




# The drivers of female entrepreneurship: A bibliometric analysis of the literature

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**Dates:**

Received: 16 Dec. 2024

Accepted: 19 May 2025

Published: 30 Aug. 2025

**How to cite this article:**

Yang, Y., John, A. & Mohelská, H., 2025, 'The drivers of female entrepreneurship: A bibliometric analysis of the literature', *South African Journal of Economic and Management Sciences* 28(1), a6043. <https://doi.org/10.4102/sajems.v28i1.6043>

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**Background:** Female entrepreneurship has emerged as a rapidly expanding area of research over the past two decades. However, there remains a lack of comprehensive bibliometric analyses focusing on its drivers.

**Aim:** This study aims to systematically map the literature on female entrepreneurship, to identify and analyse the key drivers that motivate women to engage in entrepreneurial activities.

**Setting:** The research analyses scholarly works published between 1987 and 2024 to uncover critical patterns and contributions in female entrepreneurship.

**Methods:** In this bibliometric analysis, we used the Biblioshiny-R-based bibliometric tool to map 924 documents from the Web of Science database. The analysis includes not only performance analysis but also science mapping techniques such as co-citation networks, historiographic mapping, and thematic mapping to uncover the literature's intellectual, social, and conceptual structures.

**Results:** The findings reveal significant themes driving female entrepreneurship, including socio-cultural, financial, and personal factors. Influential contributors, journals, and regions, alongside critical gaps, emerging trends, and the field's evolution, are identified. The role of artificial intelligence with other underexplored topics should be the future research agenda.

**Conclusion:** The study provides a holistic understanding of the drivers of female entrepreneurship, offering actionable insights for research and practice. The findings are significant for creating supportive ecosystems and developing educational frameworks that empower female entrepreneurs.

**Contribution:** The study contributes to female entrepreneurship literature by systematically analysing and mapping the drivers of female entrepreneurial activity, aligning closely with the Sustainable Development Goals and pursuing gender equity.

**Keywords:** bibliometric; female entrepreneurship; motivations; drivers; equality; sustainable development; socio-cultural; financial.

## Introduction

Research on gender equality has gained momentum over the last decade, and it is evident that financial independence is one of the best ways to increase gender equality. Women can achieve financial independence by indulging in entrepreneurial activities (Fitouri & Zouaoui 2024). According to the World Bank, female entrepreneurship is essential for economic development and positively impacts economic growth, development and sustainable and durable peace. The World Economic Forum's global gender gap report 2022 shows how women start more businesses, work fewer hours and earn more but face more challenges in accessing finance, legal rights and professional roles.

The importance of female entrepreneurship is multifaceted. It is a catalyst for change that propels societies towards inclusiveness, disrupts traditional gender roles in the business world and sets the stage for innovative solutions to contemporary challenges (Talukdar 2024). Female entrepreneurship is a story of aspiration, resilience and the redefinition of what is possible, making it a transformative force rather than just a business term in the global economy. This transformative force is vital for economic and innovative development, driven by women who establish and manage businesses either independently or in collaboration (Santos & Neumeyer 2021). In other words, their entrepreneurial activities not only foster financial growth but also contribute to social innovation, promote gender equality and empower women both individually and collectively (Ge et al. 2022; Mohieldin 2019).

Over the years, the concept has evolved from a novel academic interest into a well-established field of study (Dzomonda & Neneh 2023; Naguib 2024). It gave rise to a wide array of primary research, literature reviews, bibliometric analyses and meta-analyses (Deng et al. 2021; Haus et al. 2013; Link & Strong 2016; Raman et al. 2022). However, the literature specifically addressing the drivers of female entrepreneurship remains fragmented and scattered. It results in a lack of a cohesive overview of the factors that consistently influence women's entrepreneurial engagement (Manishimwe et al. 2023).

This study addresses this gap by applying advanced bibliometric analysis techniques, including co-citation analysis, thematic clustering and historiographic and thematic mapping. Thus, we explore how scholarly attention to the drivers of female entrepreneurship has evolved over the past three decades. Our focus is on uncovering the current state of the literature on the drivers that inspire women to engage in entrepreneurial activity. We argue that understanding these drivers is essential to accelerating progress in female entrepreneurship by strengthening the factors that support it. Considering the growing emphasis on gender equity and inclusive economic development, it is imperative to better understand the dynamics that shape this movement.

In the literature on female involvement in business and the labour market, terms such as drivers, motivations, determinants and predictors are often used interchangeably to describe the factors influencing women to start and grow entrepreneurial ventures (Manishimwe et al. 2023; Mateko 2024). This study employs a similarly inclusive approach, treating these terms as overlapping yet collectively indicative of the underlying forces shaping female entrepreneurship. While a precise theoretical distinction among them is beyond the scope of this bibliometric analysis, we group them under the broader concept of 'drivers' to maintain consistency with the study's title and analytical framework.

This study adopts a novel approach composed of three primary areas: the historical progression of female entrepreneurship literature, key contributors shaping this narrative and emerging collaboration and research focus patterns. Thus, our study aims to shed light on the underlying factors that inspire women to embark on entrepreneurial ventures. Furthermore, our goal is to chart the course of female entrepreneurship research and to unearth insights that illuminate the motivations driving women to entrepreneurship. Specifically, our objectives are:

- to analyse the historical evolution, key contributors and collaboration patterns in female entrepreneurship research.
- to map emerging and declining themes using bibliometric techniques.
- to identify and categorise the primary drivers of female entrepreneurship in the literature.
- to highlight gaps and propose directions for future research on the drivers of female entrepreneurship.

By understanding these drivers, we can better support female entrepreneurs, contributing to a more equitable and dynamic business landscape.

## Literature review

In this section, we review the evolution of research on female entrepreneurship with a particular focus on how the drivers have been theorised and empirically studied. Entrepreneurship is recognised as a central force in innovation, economic development and social transformation (Schumpeter & Backhaus 2003; Shane & Venkataraman 2007). It entails the identification, evaluation and exploitation of opportunities (Kirzner 2015). However, early entrepreneurship research predominantly centred on male experiences, often assuming a gender-neutral perspective. Over time, scholars began to challenge these assumptions, leading to the emergence of female entrepreneurship as a distinct and necessary field of inquiry (Ahl 2006).

Female entrepreneurship is commonly defined as the process through which women initiate, establish and manage business ventures (Cromie 1987; Minniti & Naudé 2010). This process is not limited to profit generation but often involves aspirations for autonomy, empowerment and social value creation. Women entrepreneurs typically operate within socio-cultural environments that significantly influence their access to resources, networks and legitimacy (Langowitz & Minniti 2007). The literature emphasises the importance of understanding female entrepreneurship in the context of gendered power dynamics, institutional structures and social norms (Brush, De Bruin & Welter 2009; Santos & Neumeyer 2021). Although the term is generally used inclusively, recent efforts have introduced greater conceptual precision. The International Organization for Standardization (ISO 2021), for example, distinguishes between women-owned, women-led and women-managed enterprises based on ownership, control and governance. While these definitions improve clarity for policy and data comparability, they are rarely applied in academic studies, where the concept remains broad and heterogeneous (Manishimwe et al. 2023).

Academic interest in women's entrepreneurial experiences gained momentum in the late 20th century, as researchers explored how motivations, challenges and outcomes differed by gender (Bowen & Hisrich 1986; Cromie 1987). Initial studies emphasised intrinsic motivations such as autonomy, flexibility and work-life balance (Buttner & Moore 1997; Cliff 1998). As the field evolved, frameworks like the push-pull model (Dawson & Henley 2012; Kirkwood 2009) were introduced to distinguish between necessity-driven and opportunity-driven entrepreneurship. Subsequent research expanded to examine structural barriers, including gendered access to credit and institutional challenges like legal constraints and societal norms.

A range of theoretical frameworks is employed to further explore the complexities of female entrepreneurship (Khan et al. 2024). Feminist theory (Ahl 2006; Naguib 2024)

highlights the influence of gendered power structures and social expectations on entrepreneurial behaviour. This stream argues that much of the literature reinforces gender biases by measuring women's performance and behaviour against masculine standards of growth and success (Ahl 2006). It calls for gender-aware research that recognises the structural inequalities embedded in entrepreneurial ecosystems. In parallel, institutional theory sheds light on how formal and informal institutions, such as policies, norms and cultural roles, shape women's participation in entrepreneurship. It highlights the role of national legal systems, financial regulations and cultural norms in enabling or constraining female entrepreneurship, particularly in developing and transitional economies (Sobhan & Hassan 2024).

