

Mapping the Intellectual Structure of Research on Venture Capital, Startups, and Gender: A Bibliometric Analysis

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Abstract

Access to venture capital (VC) plays a pivotal role in startup growth; however, women entrepreneurs continue to encounter substantial barriers when seeking this form of financing. Although research on VC, startups, and gender has expanded considerably in recent years, the resulting body of knowledge remains fragmented. Accordingly, this study examines the intellectual structure and evolution of this research domain through a bibliometric analysis of 152 publications indexed in Scopus and Web of Science. Using Bibliometrix/Biblioshiny, the analysis incorporated scientific performance, citation, co-authorship, keyword co-occurrence, and thematic structure techniques. The findings reveal a rapidly consolidating field organized around three major research streams: gender disparities in access to VC, investor bias and evaluation processes, and the role of strategic resources and entrepreneurial ecosystems. The analysis also highlights a transition from studies emphasizing financing inequalities toward perspectives centered on legitimacy, signaling, diversity, and financial inclusion. Finally, the study advances an integrative framework and identifies promising directions for future research.

Keywords: Venture capital; startups; gender; women entrepreneurs; entrepreneurial finance; gender bias.

Introduction

Venture capital (VC) represents a specialized source of financing for startups operating under conditions of high uncertainty, delivering not only financial resources but also legitimacy, strategic guidance, and access to critical assets that foster firm growth (Fisch et al., 2022; Greene et al., 2001; Jiang et al., 2024). Beyond financial support, VC investors contribute managerial expertise, professional networks, mentorship, and governance mechanisms designed to help ventures achieve key developmental milestones (Brush et al., 2018; Liu et al., 2026; Nelson et al., 2009). Nevertheless, access to VC remains highly selective, with investments concentrated in a relatively small number of firms that demonstrate strong growth potential and the capacity to generate successful exit events, including acquisitions and initial public offerings (Brush & Elam, 2023; Du et al., 2025; Nelson et al., 2009).

Despite its strategic importance for startup development and scaling, access to VC continues to exhibit substantial inequalities. Among these, gender stands out as one of the most persistent sources of disparity within entrepreneurial ecosystems. Evidence indicates that startups founded exclusively by women secure a markedly smaller share of total VC investment, a gap that performance differences or venture quality alone cannot fully explain (Balachandra, 2020; Brush et al., 2018). Scholars have linked these disparities to structural barriers, unequal access to strategic networks, and cognitive biases embedded in investment evaluation processes, where perceptions of the ideal entrepreneur frequently reflect traditionally masculine stereotypes (Kanze et al., 2018; Malmström et al., 2017). Consequently, gender shapes not only entrepreneurs' access to financial resources but also the perceived legitimacy of their ventures and their prospects for growth.

In response to these disparities, research on gender and VC has expanded considerably over the past decade, addressing topics such as investment bias, entrepreneurial legitimacy, financing networks, and the performance of women-led startups (Aernoudt & De San José, 2020; Brush et al., 2018; Malmström et al., 2017). Even so, this growing body of knowledge remains dispersed across multiple theoretical perspectives, analytical levels, and geographical contexts, hindering a comprehensive understanding of the field's intellectual evolution and structure. Although previous reviews have examined female entrepreneurship or entrepreneurial finance, no bibliometric study has systematically mapped the intellectual foundations, knowledge networks, dominant thematic streams, and emerging trends at the intersection of VC, startups, and gender. This gap restricts the ability to assess the scientific maturity of the field, identify unresolved research questions, and guide future scholarly agendas.

Existing reviews have examined gender disparities in entrepreneurial finance through a variety of methodological approaches, including meta-analyses (Geiger, 2020), systematic literature reviews (Koziol et al., 2025; Villaseca et al., 2020), narrative reviews (Ogujiuba et al., 2025), and bibliometric studies (Capizzi et al., 2022; Joshipura et al., 2025). Collectively, these studies have advanced understanding of the barriers confronting women entrepreneurs, gender differences in access to capital, and the evolution of alternative financing mechanisms. However, they have primarily emphasized specific dimensions of entrepreneurial finance, particular institutional settings, or related research domains, rather than providing an integrated examination of the

convergence among VC, startups, and gender. As a result, the literature still lacks a comprehensive assessment of the intellectual structure, thematic evolution, and knowledge networks that define this research domain.

To address this gap, the present study analyzes the intellectual structure and evolution of scientific knowledge at the intersection of VC, startups, and gender through a bibliometric approach. Specifically, it seeks to identify the principal research trends, the most influential contributors, and the thematic streams that have shaped the development of this field. Accordingly, the study addresses the following research questions: (1) How has scientific production on venture capital, startups, and gender evolved? (2) Which intellectual and thematic structures characterize this domain of knowledge? The study's primary contribution lies in providing an integrative perspective that clarifies the field's theoretical foundations, collaboration patterns, and promising avenues for future research.

To achieve these objectives, the analysis examines descriptive indicators of scientific performance, including trends in scholarly output, the most influential authors, the leading journals, and the most highly cited publications. In addition, bibliometric network techniques explore relationships among authors, documents, references, and keywords, thereby uncovering intellectual structures, collaboration patterns, and thematic clusters that illuminate the organization and evolution of this research field.

The remainder of the article follows this structure. The next section synthesizes the literature on VC, startups, and gender. The subsequent section describes the bibliometric methodology in detail. The following section presents the findings obtained from the different analyses conducted in accordance with the proposed research questions. Next, the discussion examines the principal theoretical implications of the results and advances an integrative framework for understanding the relationship among VC, startups, and gender. The article concludes by outlining the study's main conclusions, acknowledging its limitations, and proposing directions for future research.

Literature Reviews on Venture Capital, Startups, and Gender: Current Evidence and Research Gaps

Existing reviews on gender and entrepreneurial finance have substantially advanced understanding of the inequalities women encounter when seeking access to capital, although they have approached the topic from diverse theoretical and methodological perspectives. Across these studies, scholars consistently argue that financing disparities cannot solely reflect firm characteristics; they also arise from gender bias, network structures, legitimacy mechanisms, and the distinct behaviors of investors and entrepreneurs (Geiger, 2020; Koziol et al., 2025; Villaseca et al., 2020). In particular, the literature has documented a persistent advantage for men in traditional financing sources, such as venture capital (VC) and angel investment, whereas women appear to achieve more favorable outcomes through alternative financing mechanisms, including equity crowdfunding. Moreover, several studies emphasize that social capital, education, communication style, quality signals, and institutional context influence financing opportunities differently across genders. Table 1 compares the most relevant previous literature reviews and identifies the research gaps that motivate the present study.

Table 1. Evidence from Literature Reviews on Venture Capital, Startups, and Gender

Author	Review Type	Primary Focus	Key Findings	Research Gap
Geiger (2020)	Meta-analysis	Gender disparities in entrepreneurial finance	Identified a double gender gap in both the amount of funding secured and the likelihood of obtaining financing.	Inconsistent evidence regarding the relative influence of gender versus startup characteristics.
Villaseca et al. (2020)	Systematic literature review	Women entrepreneurs and financing barriers	The COVID-19 pandemic intensified pre-existing gender-related financing barriers.	Limited understanding of how crises affect financing inequalities.
Capizzi et al. (2022)	Bibliometric review	<i>Venture Capital</i> journal (1999–2021)	Identified female entrepreneurship as an emerging research area.	Did not specifically examine the intersection of gender and venture capital.
Kozioł et al. (2025)	Systematic literature review	Gender differences in equity financing	Men exhibit advantages in venture capital, whereas women achieve stronger outcomes in crowdfunding.	Contradictory findings regarding the effects of signaling mechanisms and educational background.
Ogujiuba et al. (2025)	Narrative review	Gender-focused entrepreneurial finance in South Africa	Women continue to face exclusion from formal financing channels.	Evidence remains concentrated in specific emerging-economy contexts.
Joshiyura et al. (2025)	Bibliometric and content review	Equity crowdfunding	Signaling mechanisms enhance fundraising success.	It remains unclear whether crowdfunding effectively reduces gender-related financing barriers.

