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TACIT KNOWLEDGE IN ENHANCING ENTERPRISE INNOVATION – A LITERATURE REVIEW

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Abstract: As scholars' interest in the practical elements of knowledge management grows, so does the intensity of research on the relationship between tacit knowledge and innovations. Questions concerning how companies may create, capture, and disseminate tacit knowledge and how this process impacts their capacity to develop new goods, services, or procedures are at the heart of these assessments. This is why the main aim of this paper is to identify and summarize the main research area linked with the relationship between tacit knowledge and innovations in modern enterprises. The paper is prepared as a systematic literature review based on bibliographic maps developed using VOSviewer software. This allowed us to find the newest research topics about how tacit knowledge affects innovations and to choose four main themes based on keywords from papers in the Scopus database.

Keywords: innovations, knowledge management, tacit knowledge

JEL Classification: D83, O31

Introduction

In the era of a knowledge-based economy, the ability of organizations to create and implement innovations is becoming a key factor of competitive advantage. It is increasingly emphasized that access to information or technology alone is no longer enough – how organizations use the knowledge they already have is equally important, if not more important.

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Tacit knowledge refers to specialized knowledge, abilities, and skills that are learned via experience and are frequently challenging to create, capture, transfer, or share (Houessou et al., 2023). Tacit knowledge is grounded in organizational procedures and routines, relates to particular contexts, and is founded on personal experience (Nonaka & Takeuchi, 1995). Tacit knowledge is essential for increasing a firm's competitive advantage and supporting innovation. Unlike explicit knowledge, which is easily captured and disseminated, tacit knowledge consists of social competences, insights, and intuitive abilities that are often specific to an individual (Schmidt et al., 2021). Because tacit knowledge is inherently difficult for rivals to imitate, firms that successfully capture and incorporate it can use it to deliver creative solutions and increase performance (Jamshidi et al., 2018). Effectively managing tacit knowledge helps a firm develop the dynamic, creative and problem-solving capabilities that are essential for long-term success and also makes it more resilient in a competitive context (Huang, 2017).

Research on the relationship between tacit knowledge and innovation is gaining in intensity, reflecting the growing interest of researchers in the practical aspects of knowledge management. At the centre of these analyses are questions about how organizations can identify, support, and transfer tacit knowledge, and how this process affects their ability to create new products, services, or processes. This is why the main aim of this paper is to identify and summarize the main research area linked with the relationship between tacit knowledge and innovations of modern enterprises.

Methods

This article reviews the literature on the relationship between tacit knowledge and innovation, using bibliometric analysis based on the Scopus database due to its wide scope of disciplines and the possibility of exporting bibliographic data. The bibliometric analysis was carried out using maps generated by the VOSviewer software, which allowed for systematic recognition of the structure and dynamics of the studied area of knowledge. Thanks to the visualization of the co-occurrence network of concepts, it was possible to distinguish the main thematic clusters, identify research trends and assess the degree of interest in specific issues over time.

The Scopus database was selected for the analysis. The search in the Scopus database was conducted on 29.05.2025, using the following query: (tacit knowledge) AND (innovations OR innovativeness).

The VOSviewer program was used to analyse the data, enabling the creation of bibliometric maps. Two main forms of visualization were performed:

- Overlay visualization – a time map showing the dynamics of the development of the studied area by visualizing the average year of publication for each keyword. Thanks to this method, it was possible to identify trends and topics that have been gaining importance in recent years.
- Network visualization – a map of keyword co-occurrences, illustrating the thematic structure of the studied area. The threshold of the minimum number of keyword occurrences was set at 4. Based on the network analysis, four thematic

clusters were distinguished, indicating different approaches and research contexts related to tacit knowledge and innovation, where the basic keywords were highlighted:

- Cluster 1: explicit knowledge, HRM, innovation capability, knowledge management, knowledge sharing, management innovation, process innovation, product innovation
- Cluster 2: information management, knowledge, intellectual capital, organizational learning, tacit knowledge, innovation, knowledge
- Cluster 3: industrial engineering, industry, innovation performance
- Cluster 4: competition, explicit knowledge sharing, tacit knowledge sharing

The analysis enabled a synthetic presentation of the state of research in this area and the identification of potential gaps and future research directions.

Results

The evolution of research topics in the area of innovation and tacit knowledge, presented on the bibliographic map (Figure 1), shows dynamic changes in the interests of scientists over the years 2012-2022. Thanks to the applied colour scheme, reflecting the average year of occurrence of a given concept in the literature, it is possible to trace the development of this field – from the basic issues to the increasingly detailed and applied ones.