Behavioural and psychological theories have contributed to the literature by focusing on individual-level predictors of entrepreneurial intent. The theory of planned behaviour, for instance, has been widely used to examine how attitudes, subjective norms and perceived behavioural control influence women's entrepreneurial decisions (Sarwar, Ahsan & Rafiq 2021). However, these approaches underestimate the impact of structural constraints and privilege individual agency over social context. While these frameworks have enriched the field, their applications remain thematically dispersed, and no study has yet consolidated how they collectively contribute to the literature on the drivers of female entrepreneurship.

Recent studies emphasise that female entrepreneurship is shaped by a complex interplay of personal, structural and cultural drivers (Kuschel et al. 2017; Langowitz & Minniti 2007; Manolova et al. 2012). Some focus on internal factors such as self-efficacy, resilience and risk tolerance, while others emphasise external constraints, including access to finance and restrictive gender norms (Fitouri & Zouaoui 2024; Pal & Gupta 2023). Despite this growing body of work, no unified framework still captures these diverse perspectives coherently.

Given the increased scholarly attention to these drivers, it is essential to understand how the field has developed and what research trajectories have guided its growth. In recent years, bibliometric analysis has emerged as a valuable method in entrepreneurship and management research, offering a systematic way to map large, fragmented bodies of literature (Cui, Liu & Mou 2018). While a few bibliometric studies have examined female entrepreneurship, their scope has remained broad. They cover topics like gender identity, entrepreneurial profiles and alignment with the sustainable development goals (Raman et al. 2022) and addressing contextual challenges in non-OECD (Organisation for Economic Co-operation and Development) countries (Deng et al. 2021).

Although prior research has examined various dimensions of female entrepreneurship, no study has comprehensively mapped the scholarship's intellectual and thematic evolution

focused explicitly on its drivers. This gap calls for a bibliometric analysis to uncover how scholarly interest in these drivers has developed over time, identify dominant research clusters and reveal emerging theoretical and empirical trends.

## Methodology

This study employs a bibliometric analysis to analyse published literature on the drivers of female entrepreneurship. Bibliometric analysis is a quantitative research method and is used to assess and map the intellectual, social and conceptual structure of scholarly domains (Tay 2022). This method is particularly useful for synthesising a large volume of academic publications and uncovering emerging patterns and gaps in research fields (Arruda et al. 2022).

We followed the guidelines of Donthu et al. (2021) to conduct this bibliometric analysis. It helped us to design a comprehensive strategy along the same lines as other prominent bibliometric studies in the field (Cui et al. 2018; Raman et al. 2022). We collected the data from the 'Web of Science', which provides access to a vast and reliable scholarly database (Cui et al. 2018; Islam & Can 2024). It has comprehensive coverage of scientific literature across various disciplines. It offers robust citation tracking and analysis tools and is critical for assessing research impacts and trends (Birkle et al. 2020; Garfield 2004). Moreover, it provides consistent indexing standards to facilitate accurate and comparable bibliometric studies (Moed 2006). We identified the synonyms and alternatives of the term female, with entrepreneur and drivers from the literature, and developed a comprehensive search string to search the literature. The comprehensive string potentially involves all the keywords to extract the literature. We searched the titles, abstracts and keywords. We only included manuscripts in the English language. No other exclusion criteria were adopted to make the data richer.

We used Bibliometrix (Biblioshiny-R Package) to perform bibliometric analysis. It is an open-source, free R package available to run all necessary tasks, such as co-citation, bibliography analysis and visualisation (Tay 2022). Compared with VOSviewer, Bibliometrix is more versatile and robust (Arruda et al. 2022). This platform offers a comprehensive suite of quantitative research tools for bibliometrics. It is coded in the R language and is known for its open-source nature and versatile ecosystem. Among its notable strengths, R stands out for its robust statistical algorithms, access to top-tier numerical routines and seamlessly integrated data visualisation capabilities, making it the preferred choice for scientific computation compared to other programming languages (Aria & Cuccurullo 2017).

Our bibliometric analysis employed performance analysis and science mapping, which are its significant streams (Donthu et al. 2021). Performance analysis focused on

evaluating productivity and the impact of different research trajectories within the field (Aria & Cuccurullo 2017). Firstly, we identified the most productive journals and influential authors based on total publications and citations. Then we analysed the performance of the institutions and countries in this field. Secondly, we identified the most cited documents based on citation metrics such as total citations (TC), total citations per year (TCpY) and normalised citations. These analyses helped in identifying prominent contributors and trends in the drivers of female entrepreneurship research globally (Mateko 2024).

On the other hand, science mapping explores the structural and dynamic aspects of a research field through network-based techniques (Aria & Cuccurullo 2017; Donthu et al. 2021). Co-citation analysis identifies pairs of documents frequently cited together, revealing intellectual linkages (Small 1973). Co-word analysis examines the co-occurrence of keywords to identify conceptual clusters and thematic patterns (Callon et al. 1983). Thematic mapping classifies themes into motor, basic, emerging or niche based on their centrality and density (Cobo et al. 2011). Finally, historiographic mapping illustrates the temporal evolution of influential studies through citation chains (Garfield 2004).

Our dataset spans from 1987 to 2024 and comprises 924 documents from 446 diverse sources. The year 1987 was not predetermined but rather emerged organically from the data extraction process. It corresponds to the earliest publication indexed in the Web of Science Core Collection that matched the search criteria used in this study. The year 2024 marks the most recent period of available data at the time of retrieval, ensuring the inclusion of the latest contributions to the field. The average age of the documents is 5.32 years, providing a well-rounded perspective on the evolution and current state of the field. The average citations of articles are 19.54, with a total of 39483 references, underscoring the impact and relevance of the included research. The dataset covers 2357 'Author's Keywords', indicating a diverse and comprehensive range of topics and themes covered in the research. These keywords facilitated thematic analysis and highlighted emerging trends and focal points within the field. The total number of authors is 2331, with 156 authors contributing to single-authored documents. This diversity in authorship reflects the broad spectrum of scholarly contributions and perspectives and suggesting the noteworthy presence of individual research endeavours alongside collaborative work. Furthermore, 31.49% of the articles featured international co-authorships, demonstrating significant global collaboration and cross-cultural scholarly exchange.

## Ethical considerations

This study did not involve human or animal research and was determined to be non-human subject research. As a bibliometric analysis, it exclusively utilised secondary data from publicly available academic literature, ensuring compliance with ethical standards. No primary data collection or interaction

with individuals or animals was conducted. Consequently, no ethical approval was required for this research.

## Results and discussion

### Performance analysis

Performance analysis offers a quantitative overview of the scholarly output and influence within the field of female entrepreneurship (Donthu et al. 2021). In this section, we assess the productivity and citation impact of key research trajectories, including the most relevant journals, prolific authors, leading institutions and countries active in this research area. This analysis allows us to identify where, by whom and through which academic outlets knowledge on female entrepreneurship has been most actively produced and disseminated. In our study, performance analysis highlights the geographical and institutional hubs of research activity and reveals the central scholarly works that have shaped the evolution of this field. These insights form the empirical foundation for the more detailed structural and thematic explorations in the science mapping section.

### Most relevant sources

An important dimension of performance analysis involves identifying the journals that have served as primary platforms for disseminating research on female entrepreneurship (Cui et al. 2018). This examines the most relevant sources that provide insight into the disciplinary homes of this body of literature. This also highlights the academic venues that have consistently contributed to shaping the field. To identify core journal sources, Bradford's Law (Bradford 1934; Garfield 1979) was applied, predicting that a small group of journals will account for most publications on a given topic. This stratification reveals the most productive sources in the field and enables an efficient mapping of key knowledge hubs (Aria & Cuccurullo 2017).