Source: Authors' own elaboration.

However, these reviews also reveal important inconsistencies. While some studies attribute the observed differences primarily to firm- or industry-level characteristics, others emphasize the influence of cognitive biases and discriminatory practices embedded in venture evaluation processes. Likewise, evidence regarding issues such as risk aversion, the impact of elite education, and women's advantages in crowdfunding platforms remains inconclusive. These discrepancies suggest that the relationship between gender and entrepreneurial finance constitutes a complex, multilevel phenomenon shaped simultaneously by entrepreneur-, investor-, firm-, and institutional-level factors.

From a broader perspective, recent reviews also highlight the transformation of the entrepreneurial finance ecosystem. The emergence of new actors—including accelerators, equity crowdfunding platforms, and digital technologies—has expanded access to capital while stimulating new research streams related to signaling, sustainability, and digital transformation (Capizzi et al., 2022; Joshipura et al., 2025). Moreover, studies conducted in emerging economies indicate that gender inequalities frequently intersect with other forms of exclusion, such as geographic location, age, and socioeconomic conditions, reinforcing the need for more contextualized and inclusive research approaches (Ogujiuba et al., 2025).

Despite these advances, the available evidence remains fragmented. Existing reviews have focused primarily on gender disparities, specific financing mechanisms, or particular institutional contexts, whereas bibliometric studies have examined broader entrepreneurship domains or specialized journals. Consequently, the literature still lacks a comprehensive bibliometric assessment that specifically investigates the convergence of venture capital, startups, and gender by mapping its intellectual structure, thematic evolution, collaboration networks, and principal research streams. This gap constrains a systematic understanding of the field's development and underscores the need for a bibliometric analysis capable of charting its scientific evolution while informing future research agendas.

Methodology

This study adopts a bibliometric approach following the methodological guidelines proposed by Donthu et al. (2021) and Mukherjee et al. (2022). Bibliometric analysis has emerged as a rigorous methodology for systematically examining the evolution of a research field by identifying influential publications, leading authors, intellectual structures, and emerging trends while reducing the interpretative bias commonly associated with traditional literature reviews (Bamel et al., 2020; Bosio et al., 2026; Cancino et al., 2018; Cumming et al., 2023).

The methodology unfolded in two stages. The first stage established the scope of the study by defining the search keywords, selecting the databases, determining the period of analysis, specifying the language criteria, and identifying the document types included. Subsequently, the study carried out the identification, screening, and evaluation of the retrieved records in accordance with procedures widely adopted in literature reviews (Denyer & Tranfield, 2009). The second stage focused on bibliometric network analysis to examine the intellectual, social, and conceptual structure of the research field. Following the recommendations of Donthu et al. (2021), the analysis incorporated scientific performance indicators together with citation, co-authorship, and keyword co-occurrence networks to identify the principal research streams, collaboration patterns, and thematic clusters.

The construction, analysis, and visualization of these networks relied on Biblioshiny, the web interface of the Bibliometrix package for R, widely recognized as one of the most robust and extensively adopted tools for bibliometric research (Aria & Cuccurullo, 2017). This platform integrates advanced scientific mapping and performance analysis techniques within a reproducible environment, thereby facilitating the processing of large bibliographic datasets and the generation of standardized bibliometric indicators.

Scope of the Analysis

This initial stage establishes the foundation for the network analysis and follows the principles of a traditional systematic literature review (Kitchenham, 2004). During this process, defining the scope of the analysis derives directly from the study's research questions and constitutes a critical step in preventing ambiguity throughout the review (Ali et al., 2017). To achieve this objective, the study adopted the CIMO framework (Context, Intervention, Mechanisms, and Outcomes) proposed by Denyer and Tranfield (2009). This framework provides a systematic structure for delineating the conceptual boundaries of the investigation while ensuring alignment between the study's objectives and the literature search strategy (Table 2).

Table 2. CIMO Framework Underpinning the Study

CIMO Component	Scope Definition	Application to the Study
Context	Entrepreneurial ecosystem	finance Research on startups seeking funding through venture capital (VC).
Intervention	Venture capital and gender dynamics	Studies examining gender differences in access to venture capital financing.
Mechanisms	Explanatory determinants and processes	Signaling, social capital, investor bias, legitimacy, networks, and institutional factors.
Outcomes	Advancement of knowledge in the field	Intellectual structure, thematic evolution, influential contributions, and future research directions.

Source: Authors' own elaboration.

Consistent with the research questions, the study specifically focuses on venture capital (VC), startups, and gender to capture the specialized literature at the intersection of entrepreneurial finance and investment strategy. Broader topics related to finance or gender research were intentionally excluded because their inclusion would have expanded the scope beyond the objectives of the study and yielded less relevant results.

Identification of the Studies

The literature search drew on Scopus and Web of Science (WoS), as both databases rank among the most rigorous and widely used sources for identifying high-quality scientific literature in the social sciences and management (Mongeon & Paul-Hus, 2016). These databases apply stringent indexing standards and curate high-quality scholarly publications, including peer-reviewed research, thereby strengthening the quality and reliability of the studies comprising the bibliometric corpus (Falagas et al., 2008). Moreover, Scopus and WoS provide complementary coverage because each indexes journals and documents not necessarily included in the other, expanding the retrieval of relevant literature while reducing the risk of source-selection bias associated with relying on a single database (Mongeon & Paul-Hus, 2016).

The search strategy identified keywords aligned with the study's objectives to retrieve relevant publications. Because bibliometric techniques rely on keywords to identify concepts, research

problems, and thematic trends within scientific networks, keyword selection represents a critical stage that directly influences the overall results. The initial keyword set underwent refinement through iterative discussion and review to reduce bias and validate the search strategy. Following procedures commonly adopted in systematic literature reviews (Denyer & Tranfield, 2009; Donthu et al., 2021), the initial terms originated from the most influential publications in the field and were subsequently refined by considering contextual factors and evaluating potential synonyms.

Testing multiple combinations of synonymous search terms yielded the following search string: ("venture capital" OR VC) AND (startup OR entrepre) AND (gender OR women OR female). The search applied this query to the title, abstract, and keywords fields. Combining these terms enabled the retrieval of studies located at the intersection of venture capital, startups, and gender, thereby ensuring both thematic relevance and comprehensive literature coverage.

Selection and Evaluation of the Studies

Before conducting the literature search, the study established inclusion and exclusion criteria to ensure the quality, relevance, and methodological consistency of the retrieved publications. Consistent with recommendations for systematic literature reviews (Chapman, 2021; Denyer & Tranfield, 2009; Okoli, 2015), the analysis included all academic documents indexed in Scopus and Web of Science that satisfied the predefined search criteria, regardless of document type. This decision broadened the representation of the field's intellectual structure by incorporating the most influential scholarly contributions available across both databases, thereby enhancing the reliability and validity of the evidence analyzed.

The search also imposed no restriction on publication year. This strategy captured the historical evolution of research on venture capital access, startups, and gender by encompassing both foundational studies and the most recent contributions. Such an unrestricted temporal scope proves particularly valuable in emerging and multidisciplinary research domains, where conceptual and empirical developments have evolved substantially over time.

To maximize thematic relevance, the search equation targeted only the title, abstract, and keywords fields. This approach increased the likelihood of retrieving relevant studies that indexing keywords alone might not adequately capture. Finally, the review included only English-language publications (Morrison et al., 2012), reflecting the predominance of English in international research on entrepreneurship, finance, and management (Mongeon & Paul-Hus, 2016).

Collectively, these criteria yielded a robust and methodologically consistent database for examining the literature on venture capital access and the role of gender in startups. The initial search retrieved 111 records from Scopus and 94 from Web of Science, producing 205 documents in total. The records from both databases were subsequently exported to Biblioshiny, converted into the Bibliometrix-compatible format, and merged into a single database. During this process, 53 duplicate records were identified and removed, resulting in a final sample of 152 documents, retrieved on June 2, 2026.

