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How venture capital increases international new venture knowledge: theoretical bases and emerging topics

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Abstract: This study reviews the existing literature on venture capital's social influence on international new venture knowledge. Using records in the Web of Science from 2022 to 2025, the researchers identify 48 documents. The theoretical foundations of this research line are analysed by studying the evolution of citations in the last four years and the interactions between them. Two bibliometric techniques were applied for this analysis: co-citation, to introduce the descriptive analysis of the network, and bibliographical coupling, to perform a group and factor analysis. The results highlight the absence of a single theoretical framework and reveal key connections between research lines and the need for future research on trust-building mechanisms across VC investment stages and syndication structures.

Keywords: venture capital; VC; knowledge; syndication; international new ventures; entrepreneurship; social capital; internationalisation; network embeddedness; investment cycle; bibliometric analysis.

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1 Introduction

Venture capital (VC) firms' purpose is to invest, manage, and offer returns to institutional investors through funding and scaling up entrepreneurial firms to sell their stakes to corporate or public investors (De Clercq and Dimov, 2008). In recent years, VC firms have been valued by their capacity to interact, connect and transmit valuable experience and ideas to internationalisation (Nguyen and Nguyen, 2025; Bygrave, 1987; 1988). VC firms transmit valuable market and internationalisation knowledge both directly, from their cross-border experience and indirectly through co-investments and syndication, which build social capital for new ventures (De Clercq and Dimov, 2008).

This indirect learning emerges through their exposure to diverse networks and the observation or imitation of other firms' internationalisation patterns (Forsgren, 2002; Henisz and Macher, 2004; Schwens and Kabst, 2009), complementing the experiential knowledge accumulated through prior cross-border investments (Eriksson et al., 1997; Hohenthal et al., 2014). Consequently, VCs act as cognitive intermediaries, transferring institutional, business and internationalisation knowledge that strengthens new ventures' global capabilities and performance (Balabanis and Katsikea, 2003; Majocchi et al., 2005).

From the international new ventures (INV)'s perspective, this knowledge mitigates their limited experience in foreign markets. When actively involved, VCs influence the strategic direction of their investees, catalysing their development by providing expertise, reputation, and network access, thereby driving firm development and international expansion (Fernhaber and McDougall-Covin, 2009; Chemmanur et al., 2014). In doing so, VCs become key enablers of organisational learning and international growth (De Clercq and Dimov, 2008; Tan et al., 2024; Wang and Tan, 2024).

While a relevant number of studies are considering the contribution of VC on providing valuable knowledge to INV, it is not clear how this role is effectively undertaken (Weik et al., 2024). Rather than on experience and knowledge about internationalisation, most research has traditionally focused on the financial support, paying special attention to the VC effect on financial constraint (Van Gelderen et al., 2005; Meuleman et al., 2017). In fact, past research has focused on evaluating the role of VC precisely considering three main stages of the INV: pre-investment stage, focused on screening and selection; the post-investment stage, involving monitoring and value-adding activities; and the exit stage, centred on divestment and return realisation (Manigart et al., 2013). This financial orientation reflects the traditional view of VC as an investment mechanism primarily aimed at funding, monitoring, and realising returns through staged financing cycles (Gompers and Lerner, 2001).

Indeed, the VC also provides valuable knowledge across the three stages of investment. In the pre-investment phase, VC firms contribute analytical knowledge in market assessment, risk evaluation, and international scalability analysis. During the post-investment phase, they provide managerial expertise, strategic guidance, and access to international networks, strengthening the INV's global development and organisational learning (Gorman and Sahlman, 1989). Finally, in the exit phase, VC knowledge in valuation, timing, and negotiation enables effective divestment decisions that maximise financial and strategic returns (Moirangthem and Nag, 2024). Nevertheless, existing research has rarely explained how this knowledge is actually created, transferred, or transformed throughout the investment process, or under which relational and contextual conditions it occurs. While previous studies have examined syndication, reputation, and

trust as enablers of cooperation, they have largely adopted financial or structural perspectives. What remains unclear is the cognitive dimension of VC activity, that is, how VCs act as knowledge intermediaries who bridge informational and institutional gaps, particularly in international contexts. This study addresses that gap by integrating financial, relational, and cognitive views to explain how VCs facilitate internationalisation through knowledge-based mechanisms across the investment cycle.

Considering this gap, the researchers undertake a systematic review of the knowledge-based role that VC firms play in the development of INV. Previous research is reviewed to build on the theoretical background as well as the emerging research lines that are being developed. This study advances existing literature reviews by uncovering the theoretical foundations and recent developments in the intersection of social capital, VC and internationalisation of new ventures. By analysing the most influential works and their recent citation dynamics, the researchers identify emerging research lines and thematic clusters that are shaping the future of the field. The findings reveal how core concepts of social capital are evolving within the stages of investment in which INV are.

The role of knowledge in the internationalisation of new ventures, particularly in relation to VC firms, has been acknowledged but remains insufficiently defined. While past studies using co-citation analysis (Cumming et al., 2023) reveal a well-established understanding of knowledge as a critical resource and highlight the brokerage and value-adding functions of VCs, they also show that this body of literature has largely focused on the domestic or general growth effects of VC involvement.

Recent bibliometric studies on the role of knowledge and VC firms on internationalisation have explored how knowledge transfer and learning mechanisms contribute to firms' global expansion (Hellmann and Puri, 2002; Sapienza et al., 1996). De Clercq and Dimov (2008) and Sapienza et al. (1996) emphasise that VC involvement facilitates both internal knowledge development and external knowledge access through strategic monitoring and value-added activities. Similarly, Mäkelä and Maula (2008) and Liu and Maula (2016) highlight that cross-border VC investments enable international knowledge exchange between local and foreign partners. More recently, Almubarak and Dimov (2022) and Moirangthem and Nag (2024) show that VCs' value-adding practices are grounded in knowledge creation and dissemination across the investment lifecycle. This research builds on these contributions by specifically examining how access to international knowledge provided by VC firms affects INVs across their different stages of development.