The *International Journal of Gender and Entrepreneurship* emerges as the most prolific source, publishing 47 articles that focus extensively on the intersection of gender and entrepreneurial activity. Other notable journals include *the Journal of Entrepreneurship in Emerging Economies*, *Sustainability*, *Gender in Management* and the *International Journal of Entrepreneurial Behavior & Research*, each contributing over 20 articles. These outlets reflect a growing scholarly interest in the role of women entrepreneurs, particularly in sustainable development and emerging markets. Additionally, journals, such as the *Journal of Developmental Entrepreneurship*, *Journal of Small Business and Enterprise Development*, *Small Business Economics*, *Frontiers in Psychology* and the *Journal of Enterprising Communities*, along with contributions from thematic volumes like *Entrepreneurship Ecosystem in the Middle East and North Africa (MENA)*, have each published over 10 articles. All top 20 journals fall within Zone 1, indicating a high concentration of relevant articles in a few core sources. The Bradford distribution visually confirms this clustering in Figure 1, where a steep drop after the first few journals reflects their disproportionate contribution to the field.



Beyond productivity, impact and influence were assessed using h-index, g-index, m-index and TC metrics. The *International Journal of Gender and Entrepreneurship* leads in publication count and scholarly impact (h-index = 18, TC = 1020), reflecting both depth and consistency. *Small Business Economics* and the *Journal of Small Business and Enterprise Development* also show strong influence with high citation counts and sustained publication over time. Notably, *Sustainability*, despite its recent entry into the field (PY start = 2019), demonstrates a rapid rise in relevance, with a high m-index (1.6) and substantial article volume, suggesting an emerging shift towards sustainability-focused perspectives in female entrepreneurship research.

This analysis reveals a robust and diverse knowledge base, anchored by journals from entrepreneurship, gender studies, management and development fields. The overlap of core sources across multiple disciplines further highlights the interdisciplinary nature of research on female entrepreneurship, supporting the integration of theoretical, practical and policy-oriented perspectives.

### Authors' production

Figure 2 outlines the top 10 authors' scholarly output. Each horizontal line represents an author, with dots along the line indicating the number of articles published in a given year and the size of the dots reflecting the TCpY for those articles. The leading contributors in female entrepreneurship research demonstrate consistent scholarly engagement and thematic specialisation.

Ramadani is the most prolific among the top authors, with publications from 2015 to 2023. His work shows a broad but sustained focus on women's entrepreneurial motivations, social empowerment and business dynamics in various cultural contexts, with notable citation impact, particularly his 2019 article on beekeeping as family entrepreneurship, which has a TCpY of 7.8. Zali has contributed significantly through regionally focused research on the MENA region, with a high citation count in their 2019 article on gender inequality (TCpY 6.8). Despite fewer publications, Shastri's work on institutional barriers and motivations in patriarchal settings has been well cited, demonstrating high relevance (e.g. TCpY 5.6).

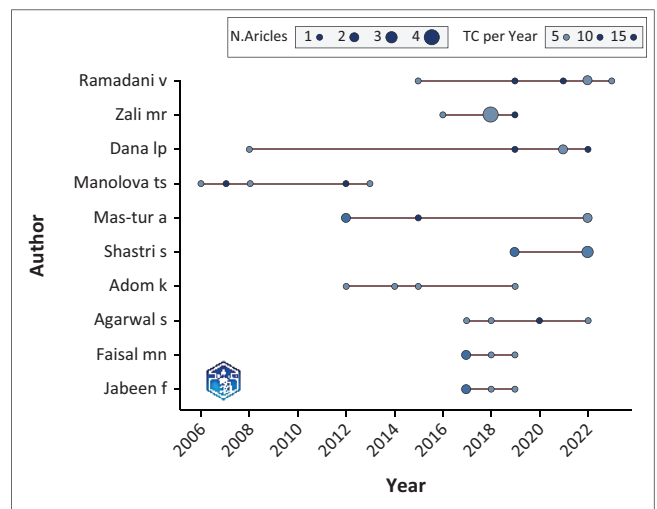


FIGURE 2: Authors' production over time.

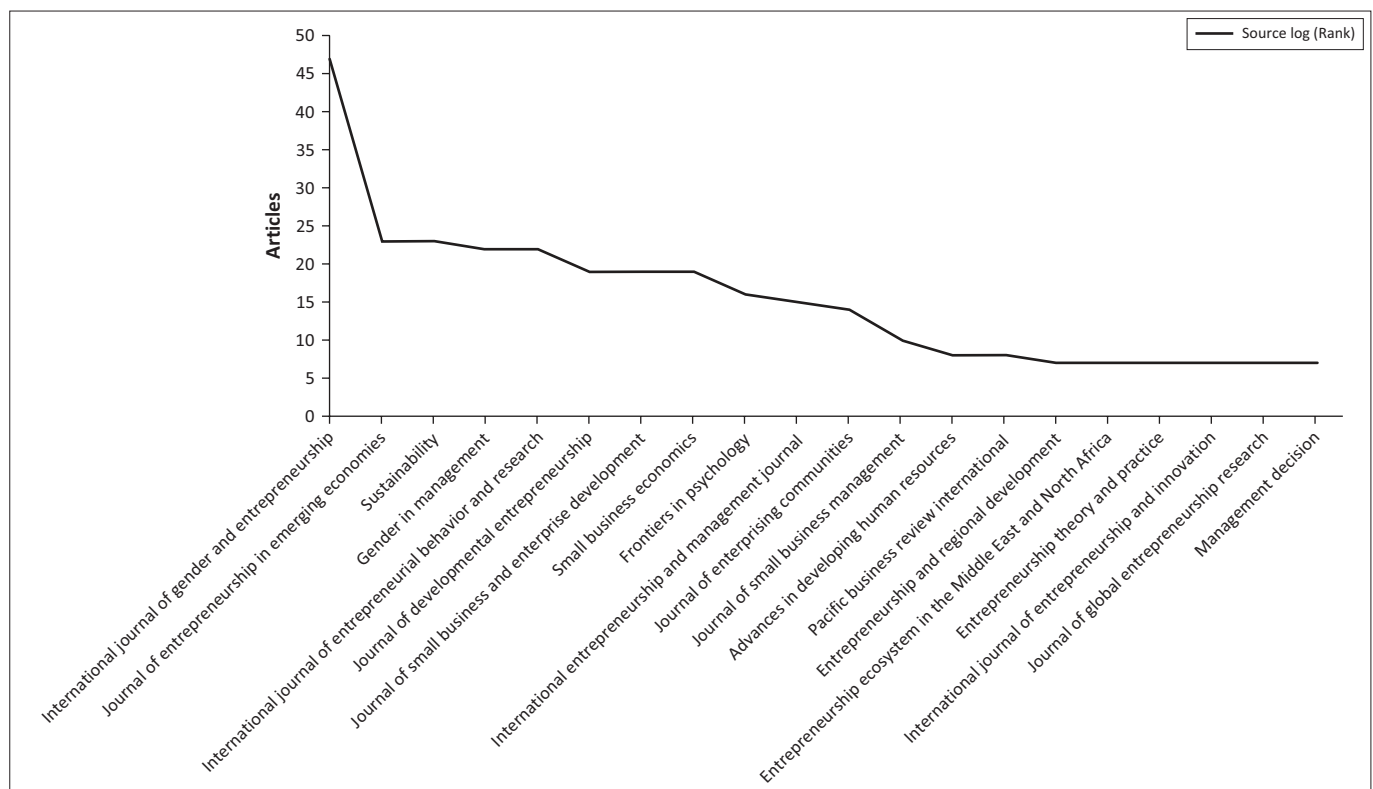


FIGURE 1: Core journal sources identified using Bradford's Law.

Dana and Manolova display long-term engagement in the field, with Dana contributing across a range of topics from growth models to domestic versus international venturing, and Manolova achieving the highest impact per year (TCpY 10.2) in her 2007 study on human capital and networking. Mas-Tur has addressed gendered entrepreneurship performance and motivation across regions, with consistently cited works from 2012 to 2022.

Agarwal, Faisal, Jabeen and Adom offer valuable region-specific insights from India, the Gulf and sub-Saharan Africa. Despite a relatively lower publication count, their individual works carry strong citation performance, indicating high scholarly influence per article. Agarwal's 2020 work on sustainable development in Indian women's social entrepreneurship shows a TCpY of 13.25, one of the highest in the dataset. This diverse author landscape highlights global engagement with the topic of female entrepreneurship and showcases the emergence of thematic specialisation and geographic depth in recent years.