In the initial period (2012-2016), fundamental concepts dominated, such as tacit knowledge (tacit knowledge), innovation (innovation), knowledge management (knowledge management), organizational learning (organizational learning) and intellectual capital (intellectual capital). Their darker colour on the map indicates their earlier presence in the literature, which suggests that they were the basis for the developing theoretical framework in the field of the connections between knowledge and innovation. At that time, research focused on understanding how intangible resources affect innovation processes in organizations and what is the importance of knowledge, especially tacit knowledge, in creating competitive advantage.

In the following years (around 2016-2019), a phase of thematic deepening is noticeable. More specialized concepts began to appear in the literature, such as innovation performance, product and process innovation, knowledge sharing, and innovation capability. This shift in emphasis indicates an increase in interest in empirical research on the mechanisms of using knowledge in practice and in finding ways to measure and strengthen the innovation efficiency of an organization.

The most current phase of development, covering the years 2020-2022 (marked with lighter, yellow colours), indicates a clear shift in research interests towards practical issues, especially related to knowledge transfer and exchange. During this period, concepts such as tacit knowledge sharing, explicit knowledge sharing, competition, and human resource management are increasingly analysed. This indicates the growing importance of research on the factors that enable effective knowledge sharing in organizations and on the role of human capital and the competitive context in innovation processes.

Thus, the evolution of the subject matter in tacit knowledge and innovation research shows a logical and coherent trajectory of the development of the field – from the creation of theoretical and conceptual frameworks, through empirical examination of the relationships and mechanisms of action, to the exploration of practical solutions and strategies for implementing knowledge to support innovation. The latest trends indicate the maturation of the research area and its growing importance for management practice in organizations operating in a complex and dynamic environment.

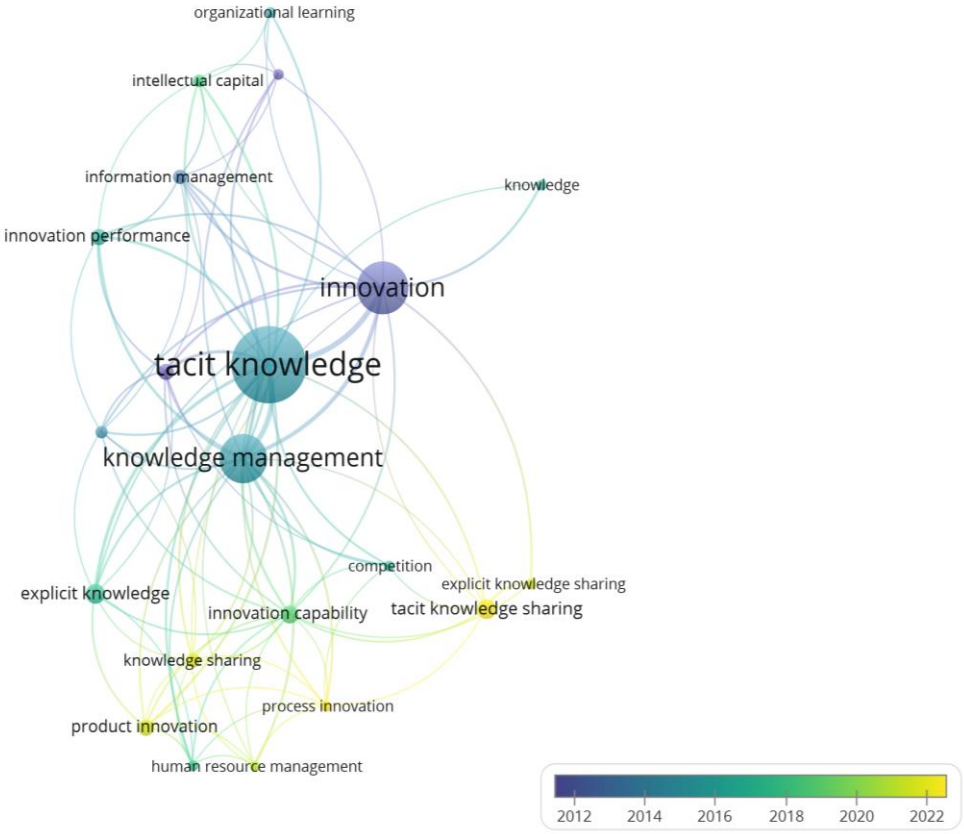

Figure 1. Overlay visualization (VOSviewer software)

Source: Own elaboration

Analysing the bibliographic map presented in Figure 2, it is visible that although the research on tacit knowledge and innovations forms one coherent scientific field, and clearly outlined thematic subdomains develop within it. They create clear thematic clusters – groups of concepts that often appear together in the literature.