This approach offers a network-based perspective that provides a more comprehensive view of which studies play a central role in defining the theoretical background and which are the theoretical approaches to explain the effects of VC on INV. Also, this study identifies the articles that occupy the most integrative positions within the co-citation network, serving as consultants (Gould and Fernandez, 1989) that connect pairs of otherwise unconnected references, rather than bridging separate theoretical communities. These works represent the conceptual anchors of an intellectually integrated field; researchers can position their own contributions in relation to this shared core, increasing both its visibility and its relevance to readers engaging with this literature from complementary disciplinary angles. This is especially relevant in this research line, where there is a clear convergence around a small set of foundational references, both in the co-citation network and in the emerging research lines identified through bibliographical coupling.

Finally, this study contributes to the literature on VC and INV by offering an integrated perspective on how knowledge needs evolve across the pre-, post-investment and exit phases of VC activity. This evolution of knowledge needs is closely linked to the concept of social capital, understood as the resources and information accessible through networks of relationships and trust that facilitate knowledge exchange and opportunity recognition within venture ecosystems (Nahapiet and Ghoshal, 1998). Previous research has generally examined these three investment phases separately and focused primarily on the financial dimension of VC involvement, either analysing VC-entrepreneur relationships (Gorman and Sahlman, 1989; Bernstein et al., 2016; Petkova et al., 2014) or on syndication patterns among investors (Bygrave, 1987; Sorenson and Stuart, 2001). This study integrates both perspectives by examining how VC networks influence the flow of information and risk sharing across the investment process. Through syndication and repeated interactions, VCs mitigate information asymmetries in the pre-investment phase, share monitoring responsibilities during the post-investment phase, and strengthen network ties that enhance exit opportunities. Consequently, risk management, information exchange, and network cohesion evolve dynamically over the course of the investment cycle.

2 Methodology

2.1 Bibliographic database

The researchers gathered the data from the Web of Science. This database was selected instead of others from the wide range that is available due to its advanced search, citation analysis and bibliometrics. Data collection began in July 2024 by choosing all the documents that contained the keywords ‘VC’ and ‘social capital’ without limiting to a specific time interval, obtaining 1826 results. To refine the search, only articles within the business and economics fields: business (588), management (474), economics (168), business economics (168) and business finance (89). This shortlisting reduced the database to 1487 articles, consistent with the study’s focus on the evolution of VC’s social capital influence on new venture performance.

Nevertheless, the researchers kept refining the database by only selecting articles from 2022 to 2025, to understand the theoretical roots and recent direction of the literature on VC and social capital. For this purpose, the researchers apply bibliographical coupling. After analysing all these articles and discarding the ones without a connection to the application of social capital and network theory to VC, a final sample of 48 articles was obtained. Table 1 summarises the data filtering process applied in this study. The resulting co-citation network comprises 58 nodes and 2428 links, representing the relationships among the most frequently co-cited studies within this research domain. This dense structure (density = 0.734) suggests a relatively cohesive body of literature, where key studies are strongly interconnected. This cohesion is further confirmed in the results section, where Markov clustering analysis consistently failed to identify discrete topical subgroups across multiple inflation parameters, and the network exhibits a diameter of only two links, jointly indicating a consolidated theoretical foundation and shared conceptual background instead of a fragmented set of subfields.

Table 1 Database refinement and final sample

<i>Stage</i>	<i>Description</i>	<i>No. of articles</i>
Shortlisted database	Articles within business and economics fields	1,487
Filter 1 – Time range	Limited to 2022 to 2025	349
Filter 2 – Relevance	Manual screening: only VC and social capital	48
Bibliographical coupling results	2428 co-citation links	-

Source: Own elaboration

2.2 Co-citation analysis and bibliographical coupling

The researchers applied bibliographical coupling and co-citation analysis due to their complementarity (Diez-Vial and Montoro-Sanchez, 2017). Bibliographic coupling measures the similarity between two articles by the number of references they share. The greater their bibliographies overlap, the stronger their connection. As citation habits evolve, bibliographic coupling works better within a limited time limit, which is why the analysis focused on the period 2022 to 2025 (Glänzel and Thijs, 2012). As a consequence, bibliographic coupling indicates the tendency and future research lines of the research.

Co-citation, in turn, considers that two cited documents are more related one to another the more times they are cited together (Persson, 1994). A co-citation connection is established by the authors who are citing the examined works, whereas a bibliographic coupling one is established by the authors of the articles in focus (Boyack and Klavans, 2010). Accordingly, it measures the theoretical bases of the research.

To analyse the bibliographic data, the researchers used the software BibExcel, which operates by taking the raw bibliometric data from the Web of Science to perform the bibliometric calculations, considering the similarities between cited documents when carrying out a co-citation analysis, and only the citing documents when performing a bibliographic analysis.

3 Results: theoretical background

The researchers start the co-citation analysis with a graphic representation of the articles as nodes, with the connections and the number of times that these articles are connected. Figure 3 presents the co-citation network of the core academic literature related to VC's social capital effect on new venture performance.

Each node represents a single article, and its size reflects the total number of co-citations each article has received, scaled to facilitate the differentiation between the most co-cited and the least. The connections or edges between nodes reflect the number of times two articles have been cited together in the same papers; stronger co-citation ties are represented with thicker lines. This diagram identifies the most central articles within this field, illustrating a dense and highly interconnected structure as opposed to distinct methodological or thematic clusters, consistent with the absence of discrete subgroups reported in the results section.

3.1 Themes addressed by central references

Degree centrality refers to the number of direct ties an actor has in a network (Freeman, 1978). In the context of a co-citation network, it shows the number of articles a given article is co-cited with. The higher the degree of centrality, the more embedded the article is in the structure of the field, likely used as a reference point for a large number of studies.

Based on the network approach literature, the researchers calculated the centrality between the cited articles; the more cited, the more central the article. This measure was calculated using UCINET software (Borgatti et al., 2002). The centrality analysis showed a highly cohesive network, anchored by a small core of just six articles (out of the 58 references), with a degree centrality score of 50 or higher. This six-article core converges closely with the three-reference optimal core independently identified through continuous coreness analysis (concentration score = 0.755), while offering broader thematic coverage for the qualitative analysis that follows. These articles build the theoretical foundations of VC's social capital influence on new venture performance literature.