### Institutions' production

The State University System of Florida shows a gradual increase in output over time, with a notable increase from 2015 onwards. The University of London had a steady output beginning in 2005 and saw a significant increase in production in 2021 and 2022. The University of North Carolina published its first articles in 2007, with a sharp increase in 2017 and a peak in 2023. The University of Valencia began publishing in 2010, with its output rising sharply in 2012 and reaching its highest in 2023. The University of Ghana saw its first significant output in 2015 and maintained a steady pace, peaking in 2023. The Indian Institute of Technology System (IIT System) started publishing on the topic later than the others in 2017 but quickly increased its number of publications by 2023. It indicates that these institutions are key players in female entrepreneurship research. The numbers reflect the institutions' research commitment and possibly the presence of specialised centres or faculty members dedicated to this study area.

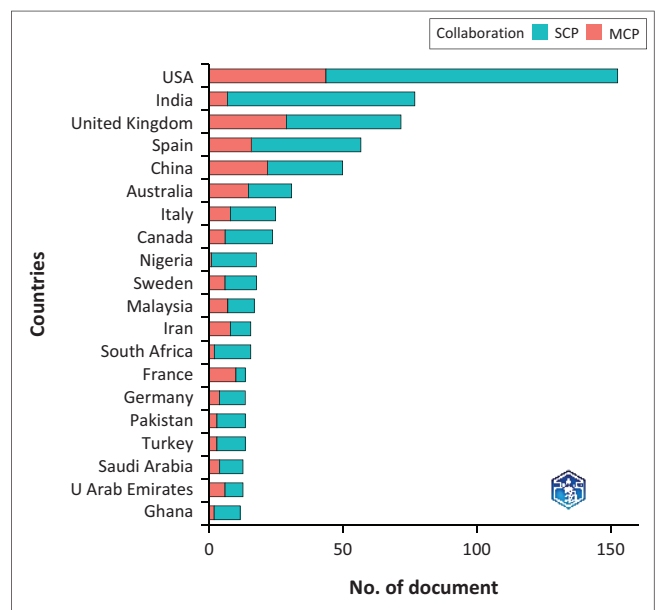
### Countries' production

The bar chart in Figure 3 illustrates the number of documents on female entrepreneurship from various countries, differentiated by the type of publication: single-country publications (SCPs) and multiple-country publications (MCPs). Single-country publication refers to research conducted within one country, whereas MCP indicates international collaboration between researchers from multiple countries. Most countries focus on their domestic data and produce more SCP, except France, which focuses more on MCP. Australia, while having fewer articles (31), shows a higher ratio of MCP (15), indicating a strong inclination towards international research partnerships. The USA leads with the highest number of articles (153) and a substantial mix of SCP (109) and MCP (44), suggesting a strong focus on domestic research and international collaboration. India followed with 77 articles, predominantly SCP (70), showing a stronger focus on domestic research.

The United Kingdom has 43 SCP and 29 MCP out of 72 articles. Spain and China both showed a sizeable number of articles. Nigeria, South Africa and Ghana (SCP: 17, 14 and 10, respectively) are the African countries in the top 20 continuously publishing on the drivers of female entrepreneurship. This number shows their consistent effort to understand these drivers to enhance the role of women in these countries' economy.

### Most cited documents

Table 1 provides the citation metrics of top-performing articles. The most globally cited documents range from 1995 to 2020. The titles of the documents suggest their compatibility with bibliometric analysis. Total citation represents the number of times an article has been cited in other articles. Total citation per year shows the average number of citations an article has received per year since publication. The normalised TC is a metric that compares an article's citation count to a benchmark or average in the field, adjusted for factors such as publication age or discipline-specific citation behaviours.



SCP, single country publications; MCP, multiple country publications.

**FIGURE 3:** Corresponding author's countries' scientific performance.

**TABLE 1:** Most globally cited documents.

S. no.	Article	Total citations	TC per year	Normalised TC
1	Langowitz and Minniti (2007)	564	33.17647060	7.312803890
2	Cliff (1998)	414	15.92307690	2.493975900
3	Buttner and Moore (1997)	352	13.03703700	1.228621290
4	DeMartino and Barbato (2003)	251	11.95238100	1.684563760
5	Fairlie (2020)	227	56.75000000	16.387700500
6	Lerner, Brush and Hisrich (1997)	221	8.18518519	0.771378710
7	Cooper and Artz (1995)	217	7.48275862	1.583941610
8	Kirkwood (2009)	217	14.46666670	4.771990740
9	Minniti and Naudé (2010)	206	14.71428570	5.208596710
10	Shelton (2006)	194	10.77777778	3.919191919

Note: Please see the full reference list of the article, Yang, Y., John, A. & Mohelská, H., 2025, 'The drivers of female entrepreneurship: A bibliometric analysis of the literature', *South African Journal of Economic and Management Sciences* 28(1), a6043. <https://doi.org/10.4102/sajems.v28i1.6043>, for more information.

TC, total citations.

The article by Langowitz and Minniti (2007) has the highest TC count (564) and an annual citation rate (33.18). It has been highly influential and consistently cited since its publication. The normalised citation count is also high (7.31), which indicates that it performs better than a standard measure. The article's sustained citation trajectory underscores its foundational role in shaping gender-aware entrepreneurial intention models. Cliff (1998) holds substantial TCs (414), TCpY (15.92) and normalised TC (2.49). Buttner and Moore (1997) have been cited 352 times, with 13.04 TCpY and a normalised TC of 1.23.

While older works reflect sustained foundational influence, recent publications like Fairlie (2020) demonstrate rapid and high-impact entry into the scholarly conversation. Despite being a relatively new article, it has achieved an annual citation rate of 56.75 and a normalised TC of 16.39, the highest among all listed works. This suggests that newer research, especially when aligned with current policy or data trends, can quickly gain traction and reshape the research agenda.

Lerner, Brush and Hisrich (1997) and Cooper and Artz (1995) discuss the factors affecting women's entrepreneurial performance and the determinants of their satisfaction. Their normalised citation counts are also at the modest end reflecting either time-adjusted decline or more focused reach. Kirkwood (2009), Minniti and Naudé (2010) and Shelton (2006) discuss the motivational factors and determinants of female entrepreneurship. Overall, the table allows for assessing the impact and relevance of academic articles in the field, with TCs indicating the overall influence.

## Science mapping

In this section, we conducted the analysis using the science mapping technique. It is a set of bibliometric techniques that facilitate the structural analysis of a research domain by uncovering the intellectual, social and conceptual relationships among publications (Aria & Cuccurullo 2017). Unlike performance analysis, which quantifies productivity and impact metrics, science mapping is concerned with the configuration and dynamics of scientific knowledge production. It focuses on identifying clusters of research, knowledge flows, thematic evolution and influential works that define the intellectual landscape of a field.

### Intellectual structure: Co-citation network

Intellectual structure establishes how the work of documents influences a given scientific community. The intellectual structure of the knowledge involves co-citation network analysis (Small 1973) and historiographic mapping (Garfield 2004). The co-citation network visualises the most influential studies by examining how often other works jointly cite articles (Small 1973). In other words, it focuses on the co-citation of two documents jointly cited by a third document. This technique is particularly beneficial for business scholars aiming to identify foundational knowledge and seminal work in their fields (Donthu et al. 2021). Figure 4 shows two

