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Intellectual capital in construction SMEs: A systematic literature review

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ABSTRACT

Purpose: The present study aims to provide an overview of the topic of intellectual capital in SMEs in the construction industry. Identifying the different research paths based on a systematic literature review will allow effective knowledge of the topics under study and the definition of a research agenda for the future.

Design/methodology/approach: This Systematic literature review considers articles collected from the Web of Science (WoS) database, a total of 105 scientific articles published in various reference journals without a defined time interval, using two analyses. A co-citation analysis allows the identification of the most influential authors and references cited within the theme, and a bibliographic coupling analysis enables the identification of the most referenced thematic clusters.

Findings: The systematisation of the available literature through the bibliographic coupling analysis identified four clusters, namely cluster (1) Intellectual Capital and Organizational Performance, cluster (2) Knowledge Management, cluster (3) Innovation, and cluster (4) Strategic Partnerships.

Originality: The study seeks to provide insights into effective strategies for leveraging intellectual resources to achieve organisational success in the construction industry. The steps that have already been taken are analysed, and the way forward is indicated through a future research agenda to strengthen a poorly explored area.

1. Introduction

The strength of the relationship between intellectual capital and SMEs (Small and Medium-Sized Enterprises) enables the ability of organisations to adjust dynamically, enabling internal learning (Pigola et al., 2022). The authors Mehralian et al. (2018) report the importance of organisations in practising actions towards developing intellectual capital. This is because it is only through this investment that there is an increase in the competitive advantage of organisations and where organisational performance plays its key role.

Nevertheless, in the last two decades, the relationship between intellectual capital and SMEs has suffered the addition of the component organisational performance. This component has been gaining more prominence in the business area, where the synergy between the components is discussed and compared to the competitive advantage that can be achieved (Asiaei and Jusoh, 2017).

There has been a lack of consensus regarding the definition of Intellectual Capital, which has led to various hypotheses proposed by numerous authors and scholars. However, it is widely recognised that Intellectual Capital is an important resource that supports companies'

performance. This recognition was mainly acquired after the work developed by Sveiby (1990) and later by Edvinson and Malone (1997), among others. Intellectual Capital is defined as an asset of each individual, generated through a combination of genetics, education, life, and business experience (Hudson, 1993). However, Nahapiet (1998) associates the term with each person's knowledge, social, and collective capacity. Matos and Lopes (2009) also have a different definition of Intellectual Capital.

Korsakiene et al. (2017) state that effective management of Intellectual Capital can enhance a company's competitive capacity. Intellectual Capital can be divided into two types of economic value. The first type, Structural Capital, includes all intangible assets owned by a company. Physical Capital, which includes tangible assets such as administrative systems, computer systems, and patents, and Human Capital, which encompasses all internal and external human resources (Edvinson and Malone, 1997).

According to Daryaei et al. (2011) and Zyngier and Burstien (2012), Intellectual Capital is the difference between book value and non-financial capital. The text discusses two types of capital: According to Daryaei et al. (2011) and Zyngier and Burstien (2012), Intellectual

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Capital is the difference between book value and non-financial capital. They argue that effective management of Intellectual Capital is crucial for companies to achieve success. Guthrie and Petty (2000) and Wiig (1997) provide a clear definition of intellectual capital and its benefits. They emphasise that the correct implementation of intellectual capital can provide a significant knowledge advantage and accelerate a company's innovation capacity through dialogue.

The concept of Intellectual Capital encourages learning for all individuals involved in the company (Guthrie and Petty, 2000; Wiig, 1997). The definition of Intellectual Capital shares common characteristics as described by these authors. According to these authors, Intellectual Capital is intangible and difficult to measure, and therefore cannot be reflected in financial statements. It is a dynamic process that requires collective effort. The practice of several individuals and companies only provides a competitive advantage when Intellectual Capital is well implemented (Guthrie and Petty, 2000). Therefore, a consensus has not yet been reached.

It is difficult to determine a correct method to measure Intellectual Capital as none of the methods presented can cover all aspects of it. On the other hand, organisational performance implies the ability to effectively implement strategies that enhance the organisation and its results (Kengatharan, 2019). That is, organisational performance is directly linked to leadership skills, which means that the ability to motivate employees and promote knowledge-sharing depends on this type of strategy (Bhatti and Christofi, 2020). In this article, when organisational performance is referred to, it can be considered the ability of organisations to increase their productivity and consequently increase competitive advantage compared to competitors.

By imposition the existing literature, the breadth of this topic required a more comprehensive investigation where SMEs complement the focus of construction companies. The study aims to fill a gap in the literature by providing empirical evidence of the relationship between intellectual capital and organisational performance in construction SMEs. The article seeks to justify its relevance and significance to the construction industry and SMEs.

Understanding the implications of this study is crucial for the construction sector as it can provide valuable insights into how intellectual capital can be leveraged to enhance the performance of SMEs. This information can be useful for managers and decision-makers in the construction industry, as it can assist them in making informed decisions about managing and utilising intellectual capital.

The study includes bibliometric analysis to establish the importance of the topic within academic literature and provide a comprehensive overview of existing research in this field. Through bibliometric analysis, the authors identify the most influential articles, key authors, and trends in intellectual capital and organisational performance research within the construction SME context. The study's findings could have significant implications for construction SMEs. The study aims to establish a clear link between intellectual capital and organisational performance. This could help SMEs in the construction sector prioritise their investments in intangible assets such as knowledge, expertise, and relationships. As a result, this could lead to improved competitiveness, innovation, and overall business performance.

In addition to empirical evidence, the methodological approach of incorporating bibliometric analysis adds another layer of significance to the study. Understanding the existing body of literature and identifying key trends and influential works in the field of intellectual capital and organisational performance within the construction SME context can provide valuable insights for both researchers and practitioners.

The study takes a holistic approach by combining empirical research with bibliometric analysis. This approach justifies the study's relevance and enriches the existing academic discourse on intellectual capital and organisational performance. The article could serve as a valuable resource for academics, practitioners, and policymakers seeking to enhance their understanding of the role of intellectual capital in the performance of construction SMEs (Novas and Sousa, 2017). Thus, the

following research question is posed - what are the impacts of intellectual capital on SMEs/construction firms?