A relevant subset of the six most central articles signals a conceptual shift from viewing VC primarily as a funding mechanism to understanding it as a relational actor that generates and channels knowledge for its backed new ventures.

The six core contributions identified in the co-citation analysis collectively portray VC syndication as a relational infrastructure through which information, monitoring capabilities, and investment opportunities are coordinated. Lerner (1994) establishes the economic rationale for syndication, arguing that co-investment enables venture capitalists to share due diligence efforts, leverage complementary expertise, and reduce informational asymmetries. Building on this foundation, Sorenson and Stuart (2001) demonstrate that syndication networks facilitate the diffusion of information across geographic and industry boundaries, allowing VC firms to access investment opportunities beyond their local environments. Hochberg et al. (2007) further show that a central position within these networks provides informational advantages that translate into superior investment performance. At the same time, Sorenson and Stuart (2008) explain that the formation of syndication ties depends on relational settings that foster trust and collaboration among investors, whereas Cumming and Dai (2010) show that investment decisions remain influenced by geographic proximity despite these network connections. Finally, Bernstein et al. (2016) highlight that active VC monitoring creates value after investment, emphasising that network relationships are complemented by intensive post-investment involvement. Taken together, these studies depict VC networks as governance structures that coordinate information, monitoring, and investment decisions in contrast to merely mechanisms for capital provision.

From a theoretical perspective, these patterns illustrate how social capital (Coleman, 1988; Nahapiet and Ghoshal, 1998) provides the relational infrastructure through which knowledge circulates, complementing the resource-based view (Barney, 1991) and agency theory (Jensen and Meckling, 1976) that explain how VCs reduce uncertainty and create value through expertise and strategic guidance. Overall, the evidence suggests that VC-backed internationalisation depends not only on financial capital but on the knowledge and network position that allow VCs to act as knowledge brokers, shaping opportunity recognition and learning across the investment cycle.

3.2 Stages of investment in the INV

Once the final sample was defined, an in-depth review of the 58 references comprising the co-citation network was performed, detecting differences in the role played by the VC according to the investment stage of the INV: pre-investment, post-investment and exit. The pre-investment phase takes place before the VC investment becomes effective and represents the first channel through which analytical knowledge begins to flow between VCs and INVs. Beyond its transactional nature, this stage, which includes origination, screening, evaluation and deal structuring, involves continuous exchanges of information, advice and expectations. Activities such as identifying potential VCs, leveraging referrals, engaging in initial contacts, presenting business proposals, and negotiating contracts enable entrepreneurs to access external expertise and market insights. At the same time, VCs acquire critical knowledge about the venture's technological, managerial and international potential through due diligence and evaluation processes. Thus, the pre-investment phase functions as an early learning interface, where mutual knowledge acquisition and trust formation set the foundations for subsequent collaboration and post-investment value creation.

The goal of the VCs is to choose a new venture that has the potential for relevant long-term gains (De Clercq et al., 2006). In turn, new ventures need to understand how to fulfil VCs' needs when making investment decisions. First, they need to offer a business opportunity with huge market potential, thus scalable (Shane, 2003). Second, the new venture's founding and management team must share the VC's growth and value maximisation mentality (De Clercq et al., 2006). 27 references out of the 58 that form the final sample predominantly study the pre-investment phase.

The post-investment phase facilitates relational knowledge since it takes place after the VC investment in the new venture is effective. Here, VCs are focused on two activities: monitoring and providing value added to their investees (Sapienza and Gupta, 1994). This phase is covered by 21 references out of the 58.

The last phase is the exit, where strategic and market knowledge is consolidated. At this stage, VCs focus on performing an exit strategy to convert their equity position in a new venture into traded stock or cash (De Clercq et al., 2006). Generally, there are four exits:

- 1 the new venture goes public (IPO) and the VC sells its share in the stock market
- 2 the new venture is sold entirely
- 3 the new venture buys back the VC's stock
- 4 the new venture is liquidated if the performance is poor (De Clercq et al., 2006).

Ten references out of the 58 predominantly focus on the exit phase.

Across the three phases, the co-citation network reflects two broad thematic strands running through the field: social capital and the interaction between entrepreneurs and VC firms, and interconnectivity between VC firms reflected in sequential and syndicated investment decisions.

More broadly, the 58 references in the co-citation network were each assigned to one of the three investment stages (pre-investment phase, post-investment phase, or exit) based on their predominant thematic focus. Table 2 presents network metrics by investment phase across this full set of 58 references.

Table 2 Network metrics by investment phase

<i>Phase</i>	<i>Average degree</i>	<i>Degree centralisation</i>	<i>Density</i>	<i>Ego betweenness</i>
Pre	32.31	41.81	0.79	18.13
Post	31.68	40.05	0.82	15.03
Exit	34.57	45.80	0.77	22.95

Source: Own elaboration

The post-investment phase reveals the highest network density (0.82), meaning that actors involved at this stage tend to be more closely tied, likely reflecting the intensified monitoring and coordination that characterise this stage (Bernstein et al., 2016). In contrast, the exit phase shows the highest degree centralisation (45.80) and the highest ego betweenness (22.95), a measure capturing the extent to which a reference bridges structural holes among its otherwise unconnected direct co-citation ties (Everett and Borgatti, 2005). This ego betweenness result indicates that exit-stage references occupy the most strategic bridging positions within the network, mediating information across otherwise unconnected parts of the literature. The pre-investment phase occupies an intermediate position across all three metrics, reflecting a broader, more exploratory pattern of information exchange consistent with the origination, screening and evaluation activities that characterise this stage (De Clercq et al., 2006).

This analysis highlights the relevance of coordination and control once the investment relationship has started, alongside the growing structural centrality of exit-related knowledge within the field. These results support the idea that VC networks evolve with the investment lifecycle, from exploration to control and, increasingly, toward a strategically central role of exit-stage knowledge (Cumming et al., 2023).