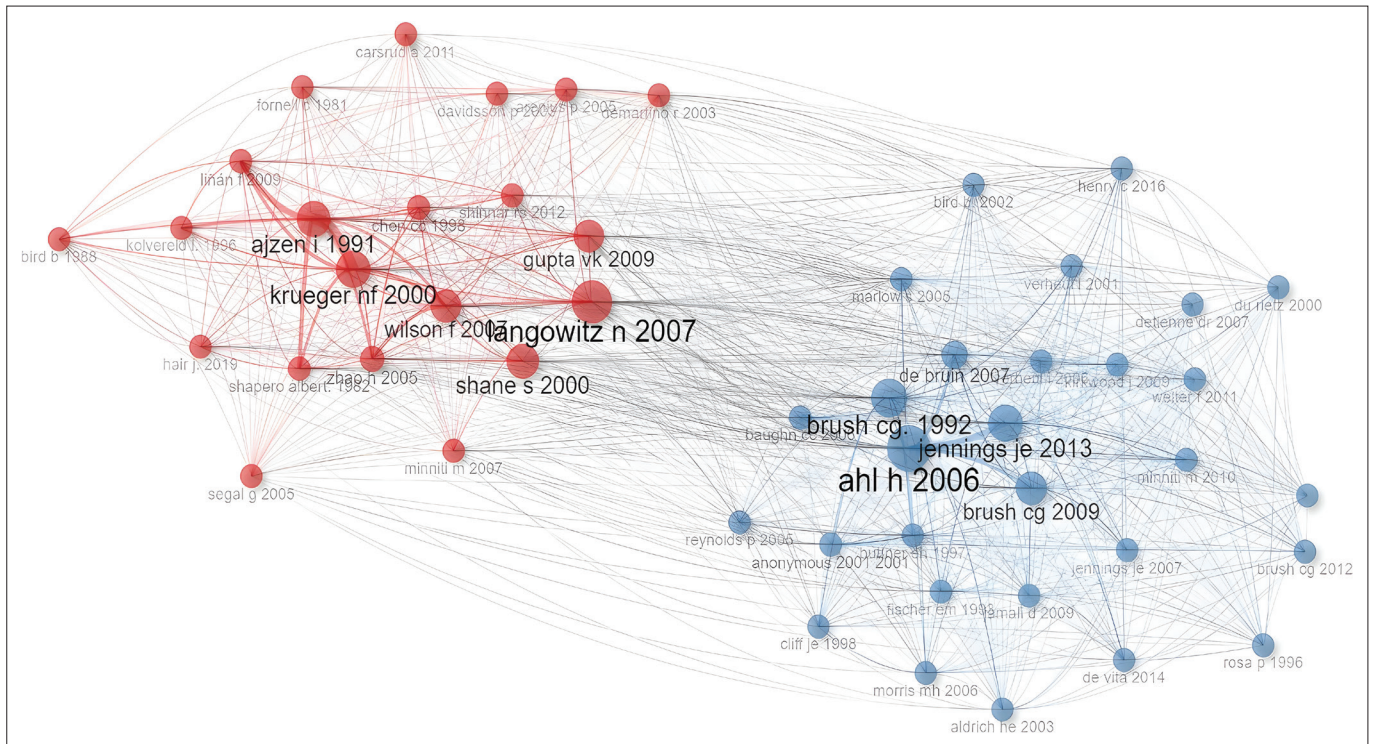
significant clusters that emerged based on betweenness centrality and a high PageRank score. These two distinct intellectual clusters represent diverging but complementary paradigms in studying female entrepreneurship. These clusters are structurally identifiable in the network and epistemologically distinct in their theoretical orientations and research foci.

The first cluster, led by Langowitz and Minniti (2007), reflects a behavioural economics perspective rooted in cognitive and decision-making frameworks. This body of work extends traditional models of entrepreneurship by incorporating cognitive limitations, subjective perceptions and social embeddedness into the analysis of entrepreneurial behaviour. Langowitz and Minniti's contribution is particularly influential in this regard. Drawing on data from the Global Entrepreneurship Monitor, their study tests multiple hypotheses related to social and human capital, risk perception, self-efficacy and the role of entrepreneurial networks while paying specific attention to gendered differences in opportunity recognition and entrepreneurial motivation (Nkwei, Rambe & Simba 2023). By doing so, they challenge the rational actor assumptions of neoclassical economics and provide a nuanced framework that explains how entrepreneurship is not merely an outcome of economic utility maximisation but also shaped by subjective and socially constructed perceptions. Their work links closely to others in this cluster, who collectively explore entrepreneurial intention, psychological traits and the importance of social context.

The second cluster, with Ahl (2006) as its intellectual anchor, represents a critical feminist approach to female entrepreneurship. This line of scholarship interrogates the discursive, structural and institutional dimensions that shape and constrain women's entrepreneurial experiences. Ahl's work offers a significant theoretical intervention by critiquing the individualistic, essentialist and gender-neutral assumptions prevalent in much of the mainstream entrepreneurship literature. It calls for a constructionist and interdisciplinary perspective, grounded in feminist theory. She reframes entrepreneurship research in a way that highlights power dynamics, social inequalities and the structural reproduction of gender norms. The influence of her critique is clearly visible in the co-citation cluster (Brush et al. 2009; De Bruin, Brush & Welter 2006; Jennings & Brush 2013). These studies contribute to the global women's entrepreneurship policy (GWEP) discourse and advocate for gender-aware entrepreneurship ecosystems. These scholars push the field beyond traditional performance metrics and encourage a broader understanding of entrepreneurial success that incorporates social value creation and institutional change.

The network structure and cumulative degree distribution further substantiate the centrality of these clusters. The red cluster (Langowitz & Minniti 2007) demonstrates dense intracluster co-citation patterns, indicating a





**FIGURE 4:** Co-citation network.

cohesive intellectual tradition focused on entrepreneurial cognition and behaviour. The blue cluster (Ahl 2006) similarly exhibits strong internal ties, highlighting the consolidation of critical feminist thought within the domain. The bridging links between these clusters suggest some theoretical convergence, particularly in recent studies that integrate psychological insights with socio-structural critiques.

This dual-cluster structure highlights a thematic bifurcation in female entrepreneurship research. One stream advances psychological and behavioural models that explore individual-level drivers. The other advocates feminist and institutional approaches that interrogate structural constraints and propose transformative agendas. The coexistence of these paradigms reflects the field's growing theoretical pluralism and underscores the need for continued interdisciplinary integration.

### Historiographic mapping

Historiographic mapping is a bibliometric technique used to reconstruct the evolutionary trajectory of a research field by identifying key documents that have influenced subsequent scholarship. Developed by Garfield (2004) and later integrated into bibliometric software such as Bibliometrix (Aria & Cuccurullo 2017), this method visualises a direct citation network in which nodes represent documents and edges represent citation links. The temporal dimension is embedded on the horizontal axis, allowing researchers to trace the progression of theoretical development and influence over time (Tay 2022).

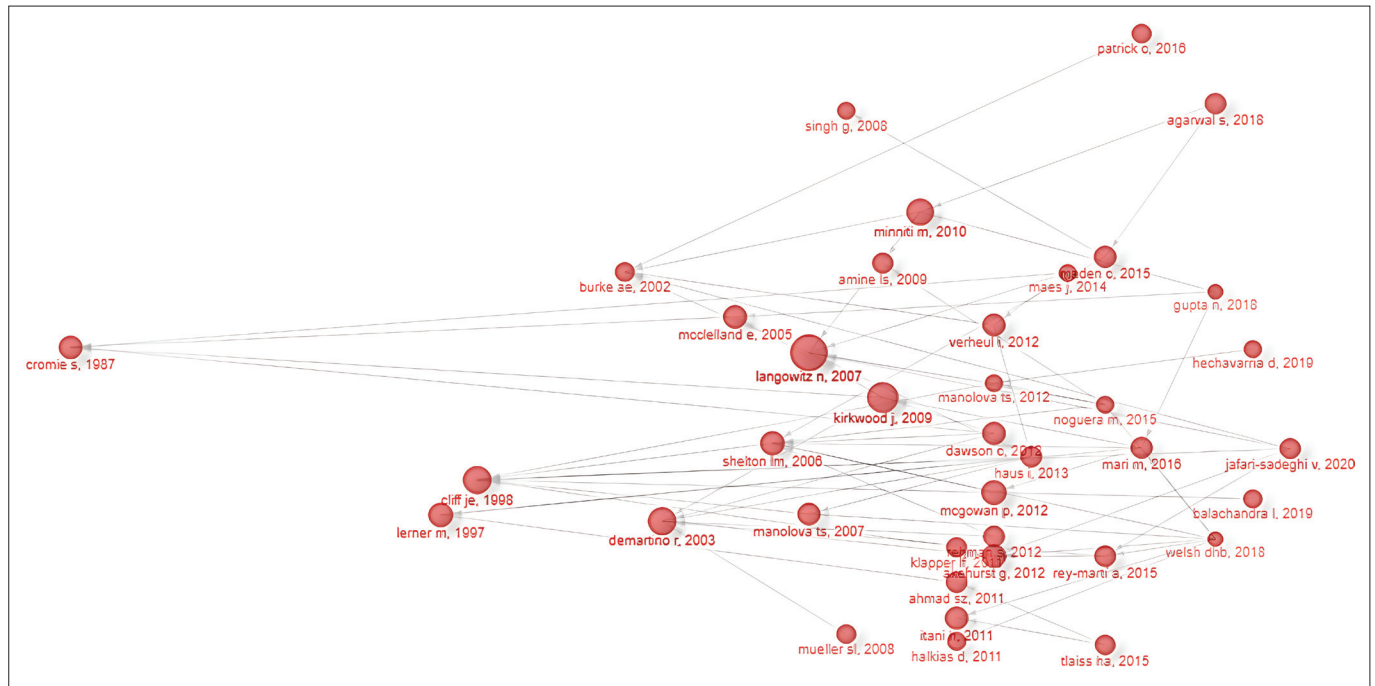
As illustrated in Figure 5, the historiographic map of female entrepreneurship research reveals a chronologically coherent citation path that connects landmark contributions over the past four decades. The map begins with Cromie (1987), one of the earliest empirical explorations into gender differences in entrepreneurial motivation. Cromie's study served as an intellectual precursor to subsequent waves of research, particularly in highlighting non-economic and personal factors in female entrepreneurial activity.