In conclusion, intellectual capital, knowledge management, and strategic partnerships are vital ingredients for organisations seeking to achieve high-performance levels. By recognising and leveraging their intellectual assets, implementing effective knowledge management practices, and forging strategic collaborations, organisations can enhance their competitive advantage, foster innovation, and drive sustainable success in today's rapidly evolving business environment.

2. Methodology

The literature review aims to create a comprehensive understanding of the topic, identify gaps in knowledge, suggest new avenues of research, and express plans to contribute to the field of study (Donthu et al., 2021). However, it is common to find articles whose reproducibility is limited due to their limited degree of transparency. With these premises in mind, the authors of this article decided to apply a protocol aimed at the transparency and reproducibility of the study, ensured by the use of the PRISMA protocol (Moher et al., 2009). To this end, a bibliometric analysis was performed (Marzi et al., 2020) and the technique of similarity analysis (VOS) was applied (van Eck and Waltman, 2010). The overall process consisted of 10 steps by following the example of Paul and Dhiman (2021), as described in the following paragraphs.

The first step was an analysis of the existing literature, where the current state of research in the proposed area was reviewed. Based on this analysis, a list of keywords was generated, which, through their different combinations, made it possible to broaden the field of research.

In the second stage, the research question was defined, which, in addition to facilitating the development of the research, allows it to keep pace with the needs of science in the area proposed for research, allowing it to be constantly updated. Similar literature reviews on the topics under analysis were also included. In this way, the final query depended on the equation "("intellectual capital" and "organisational performance" and "SME" " or "firm").

The third stage was characterised by consulting the Web of Science (WoS) database for its quality and scientific rigour (Zha et al., 2020), which is widely recognised in academia. The limitations imposed on this research were the use of the "Topic" operator and the restriction of articles to the fields of management, economics, and administration, without any time limitation.

The fourth and fifth stages took place after the limits of the study were well defined. We then proceeded with the collection of data, which we can summarise as a total of 303 articles. Of these 303 articles, 198 were excluded after individual reading of the titles and abstracts revealed that these articles did not deal with the topics under study and only mentioned some of the keywords in their content. Of the remaining 105 articles, 33 were excluded because they did not fall within the parameters defined for the research areas.

The sixth stage was the bibliographic analysis, where a more careful analysis and the creation of bibliographic constellations were carried out using the VOSviewer, Cadima and Bibliometrix R software. Through this analysis, as already mentioned, it was possible to generate the similarity matrix in which the articles form small subgroups in which the research areas are identified. During this process, 11 articles were also excluded using VOSviewer and Cadima because they did not fit into any research subgroup.

In the seventh point, by analysing the articles by groups, the main themes were identified, leading to the theme that summarises the research carried out in all the articles. Due to the small number of articles, all articles were considered and reviewed.

In the eighth step, the articles with the highest number of citations were selected, following the example of Turzo et al. (2022), the upper 90th percentile of articles in each cluster was selected, calculated based on normalised citations.

In the final stages, the ninth and tenth, a systematic literature review was carried out following the example of [Tranfield et al. \(2003\)](#) using the PRISMA protocol ([Moher et al., 2009](#)). The final clustering of articles made it possible to summarise the best research practices on the central theme and its implications. This analysis not only facilitates the documentation of the main lines of research, but also helps to identify future lines of research ([Fig. 1](#)).

3. Characterisation of the sample

The database consists of 61 articles focusing on SME intellectual capital and organisational performance, arranged in the time interval between 1999 and 2022. The database is spread over 26 journals, 172 authors, 4138 references, and 199 keywords, with an average of 38.84 citations per document.

The boom in the number of publications on the relationship between intellectual capital and organisational performance emerged in 2017, and this number has been increasing over the years, except for 2018 and 2019. The number of citations registered a more exponential behaviour (see [Fig. 2](#)). The highest peak regarding publications was in 2020, with 13 articles, while the year with the highest number of citations was 2021, with 737 citations, showing that this is a topic of current interest.

Based on the temporal space in which the bibliographic database is inserted, a graph demonstrating the dynamics and evolution of a set of Keywords on the temporal axis was prepared (see [Fig. 3](#)). In this graph, it is possible to analyse all the words present since the genesis of the database. However, the words with the highest growth dynamics are "organisational performance", "innovation" and "capabilities".

[Table 1](#) displays the variables that were analysed in previous studies across various countries. These variables comprise 'Intellectual Capital', 'Knowledge Management', 'Strategic Partnerships', 'Innovation', and 'Organisational Performance'. Each variable was thoroughly examined to comprehend its correlation with organisational performance in SMEs. The studies analysed the variables that correlated and interacted with each other in various countries. The aim was to provide insights into how companies can optimise their performance through effective management of their intangible resources and strategic partnerships.

The Sankey chart (see [Fig. 4](#)) was elaborated with a central focus on three pillars (countries, authors, and keywords) to understand and to identify on what theme there is a greater focus on research carried out by the most influential authors within each country. It was possible to ascertain that the countries that produce scientific research on this theme are Malaysia, China, and the USA, with most of the research focused, as expected, on intellectual capital, performance, and innovation.

A co-citation analysis and a bibliographic coupling we performed in the current study. Co-citation analysis seeks to reveal both the intellectual framework of a study topic and the common theme of a particular set of bibliographic constructions (clusters) ([Hjørland, 2013](#); [Rossetto et al., 2018](#)). It also allows identifying which authors, journals, and articles are the most influential in the area of knowledge under study ([Donthu et al., 2021](#)). Bibliographic coupling analysis complements

co-citation analysis and reveals a broad spectrum of topics and all their most recent developments, providing a snapshot of the current state of research. Since bibliographic linkage is more future-oriented and co-citation analysis is more past-oriented ([Garfield, 2002](#)), the complementary nature of the two enables a cross-sectional view over time, allowing for a greater understanding and the potential to define future lines of research. Based on this basic principle, the decision to adopt these two analysis techniques is based.

