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Informal entrepreneurship and entrepreneurial ecosystems: a systematic literature review and future research agenda

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Abstract: The evolving dynamics of informal entrepreneurship (IE) within entrepreneurial ecosystems (EEs) is a complex and under-explored area of research. This article provides a systematic literature review of the intersection between IE EEs, addressing a central gap: EE research often sidelines informal actors, while IE research frequently under-specifies ecosystem mechanisms (networks, culture, intermediaries, and resource access). We synthesise 72 articles (2009–March 2025) using thematic analysis to derive an integrative model and research agenda. The thematic analysis, underpinned by content analysis, discerns thematic threads that offer a solid synthesis of the existing body of knowledge.

Keywords: entrepreneurial ecosystems; informal entrepreneurship; systematic literature review; thematic analysis.

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1 Introduction

The informal sector consists of businesses that are not legally registered (Salvi et al., 2023). It is widespread and shapes local opportunity flows, yet entrepreneurial ecosystem (EE) thinking often centres formal and productivity-oriented ventures, which sidelines informal actors even where they materially influence markets, networks, and resource circulation. According to the World Bank's reports, the informal economy accounts for one-fifth of GDP and 16% of employment in advanced economies. In contrast, it accounts for, on average, one-third of GDP and 70% of employment in emerging markets and developing economies (Ohnsorge and Yu, 2022). Unlike formal entrepreneurs, who are bound to work within the institutional framework of a country, informal entrepreneurs choose not to register their businesses legally (Baumol, 1996; Moore et al., 2020). Despite their widespread prevalence in many economies, they are often not considered in practical discussions and theoretical models for designing EEs. Numerous studies have examined the entrepreneurial facets of informality from various perspectives (Boafo et al., 2022; Ejiogu et al., 2022; Omri, 2020; Salvi et al., 2023; Teyi et al., 2023). They usually focus on two levels: the micro-level features of informal entrepreneurs such as gender, education, and income (Williams and Shahid, 2016); and macro-level features, such as the environments in which they operate and with which they interact. On the macro level, the literature has focused more on institutional contexts, leaving other contextual dimensions of the EE underexamined (Shahid et al., 2022).

The concept of EE has received considerable attention, yet influential definitions and performance framings often privilege 'productive' and formal entrepreneurship, narrowing what is studied and which actors are treated as ecosystem-relevant (Stam, 2015; Stam and Van de Ven, 2021). This focus can obscure informal entrepreneurs even in contexts where they shape opportunity flows and resource circulation. Conversely, IE research often explains informality through institutional and individual determinants, while under-specifying ecosystem mechanisms such as networks, culture, intermediaries, and access to resources that structure participation in place-based systems (Webb et al., 2013). Our review therefore adopts an ecosystemic lens to make these mechanisms explicit. From a policy and practice perspective, an ecosystem lens matters because ecosystem institutions often function as gatekeepers of resources and legitimacy. Where entry conditions require immediate registration or formal financial documentation, informal entrepreneurs are structurally excluded from ecosystem benefits even when they represent a large share of entrepreneurship. This implies that formalisation policies and ecosystem support can be designed as staged transitions, combining simplification, information accessibility, and inclusive support infrastructures.

Therefore, the relationship between informal entrepreneurship (IE) and EEs in the literature is weak, exposing two main gaps. First is the absence of a holistic approach in the IE literature. There is a need for an ecosystemic approach to understand the role of context and dynamics in IE (O'Connor et al., 2018). Second is the lack of inclusivity in the EE literature. There is a need to understand how these ecosystems contribute to the integration and support of informal entrepreneurs, particularly through the transition from informal to formal entrepreneurship (Salvi et al., 2023). The unit of analysis in this review is research that examines informal entrepreneurs/ventures in relation to EE concepts or mechanisms (e.g., governance, intermediaries, networks, culture, and resource access) at a place-based level. Studies that discuss informality only as a macro 'shadow economy' phenomenon without any ecosystem construct are excluded. These

gaps pave the way for linking IE and EEs as part of an inclusive and holistic approach. They also open up the debate as to whether EEs are genuinely open to all forms of entrepreneurship, or whether they systematically exclude certain actors. This points to the issue of exclusion from resources; networks and legitimacy that EEs tend to confer (Ahl and Marlow, 2021). More precisely, our research question is how can we contribute to an ecosystemic understanding of IE?