A decade later, Cliff (1998) emerges as another pivotal node. This work challenges the dominant growth-centric paradigm in entrepreneurship by demonstrating that many female entrepreneurs intentionally choose smaller-scale ventures. This idea marked a conceptual shift towards recognising alternative success metrics and questioning the assumptions of 'one-size-fits-all' business models (Dzomonda & Neneh 2023).

The historiographic trajectory continues with a pronounced citation convergence around Langowitz and Minniti (2007), whose behavioural economics framework examines the cognitive and perceptual filters that shape women's entrepreneurial intentions. This study plays a central bridging role in the citation network, connecting earlier work on motivation and intention with emerging scholarship on opportunity recognition and gendered entrepreneurial ecosystems.

Building upon this foundation, Manolova et al. (2012) further enrich the discourse by introducing cross-cultural perspectives and exploring how gendered differences in human capital and networking influence growth expectancies.





**FIGURE 5:** Historiographic mapping.

These contributions are critical in shifting the analytical lens from the individual to the relational and structural dimensions of entrepreneurship.

More recent nodes in the map (Minniti & Naudé 2010) address broader determinants, including policy environments, institutional frameworks and the complex interplay between work–family balance and entrepreneurial engagement. These studies indicate a growing recognition of the intersectional challenges women face, particularly in emerging and culturally specific contexts.

The structure of the historiographic map reflects a thematic maturation in the field. It moves from early explorations of motivation and gender comparison towards more sophisticated inquiries into cognition, social capital, institutional barriers and feminist critique. This evolution underscores how foundational works inform contemporary debates and how new research agendas are built upon historically rooted theoretical shifts. Historiographic mapping in this study has allowed us to trace the intellectual lineage of female entrepreneurship research. It reveals a field characterised by increasing theoretical diversity, cross-disciplinary engagement and a growing emphasis on context-sensitive inquiry.

### Conceptual structure: Thematic map

Conceptual structure discusses the main themes and trends in the field. It shows the structural relationship between themes, words or concepts. The thematic map using the networking approach is a strategic tool for identifying key research areas, understanding the relationships between different themes and discovering trends within scholarly conversations (Aria & Cuccurullo 2017). The thematic map in

Figure 6 includes 13 clusters that fall into four distinct quadrants, reflecting the varied focus and development of these themes within the field.

### Basic and transversal themes

The lower right quadrant (basic and transversal themes) includes themes that are not densely developed but are central, often foundational concepts integral to many other themes. This quadrant included self-efficacy, self-employment, access, aspirations and gender. The self-efficacy cluster emerged as a central and cohesive theme, as indicated by its high centrality and density scores. This finding suggests that self-efficacy is a core driver of female entrepreneurship, with a substantial amount of interconnected literature. Haus et al. (2013) found that women's attitudes towards starting a new venture and perceived behavioural control lead to entrepreneurial orientation. Another study found that subjective perceptual variables have a crucial influence on women's entrepreneurial propensity (Langowitz & Minniti 2007). The female cluster is notable for its high frequency and density. Studies have shown that women's personal factors, network affiliation, motivation, human capital and environmental factors affect their entrepreneurial performance (Groza, Groza & Barral 2020; Kuschel et al. 2017; Lerner et al. 1997).

Self-employment is another significant theme that emerged as a primary driver of entrepreneurship among women. Women who are good at managing their family conflicts properly and match their strategies with their needs and resources are better able to grow their venture (Manolova et al. 2012; Mari, Poggesi & De Vita 2016; Shelton 2006). Another study found that conducive and encouraging contributions to increased family income led to the launch of new ventures (Ge et al. 2022). While not central, access

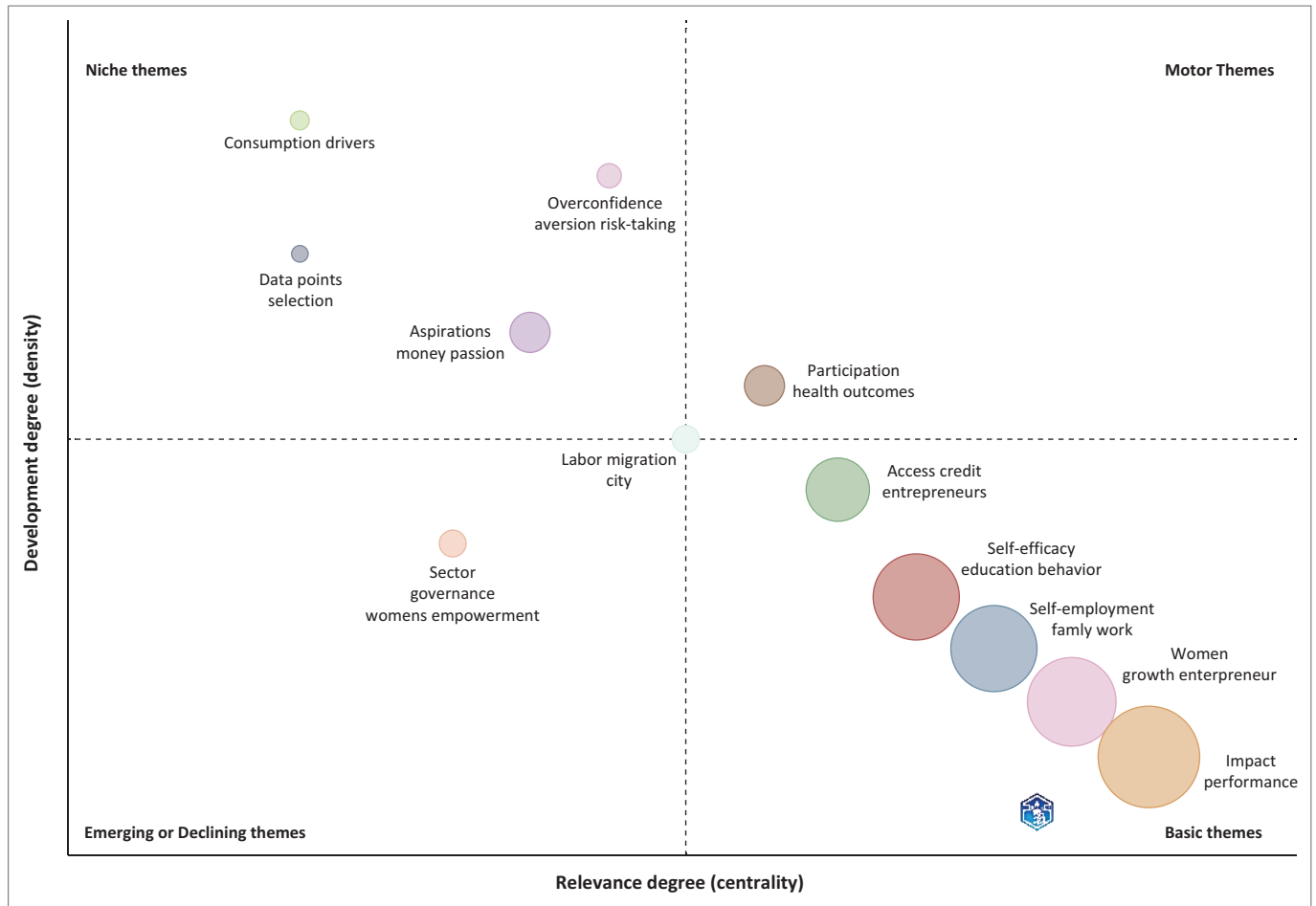


FIGURE 6: Thematic map.

is supported by a closely related set of studies, as shown by its high density. This implies that while access is not a dominant theme, the research within it is well integrated. Access includes many factors, including access to the market, finance, credit and policy, which suggests that access to these factors can serve as an indicator of female entrepreneurship (Campopiano et al. 2017; Gunewardena & Seck 2020; Minniti & Naudé 2010). Gender stands out as a frequent and dense cluster with a lower centrality. This suggests that gender-related themes such as gender stereotypes, gender roles, family conflicts and opportunities for recognition motivate women to launch ventures to prove themselves in society (Cliff 1998; Langowitz & Minniti 2007; Santos & Neumeyer 2021). It has developed into a distinct area of research that may not intersect widely with other themes.