4. Co-citation analysis

Based on the number of publications, the three most relevant sources are the Journal of Intellectual Capital, with 18 publications the Journal of Knowledge Management, with 6 and Management Decision, with 5 publications (see [Fig. 5](#)).

Regarding the source of co-citation analysis, with a restriction to the minimum number of 20 source citations, a total of 42 sources distributed by 3 clusters were found (see [Fig. 6](#)). The influence of the sources remains unchanged since the sources presented in [Fig. 5](#) maintains their prominent role. Cluster 1 (in red) has as a most influential source, precisely the Journal of Intellectual Capital, with 586 citations, 41 connections, with a total strength of 19190. In cluster 2 (in green), the Journal of Knowledge Management is the most influential source, with 142 citations, 41 connections, with a total strength of 7163. Regarding cluster 3 (blue), it is the source with the least influence of the 3 clusters, Management Decision, with 117 citations, 41 connections and a total strength of 8187.

Performing an author co-citation analysis allows for identifying the most influential authors in the area of knowledge under study. To this end, an author co-citation analysis was carried out based on the database of 3151 authors, limited to a minimum of 10 citations, reducing the spectrum of the sample to 65 authors. The constellation shown in [Fig. 7](#) comprises three clusters with the most cited authors. In cluster 1 (in red), the most cited author is Wang, with 26 citations. Regarding cluster 2 (in green), Bontis Hair Jr. stands out with 89 and 37 citations, respectively. Finally, in cluster 3 (in blue), the dominant author is Kaplan, who has 32 citations.

In the bibliographic reference co-citation analysis, the database comprises 4128 articles applying the limitation of a minimum of 6 citations per document, resulting in 92 documents. This final output resulted in the cloud visible in [Fig. 8](#), giving rise to 4 clusters.

5. Bibliographic coupling analysis

Bibliographic coupling was performed to ascertain the main research themes on the relationship between intellectual capital and organisational performance in SMEs. It can be concluded that a minimum number of citations per article should not be defined since the entire database is relatively recent. Finally, with a total of 61 articles selected, the number of minimum articles per cluster was limited to 10, resulting in an output of 4 clusters.

The analysis of the 61 articles, separated by 4 clusters, resulted in the cluster network being exposed in detail in [Fig. 9](#). The composition of each cluster represents a different approach to the theme under study – cluster (1) Intellectual Capital and Organisational Performance, cluster (2) Knowledge Management, cluster (3) Innovation, and cluster (4) Strategic Partnerships.

5.1. Cluster 1 | intellectual capital and organisational performance (N = 21) red

The authors [Bassi and Buren \(1999\)](#) clarify the importance of organisations correctly assessing the importance of intellectual capital in organisational performance. The correct planning and investment in these components ease the achievement of competitive advantage. The problem lies in the organisations that, besides not knowing what

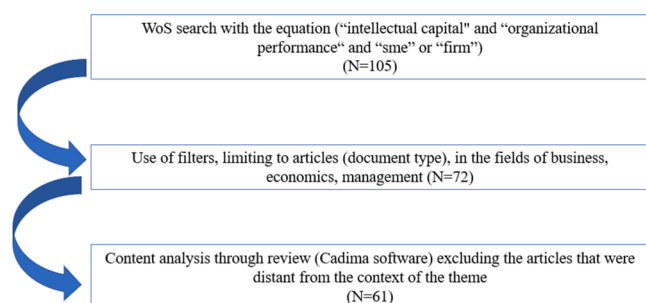


Fig. 1. Article selection process for the database.

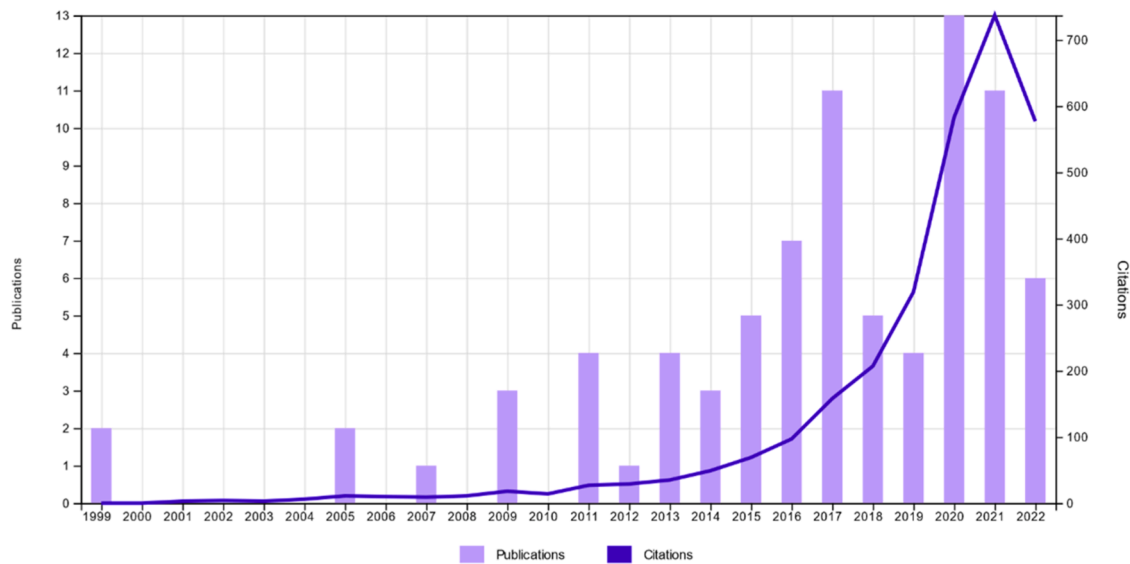


Fig. 2. Evolution of the number of articles and citations in the theme “Relationship between Intellectual Capital and Organisational Performance”, between 1999 and 2022.

Source: Bibliometrix.