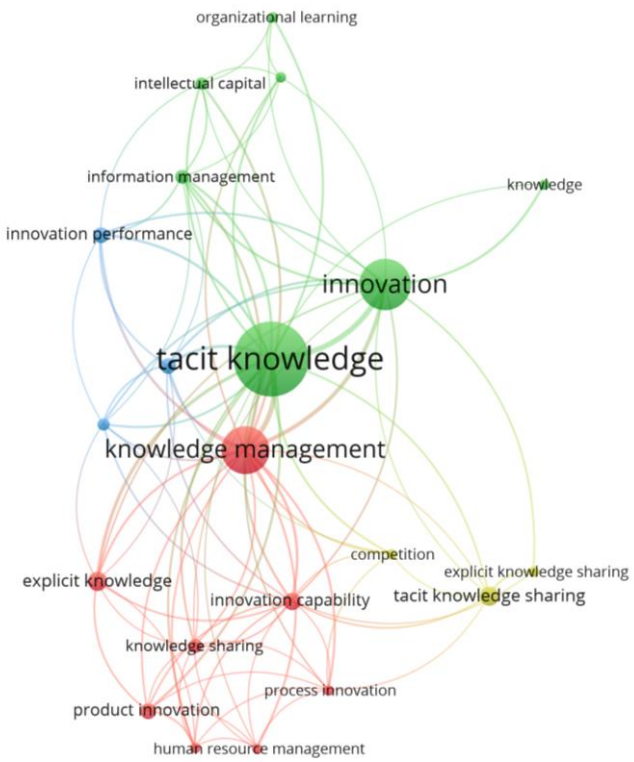

Figure 2. Network visualization (VOSviewer software)

Source: Own elaboration

In relation to cluster 1, in the centre of the map, there is the largest and most intensively connected cluster around concepts such as tacit knowledge, innovation and knowledge management. These concepts are strongly interconnected, which suggests that many scientific works address the topic of mutual relations between tacit knowledge and innovation, and shows that knowledge management is often analysed in the context of creating innovations. For example, Zhang et al. (2025) pointed out that tacit knowledge has become crucial for innovation and organizational performance. Based on a survey study of 344 Chinese firms, they confirmed that product innovation mediates the connection between managing tacit knowledge and the organization's performance. Also, Zia et al. (2024) highlighted the dependencies between tacit knowledge management and the capacity to create new products and services for enhancing organizational performance proven by a questionnaire-based study on 378 respondents from different provinces of China. Tacit knowledge, which is personal knowledge acquired from experience, can spur innovation in businesses (Berraies et al., 2020). From an employee's point of view, tacit knowledge improves daily job operations and has a substantial impact on the innovation process (Kucharska & Rebelo, 2022). Pérez-Luño et al. (2018) connect innovation to the

nature and process of knowledge. They find a nonlinear association between innovation and information interchange and combination, as well as a positive linear influence of tacit knowledge on innovation, using the data from 105 innovative enterprises. Achmad and Wiratmadja (2025) evaluated and confirmed the function of knowledge management in encouraging green innovation and its impact on organizational performance and competitive advantage based on a quantitative survey carried out with 191 SMEs.

Concerning cluster 2, above the main cluster, there is a smaller group of concepts related to organizational learning, intellectual capital, and information management. This cluster shows that there is a research stream focusing on how knowledge is created and maintained within an organization, especially through organizational culture and structures supporting learning. In relation to this topic, Han et al. (2015) pointed out that it is important to strengthen tacit knowledge management to improve enterprise innovation performance. In their research, they confirmed the positive relationship between enterprise tacit knowledge and innovation performance, as well as the positive mediating effect of intellectual capital between tacit knowledge management and innovation performance. In turn, a technique was developed by Yıldız et al. (2025) to investigate the effects of explicit and tacit knowledge on organizational innovation and a knowledge-sharing culture. The findings of the study demonstrate that tacit knowledge, as opposed to explicit knowledge, partially mediates the relationship between organizational creativity and an information-sharing culture. This is particularly true in the ICT industry. Moreover, when investigating how organizational culture types affect tacit knowledge sharing behaviour in Malaysian organizations, Suppiah and Singh Sandhu (2011) came to the conclusion that organizational culture types have an impact on tacit knowledge sharing behaviour, and that these influences can vary depending on the culture type. Therefore, managers will be able to conduct the most effective information sharing activities for a particular firm by identifying the type of organizational culture.