This compositional pattern is partly explained by the specific references anchoring each phase. Within the exit phase, the network's high centralisation and ego betweenness are largely driven by broadly cited works such as Kaplan and Schoar (2005), a widely referenced study of fund performance whose connections extend across finance research generally instead of remaining confined to exit-specific literature, consistent with high connectivity paired with comparatively lower internal density. Within the pre-investment phase, references spanning distinct theoretical traditions contribute to its intermediate bridging position: Sørensen (2007) on VC-startup matching, and Kogut et al. (2007) on syndication network structure. Within the post-investment phase, foundational network-theory works such as Nahapiet and Ghoshal (1998) and Ahuja (2000) tend to reinforce ties within already-dense clusters instead of bridging distant parts of the network, consistent with post-investment's comparatively higher density.

3.3 Core-periphery structure of the co-citation network

The researchers applied the Markov clustering algorithm to identify whether the co-citation network could be partitioned into distinct theoretical or thematic subgroups. Across a range of inflation parameters ($\gamma = 2, 3, 4, 6$, and 13), Markov clustering returned a single cluster encompassing all 58 references, instead of separating them into discrete subgroups. This result indicated that the co-citation network constitutes a single, intellectually integrated body of literature, not a set of separable theoretical orientations, consistent with the network's high overall density (0.734), its single connected component, and its diameter of only two links (see Section 3.1).

Given the absence of discrete subgroups, a categorical core/periphery analysis was applied instead. This identified a core of 16 references and a periphery of 42, achieving a moderate model fit ($\rho = 0.663$). This classification is conceptually distinct from the six most-cited articles discussed in Section 3.1: several highly cited references such as Cumming and Dai, 2010; Bernstein et al., 2016 fall within the periphery, confirming that raw connectivity and structural core membership are related but non-equivalent properties.

The core, ‘syndication, reputation, and network embeddedness in VC’, combines VC-specific evidence with foundational network theory. Gorman and Sahlman (1989), Nahata (2008), and Hochberg et al. (2007) show that active monitoring, reputation and network position drive successful exits, while Lerner (1994), Sorenson and Stuart (2001, 2008), Brander et al. (2002), and Tian (2012) establish syndication as a mechanism for pooling evaluation skills, diffusing information, and enhancing portfolio-firm innovation. Dai and Nahata (2016) and Meuleman et al. (2017) extend this to cross-border settings, where cultural distance constrains syndicate formation unless mitigated by local experience and shared institutions. This applied strand is anchored in general network theory: Granovetter (1985) on the embeddedness of economic action, Gulati (1995) and Gulati and Gargiulo (1999) on alliance formation and network embeddedness, Uzzi (1997) on the trust-novelty trade-off of embeddedness, Powell et al. (1996) on interorganisational learning, and Burt (2004) on brokerage across structural holes.

Table 3 Conceptual differences between theoretical bases in the VC social capital literature

<i>Dimension</i>	<i>Core: syndication, reputation and network embeddedness in VC</i>	<i>Periphery: value-adding, governance and information in VC</i>
Theoretical base	Financial economics and network theory	Organisational gov. and signalling theory
View of VC	Network-positioned strategic actor	Value-adding and certifying agent
Network function	Syndication, information diffusion, brokerage across structural holes	Reputation-based screening, professionalisation, governance
Knowledge nature	Derived from network position and relational embeddedness	Derived from active monitoring, advising and certification
Level of analysis	Inter-organisational/relational	Firm-level/governance-oriented

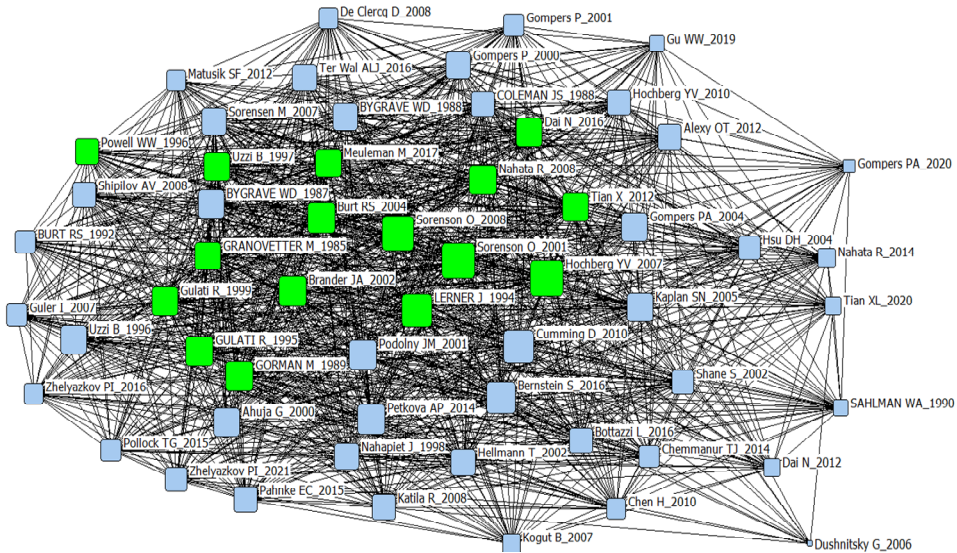
Source: Own elaboration

The periphery, ‘value-adding, governance, and information in VC’, concentrates on how VCs create value once syndicate structure and network position are established. Hellman and Puri (2002), Sahlman (1990), and Gompers et al. (2020) document that VCs professionalise portfolio firms, govern through staged financing and board control, and apply structured decision-making under uncertainty. Alexy et al. (2012), Bottazzi et al. (2016), and Coleman (1988) show that VC’s own social capital and trust shape funding decisions, while Hsu (2004), Podolny (2001), and Pahnke et al. (2015) demonstrate that entrepreneurs value reputation and differentiate between investor types when seeking more than capital. Cross-border and knowledge-specific contributions from De Clercq and Dimov (2008), Dai et al. (2012), Matusik and Fitza (2012), and Nahata et al. (2014), reinforce that combining internal VC experience with external, locally embedded knowledge improves outcomes in international settings.

Core membership is unevenly distributed across investment phases: half of all exit-phase references (5 of 10) belong to the core, compared to roughly one-quarter of

pre-investment (6 of 27) and post-investment (5 of 21) references, consistent with the exit phase's higher centralisation and ego betweenness reported in Table 2. Table 3 compares the conceptual bases of the core and peripheral segments, and Figures 1 and 2 visualise the network's core/periphery structure and its composition by investment phase, respectively.