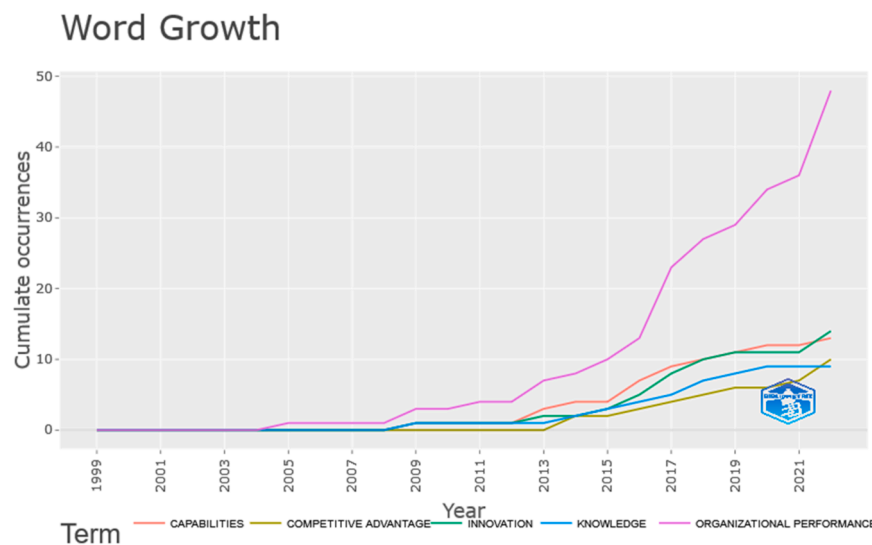


Fig. 3. Dynamics and evolution on the use of keywords.

Source: Bibliometrix.

provides them with the advance and growth, they do not understand how and where to invest for this can happen. As such, and to solve this chronic problem in organisations, the authors [Carriere \(2009\)](#) stress the importance for organisations to define, in a clear way, what their medium-long term intentions are. In other words, stipulating the investment in training, development and career progression of their employees will allow them to bring unquantifiable added value to the organisation. However, there is another fundamental premise: the choice of the right candidates. For this reason, there must be also greater investment in this area. The consistency of these investments will allow the promotion of important organisational messages, such as vision, mission, and values, which will trigger the promotion of organisational culture ([Carriere, 2009](#)).

Organisational culture is presented as the foundation that provides the development of the relationship between intellectual capital and organisational performance in SMEs ([Asiaei et al., 2015](#)). This phenomenon also enables the development of some constructs of

intellectual capital, such as structural and relational capital. That is, the relationship between intellectual capital and organisational performance is not only one-way but two-way. The authors reinforce the importance of leadership in this relationship since good leadership motivates and eases knowledge sharing. [Bhatti and Christofi \(2020\)](#) corroborates this idea and add human capital as a fundamental construct for leveraging organisational performance. According to [Li \(2021\)](#) and [Nagwan et al. \(2021\)](#), with the correct use of human capital in conjunction with the emotional capabilities of organisations, it is possible to continue improving SMEs' performance. Thus, for this resource to significantly impact organisations, it is necessary to create investment mechanisms that allow its development ([Chen and Zhu, 2020](#)).

The development of intellectual capital also facilitates the mediation of the relationship between knowledge management and organisational performance ([Daud et al., 2011](#)). Knowledge management is characterised as one of the key elements that help SMEs improve their

Table 1
Previous studies carried out, studied variables, and countries analysed.

Previous Studies	Countries	Studied variables	Relationship
McDowell et al. (2018)	EUA	Intellectual Capital, Human Capital, Organisational Performance, Innovation	Positive
Mukaro et al. (2023)	Turkey	Intellectual Capital, Human Capital, Organisational Performance	Positive
Yang and Lin (2014)	Taiwan	Intellectual Capital, Human Capital, Relational Capital, Organisational Performance	Positive
Ferreira and Franco (2017)	Portugal	Strategic Partnerships, Intellectual Capital, Organisational Performance	Positive
Gupta (2022)	India	Intellectual Capital, Organisational Performance, Knowledge Management	Positive

performance. Another way to justify this result is to consider what Ling (2013) highlights in his research. Thus, Agostini and Nosella (2017) presents two ways to achieve this goal. Intellectual capital is present in

all organisations. However, we can either consider it and invest in it or not. This is where organisations are divided into two sets. The first set is where intellectual capital is not invested and ends up being underutilised. The second one is where investment and intellectual capital maintenance are considered, boosting organisational performance. This also benefits from the improvement in the internal organisation of SMEs, which directly relates to their performance but is not directly linked to their economic success (Jardon and Martos, 2014).

Therefore, it is safer to say that good organisational planning benefits the achievement of better performance through the correct use of intellectual capital (Asiaei and Jusoh, 2017) and allows to make strides towards organisational sustainability. Other authors, such as Han and Li (2015) reinforce the importance of intellectual capital by emphasising that organisational performance depends on organisations’ ability to make correct and timely decisions through their perception of opportunities and threats they face. Only in this way is it possible, in an efficient way, to improve SMEs’ productivity, an element directly related to the performance of organisations (Kengatharan, 2019).

In conclusion intellectual capital is crucial for enhancing organisational performance in various sectors. It comprises intangible assets such as knowledge, skills, experience, and relationships, which enable

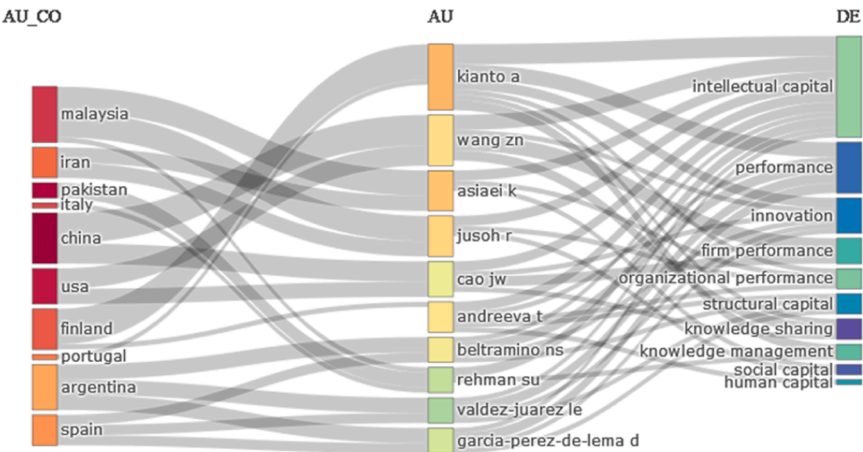


Fig. 4. Sankey chart centred on three pillars: country-authors-keywords.
Source: Bibliometrix.