Although the final corpus comprises 152 publications, this sample size adequately reflects an emerging and highly specialized research field such as venture capital, startups, and gender. Moreover, it matches or exceeds the sample sizes reported in previous reviews of closely related research domains, including Geiger (2020), who analyzed 114 studies, and Koziol et al. (2025), whose review included 78 studies. Accordingly, the resulting corpus provides a sufficiently representative foundation for identifying the field's evolution, intellectual structure, and major thematic trends through bibliometric analysis.

Data Analysis

Data analysis began with the extraction of bibliographic information from the final sample. The bibliometric analysis employed Biblioshiny, the web interface of the Bibliometrix package for R, widely recognized for scientific mapping and bibliometric analysis because of its capacity to process bibliographic data in a transparent and reproducible manner (Aria & Cuccurullo, 2017). Before the analysis, records retrieved from Scopus and Web of Science were converted into the Bibliometrix-compatible format and integrated into a unified database, ensuring duplicate removal and dataset consistency.

The analysis examined scientific performance indicators, including publication trends over time, publication sources, the geographical distribution of scientific output, and collaboration networks among authors. In addition, the study conducted co-authorship analysis, keyword co-occurrence analysis, thematic mapping, factorial analysis, and emerging-topic detection to uncover the social, conceptual, and intellectual structure of the literature on venture capital, startups, and gender (Mukherjee et al., 2022).

To ensure the reproducibility of the network analyses, the keyword co-occurrence network used Author's Keywords as the unit of analysis. Network normalization followed the association strength method, widely recommended for bibliometric mapping of co-occurrence networks (Van Eck & Waltman, 2009). The identification of thematic communities relied on the Walktrap community detection algorithm (Pons & Latapy, 2006), implemented through Biblioshiny/Bibliometrix (Aria & Cuccurullo, 2017). Network visualization employed the automatic layout option while retaining the 50 most relevant nodes, removing isolated nodes, requiring a minimum of two links per node, and applying a repulsion force of 0.1 to improve network readability. Reporting these parameters enhances the transparency and reproducibility of the bibliometric analysis.

Results

Research Field Performance Analysis

The overall characterization of the corpus reveals an expanding research field marked by increasing internationalization (Table 3). In this context, the temporal evolution of scientific production reflects a gradual consolidation of research on venture capital (VC), startups, and gender (Figure 1). Although the earliest contributions emerged in the early 2000s, the substantial growth observed in recent years suggests that this topic has evolved from a peripheral line of inquiry within entrepreneurship into a distinct research domain with its own intellectual identity.

This trajectory aligns with the growing visibility of gender disparities across entrepreneurial ecosystems (Brush et al., 2009; Brush et al., 2018; Guzman & Kacperczyk, 2019), as well as with the increasing interest among scholars, policymakers, and investors in understanding the mechanisms that generate inequalities in access to strategic resources (Karlström et al., 2023; Lopez et al., 2025).

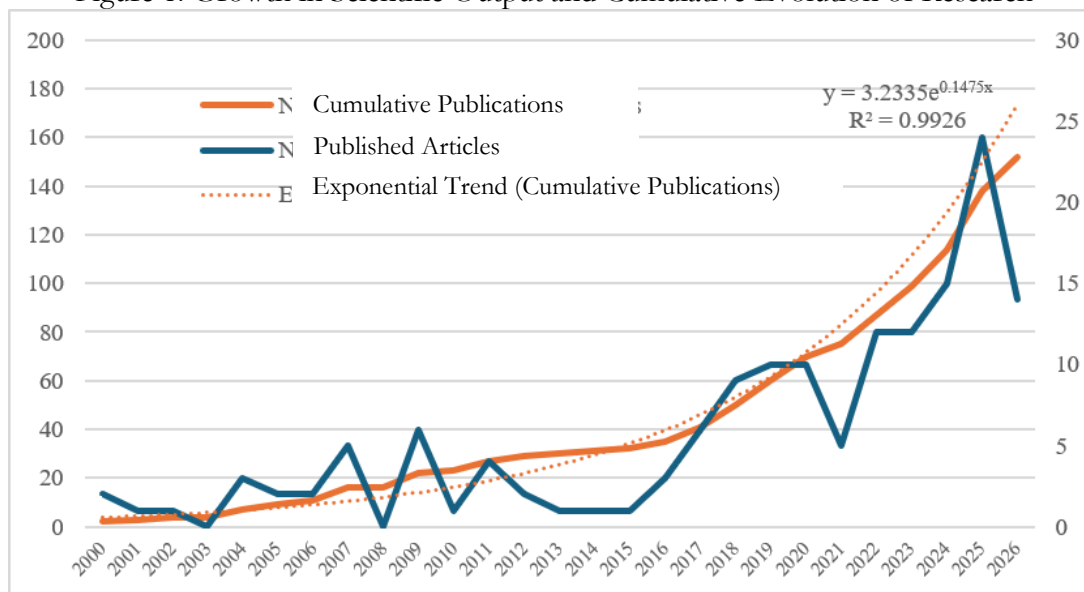
Table 3. General Characteristics of the Bibliometric Corpus

Indicator	Result
Period analyzed	2000–2026
Documents	152
Publication sources	103
Authors	381
Co-authors per document	2.86
International collaboration	18.42%
Annual growth rate	7.77%

Note: Authors' own elaboration based on Bibliometrix/Biblioshiny.

Nevertheless, the field's growth has not followed a uniform trajectory. Periods of stagnation and fluctuations in annual scientific output indicate that knowledge development has depended on the emergence of new theoretical perspectives and shifts in research priorities. In particular, the accelerated expansion observed from 2017 onward appears to reflect a transition from descriptive studies focused primarily on women's representation toward research examining more complex phenomena, including cognitive bias, entrepreneurial legitimacy, social capital, diversity within founding teams, and the institutional structures of the venture capital market.

Figure 1. Growth in Scientific Output and Cumulative Evolution of Research



Source: Authors' own elaboration.

A particularly noteworthy finding concerns the exponential fit of the cumulative publication curve ($R^2 = 0.9926$), which suggests that the field's expansion reflects a process of cumulative knowledge development rather than a temporary research trend. Such a pattern characterizes research domains that have reached a critical mass of scholars, theoretical perspectives, and empirical evidence. Nevertheless, the rapid increase in scientific output also introduces significant challenges related to the field's conceptual and methodological fragmentation. As new perspectives and analytical contexts continue to emerge, identifying the dominant intellectual streams, foundational contributions, and remaining knowledge gaps becomes increasingly important for advancing more integrative explanations of the relationship among venture capital, startups, and gender.

Table 4. Leading Publication Sources

Journal	Number Publications	of Total Citations
<i>Venture Capital</i>	13	826
<i>Small Business Economics</i>	8	254
<i>International Journal of Gender and Entrepreneurship</i>	6	184
<i>Entrepreneurship Theory and Practice</i>	5	431
<i>Journal of Business Venturing Insights</i>	4	118
<i>International Journal of Entrepreneurship and Small Business</i>	4	68
<i>Entrepreneurship Research Journal</i>	4	26
<i>De Gruyter Handbook of Entrepreneurial Finance</i>	3	6
<i>International Entrepreneurship and Management Journal</i>	2	45
<i>Journal of Business Ethics</i>	2	26

Source: Authors' own elaboration.

The analysis of publication sources indicates that research has concentrated within a relatively small group of scientific journals, complemented by other scholarly outlets, that have driven the intellectual development of the field (Table 4). The leading position of *Venture Capital* underscores the central role that studies on entrepreneurial finance and risk investment have played in shaping this research domain. At the same time, the prominence of journals such as *Small Business Economics*, *Entrepreneurship Theory and Practice*, and the *International Journal of Gender and Entrepreneurship* reflects a gradual shift toward more interdisciplinary

perspectives, integrating insights from entrepreneurship, gender studies, and organizational management.

Moreover, comparing publication volume with citation counts reveals important differences between scientific productivity and scholarly influence. While some journals stand out for publishing a larger number of articles, others exert a disproportionately greater impact on the field's theoretical development. Entrepreneurship Theory and Practice provides a particularly illustrative example: despite publishing a relatively small number of articles on this topic, it has accumulated a remarkably high citation count. This finding suggests that the evolution of the literature has depended not only on increasing scientific output but also on the publication of seminal studies that have reshaped understanding of gender inequalities within venture capital ecosystems.