Figure 1 Co-citation network (see online version for colours)



Notes: Core references ($n = 16$, shown in light green) are those consistently and directly connected to all other core members; peripheral references ($n = 42$, shown in light blue) connect primarily through the core. The partition achieved a moderate fit ($\rho = 0.663$; Borgatti and Everett, 1999) indicating a densely integrated rather than sharply divided network.

Source: Core and periphery authors

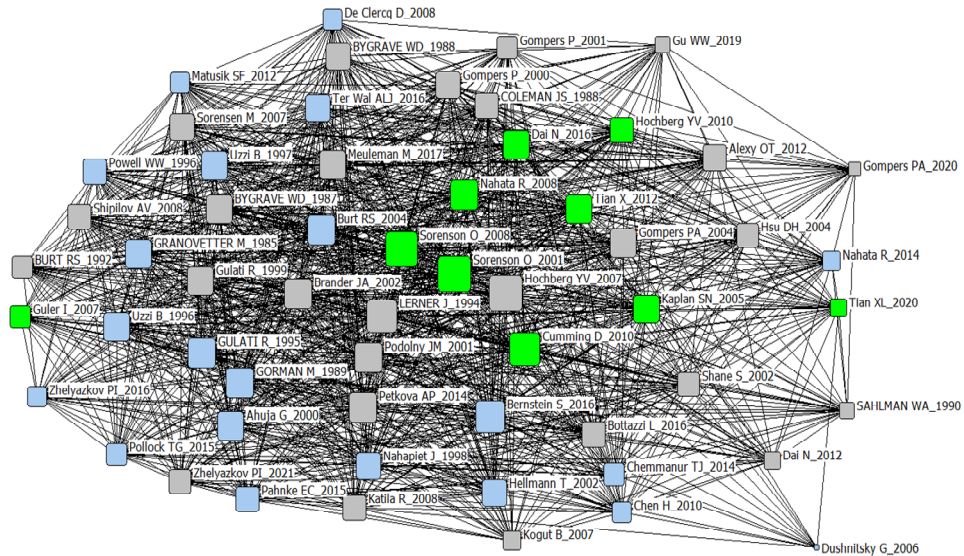
3.4 Brokerage roles between core and periphery

One factor that can help explain how theoretically distinct contributions become mutually connected is the presence of authors that are co-cited across otherwise separate positions in the network structure (Obstfeld et al., 2014). Such authors are denominated gatekeepers of knowledge in the network perspective (Giuliani, 2011). The Gould and Fernandez (1989) framework distinguishes five brokerage roles. Given the network's symmetric ties and its two-group (core/periphery) structure, only three of these roles are informative here: coordinator, consultant, and a merged gatekeeper/representative role (the fifth role, liaison, does not apply with only two groups).

Applying the Gould and Fernandez (1989) brokerage framework to the core/periphery partition reveals a clear division of structural labour. All 16 core references score zero on the coordinator role, functioning almost exclusively as consultants who bridge pairs of peripheral references that are not directly tied to one another. Conversely, all 42 peripheral references score zero on the consultant role, acting instead as coordinators that bridge other peripheral references. This division between the two positions suggests that

raw connectivity and brokerage function tend to operate as structurally distinct properties within this network.

Figure 2 Co-citation network investment phases (see online version for colours)



Notes: References are coloured by their predominant investment phase: pre-investment ($n = 27$, grey), post-investment ($n = 21$, light blue), and exit ($n = 10$, light green). Phase classification is based on each reference's substantive focus rather than network position.

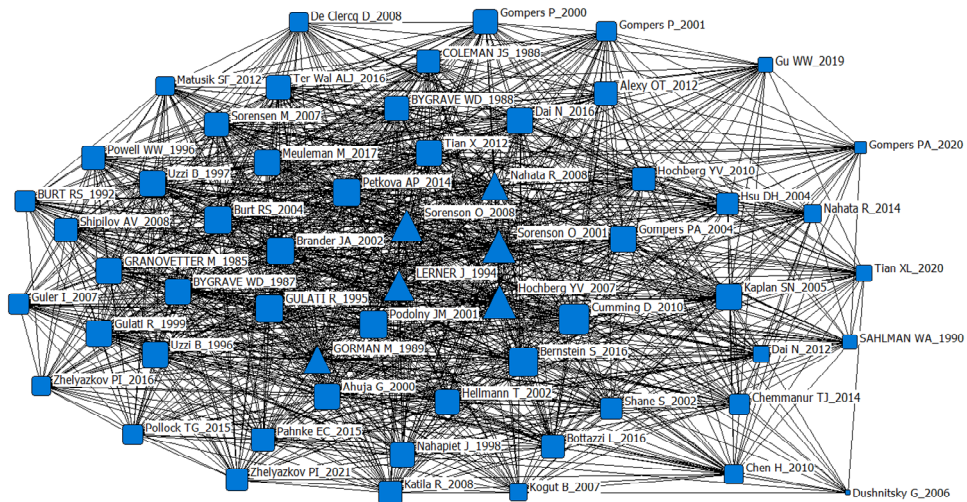
Among the core, six references record the highest absolute consultant brokerage scores: Hochberg et al. (2007), on network position and investment performance; Sorenson and Stuart (2001, 2008), on the geographic diffusion of syndication networks and relational foundations of syndicate formation; Lerner (1994), on syndication as a mechanism for shared due diligence; and Gorman and Sahlman (1989), and Nahata (2008), on post-investment monitoring and reputation-driven exit performance. This set only partially overlaps with the six most-cited references identified by degree centrality in Section 3.1 (four in common): Gorman and Sahlman (1989) and Nahata (2008) emerge instead of Bernstein et al. (2016) and Cumming and Dai (2010), indicating that overall connectivity and structural bridging capacity, while related, identify partially distinct sets of influential references.

These patterns are conceptual, not empirical: they indicate that certain references have become a shared cognitive ground bridging peripheral position, not that any author actively transferred knowledge between them. Their position nonetheless shows which contributions function as integrative reference points, or boundary objects by Obstfeld et al. (2014). This allows conceptual cross-fertilisation across an otherwise undifferentiated network.