To answer this research question, this study presents a systematic review of the existing academic work (Tranfield et al., 2003; Torraco, 2005, 2016; Snyder, 2019) on the link between IE and EEs, which emphasises transparent search, screening, and synthesis to generate a defensible knowledge map and agenda. Employing thematic analysis (Caputo et al., 2016), a qualitative analysis method (Braun and Clarke, 2006; Clarke and Braun, 2017), we reviewed the existing literature on this link, focusing on inter-organisational dynamics and highlighting complex interactions within the IE ecosystem. This review focused on 72 articles published from 2009 to March 2025. Through this analysis, we developed a number of thematic threads, which served as the foundation for a conceptual model, allowing a more holistic synthesis of the accumulated knowledge in this domain.

The structure of this article is as follows: Sections 2 and 3 present the theoretical background and methodology for the topics under analysis; the subsequent sections provide a descriptive analysis and results of the studies in the literature. The final section presents a discussion of the findings.

2 Theoretical background

In entrepreneurial research, EEs and IE have traditionally been studied as distinct entities. The concept of the EE has been elucidated through various lenses and has gained prominence in research, policy, and practice (Theodoraki et al., 2022). Spigel (2017, p.49) defined it as “the union of localised cultural outlooks, social networks, investment capital, universities, and active economic policies that create environments supportive of innovation-based ventures” or as a set of interdependent actors and factors that enable productive entrepreneurship (Stam, 2015). Because of this focus on productive entrepreneurship, the inclusivity of EEs has been left in the shadows. Even though research has highlighted inclusive EEs, such as through a gender-oriented lens (Brush et al., 2019; Neumeyer, 2020), forms of business that operate outside formal regulatory boundaries, like IE, are rarely considered. We adopt an ecosystemic lens because IE outcomes are not determined only by macro institutions but also by meso-level mechanisms such as intermediaries, networks, cultural norms, and resource access, that structure opportunity and legitimacy in places. The context, structure and dynamics framing (Cao and Shi, 2021) allows us to organise this evidence coherently and to derive mechanism propositions from the literature.

The junction of these two concepts is intriguing for theoretical exploration. It represents a crucial area where the formal structures of ecosystems intersect with the informal spheres of entrepreneurship, providing insights into new directions for economic development and innovation. For instance, Salvi et al.’s recent (2023) study critically analysed and highlighted the different paths taken by informal entrepreneurs in their environments, emphasising the dialectical nature of their engagement with formal

structures and the resulting implications for policy and practice without considering the role of EEs.

Prior studies on IE have focused on individual characteristics, processes, and determinants (Ejiogu et al., 2022). They have considered the challenges and barriers informal entrepreneurs face because of necessity-driven motives (Meyer et al., 2016), the diversity among informal entrepreneurs and their paths to formalisation (Salvi et al., 2023), and how different institutional settings in both developed and developing economies shape their experiences (Webb et al., 2014). Moreover, research has investigated the economic and social motivations behind IE, including responses to economic crises, recessions, and inequality (Santos et al., 2021). It has also addressed gender disparities in IE among academics (Halilem et al., 2022). According to the literature, IE is practiced worldwide and perceived to occur on the margins and peripheries of the formal economy, yet it is also theorised as a powerful process in business ventures (Simba et al., 2023). Some work has taken context into account by focusing on institutional or cultural dimensions (Williams and Nadin 2011; Ejiogu et al., 2022), but not from a holistic or ecosystemic approach.

Building upon this foundation, our study aims to provide an ecosystemic perspective on IE, offering insights into EEs' ability to integrate this form of entrepreneurship. This approach not only fills a critical void in the academic discourse but also opens up new research avenues. This research is based on the premise that EEs and IE do not merely coexist, but are inherently intertwined, with each influencing and affecting the other. Current discourse has often separated these two fields, overlooking that the dynamic interplay between them can provide deeper insight into the inclusivity of EEs.