From a critical perspective, the concentration of both research output and highly influential contributions within a limited number of publication outlets may also indicate an overreliance on theoretical perspectives developed in Western contexts, particularly the United States and Europe. Such concentration may constrain the incorporation of evidence from emerging entrepreneurial ecosystems, where institutional, cultural, and gender dynamics often differ substantially. Consequently, further advancement of the field will require not only greater scientific production but also broader geographical and epistemological diversity capable of expanding current understanding of how venture capital dynamics operate across different institutional settings.

Citation Impact and Co-authorship Network Analysis

Citation analysis identifies the contributions that have shaped the principal debates surrounding venture capital, startups, and gender. As shown in Table 5, the most influential studies consistently demonstrate that the observed disparities cannot solely reflect differences in firm performance; instead, structural, cognitive, and institutional factors also play decisive roles. In particular, the field's most highly cited study, conducted by Guzman and Kacperczyk (2019), demonstrates that women-led startups face a significantly lower probability of securing venture capital funding, even though they achieve outcomes comparable to those of male-led ventures once investment occurs. This finding challenges the traditional market-based perspective and reinforces the importance of examining the mechanisms that govern resource allocation.

The foundational literature also reveals a marked conceptual evolution. Greene et al. (2001) laid the groundwork for the debate by documenting that women-led firms attracted only a small fraction of available venture capital, attributing this outcome to structural barriers, differences in human capital, and distinct business growth patterns. Subsequently, Becker-Blease and Sohl (2007) demonstrated that women who actively sought venture capital financing achieved success rates comparable to those of men, thereby shifting part of the discussion away from explicit discrimination toward factors associated with market access and participation. More recently, Johnson et al. (2018) showed that financing outcomes vary across funding contexts by demonstrating that women entrepreneurs may even benefit from perceptions of trustworthiness and credibility on crowdfunding platforms, although traditional gender-role expectations continue to shape investor evaluations.

Taken together, these studies illustrate a transition from research primarily focused on identifying participation gaps toward more sophisticated explanations that incorporate legitimacy, cognitive bias, gender stereotypes, and investor evaluation processes. Nevertheless, the high concentration of citations among a relatively small number of publications also indicates that the field continues to rely heavily on a limited set of theoretical frameworks developed primarily in advanced economies. This pattern highlights the need to expand empirical evidence from emerging markets while exploring new theoretical perspectives capable of explaining how gender dynamics interact with diverse institutional environments and entrepreneurial ecosystems.

Table 5. The Ten Most Highly Cited Articles

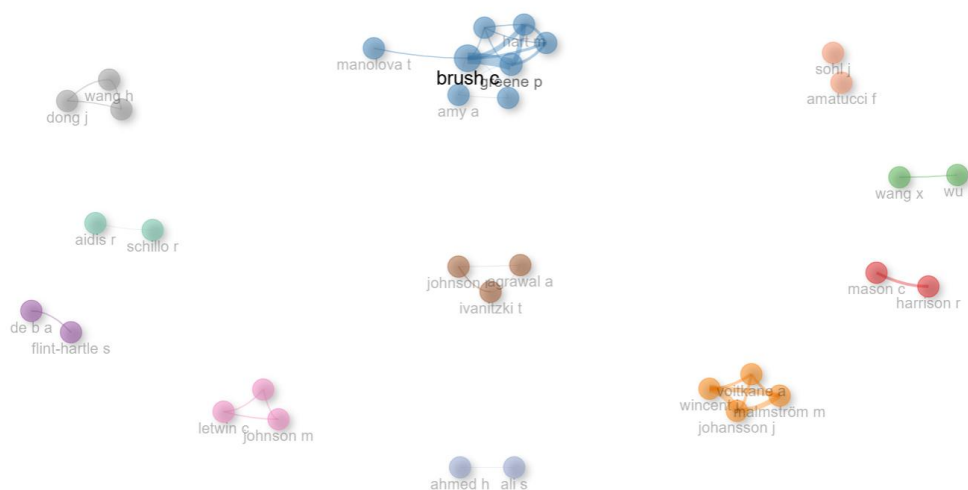
Author	Title	Journal	Total Citations	Citations per Year
Guzman & Kacperczyk (2019)	<i>Gender Gap in Entrepreneurship</i>	<i>Research Policy</i>	354	44.25
Becker-Blease & Sohl (2007)	<i>Do Women-Owned Businesses Have Equal Access to Angel Capital?</i>	<i>Journal of Business Venturing</i>	262	13.10
Johnson et al. (2018)	<i>A Woman's Place Is in the... Startup! Crowdfunder Judgments, Implicit Bias, and the Stereotype Content Model</i>	<i>Journal of Business Venturing</i>	254	28.22
Greene et al. (2001)	<i>Patterns of Venture Capital Funding: Is Gender a Factor?</i>	<i>Venture Capital</i>	249	9.58
Malmström et al. (2017)	<i>Gender Stereotypes and Venture Support Decisions: How Governmental Venture Capitalists Socially Construct Theory and Practice Entrepreneurs' Potential</i>	<i>Entrepreneurship Theory and Practice</i>	227	22.70
Harrison & Mason (2007)	<i>Does Gender Matter? Women Business Angels and the Supply of Entrepreneurial Finance</i>	<i>Entrepreneurship Theory and Practice</i>	217	10.85
Brush et al. (2018)	<i>The Gender Gap in Venture Capital: Progress, Problems, and Perspectives</i>	<i>Venture Capital</i>	186	20.67
Brush et al. (2002)	<i>The Role of Social Capital and Gender in Linking Financial Suppliers and Entrepreneurial Firms: A Framework for Future Research</i>	<i>Venture Capital</i>	161	6.44
Shahzad et al. (2021)	<i>What Factors Affect Entrepreneurial Intentions to Launch Startups? The Role of Entrepreneurial Skills, Risk-Taking Propensity, and Innovativeness in Open Business Models</i>	<i>Journal of Open Innovation: Technology, Market, and Complexity</i>	159	26.50

Author	Title	Journal	Total Citations	Citations per Year
Gatewood et al. (2009)	<i>Diana: A Symbol of Women Entrepreneurs' Hunt for Knowledge, Small Money, and the Rewards of Economics Entrepreneurship</i>	<i>Business</i>	137	7.61

Source: Authors' own elaboration.

Furthermore, the co-authorship network presented in Figure 2 shows that the field has evolved through a set of relatively independent scholarly communities, each concentrating on specific dimensions of the phenomenon. Particularly prominent are the research groups led by Brush et al. (2002, 2011, 2018) and Greene et al. (2001), whose work established the foundations of research on women's access to entrepreneurial finance, as well as those led by Johansson et al. (2021) and Malmström et al. (2017), who introduced explanations grounded in cognitive bias and gender stereotypes. This evolution reflects a shift from predominantly structural perspectives toward more sophisticated approaches that incorporate perception, legitimacy, and decision-making processes into the analysis of venture capital investment.

Figure 2. Co-authorship Network Analysis



Source: Prepared by the authors based on results generated with Bibliometrix (Biblioshiny).

Nevertheless, the limited interconnectedness among the leading research groups indicates that knowledge production remains fragmented across relatively isolated thematic streams. Although this diversity has fostered specialization and encouraged the emergence of new perspectives, it may also constrain the development of integrative explanatory frameworks. Greater collaboration among research communities therefore offers an opportunity to strengthen the field's intellectual cohesion and advance more comprehensive explanations of the relationship among venture capital (VC), startups, and gender.