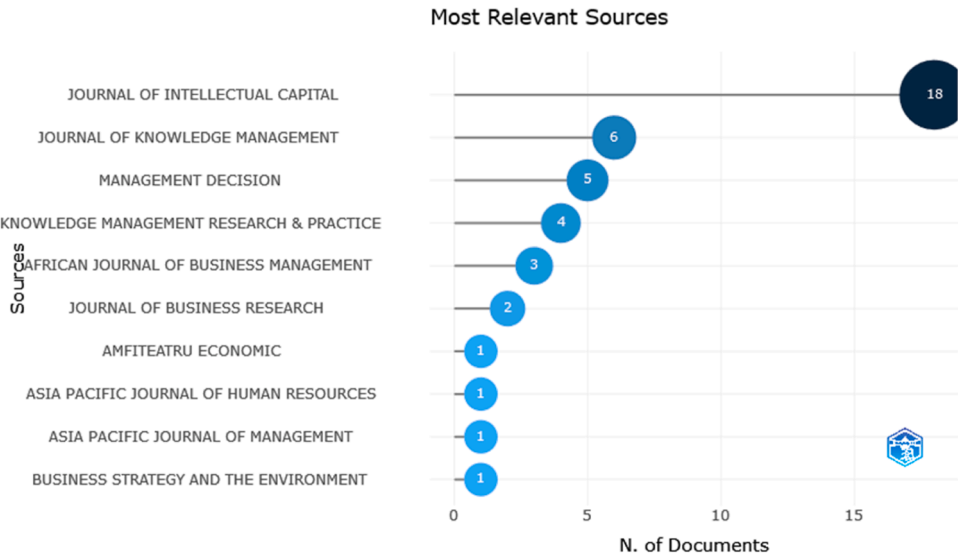


Fig. 5. Most relevant sources.
Source: Bibliometrix.

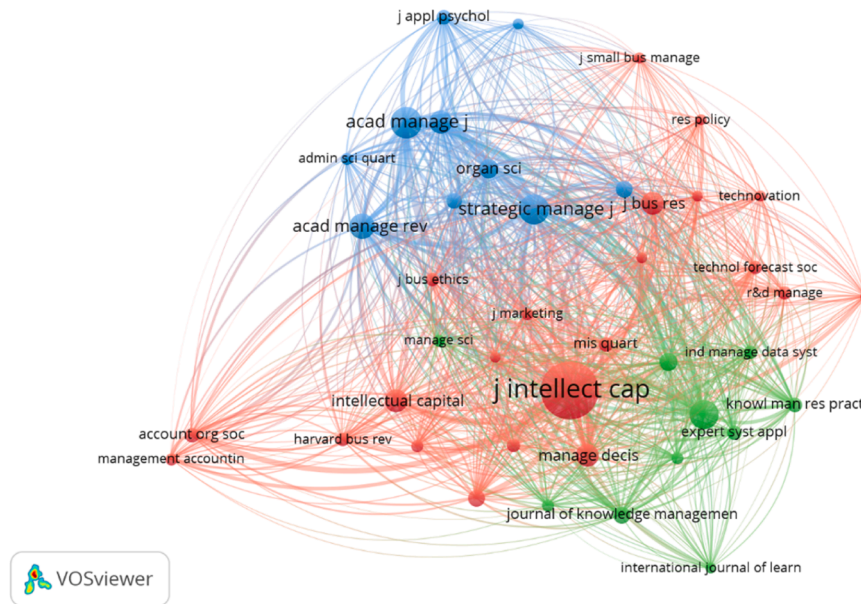


Fig. 6. Co-citation analysis of cited sources.
Source: VOSviewer.

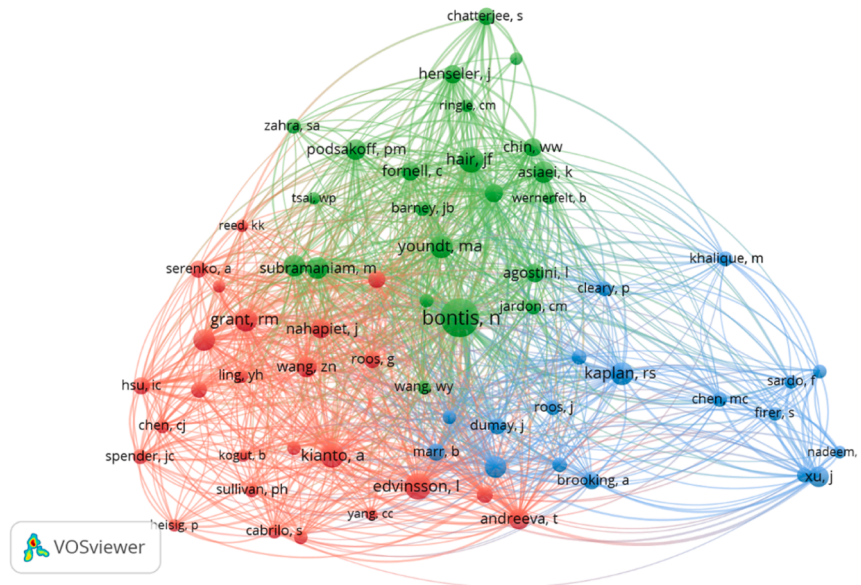


Fig. 7. Co-citation analysis of cited authors.
Source: VOSviewer.

organisations to innovate, adapt to change, and gain a competitive edge in the market. Effective management of intellectual capital allows companies to utilise their internal resources and external networks to improve productivity, encourage innovation, and accomplish strategic objectives.