Applying the Gould and Fernandez (1989) framework, the co-citation network was partitioned into a core and periphery group using a categorical core/periphery analysis (fit = 0.663), rather than Markov clustering, since the latter did not identify discrete subgroups within the 2022-2025 network (see Section 3.3). Figure 3 presents the results.

The six core references with the highest consultant brokerage scores are marked with a triangle.

Figure 3 Co-citation network (see online version for colours)



Notes: Triangles mark the six core references with the highest consultant brokerage scores (Gould and Fernandez, 1989): Hochberg et al. (2007), Sorenson and Stuart (2001, 2008), Lerner (1994), Gorman and Sahlman (1989), and Nahata (2008).

Source: Brokerage roles among core authors

4 Emerging research lines

Once the co-citation network was analysed, the researchers identified the structure of relations between citing papers through bibliographic coupling, a complementary network in which the 48 source articles are linked according to the number of references they share, not according to which studies are jointly cited. The Markov clustering algorithm was applied to this bibliographical coupling network to extract the subgroups into which it can be divided, given that it operates by partitioning a graph into non-overlapping clusters and determines the appropriate number of clusters based on the graph's structural properties (Van Dongen, 2008). In this case, four subgroups were identified, each associated with a distinct thematic factor, as detailed in Table 4.

4.1 Structure of the bibliographical coupling

Table 4 summarises the main factors emerging from the bibliographical coupling analysis. Among them, syndication stands out as the most central and connected topic, with the highest values in centrality (514), brokerage (4,950) and betweenness (421.16), confirming its pivotal role in linking different research strands within the VC literature. Geographic and cultural proximity follows as a second major cluster, indicating growing interest in how spatial and contextual factors influence cross-border investment and collaboration. Trust formation ranks third across all three metrics, with a level of

connectivity broadly proportional to its smaller number of citing documents ($n = 10$), suggesting a moderately cohesive but more specialised body of research. Legitimacy/reputation/signalling, the smallest cluster ($n = 6$), shows the lowest values throughout, consistent with its role as a more peripheral and complementary theme. Overall, these results reveal a research structure dominated by syndication-related studies, with increasing attention to relational and cognitive dimensions that support VC-backed new venture internationalisation.

Notably, syndication leads the network on all three metrics simultaneously, not only in centrality but also in brokerage and betweenness, which capture qualitatively different aspects of structural position. Because brokerage specifically counts pairs of a paper's neighbours that are not directly connected to one another, a high brokerage score indicates that syndication-focused papers connect otherwise disconnected parts of the citing literature, rather than merely accumulating redundant ties. This consistent dominance across measures that respond differently to network density reinforces the interpretation of syndication as the structurally central and integrative theme of the field, not merely an artefact of any single metric.

Table 4 Factors in bibliographical coupling analysis

<i>Factors</i>	<i>No. citing documents</i>	<i>Centrality</i>	<i>Brokerage</i>	<i>Betweenness</i>
1 Syndication	15	514	4950	421.16
2 Geographic/cultural proximity	17	448	3544	366.12
3 Trust formation	10	246	1818	218.37
4 Legitimacy/reputation/signalling	6	134	734	88.99

Source: Own elaboration

4.2 Research themes

This section identifies the main research themes emerging from bibliographical coupling analysis, highlighting how recent studies on VC and INVs converge around a limited set of interrelated factors. These factors reflect both the financial logic of VC activity and its relational and cognitive dimensions, illustrating how knowledge, trust, and network embeddedness shape investment decisions and outcomes. Four dominant themes capture the multidimensional nature of VC-backed new venture internationalisation, linking financial mechanisms with social capital and learning dynamics across borders: syndication, geographic and cultural proximity, trust formation, and legitimacy/reputation/signalling.

4.2.1 Syndication

Syndication is the largest of the four factors, comprising 15 articles. Most of them focus on syndication in both local and cross-border investments. Syndication means that two or more investors participate in a unique financing round (Smolarski and Kut, 2011; Brander et al., 2002).

In cross-border contexts, syndication can help investors overcome nationality-based homophilic preferences: Xia et al., (2023) show that an initial collaborative move by a foreign VC can reduce a partner's subsequent preference for same-nationality

co-investors, although this effect is asymmetric and depends on the cultural context. Relatedly, Colombo et al., (2024) find that new ventures are more likely to form ties with corporate venture capitalists from countries perceived as more trustworthy, an effect that weakens when the venture has an indirect network connection to the investor or backing from a high-status independent VC.

Guenther et al. (2022) show that referrals between VCs shape the pre-investment evaluation process itself: counterintuitively, stronger prior co-investment ties between a referring and receiving VC are associated with a longer due diligence process, as relational embeddedness increases both the amount of information available and the social obligation to evaluate the opportunity thoroughly.

Hu et al. (2022, 2023) highlight the importance of a firm's position within the syndication network, showing an inverted U-shaped relationship between a VC's lead orientation and both its selection of familiar versus unfamiliar syndicate partners and its propensity to enter new investment markets; centrality and network constraint moderate this relationship in different directions. Aside from network position, the selection of syndicate members affects the perceived trustworthiness and reputation of the investees (Colombo et al., 2024).

Beyond partner selection, the structure of the relationship itself shapes what knowledge actually reaches the venture: Balachandran and Eklund (2024) show that a more centralised corporate partner grants access to broader but more slowly mobilised knowledge, illustrating that syndication and corporate VC ties involve a trade-off between breadth and speed of knowledge access rather than unconditional benefit. Similarly, Wang et al. (2022) find that greater prior collaborative experience among syndicate members increases the likelihood of an acquisition exit, whereas lower familiarity is associated with a higher likelihood of an IPO but also greater risk of failure, indicating that cohesive and more open syndicate configurations serve different outcomes, not uniformly superior ones. This contingent view is reinforced by Zhong et al. (2025), who show that the performance effects of cooperation and competition among syndicate members depend on their prior relational history rather than operating independently.

Combined, these studies indicate that VC networks shape investment and venture outcomes through several distinct mechanisms: providing private information during screening, shaping the selection and governance of syndicate partners, facilitating or constraining access to distributed knowledge, and balancing coordination against novelty. These effects are contingent on context and investment stage, not uniformly positive. Beyond syndication, the proximities and differences between VC investors have not been deeply explored in the literature; Bédu et al. (2024) distinguish five types: geographic/cultural, cognitive, institutional, social and organisational. The next factor to be addressed is geographical and cultural proximity.