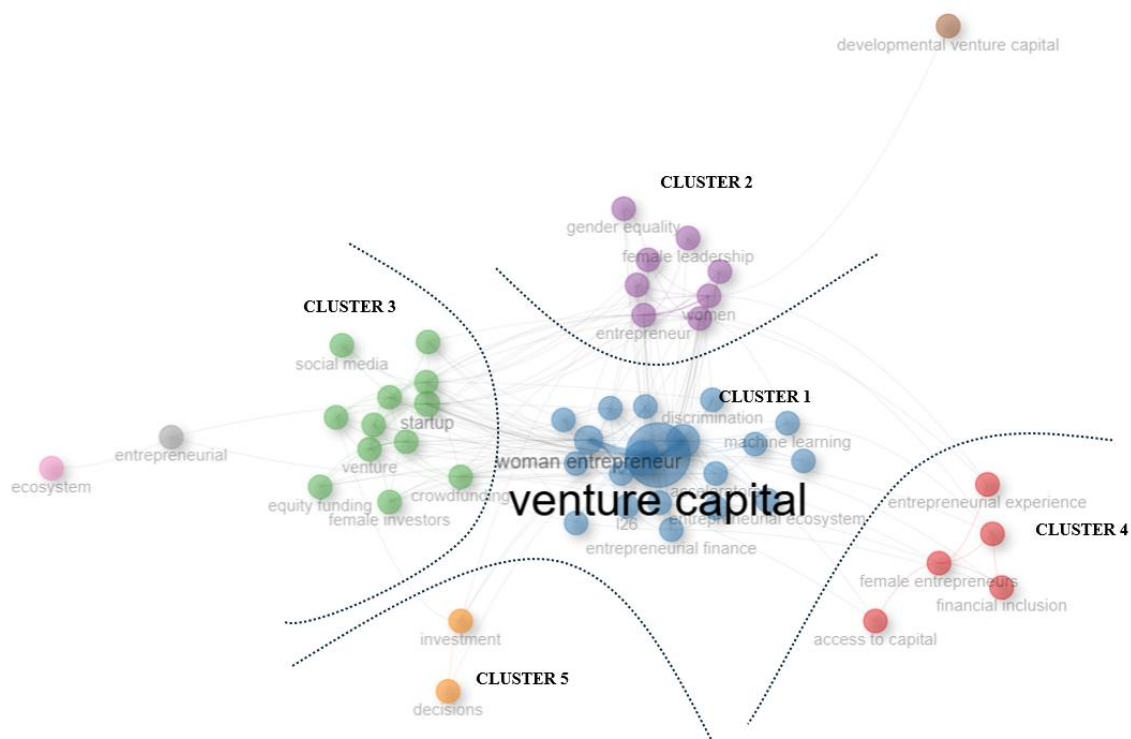
Keyword Analysis

To identify the field's conceptual structure, the authors conducted a co-occurrence analysis of author keywords. The resulting network, presented in Figure 3, revealed five thematic clusters representing the principal research streams. The high centrality of the keywords *venture capital* and *woman entrepreneur* confirms that the field revolves around the analysis of the opportunities and barriers women encounter within entrepreneurial financing ecosystems. At the same time, the distribution of the clusters illustrates how the literature has progressed toward increasingly specialized approaches, drawing on perspectives from finance, gender studies, institutional theory, and organizational behavior.

Cluster 1: Bias, Discrimination, and Evaluation Processes

The first cluster revolves around terms such as *woman entrepreneur*, *discrimination*, *entrepreneurial finance*, *entrepreneurial ecosystem*, and *machine learning*. This cluster brings together studies that seek to explain how evaluation mechanisms employed by investors can produce different outcomes for male and female entrepreneurs (Kanze et al., 2018; Malmström et al., 2017, 2020). Research within this stream has demonstrated that investment decisions rely not only on objective economic criteria but also on perceptions of legitimacy, credibility, and growth potential (Brush et al., 2018; Brush & Elam, 2023; Pistilli et al., 2023; Topaler & Khan, 2025). Consequently, this cluster reflects a shift from approaches focused primarily on the existence of financing gaps toward more sophisticated explanations that incorporate cognitive biases and decision-making processes.

Figure 3. Co-occurrence network of author keywords with cluster-based partitioning.



Source: Prepared by the authors based on results generated with Bibliometrix (Biblioshiny).

Cluster 2: Female Leadership and Gender Equality

The second cluster brings together concepts such as gender equality, female leadership, women, and entrepreneur. Its prominence reflects the growing scholarly interest in examining women's participation in leadership positions and their influence within entrepreneurial ecosystems (Brush et al., 2018; Cassion et al., 2021; Kuschel et al., 2017). Unlike studies that focus exclusively on access to financing, this research stream explores how social norms, gender stereotypes, and leadership expectations shape perceptions of women entrepreneurs (Karlström et al., 2023; Kwapisz & Hechavarria, 2025; Tinkler et al., 2015). The development of this cluster demonstrates how the literature has progressively broadened its scope by incorporating social and institutional dimensions to explain the inequalities observed in entrepreneurial settings.

Cluster 3: Networks, Ecosystems, and Alternative Financing

The third cluster comprises terms such as startup, venture, crowdfunding, female investors, equity funding, and social media. This research stream emphasizes the role of networks, support ecosystems, and alternative financing mechanisms in fostering women-led ventures (Clayton, 2024; Dams et al., 2022; Fisch et al., 2022). Studies within this cluster argue that social connections, digital visibility, and access to supportive communities can reduce information asymmetries and expand financing opportunities (Hao et al., 2024; Howell & Nanda, 2023; Wang et al., 2024). This perspective marks a significant evolution in the field by shifting attention away from investors alone toward the ecosystem conditions that facilitate or constrain resource mobilization.

Cluster 4: Financial Inclusion and Access to Capital

The fourth cluster centers on concepts such as access to capital, financial inclusion, female entrepreneurs, and entrepreneurial experience. This stream represents one of the field's most established lines of inquiry and focuses on identifying the factors that shape women's access to financial resources. Studies within this cluster consistently argue that financing gaps arise not only from differences in business performance or entrepreneurial capabilities but also from institutional and structural factors that restrict women's access to growth capital (Brush & Elam, 2023; Guzman & Kacperczyk, 2019; Kwapisz & Hechavarria, 2025). Consequently, this cluster serves as one of the field's principal conceptual foundations.

Cluster 5: Investment Decisions

The fifth cluster, composed primarily of the terms investment and decisions, examines the processes through which investors select ventures and allocate financial resources. Although this cluster remains the smallest, its position within the network highlights its cross-cutting role, linking debates on gender, leadership, financing, and financial inclusion (Kuschel et al., 2017; Kuschel & Labra, 2018; Lueg & Ni, 2020; Ogujiuba et al., 2025). Its presence confirms that a substantial share of recent scholarship seeks to understand how investment decisions emerge and which factors shape the evaluation of entrepreneurial opportunities.

Taken together, the five clusters demonstrate that research on gender and venture capital has evolved from an initial concern with documenting disparities in access to financing toward a