5.2. Cluster 2 | knowledge management (N = 15) green

Besides being dependent on the productive capacity of the employees, the productivity of an organisation is linked to the performance of the intellectual capital that, in turn, eases organisational performance (Ahangar, 2011). In this way, it becomes essential that SMEs become increasingly aware of the strategic asset, that is, knowledge management (Bhatti et al., 2011). Some organisations' underlying problem is the inability to apply knowledge management policies appropriate to

their contexts and environments. Authors like Mehralian et al. (2018) reiterate the importance of developing and investing in intellectual capital and knowledge management concepts from the very beginning of organisations' lives and throughout their time in business. Only in this way can it positively impact organisational environments, thus improving the outlook for future generations of professionals (Pigola et al., 2022).

For knowledge management to play a key role in the relationship between intellectual capital and organisational performance in SMEs, they must strategically plan their social decisions (Archer-brown et al., 2018). That is, the increasing preponderance of SMEs in the social environment forces them to respond to these issues seriously, as the advantages they can enjoy are pending their social action. Strategic knowledge management directly affects the components of the intellectual capital of the relational capital, the structural capital (Heisig

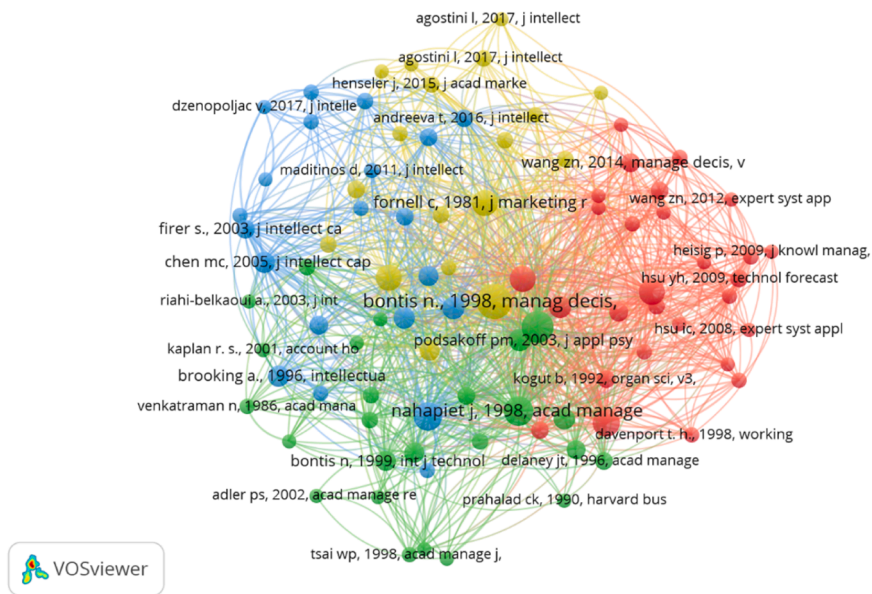


Fig. 8. Co-citation analysis of cited references.
Source: VOSviewer.

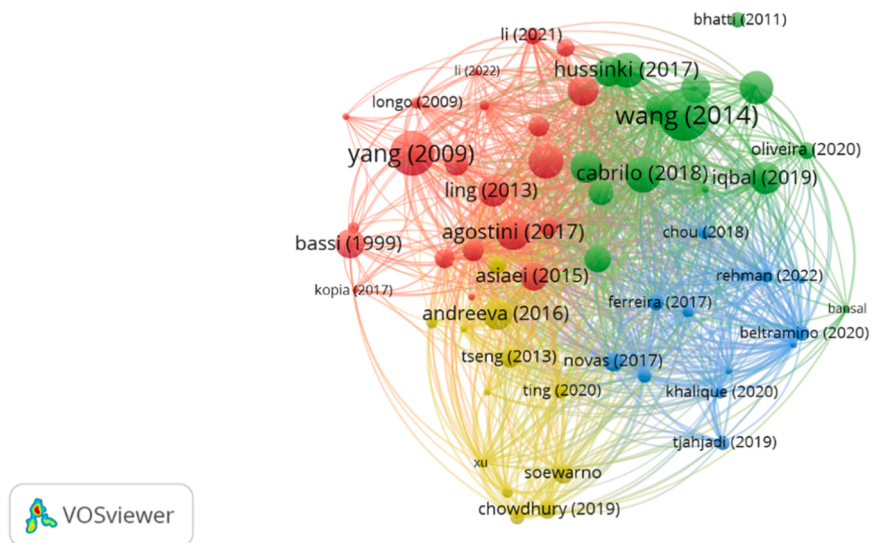


Fig. 9. Bibliographic coupling analysis.
Source: VOSviewer.

et al., 2016; Cabrilo et al., 2018) and knowledge sharing (Oliveira et al., 2020) stand out.

Knowledge management emerges as a mediator of the relationship between intellectual capital and organisational performance, where it starts to register a positive variation, improving all operational dynamics of SMEs (Hussinki et al., 2017) due to the ability of employees to share knowledge (Wang et al., 2015, 2016). Knowledge management can positively affect organisational performance due to its direct and indirect interactions with intellectual capital (Iqbal et al., 2019). Later, the authors Bansal et al. (2022) went further and strengthened the theory by presenting more objective findings. They concluded that when high levels of intellectual capital and knowledge management exist in each organisation, it tends to perform well above its competitors.

However, [Kianto et al. \(2013\)](#) warns against conducting too direct analysis. The author recalls that, despite the positive mediation of knowledge management in the relationship between intellectual capital and organisational performance, the latter is dependent on good

intellectual capital management policies. That is, if SMEs, as mentioned above, do not invest in the management of intellectual capital, and do not adapt their policies, the possibility of positively affecting their performance is drastically reduced (Wang et al., 2016).