### Niche themes

The upper left quadrant (niche themes) includes the themes that developed well internally but are yet to gain vital importance in the broader research landscape. With their low centrality yet high density, aspirations seem to be a niche area, indicating a more focused but less widespread research activity within the field. These studies have focused on the different aspirations of female entrepreneurs (Patrick, Stephens & Weinstein 2016).

Dawson and Henley (2012) found that 80% of women cited independence as their primary motivation for entrepreneurship. The theme of overconfidence in the literature (Yordanova & Alexandrova-Boshnakova 2011) potentially indicates a specialised topic of interest. Consumption, showing no centrality and the lowest density rank, is likely a niche with a very focused yet isolated body of research. These themes are well developed within their niches but have less centrality. The theme focuses on women's consumption behaviour, with a special focus on technology in financial management (Gichuki & Mulu-Mutuku 2018). These studies could be seen as well established within a specific context but not as influential across the broader field of female entrepreneurship research.

### Motor themes

Motor themes, typically characterised by high centrality and density, are crucial, as they often represent well-established and influential areas within a field. Participation is balanced with moderate centrality and high density, signifying its relative importance and a tight network of existing research depicted in the upper right quadrant (motor themes). The participation of family and children in terms of psychological and financial support and good health leads to successful ventures (Fairlie 2020; Pal & Gupta 2023).

### Emerging or declining themes

Sector, governance, empowerment and labour clusters, with their low centrality and moderate density in the lower left quadrant (emerging or declining themes), indicate peripheral themes with a degree of internal cohesion but are not core to the field. These themes focus on adoption, immigration, governance, power and related variables as the motivation for women to engage in entrepreneurship for the women (Joshi et al. 2019; Karki & Xheneti 2018; Yeoh & Willis 2005). More research is needed in these research areas.

### Drivers of female entrepreneurship

The bibliometric analysis reveals that research on female entrepreneurship clusters around three overarching categories of drivers: personal, financial and socio-cultural. These categories, while interconnected, are unevenly represented in the literature, suggesting both areas of depth and significant blind spots that warrant further exploration. Figure 7 visualises the conceptual framework that emerged from the bibliometric analysis. It shows the overlapping nature of these factors. None of these factors is isolated. These are interconnected, and the propensity of female entrepreneurship depends on the successful interplay of these factors.

#### Personal drivers

Personal drivers are the most emphasised in the literature. This includes a range of psychological, cognitive and experiential attributes. These drivers include self-efficacy, confidence, resilience, risk-taking propensity, motivation, decision-making ability and individual agency. These attributes reflect an internal locus of control and are often framed as essential prerequisites for entrepreneurial entry and persistence. These factors are in women's control, and their interplay leads them towards entrepreneurial ventures. While this focus has yielded valuable insights, it also reflects a bias towards individual-level attribution models, which may unintentionally place the burden of entrepreneurial success (or failure) solely on women's internal characteristics. As a result, the literature often underplays how systemic barriers such as structural discrimination or legal constraints interact with these personal traits.

Studies have consistently highlighted the importance of perceived behavioural control and entrepreneurial attitudes in predicting women's intentions to pursue entrepreneurial careers (Haus et al. 2013; Langowitz & Minniti 2007). However, the predominance of this focus has also drawn criticism for reproducing a heroic individualist narrative, which can inadvertently decontextualise women's entrepreneurship from the structural and environmental conditions in which it occurs. Moreover, the role of self-efficacy and internal motivation is well supported. However, there is limited inquiry into how these personal factors are themselves shaped by systemic barriers or enablers such as

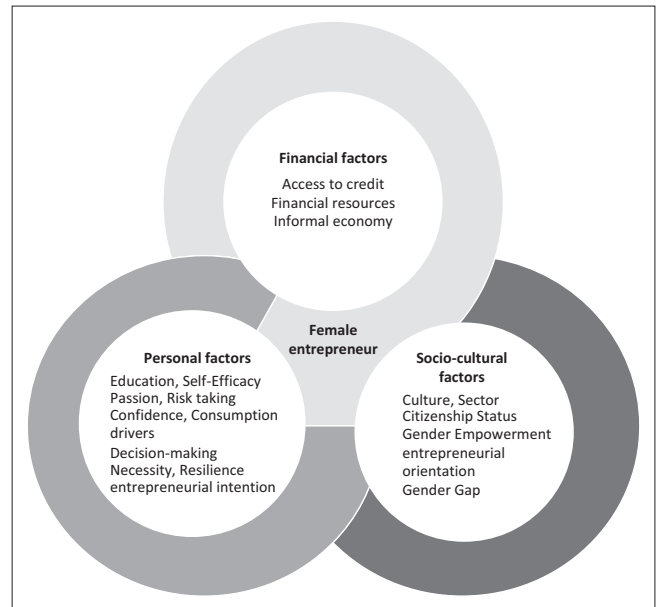


FIGURE 7: Drivers of female entrepreneurship.

socialisation, access to education, prior work experience or mentorship opportunities. A more nuanced and critical strand of literature (Kirkwood 2009; Kuschel et al. 2017) suggests that personal drivers are not static traits but are dynamically influenced by a woman's social, cultural and institutional context.

#### Financial drivers

Financial drivers primarily revolve around access to credit, capital and funding mechanisms. They emerge as central but underdeveloped in terms of theoretical rigour. Access to financial resources is frequently cited as both a facilitator and a barrier, particularly for women in developing or transitional economies. The literature highlights persistent gender gaps in financial inclusion, often driven by a lack of collateral, legal restrictions or discriminatory lending practices.

Recent studies (Fitouri & Zouaoui 2024; Pal & Gupta 2023) emphasise the importance of microfinance institutions, informal lending systems and the increasing role of digital financial tools in enabling female entrepreneurship. However, bibliometric analysis reveals that much of this work remains fragmented and highly context specific, focusing heavily on micro-level interventions in low-income countries. At the same time, macroeconomic or policy-level explorations are limited.

Additionally, financial drivers are often analysed in isolation from other categories. A few studies investigate how access to finance intersects with cultural expectations or family dynamics or how their personal agency or business experience shapes women's financial confidence. As such, while financial factors are widely acknowledged as critical, their complex interaction with other domains is insufficiently theorised.



### Socio-cultural drivers

Socio-cultural drivers represent a broad and diverse category, including family support, gender norms, community expectations, citizenship status, social capital and broader institutional structures. These factors are especially salient in non-Western and developing contexts, where traditional gender roles, collectivist cultural values and patriarchal systems often shape the opportunities and constraints faced by women entrepreneurs.

The literature captures both enabling and constraining aspects of socio-cultural environments. Family can be a source of both support (through labour, networks or emotional encouragement) and conflict (because of gender role expectations or time pressures) (Manolova et al. 2012; Shelton 2006). Similarly, some cultures view women entrepreneurs as agents of modernisation and progress, while others perceive them as transgressing established norms.

Despite the importance of these factors, the bibliometric findings suggest a lack of conceptual coherence in how socio-cultural drivers are treated. There is also a gap in comparative cross-cultural analyses, which limits the generalisability of insights. Furthermore, feminist and intersectional theoretical perspectives, which could help interrogate power structures and structural inequities, are largely absent or underused in this strand of literature (Ahl 2006; Santos & Neumeyer 2021).