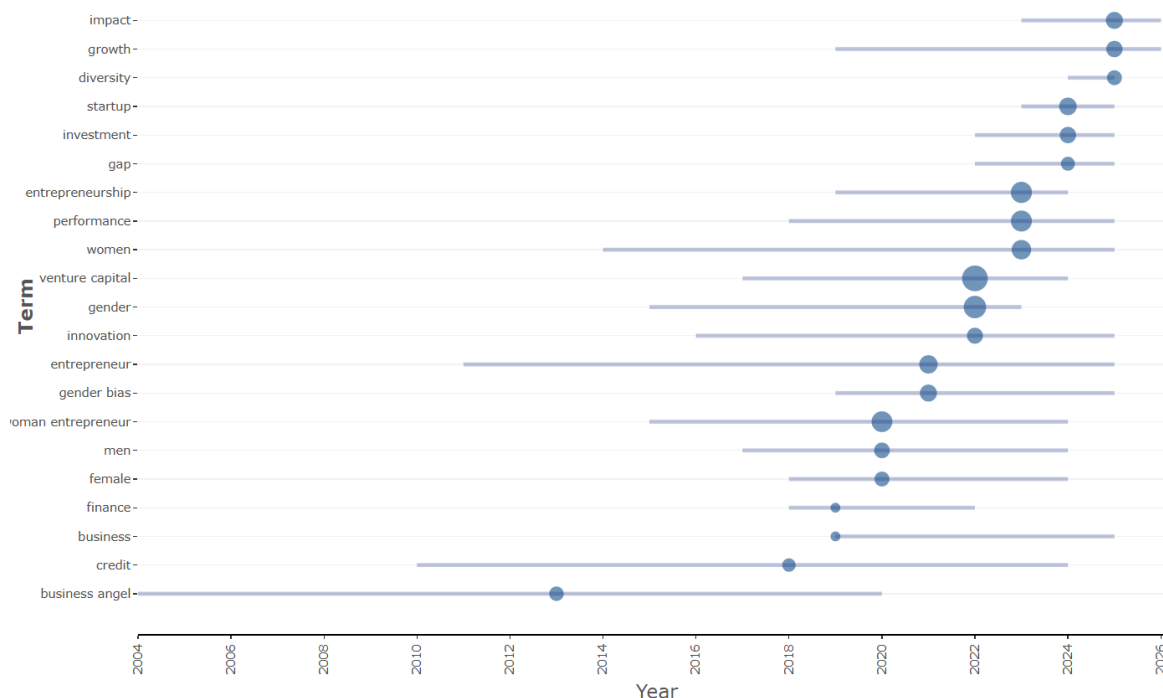
broader understanding of the mechanisms that generate such inequalities. Nevertheless, the relative separation among several clusters suggests that the field continues to develop through specialized research streams that still exhibit limited conceptual integration. This fragmentation offers a valuable opportunity for future research to develop more integrative theoretical frameworks capable of simultaneously explaining the individual, organizational, and institutional dimensions that shape the relationship between gender and entrepreneurial finance.

Emerging Topics: Kleinberg Burst Detection Algorithm

To identify the evolution of emerging topics within the field, the study applied the burst detection algorithm proposed by Kleinberg (2003). This method identifies keywords that undergo significant increases in scholarly attention during specific periods, thereby capturing shifts in research priorities and the emergence of new scientific agendas. Following the analysis and normalization of author keywords, Figure 4 presents the resulting findings.

The results reveal a thematic evolution consistent with the maturation of the literature on venture capital (VC), startups, and gender. The earliest bursts appeared between 2000 and 2012, with terms such as business angel (2000–2008), credit (2007–2012), and entrepreneur (2009–2015) receiving heightened attention. This pattern reflects an early interest in understanding the financing sources available to entrepreneurs and the mechanisms governing access to capital. During this period, research primarily examined the financial and business determinants of entrepreneurship while devoting comparatively little attention to gender-related dimensions.

Figure 4. Thematic trends based on author keywords.



Source: Prepared by the authors based on results generated with Bibliometrix (Biblioshiny).

Between 2015 and 2022, keywords such as gender, woman entrepreneur, gender bias, and venture capital gained increasing prominence, signaling a conceptual shift toward the study of inequalities embedded in investment processes. This transition coincided with the emergence of research that challenged the presumed neutrality of investor evaluation mechanisms and highlighted the influence of social, institutional, and cognitive factors on financing decisions.

From 2022 to 2026, terms such as performance, entrepreneurship, diversity, growth, and impact indicate a new stage in the field's development. Rather than focusing exclusively on the existence of financing gaps, contemporary scholarship seeks to explain the consequences of these disparities for firm performance, innovation, and economic growth. Collectively, the identified bursts illustrate a transition from studies centered on access to capital toward approaches that emphasize the strategic value of diversity and inclusion within entrepreneurial ecosystems.

Thematic Map Based on the Co-occurrence of Author Keywords

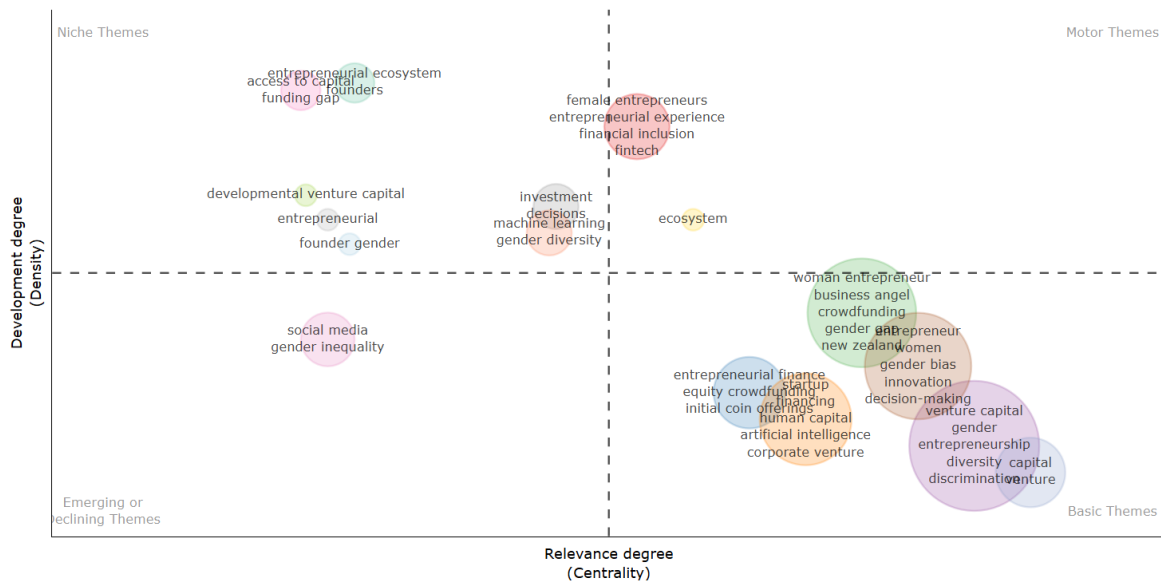
To identify the field's conceptual structure, the study developed a thematic map based on the co-occurrence of author keywords, following the approach proposed by Cobo et al. (2011). This method classifies research themes according to their levels of centrality and density, distinguishing among motor, basic, emerging, and niche themes. As Figure 5 illustrates, the literature displays a relatively consolidated structure, although substantial differences remain in the degree of development across its principal research streams.

The motor themes, located in the upper-right quadrant, encompass concepts such as female entrepreneurs, entrepreneurial experience, financial inclusion, and fintech. Their high centrality and density identify these topics as highly developed areas that simultaneously play a fundamental role in advancing the field. The convergence of these concepts suggests that recent scholarship has begun to examine access to financing from a broader perspective, incorporating digital mechanisms, financial inclusion, and entrepreneurial trajectories as essential elements for understanding gender-related inequalities.

The basic and transversal themes, positioned in the lower-right quadrant, include terms such as venture capital, gender, gender bias, entrepreneurship, diversity, and discrimination. These concepts exhibit high centrality but comparatively lower levels of development, indicating that they continue to serve as the conceptual core underpinning most of the literature. Their position confirms that research on gender disparities, evaluation processes, and women's participation in venture capital markets remains the principal concern of the academic community.

The emerging or declining themes, located in the lower-left quadrant, include concepts such as gender inequality and social media. Although these topics currently occupy a peripheral position within the thematic network, their presence points to the emergence of new research directions concerning the role of digital platforms, entrepreneurial visibility, and alternative mechanisms for reducing inequalities in access to financial resources. These themes represent promising opportunities for future research because of their growing connection with entrepreneurial financing processes.

Figure 5. Thematic map based on the co-occurrence of author keywords.



Source: Prepared by the authors based on results generated with Bibliometrix (Biblioshiny).

Finally, the niche themes, located in the upper-left quadrant, encompass concepts such as access to capital, funding gap, founders, developmental venture capital, and founder gender. Although these areas have reached a high level of development, their lower centrality indicates that they have evolved relatively independently from the field's dominant research streams. This finding carries particular significance because it reveals that several topics that originally shaped the literature on gender and venture capital have gradually lost prominence as more integrative perspectives emphasizing diversity, financial inclusion, and entrepreneurial ecosystems have gained momentum. Overall, Figure 5 illustrates a transition from studies focused primarily on disparities in access to capital toward research that seeks to understand the strategic and systemic implications of diversity within venture capital ecosystems.