In conclusion the relationship between intellectual capital and knowledge management is crucial for enhancing organisational performance. Intellectual capital refers to the intangible assets, knowledge, and expertise embedded within an organisation. Knowledge management involves systematic processes for creating, sharing, and utilising this knowledge effectively. By aligning intellectual capital with knowledge management practices, organisations can optimise the utilisation of their intellectual resources, enhance decision-making processes, and foster innovation. This synergy enables organisations to adapt to changing environments, capitalise on emerging opportunities, and sustain competitive advantage in the long term.

5.3. Cluster 3 | innovation (N = 13) blue

A good organisational structure allows the creation of better conditions for the performance of SMEs. Articulating intellectual capital with knowledge management improves organisational performance through the impact of innovation (Beltramo et al., 2022). Although process innovation is directly affected by an organisation's communication style, it allows for improving intangible components of organisations, such as culture and organisational capital (Tjahjadi et al., 2019). Depending on the technology embedded in an organisation, the level of employee engagement can vary, facilitating the consumer experience (Chou et al., 2018). Customer acquisition is a fundamental step in the life of organisations. In essence, their performance depends on consumer behaviour and the ease with which they accept and interact with innovations, in this case, technological innovations, implemented by organisations.

Thereby, let's consider that organisations plan and seek to improve their organisational performance. The investment in technology-based innovations represents a strong link to the basic constructs of intellectual capital (Novas and Sousa, 2017). The strategy of each organisation is intrinsic to each one of them. However, the constructs of intellectual capital and strategic partnerships are mainly responsible for improving performance (Ferreira and Franco, 2017). That is the correct investment in innovation and using resources, such as intellectual capital and strategic partnerships, will enhance SMEs' resources and dynamics, eliminating some gaps and clearly improving their performance (Khalique and Abdul, 2020).

More recently, authors like Asiaei et al. (2015) and Beltramo et al. (2022) have demonstrated the importance of investing in innovation and the impact of this action on some of the components of intellectual capital. Human capital and structural capital are the two constructs most affected by investment in innovation; it is possible to associate this investment with a more sustainable environmental performance (Chatterjee et al., 2022). In other words, for SMEs to reap the maximum benefits associated with green resources, it is necessary to synchronise adequate organisational control with intellectual capital valences (Rehman et al., 2022). Thus, it is possible to state that organisational performance and competitive advantage are directly affected by innovation and the repercussions it has on intellectual capital and knowledge management (Rehman et al., 2022).

In conclusion innovation is essential for driving organisational performance and achieving long-term success. By continuously innovating products, services, processes, and business models, organisations can adapt to changing market dynamics, meet evolving customer needs, and gain a competitive edge. Innovation enhances efficiency, productivity, and profitability while enabling organisations to stay ahead of the curve and differentiate themselves from competitors. Moreover, adopting a culture of innovation promotes creativity, collaboration, and employee engagement, resulting in improved performance and organisational resilience.

5.4. Cluster 4 | strategic partnerships (N = 12) yellow

Considering an approach that began to gain momentum in the early 10s of the XXI century (Yitmen, 2015), strategic partnerships have come to the forefront where the scrutiny of this construct has been gaining increasing importance. According to Andreeva (2016), organisational performance tends to suffer a more significant impact when there is a greater bet on intellectual capital, mainly structural and relational capital. This bet will allow the creation of better opportunities for the development of bilateral relationships (Xu et al., 2022). The ability to unite the human capital of two or more organisations for the sake of organisational efficiency turns out to be scarce (Afroz et al., 2019). That is, some SMEs still need to internalise how much better their organisational performance could be if they worked together with several organisations (Afroz et al., 2019).

The better the access to information, the greater the ability of SMEs to achieve better organisational performance through intellectual capital investment and strategic partnerships (Gravili et al., 2020). Although investment in intellectual capital points to the various constructs, structural and relational capital will stand out the most (Özer and Ergun, 2015). Thus, the possibility of leveraging strategic partnerships becomes a reality with grounds to happen; that is, the relationship between intellectual capital and organisational performance in SMEs exists, and both constructs influence each other (Soewarno and Tjahjadi, 2020).

However, strategic partnerships should emerge as moderators of this relationship, developing organisations both structurally and economically, as well as creating a more significant competitive advantage that will allow for greater longevity and growth of SMEs (Tseng et al., 2013; Ting et al., 2020). By using strategic partnerships as a moderator of the relationship between intellectual capital and organisational performance, it is possible to leverage both constructs and improve organisations' results in the medium to long term (Xu and Li, 2019).

In conclusion the connection between intellectual capital and strategic partnerships is crucial for improving organisational performance. Intellectual capital refers to an organisation's knowledge, expertise, and intangible assets, while strategic partnerships involve collaborative relationships with external entities to achieve mutual goals. Organisations can enhance their competitive position and fuel growth by leveraging intellectual capital through strategic partnerships. These partnerships facilitate knowledge exchange, innovation, and the creation of new opportunities, enabling organisations to expand their market reach, mitigate risks, and capitalise on emerging trends.

5.5. Framework - intellectual capital and organisational performance in the construction sector

Considering the clusters identified through the bibliographic coupling of the 61 articles, Fig. 10 shows the proposed framework for the theme "Intellectual Capital and Organisational Performance in SMEs/Construction Companies". In general, the relationship between intellectual capital and organisational performance has positive aspects for organisations. The correct investment in intellectual capital always enhances organisational performance, which can benefit from the correct knowledge management that requires applying policies that allow development. This way, knowledge management can mediate the relationship between intellectual capital and organisational performance. On the other hand, strategic partnerships emerge as a differentiating element where their ability to moderate the relationship described above improves organisational performance and creating more significant competitive advantage.

These two processes of mediation and moderation can be analysed independently; that is, the model represented in Fig. 10 can be divided into two distinct models. The first model, where knowledge management mediates the relationship between intellectual capital and organisational performance and the second one, where strategic partnerships moderate this same relationship. However, it should be noted that in both models, innovation is a constant that influences the relationship described. This obtains greater benefit if the two models merge into one,

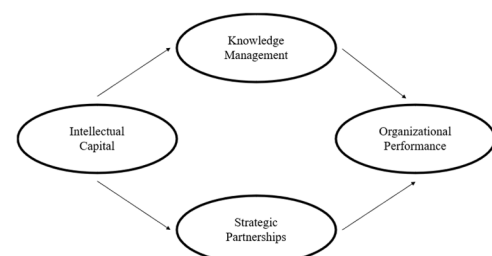


Fig. 10. General framework.

as it is presented in Fig. 10.