Together, these three categories offer a useful heuristic for organising the literature on the drivers of female entrepreneurship. However, the analysis reveals a field that is still evolving, with notable imbalances. Personal drivers dominate the discourse, often at the expense of deeper explorations into systemic barriers. Financial drivers, while widely discussed, require more nuanced, context-sensitive and intersectional analyses. Socio-cultural factors, although rich in qualitative insight, lack theoretical unification and robust cross-national comparisons. Additionally, the interplay among these categories is often overlooked. For instance, a woman's financial access might depend on cultural norms regarding inheritance or male guardianship, affecting her self-confidence and entrepreneurial intent.

These critical reflections on the literature illuminate the current state of knowledge and highlight clear areas in need of further inquiry. In the subsequent section, we build on these insights to propose a future research agenda that addresses thematic gaps, theoretical underdevelopment and emerging trends in the field of female entrepreneurship.

### Research implications

The findings of our study yield several practical implications for stakeholders seeking to support and strengthen female entrepreneurship. While the study adopts a global bibliometric lens, the key drivers spanning personal, structural and socio-cultural domains can inform context-

sensitive strategies when adapted appropriately. These recommendations are directed at policymakers, educational institutions, development agencies and entrepreneurial support organisations, each of which plays a critical role in shaping women's entrepreneurial ecosystems.

For policymakers, the review confirms that institutional constraints remain a significant barrier to women's entrepreneurial participation, particularly in developing contexts where regulatory systems and financial infrastructure are underdeveloped (Minniti & Naudé 2010; Sobhan & Hassan 2024). Gender-sensitive policy frameworks should prioritise reforms that improve access to finance (Fitouri & Zouaoui 2024), ensure legal protection for women business owners and promote enabling environments through streamlined business registration and inclusive procurement schemes. In regions where informal norms restrict women's market participation, policies must also engage with cultural narratives and promote inclusive public discourse.

Educational and training institutions have a central role in building entrepreneurial capacity and confidence among women. The review highlights the importance of individual drivers such as self-efficacy and resilience (Haus et al. 2013; Langowitz & Minniti 2007). Curricula should incorporate gender-aware entrepreneurship education that fosters critical thinking, negotiation skills and risk tolerance. Institutional partnerships with local entrepreneurs and networks can provide women with mentorship and exposure, particularly in environments where female role models are scarce or undervalued (Manolova et al. 2012).

For development organisations and non-profit organisations (NGOs), regionally differentiated strategies are essential. In lower-income or rural settings, many women enter entrepreneurship out of necessity and often operate informal or home-based businesses (Kuschel et al. 2017; Pal & Gupta 2023). Interventions here should focus on microfinance, digital literacy and mobile-based business solutions. Support services should also account for domestic labour burdens and time poverty, which disproportionately affect women (Cliff 1998). In contrast, in high-income contexts, initiatives may be better directed towards increasing access to venture capital and high-growth sectors, addressing the gender gap in startup investment (Raman et al. 2022).

Entrepreneurship support organisations, including incubators, accelerators and business advisory services, can enhance their inclusivity by applying the findings related to socio-cultural drivers. The literature points to the continued influence of gender norms, limited mobility and network exclusion in constraining women's entrepreneurial engagement (Brush et al. 2009; Santos & Neumeyer 2021). Inclusive design strategies may include flexible programming, child-care supported training and community-based delivery models. Programme designers should also monitor participation metrics to identify and respond to gender-based drop-off patterns.

While this study does not focus on a single country or regional case, its value lies in providing a comprehensive synthesis of globally relevant drivers of female entrepreneurship. Stakeholders are therefore encouraged to interpret these insights through a regionally grounded lens, considering differences in institutional maturity, cultural values and economic priorities. Future policy and programme development should be guided by aligning these drivers with local challenges and opportunities, rather than relying on one-size-fits-all models.

## Study limitations and future research directions

Our study focused on the drivers of female entrepreneurship. We presented the three fundamental categories of these drivers, but this study has some limitations. Although this study followed the best practices in bibliometric analysis, it could provide the benefits of a systematic literature review or a meta-analysis. We collected the data from the Web of Science (WOS) database, but ignoring other dominant databases like Scopus can result in some biases. Future studies should collect the data from Scopus, and they can compare the results.

The thematic map's strategic delineation of key research areas in the female entrepreneurship literature unveils potential avenues for future scholarly inquiry. Notably, underrepresentation in the motor quadrant underscores the need for more holistic and integrative research. This invites exploration of the interconnections between central and peripheral themes, thereby fostering a more comprehensive understanding of the domain. A pivotal area for future research is the expansion of the theme of self-employment. Given its significant centrality and density, it warrants an in-depth examination of the strategies employed by women to balance family conflicts and advance entrepreneurial ventures. Furthermore, exploring how various socio-economic backgrounds influence women's self-employment experiences could yield valuable insights. The access theme is characterised by its high density yet non-dominant area of study, which warrants research on how access to resources, such as markets, finance and policy, impacts female entrepreneurship. This investigation could be particularly enlightening when considering diverse cultural and geographical contexts.

The investigation of niche themes, including decisions, aspirations, overconfidence and consumption, while less central, offers an opportunity to uncover unique insights into the motivations and behaviours of female entrepreneurs. Although specific, these areas can potentially enrich the broader understanding of female entrepreneurship significantly. Emerging or declining themes, such as labour, sector and adoption, present a fertile ground for research. Examining these themes could illuminate aspects of female entrepreneurship in flux, including the roles of immigration, governance and power dynamics.

Longitudinal studies are essential to understand the evolution of these themes over time. Such studies would provide invaluable insights into the changing landscape of female entrepreneurship and help identify emerging trends. Comparative studies across cultures and regions can reveal how contextual factors shape female entrepreneurship. This approach may lead to more effective and culturally sensitive support strategies for female entrepreneurs. Finally, adopting interdisciplinary approaches incorporating perspectives from psychology, sociology, economics and gender studies could offer a holistic understanding of female entrepreneurship. This approach advances academic knowledge and informs policymaking, educational programmes and support mechanisms for female entrepreneurs.

## Conclusion

This study provides a comprehensive bibliometric analysis of the drivers behind female entrepreneurship. It offers critical insights into the literature's evolution, structure and emerging trends from 1987 to 2024. By leveraging advanced bibliometric tools such as Biblioshiny, our analysis systematically maps the scientific performance and intellectual, social and conceptual structures. Key findings emphasise the interplay of personal, financial and socio-cultural factors as fundamental drivers shaping female entrepreneurship, with significant variations across diverse cultural and economic contexts.

The analysis presents critical contributions from influential authors, journals and institutions, highlighting the pivotal role of interdisciplinary and cross-cultural collaborations in advancing knowledge in this domain. Our study also underscores the thematic progression within the literature, identifying core and emerging themes that influence female entrepreneurial activities. The insights gained into gender-specific motivators, the role of self-efficacy, access to resources and societal support systems provide valuable directions for both academic inquiry and practical interventions.

Moreover, the study draws attention to significant research gaps, such as the need for deeper exploration of underrepresented themes. It includes niche topics like aspirations, overconfidence, consumption behaviours and broader socio-economic and governance influences on female entrepreneurship. These gaps present opportunities for future research to employ interdisciplinary and longitudinal approaches, fostering a more nuanced and inclusive understanding of the field.

Ultimately, this bibliometric analysis contributes to the academic discourse by mapping existing knowledge and offering actionable insights for policymakers, practitioners and educators. By identifying critical trends and gaps, our findings aim to inspire targeted strategies that empower female entrepreneurs, promote gender equity and support

sustainable development in diverse contexts. As female entrepreneurship continues to evolve, this study serves as a foundational resource for fostering an ecosystem that nurtures and amplifies the impact of women in business globally.

## Acknowledgements

### Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

### Authors' contributions

A.J. collected the data, performed the analysis, prepared the manuscript and handled the revisions. Y.Y. contributed in reviewing and revising the paper. H.M. reviewed the paper initially and revised it according to the journal's guidelines.

### Funding information

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### Data availability

Data sharing does not apply to this article as no datasets were generated or analysed during this study.

### Disclaimer

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