Conceptual Structure and Thematic Clustering

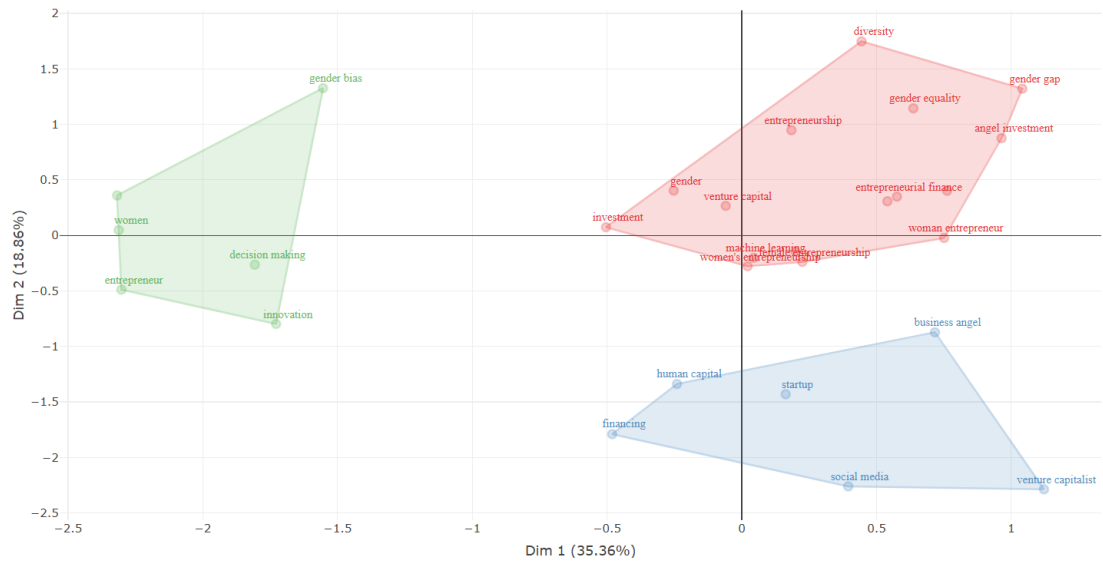
Factor analysis identifies the principal conceptual streams that structure research on gender and venture capital. As Figure 6 shows, the literature falls into three distinct thematic clusters, reflecting the diversity of approaches used to explain inequalities in entrepreneurial finance. This configuration demonstrates the field's evolution toward more complex and interdisciplinary perspectives.

The first cluster (red) forms the literature's conceptual core and includes terms such as venture capital, gender, gender gap, gender equality, and entrepreneurial finance. Their close conceptual proximity indicates that research has primarily focused on understanding gender disparities within investment markets and their implications for women's participation. This cluster contains the field's most influential and well-established concepts.

The second cluster (blue) brings together concepts associated with the resources and mechanisms that facilitate access to financing, including human capital, business angel, startup,

and social media. This research stream highlights the importance of entrepreneurial capabilities, support networks, and digital visibility as factors that can reduce barriers to capital access. Its prominence reflects growing scholarly attention to the mechanisms that strengthen entrepreneurial legitimacy and foster business growth.

Figure 6. Factor analysis of author keywords.



Source: Prepared by the authors based on results generated with Bibliometrix (Biblioshiny).

Finally, the third cluster (green) links terms such as gender bias, decision making, innovation, and women. This cluster represents the body of literature that examines how cognitive biases and evaluation processes shape investment decisions and influence investors' perceptions of women entrepreneurs. Overall, the factor analysis indicates that, although the field has achieved a substantial degree of conceptual consolidation, structural, behavioral, and institutional perspectives remain only partially integrated, highlighting the need for greater theoretical convergence.

Tabla 6. Correspondencia entre los diferentes niveles del análisis conceptual

Level of Analysis	Result	Integrated Main Research Stream
Co-occurrence analysis	Cluster 1 (<i>Bias, Discrimination, and Evaluation Processes</i>) + Cluster 5 (<i>Investment Decisions</i>)	Investor evaluation processes and cognitive biases
Co-occurrence analysis	Cluster 2 (<i>Female Leadership and Gender Equality</i>) + Cluster 4 (<i>Financial Inclusion and Access to Capital</i>)	Gender disparities in access to venture capital
Co-occurrence analysis	Cluster 3 (<i>Networks, Ecosystems, and Alternative Financing</i>)	Strategic resources and entrepreneurial ecosystems

Level of Analysis	Result	Integrated Main Research Stream
Factor analysis	Red cluster	Gender disparities and entrepreneurial finance
Factor analysis	Blue cluster	Strategic resources and mechanisms for accessing finance
Factor analysis	Green cluster	Cognitive biases and investor evaluation processes
Integrative synthesis	Three principal research streams	(1) Gender disparities in access to venture capital; (2) Investor evaluation processes and cognitive biases; (3) Strategic resources and entrepreneurial ecosystems

Source: Prepared by the authors.

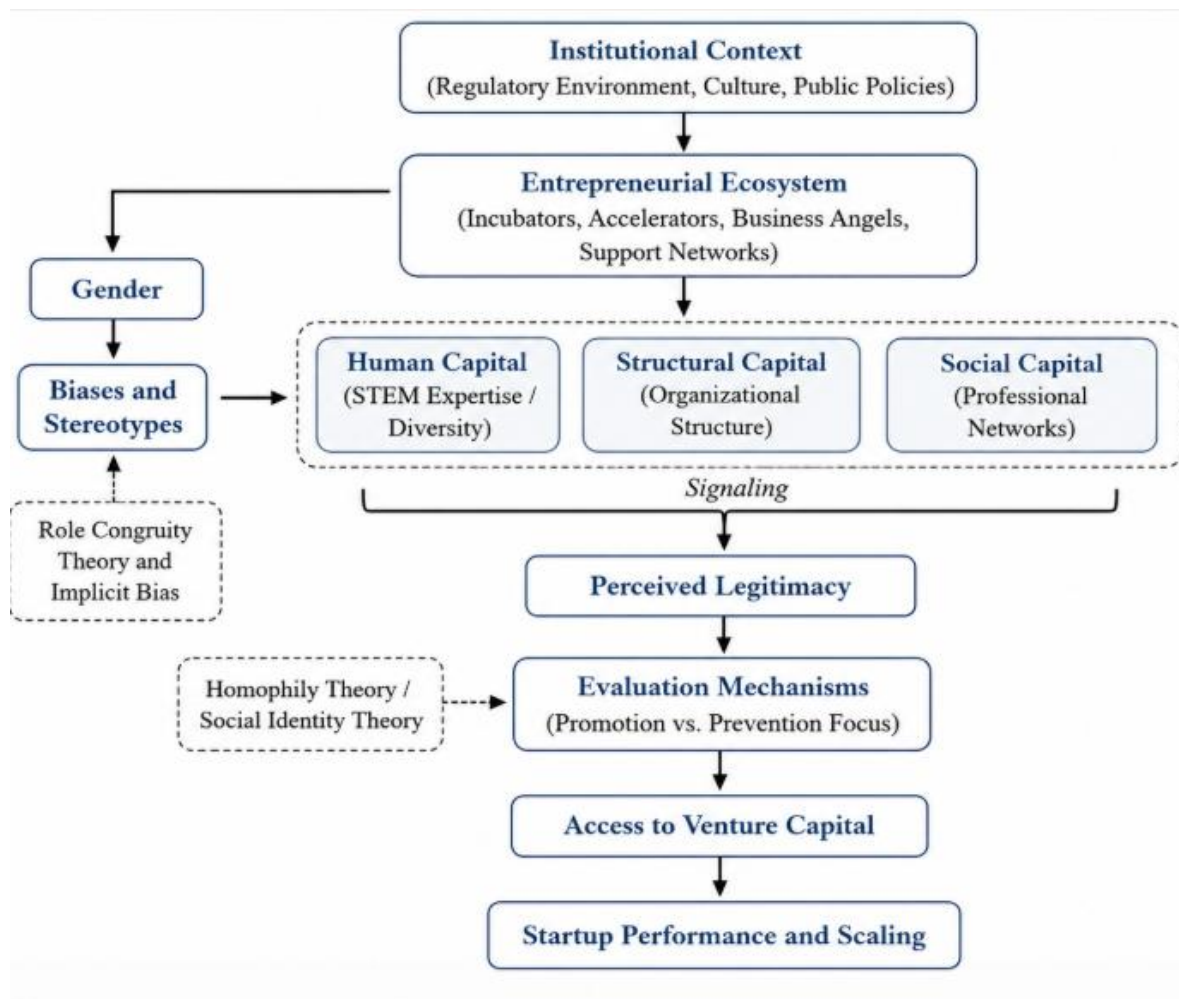
It is important to note that the different bibliometric analyses operate at distinct levels of conceptual aggregation and therefore provide complementary perspectives on the field's structure. The co-occurrence analysis identifies five thematic clusters that represent specific research streams defined by the proximity of author keywords. In contrast, factor analysis reduces this complexity by grouping those themes into three higher-order conceptual dimensions that capture the principal domains organizing the literature. Accordingly, the five clusters can be interpreted as specific manifestations of three overarching research streams. Table 6 summarizes the correspondence between these two analytical levels and facilitates an integrated interpretation of the findings.