6. Future lines of research

Future research could investigate the mechanisms through which intellectual capital affects organisational performance in construction SMEs (Rexhepi et al., 2013). Longitudinal studies could provide deeper insights into the long-term effects of intellectual capital on performance outcomes. It is also recommended to explore the specific mechanisms through which intellectual capital impacts organisational performance in construction SMEs. Furthermore, conducting longitudinal studies could provide deeper insights into the long-term effects of intellectual capital on performance outcomes. Exploring these avenues would contribute to a more comprehensive understanding of the intricate relationship between intellectual capital and organisational performance in the context of construction SMEs.

Additionally, it would be valuable to examine how different types of intellectual capital, such as human capital, structural capital, and relational capital, individually influence organisational performance within the construction SME sector. This approach could provide a deeper understanding of the unique contributions of each form of intellectual capital to overall performance, offering tailored insights for SME managers and decision-makers.

Moreover, future research could explore the influence of external factors, such as industry dynamics, market conditions, and regulatory environments, on the relationship between intellectual capital and organisational performance in construction SMEs. This would provide a more holistic perspective and inform the development of targeted strategies for enhancing performance in this sector.

7. Conclusions

The need for SMEs to view the future more critically has revealed the need to change investment strategies and policies. It still needs to be considered within SMEs (mainly family-owned ones), and intellectual capital stands out as the key to easing organisations' growth and maturity (Chen and Zhu, 2020). In this sense, intellectual capital and organisational performance appear related to one construct forcing the other to grow, improving the environment for employees, customers, and the economy (Li et al., 2021).

Research on the topic under review in this article is recent, with research reaching a peak in 2020. The considerable increase in research on the issue from the beginning of the century to the present day is due to the need for organisations to compete and leverage their progress through the strategic application of investments and policies (Han and Li, 2015).

As far as possible, no systematic literature review was identified that addressed the topic. Thus, this study contributes to a holistic view of the relationship between intellectual capital and organisational performance in SMEs. Identifying the sub-themes present in the research area is also defined, allowing the identification of some gaps in state of the art and, thereby, suggesting possible lines of research.

The bibliometric analysis allowed the identification of sets of constructs with strong links between them. The bibliographic coupling allowed the identification of 4 clusters – cluster (1) Intellectual Capital and Organisational Performance, cluster (2) Knowledge Management, cluster (3) Innovation, and cluster (4) Strategic Partnerships, allowing us to answer the question "What are the dominant sub-themes in the knowledge area under analysis?"

The co-citation analysis allowed us to ascertain the most cited/influential authors (Yang et al., 2014; Han and Li, 2015; Wang et al., 2015; Hussinki et al., 2017; Cabrilo et al., 2018) and the journals with the most significant number of publications on the theme under analysis – Journal of Intellectual Capital, the Journal of Knowledge Management and Management Decision, in descending order. This research allowed answering the following questions: "Which are the most influential

authors?" and "Which journals have the most publications?"

To answer the research question of the study conducted, "What are the impacts of intellectual capital on SMEs/construction firms?" the bibliometric analysis allowed us to ascertain the impacts of intellectual capital on SMEs but did not make a clear statement about construction firms due to the lack of literature. In this way, it was verified that when there is a coherent line of investment in intellectual capital, its constructs are strengthened and, in turn, through a two-way relationship, allow for a better organisational performance that, in the opposite direction, stimulates the development of intellectual capital. Nevertheless, knowledge management and strategic partnerships play a key role in this relationship. This role can be played individually or jointly, as shown in the model present in the "Framework" chapter. In other words, through the mediation of the relationship between intellectual capital and organisational performance, knowledge management can enhance the performance and productivity of SMEs. At the same time, strategic partnerships facilitate the leverage of both constructs by moderating the same relationship. Regarding innovation, although playing a key role in the advancement and growth of organisations, it does not play a pivotal role in improving organisational performance. In short, if an organisation is not aware of the ability of these constructs to work together, it may be undervaluing and underutilising all its competencies. In contrast, an organisation that understands how to put all these strengths to work together achieves better results through improved performance.

Like any research, this RSL (Systematic Review of the Literature) is not immune to limitations in its process. The fact that it only uses one database (Web of Science) restricts the search spectrum, and documents of relevance and interest have not been considered. The different filters that were used to narrow and focus the research have a double face in the sense that they provide a focus within the theme but inhibit the holistic view of the theme. Finally, there is a lack of studies applied to various economic areas, including the area of construction, especially in the Portuguese context, which forced us to broaden our field of investigation to SMEs.

In conclusion, the article's findings and methodological approach contribute to the current understanding of intellectual capital and organisational performance in construction SMEs. Additionally, they pave the way for future research directions that can further enrich the literature and offer actionable insights for industry practitioners and policymakers.

Declaration of interests

Not applicable.

Ethical statement

Ethical considerations have been an integral part of this research endeavour. The study adheres to the highest ethical standards, ensuring the protection of human participants, animal subjects, and the integrity of the research process. All procedures and protocols were conducted in accordance with relevant institutional and national guidelines. Informed consent was obtained from all human participants involved in the study, and measures were taken to ensure confidentiality and anonymity. Animal experiments, if any, were conducted with utmost care and in compliance with ethical guidelines for the humane treatment of animals. Furthermore, any potential conflicts of interest have been disclosed and managed transparently. The authors are committed to upholding ethical principles and maintaining the integrity of scientific research.

CRediT authorship contribution statement

Florinda Matos: Supervision. **António Nunes:** Supervision. **André Sucena:** Writing – review & editing, Writing – original draft.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability statement

No data was used for the research described in the article.

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