Referring to cluster 3, which is focused on concepts such as explicit and tacit knowledge sharing, product innovation and process innovation, it is visible that these topics are more specific and operational. There is a clear interest in how knowledge is shared between employees, and how this affects innovation in products and processes. Referring to the literature in this area, it can be indicated that organizational internal innovation is greatly aided by the sharing of tacit knowledge. Its importance is emphasized by Ganguly et al. (2019), who point out that social capital influences an organization's capacity for innovation comes before the sharing of tacit knowledge. According to Al-Zoubi et al. (2019), individuals' ability to adapt and innovate in dynamic work situations is enhanced when they share tacit knowledge. Moreover, Hu & Randel (2014) propose that the relationship between social capital and team creativity is mediated by tacit knowledge sharing, which improves teams' flexibility. In turn, in their summary of the literature review, Herlina et al. (2024) highlighted the importance of tacit knowledge sharing in promoting an innovative culture inside organizations, enhancing team interactions, and facilitating knowledge transfer.

In cluster 4, a group of entries such as competition, human resource management and innovation capability can be distinguished. This group is equally important as it indicates research that analyses factors that support or inhibit innovation, such as market competition or effective personnel management. Knowledge management is critical in improving the competitive advantage of firms by ensuring effective knowledge collection, sharing, and utilization. The potential of knowledge management to convert individual and community know-how into structured information that can be used to build new strategies and maximize operational performance emphasizes its importance (Ali et al., 2023). Companies that strategically apply knowledge management systems can leverage both explicit and tacit information, resulting in better decision-making and market responsiveness, both of which are essential aspects in gaining and maintaining competitive advantage (Otundo, 2023). Previous studies show that the ability to handle knowledge is one of the primary factors of organisational performance and competitive advantage (Chuang, 2004). Knowledge management is considered as a critical part of boosting organisational performance, which is crucial for continuous survival and competitive advantage of an organisation (Shehabat, 2020). Nguyen Tran and Ngo Thi (2025) looked into how innovation and knowledge management improve the business performance of family businesses. They also found that competitive advantage acts as a moderator in the relationship between these two factors and the business performance of family businesses. In turn, an investigation based on empirical research was carried out on 183 software companies in Pakistan and confirmed the impact of knowledge management capability on sustainable competitive advantage (Saleem et al., 2025).

Conclusion

Research on tacit knowledge and innovation is crucial to understanding how employees' intangible knowledge resources contribute to the creation and implementation of innovations in organizations. They allow us to identify the mechanisms for effective knowledge management, which helps build competitive advantage and long-term development.

Conducting such a scientific study brings a number of significant benefits, both cognitive and practical. The use of bibliometric analysis using the Scopus database and the VOSviewer tool allows for a systematic and objective recognition of the structure and dynamics of the studied area of knowledge, which is the relationship between tacit knowledge and innovation. Thanks to the visualization of the co-occurrence network of concepts, it was possible to distinguish the main thematic clusters, identify dominant and developing research trends and determine the degree of interest in individual issues over time. This approach allows not only for a synthetic presentation of the state of research but also for revealing gaps in previous analyses and indicating potential directions of future scientific investigations. As a result, this study is a valuable contribution to the development of an interdisciplinary field of knowledge, integrating issues from the field of knowledge management, innovation

and organizational sciences, which may be particularly useful for researchers, decision-makers and practitioners striving for a more effective use of tacit knowledge in innovation processes.

The study is limited by its exclusive dependence on the Scopus database, which may result in omitting important publications found in other sources, such as the Web of Science or Google Scholar. Moreover, the bibliometric analysis takes into account only quantitative data and the co-occurrence of concepts, which limits the possibility of a deep interpretation of the content of individual publications.

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WIEDZA UKRYTA WE WZMACNIANIU INNOWACYJNOŚCI PRZEDSIĘBIORSTW – PRZEGLĄD LITERATURY

Streszczenie: Wraz ze wzrostem zainteresowania naukowców praktycznymi elementami zarządzania wiedzą wzrasta również intensywność badań nad związkiem między wiedzą milczącą a innowacjami. Kwestie dotyczące tego, w jaki sposób firmy mogą tworzyć, przechwytywać i rozpowszechniać wiedzę milczącą, a także w jaki sposób ten proces wpływa na ich zdolność do opracowywania nowych dóbr, usług lub procedur, stanowią istotę tych badań. Dlatego głównym celem niniejszego artykułu jest zidentyfikowanie i podsumowanie głównych obszarów badawczych związanych ze związkiem wiedzy milczącej z innowacjami w nowoczesnych przedsiębiorstwach. Artykuł przygotowano jako systematyczny przegląd literatury w oparciu o mapy bibliograficzne opracowane przy użyciu oprogramowania VOSviewer. Pozwoliło to znaleźć najnowsze tematy badawcze dotyczące wpływu wiedzy milczącej na innowacje i wyselekcjonować cztery główne klastry tematyczne w oparciu o słowa kluczowe z artykułów w bazie danych Scopus.

Słowa kluczowe: innowacyjność, zarządzanie wiedzą, wiedza ukryta