Discussion

Integrating the findings derived from the bibliometric analyses enabled the development of an integrative framework that synthesizes the principal mechanisms explaining women's access to venture capital (VC). As illustrated in Figure 7, the literature converges on a multilevel process in which the institutional context and the entrepreneurial ecosystem shape the signals communicated by startups, while gender-related biases and stereotypes influence how investors interpret those signals. This finding extends traditional explanations that focus exclusively on the characteristics of women founders (Brush et al., 2018; Brush et al., 2009; Brush & Elam, 2023; Guzman & Kacperczyk, 2019) and suggests that access to venture capital should instead be understood as the outcome of a legitimacy-building process shaped by individual, organizational, and institutional factors.

A primary contribution of this study lies in challenging the dominant interpretation that attributes financing disparities primarily to differences in human capital or business performance. The most influential studies in the field demonstrate that, even when women entrepreneurs exhibit comparable levels of education, experience, or business performance, they still face lower probabilities of securing venture capital (VC) funding (Guzman & Kacperczyk, 2019; Pistilli et al., 2023; Tinkler et al., 2015). These findings therefore suggest that gender functions less as an individual characteristic than as a mechanism that shapes how investors interpret the signals employed during screening and evaluation processes.

Figure 7. Proposed theoretical model.



Source: Prepared by the authors.

The findings also demonstrate that biases and stereotypes constitute structural features of investment markets. Johansson et al. (2021) and Malmström et al. (2017) showed that investors frequently associate successful entrepreneurial leadership with traditionally masculine attributes, creating discrepancies between the objective quality of entrepreneurial ventures and their perceived value. As synthesized in Figure 7, the contributions of Role Congruity Theory, Social Identity Theory, and Homophily Theory explain how these perceptions influence the evaluation of investment opportunities and contribute to the persistence of inequalities in resource allocation.

Another important finding involves the convergence of the literature around three principal signaling mechanisms: human capital, structural capital, and social capital. Entrepreneurial experience, educational background, founding team characteristics, organizational structure, and

professional networks consistently emerge as indicators that investors rely upon to reduce the information asymmetries inherent in startup investments (Du et al., 2025; Topaler & Khan, 2025). The results nevertheless suggest that these signals create value only after they translate into legitimacy in the eyes of investors, thereby explaining why women entrepreneurs with comparable resources may achieve markedly different financing outcomes.

The analysis also highlights the central role of perceived legitimacy as the mechanism linking the signals communicated by startups with subsequent investment decisions. Although previous research has extensively examined human capital, networks, and business performance, considerably less attention has focused on the processes through which these attributes transform into perceptions of credibility and growth potential. This gap holds particular importance because the findings indicate that legitimacy serves as the principal filter through which investors interpret available information and form expectations regarding firms' future performance.

Finally, the results underscore the more prominent role of the entrepreneurial ecosystem and the institutional environment than the literature has traditionally acknowledged. Incubators, accelerators, angel investors, and support networks strengthen startup visibility and credibility, whereas factors such as regulation, public policy, and entrepreneurial culture shape the effectiveness of these mechanisms (Brush & Elam, 2023; Clayton, 2024; Kuschel et al., 2017). Nevertheless, the strong concentration of evidence from the United States and Europe constrains the understanding of these dynamics in emerging economies, where institutional arrangements and entrepreneurial ecosystems differ substantially.

From a practical perspective, the findings summarized in Figure 7 suggest that investment evaluation processes should incorporate more objective and structured criteria to reduce the influence of implicit gender-related biases. At the same time, women entrepreneurs can strengthen their legitimacy in the eyes of investors by adopting strategies that enhance the signals derived from their human, structural, and relational capital. Collectively, these findings indicate that improving both the quality of entrepreneurial signals and the way investors interpret them represents a key mechanism for narrowing persistent disparities in access to venture capital.

The results further demonstrate that policies aimed exclusively at strengthening the individual capabilities of women entrepreneurs remain insufficient unless accompanied by initiatives that transform the broader entrepreneurial ecosystem. In this regard, strengthening incubators, accelerators, mentoring networks, and mechanisms that connect entrepreneurs with investors can enhance the legitimacy and visibility of women-led startups. This perspective suggests that fostering more inclusive entrepreneurial ecosystems constitutes a complementary strategy for reducing structural inequalities in venture capital allocation.

Conclusions and Limitations

This study provides a comprehensive overview of the intellectual structure of the literature on venture capital (VC), startups, and gender through a bibliometric analysis. The findings reveal that the field revolves around three principal research streams: disparities in access to financing, investor evaluation processes and cognitive biases, and the role of strategic resources and entrepreneurial ecosystems in capital mobilization.

Building on these findings, this study proposes an integrative framework that conceptualizes access to venture capital as a legitimacy-building process shaped by institutional, ecosystem, organizational, and cognitive factors. The evidence demonstrates that financing inequalities cannot derive solely from the characteristics of women entrepreneurs; rather, they emerge from the interaction between the signals entrepreneurs communicate and the mechanisms through which investors interpret and evaluate those signals. The study's principal contribution lies in integrating previously fragmented theoretical perspectives into a coherent explanatory framework that offers a deeper understanding of the dynamics linking entrepreneurship, gender, and venture capital markets.

Like any research endeavor, this study has several limitations that warrant consideration when interpreting the findings. First, the analysis included only documents indexed in Scopus and Web of Science and published in English. Consequently, relevant studies available in other databases or written in other languages may not have entered the analysis. Second, to maximize the retrieval of potentially relevant literature, the search strategy incorporated broad entrepreneurship-related terms. This approach provided a comprehensive view of the field's evolution but may also have introduced a limited number of studies only indirectly related to the specific intersection of venture capital, startups, and gender. In addition, citation-based indicators tend to favor older publications because they have had more time to accumulate citations, whereas co-occurrence analyses rely on author-defined keywords and therefore depend on the consistency and specificity of those labels to represent the field's conceptual structure accurately. Future research could address these limitations by complementing the search strategy with manual screening of titles and abstracts, expanding the range of information sources, and incorporating content analysis to strengthen both the precision and interpretation of the findings.

Finally, the findings open several promising avenues for future research. First, additional empirical evidence from emerging economies remains essential because their institutional contexts and entrepreneurial ecosystems differ substantially from those traditionally examined. Second, scholars should develop multilevel models that simultaneously integrate individual, organizational, ecosystem, and institutional factors to explain access to entrepreneurial finance. Third, future studies could investigate more deeply the role of perceived legitimacy as a mediating mechanism linking entrepreneurial signals with investment decisions. Finally, the growing interest in financial inclusion, fintech, and artificial intelligence creates new research opportunities to examine whether these technologies can help reduce persistent biases and inequalities within venture capital markets.

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