4.2.2 Geographic and cultural proximity

Geographic and cultural proximity is the second-largest factor, comprising 17 articles. Bédu et al. (2024) distinguish five types of proximity (geographic, institutional, organisational, social and cognitive), showing that each shapes venture outcomes differently, and that excessive proximity can be as detrimental as excessive distance.

This factor plays a nuanced role in VC investment. Huang et al. (2023) and Guzella et al. (2024) show that geographic and institutional distance both hinder cross-border

investment, but network centrality moderates each differently, mitigating geographic distance while intensifying the negative effect of institutional distance, as better-connected VCs more easily detect institutional risk.

Counterintuitively, Chen et al. (2022) find that greater cultural distance is instead associated with a higher probability of successful exit when foreign VCs hire local managers, who provide institutional knowledge and legitimacy. Tan et al. (2024) further show that structural, relational, and cognitive social capital affect cross-border investment differently rather than uniformly, while Feng et al. (2022) provide direct evidence that VC funds backed by foreign limited partners are more likely to support ventures that eventually list overseas. Complementing this evidence, Li and Hu (2025) apply spatial co-agglomeration measures to quantify the geographic clustering of venture capitalists and new firms in Beijing, offering a methodological approach to directly measure the physical proximity dynamics that shape cross-border and domestic VC investment decisions.

4.2.3 Trust formation

Trust formation is the third factor, understood as the confidence that must exist between the parties for a successful outcome. Li and Yang (2022) argue that entrepreneurs' behaviour, prior experience, and relational embeddedness are key antecedents of trust, distinguishing between cognitive trust, grounded in perceived competence, and affective trust, based on goodwill and reliability.

Related mechanisms operate alongside trust to shape knowledge access. Shuwaikh and Dubocage (2022) show that corporate investors facilitate innovation in portfolio companies primarily when absorptive capacity, sectoral similarity, and geographic proximity are present, not through capital alone. Santos and Yang (2025) similarly find that foreign VC investment functions as a channel of cross-border knowledge flow, though this relationship is non-linear and moderated by intellectual property regimes and technological distance.

4.2.4 Legitimacy/reputation/signalling

Legitimacy, reputation, and signalling constitute the fourth factor. Although closely related, these are conceptually distinct constructs: legitimacy concerns the perceived appropriateness of an organisation's actions within institutional frameworks (Suchman, 1995); reputation concerns stakeholders' comparative evaluations of an organisation's quality (Rindova et al., 2005); and signalling describes how parties resolve information asymmetry through observable, costly actions (Connelly et al., 2011). These constructs are analytically grouped here due to the limited number of references addressing each individually, though treated as theoretically distinct throughout.

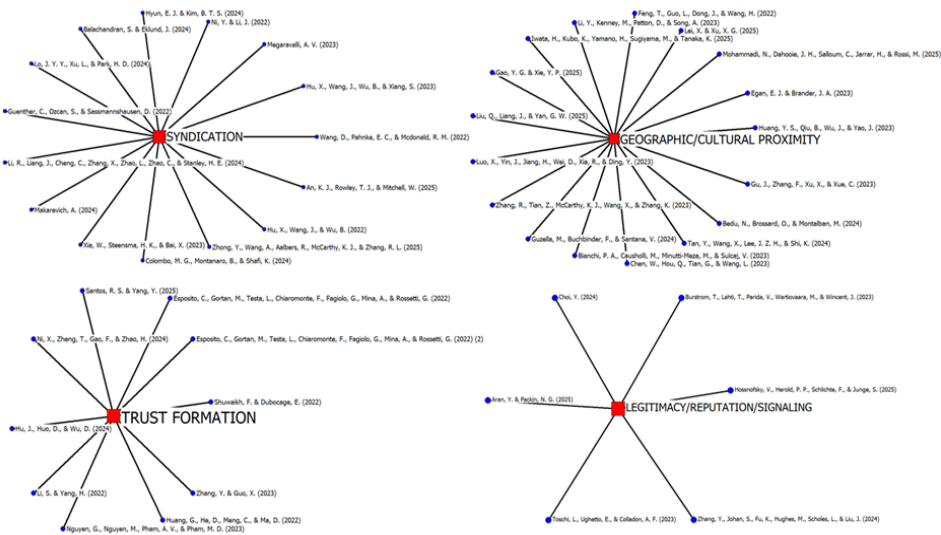
In the VC industry, greater investment experience tends to be associated with greater reputation, and the most experienced investors tend to favour early-stage ventures or specialised industries (Choi, 2024). Prominence also functions as a certification mechanism: Hossnofsky et al. (2025) show that a lead VC's prominence amplifies the funding effect of a venture's own signals, acting as third-party endorsement, while Burström et al. (2023) find that large, central VCs orchestrate capital and reputation across global ecosystems. This certification effect is not unconditionally positive, however; Aran and Packin (2025) show that reliance on a reputable co-investor can

substitute for independent verification, creating risks of herding among syndicate members.

Fig.4 shows different cohesion measures based on the similarities of the articles. The mean degree is 27.96, and the H-index sits at 26; this variable counts the number of publications for which an author has been cited by other authors at least that same number of times. Degree centralisation is 0.29, meaning a moderate concentration of links across nodes in the network. Network density is 0.60, representing the ratio of actual to potential links in the network.

Lastly, efficiency was also measured to assess how efficiently the members of the network exchange information. This value can be between 0 and 1. Since the value obtained is 0.67, it can be argued that the network is relatively efficient, with most connections providing non-redundant access to information.

Figure 4 Bibliographical coupling factors: 2022–2025 (see online version for colours)



Notes: Cohesion of the bibliographical coupling networks 2022–2025, degree centralisation: 0.29; H-index: 26; efficiency: 0.67; density: 0.60; average degree: 27.96.

