis of the stock of knowledge on a given knowledge domain, mapping other phenomena, associations, theoretical currents and methodological approaches. Despite this limitation, it is understood that the sample of this research is composed of articles that portray the emergence, evolution and state of the art of this topic.

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