Overall, the thematic structure shows that syndication remains the most central topic, bridging financial cooperation and knowledge exchange among VCs and their investees. Geographic and cultural proximity reinforce this by facilitating information flows and reducing cross-border frictions. Trust formation and legitimacy, reputation and signalling act as relational mechanisms that strengthen credibility and cooperation between investors and entrepreneurs. Although the network shows moderate density (0.60), its relatively high efficiency (0.67) points to effective information circulation across research streams, suggesting a field that increasingly integrates financial, relational, and cognitive perspectives on VC.

5 Conclusions

The purpose of this paper is to identify the foundations of VC's social capital research by analysing the interactions between the existing research lines, and to find areas for future research based on the identified theoretical foundations. Two complementary bibliometric techniques were applied, allowing the researchers to identify the factors that structure this research area, detect the direction in which this research field is evolving, and identify the references that occupy the most structurally central and integrative positions within it.

This review shows that there is not a single theoretical framework in this field, but rather an increasingly integrated body of literature that should be considered when undertaking new research. The co-citation analysis shows that the field's core references function primarily as consultants (Gould and Fernandez, 1989), bridging pairs of otherwise unconnected peripheral references, instead of dividing the literature into discrete theoretical camps. This structural integration is reflected thematically in the bibliographical coupling analysis, which identifies four interrelated factors (syndication, geographic and cultural proximity, trust formation and legitimacy/reputation/signalling) rather than isolated research streams. Syndication and geographic/cultural proximity primarily clarify the financial, structural, and spatial logic of VC behaviour, while trust formation and legitimacy/reputation/signalling explain the relational and cognitive mechanisms through which VCs enhance INV learning and global expansion. The co-existence of these factors within a single, densely connected network, not as separable theoretical fields, offers a more integrated account of how VCs support INV development and internationalisation than a framework built around discrete, competing perspectives.

This co-citation analysis reveals the theoretical foundations of the field, identifying the central works that structure research on VC, knowledge, and international entrepreneurship within a single, densely integrated network. Rather than bridging separate theoretical communities, the field's core references function as consultants, connecting pairs of otherwise unconnected peripheral references and mapping the conceptual nodes through which financial, social capital, and network-embedded perspectives remain interrelated within a common intellectual space.

A further contribution of this study is the identification of how the type of knowledge exchanged between VCs and INVs varies across the various stages of the investment cycle. The review shows that the pre-investment phase operates as an early learning interface in which analytical knowledge, related to screening, evaluation and market potential, is shared through initial interactions, referrals, and due diligence. The post-investment phase, in contrast, is characterised by relational and experiential knowledge, derived from monitoring activities, strategic guidance and repeated interactions that facilitate organisational learning and international scaling. Finally, during the exit phase, VCs rely on accumulated strategic and market knowledge to optimise valuation, negotiation and timing decisions, shaping the ultimate performance and legitimacy of the INV. By connecting investment stages to specific knowledge dynamics, this study demonstrates that VC value-adding is not homogeneous but rather a sequence of differentiated knowledge contributions that collectively support international development of new ventures.

Building on the identification of the field's structural and thematic integration, the application of the bibliographical coupling technique enabled the researchers to identify four areas for future research. First, given that syndication investment structures vary

(Tan et al., 2024; Huang et al., 2023; Li et al., 2024), one future research line could focus on studying which combination of ties and brokerage roles within a VC network led to greater innovation and international performance. Second, trust formation in syndication investments is important, but there is little empirical evidence on how trust is built through the different investment rounds and how it improves new venture performance. The researchers therefore suggest studying the relationship between trust formation and recurrency in syndication investments.

Third, the growing relevance of geographic and cultural proximity suggests examining how spatial and cultural alignment between VCs and new ventures influences information flows and cross-border learning, particularly in institutionally distant markets.

Fourth, legitimacy, reputation, and signalling emerged as complementary yet understudied themes. Future work could explore how reputational signalling cues from both VCs and entrepreneurs shape partner selection, foreign market entry, and early-stage performance.

Finally, future research could develop an integrated framework that jointly examines VC-new venture interactions and VC-VC network dynamics. While these two domains have traditionally been analysed separately, the findings suggest that understanding how they intersect and evolve across the investment cycle may offer new insights into how VCs shape new venture knowledge development. Such a transversal perspective could better explain how knowledge, coordination, and relational mechanisms operate simultaneously at the dyadic and network levels.

A further limitation concerns the scope of the search strategy: the query was restricted to the terms ‘VC’ and ‘social capital’, which may exclude literature using closely related but distinct terminology, such as knowledge, trust, legitimacy, and signalling. While this choice was made deliberately to preserve the methodological consistency with the original sample when extending the database through 2025, future research should replicate and extend this analysis using a broadened search strategy incorporating these related constructs, potentially cross-validated against complementary databases such as Scopus, to assess the robustness of the identified network structure and thematic patterns to this scoping decision.

This study also contributes to the current bibliographical literature by showing that VC internationalisation knowledge influences new venture performance; however, further longitudinal studies examining how specific mechanisms, such as trust, reputation and cultural proximity, among others, act throughout the investment cycle will be needed.

To conclude, several implications for VC managers and new ventures’ founding teams can be proposed. First, VC managers should prioritise strategic alliances with local partners to reduce the liability of foreignness, as they can have access to valuable knowledge while also improving financial outcomes by reducing uncertainty, lowering due diligence costs, and increasing the likelihood of achieving higher valuations at exit.

Secondly, VCs must evaluate their position within their syndication networks since centrality and tie diversity enhance co-investment opportunities, deal flows and successful exits. Third, valuing intangibles in the new venture selection process, like relational capacity, reputation, and pre-existing networks, could allow VC managers to make better decisions than if they only consider the financial pitch.

On the new venture side, founding teams and managers should first search for the best VC fit, not only for capital, but for its network, since VCs can facilitate entry into new markets, attracting talent and enabling new investment rounds. This is particularly

relevant for technology-based ventures, where a strong entrepreneurial and technopreneurial mindset has been shown to shape how founding teams pursue and leverage external resources (Jose and Kushwaha, 2024).

Second, founding teams must cultivate relationships before financing is needed; participation in startup ecosystems, such as international incubators, forums, and networking events, is crucial for creating links with potential VC investors. Lastly, new ventures need to be strategic in choosing co-investors, since cultural and geographical diversity can enhance international expansion.

Declarations

All authors declare that they have no conflicts of interest.

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