3 Methods and data

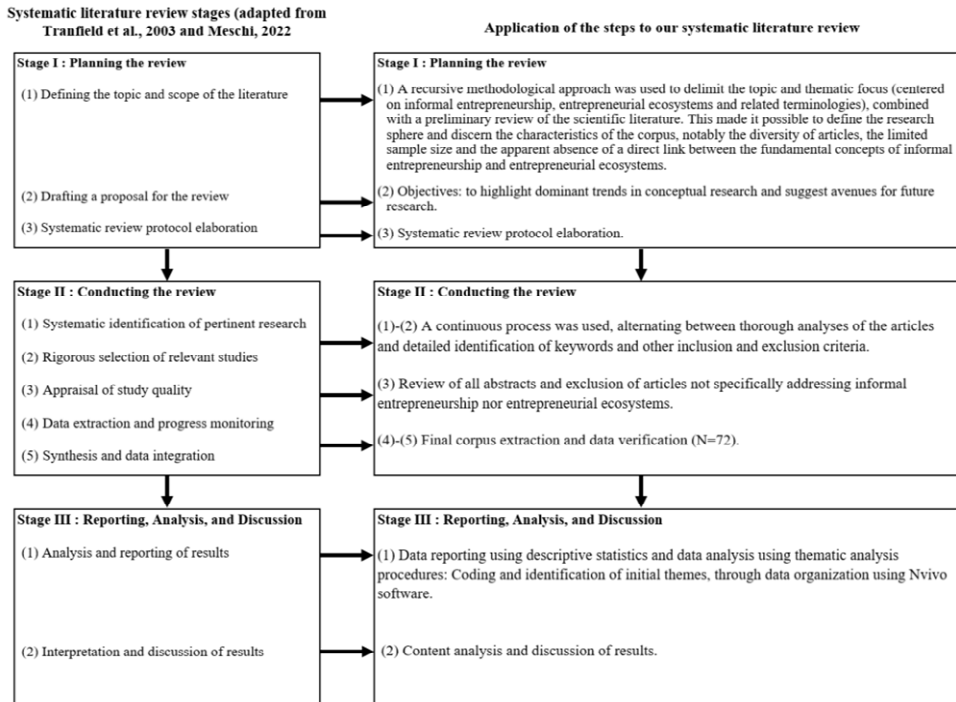
3.1 Data collection

We adopted a systematic approach grounded in a detailed, predetermined protocol for the examination and assessment of peer-reviewed articles (Snyder, 2019; Torraco, 2005, 2016; Tranfield et al., 2003) published in the Scopus and Web of Science (WoS) databases. This integration acknowledges both databases as dependable and accessible resources for the exploration of scientific literature. We elected to use both Scopus and WoS for data collection to ensure greater coverage of the sample of articles on this topic and to obtain different preliminary results when running the first searches. As selection criteria, in both databases the first research dataset was built using the search terms *IE* and related terms and concepts such as *unregistered business activity*, *informal business ventures*, *unregulated self-employment*, *informal enterprise*, *marginal entrepreneurship*, *network*, *environment*, *ecosystems*, and *EEs* in the titles, abstracts, and keywords of the articles to ensure their relevance to the subject. However, the initial searches returned papers that were unrelated to our research question and objectives. This scoping indicated substantial noise outside the IE and EE intersection. To preserve conceptual consistency, the main search therefore used 'IE' as an anchor term aligned with the research question. Terminology choice is acknowledged as a limitation. For this reason, we exclusively used the search term IE, which yielded 2,340 articles in Scopus and 2,499 in WoS.

We then ran searches within the database keywords filter and checked for the term 'IE and EEs' in Scopus, which reduced the results to 327 articles. We refined the results

yielded in WoS by searching for the term *EEs* to capture a broader range of publications, as suggested by Kraus et al. (2020), as this term is often found in the content rather than the title or abstract. This reduced the results to 155 articles. After this step, we applied more filter options to further refine our searches in both databases using the following criteria: we only selected articles written in English and published in a journal, and whose research field corresponded to our research objective and to the scope of application in the management research field. Ultimately, Scopus and WoS returned 168 and 130 papers, respectively.

Figure 1 Steps of a systematic review and their application to our SLR



To control for quality, we classified our data by journal ranking to select only publications ranked from 4* to 2 using the ABS Academic Journal Guide (v.2024) by Chartered Association of Business Schools (CABS), a globally accepted list of distinctive journal rankings. This choice was intended as a quality-control mechanism to focus on peer-reviewed contributions meeting established academic standards, while acknowledging that research on informality is also often published in context-rich outlets. To address this potential limitation, we conducted a sensitivity check by relaxing the ABS filter and re-running the search strategy to ensure that no relevant contributions were inadvertently excluded. This additional step confirmed the overall consistency of our corpus.

The initial classification process yielded 41 articles from Scopus and 69 from Web of Science, totalling 110 publications. We then conducted a sequential screening process to remove duplicates and merge the two datasets, ensuring a consistent and homogeneous

analysis (Wurth et al., 2022). The final sample comprised 72 unique articles published between 2009 and March 2025.

3.2 *Data analysis*

We conducted a thematic analysis using the qualitative analysis software NVivo. We then applied an inductive methodology, using the six phases of thematic analysis (Table 1) as outlined by Braun and Clarke (2006) and Clarke and Braun (2017) to produce a thematic map (Bürger and Volkmann, 2020), in which connections between topics are established based on data and the existing literature. We ensured the validity of the study by situating it within a theoretical framework (Charmaz and Bryant, 2011), while developing a model at the end of the analysis that combines elements of EEs and IE.

We chose thematic analysis for this study because of its robust capacity to help researchers identify, analyse, and report patterns (themes) within qualitative data, which made it particularly valuable for understanding the complex nature of IE within EEs. Unlike methodologies that focus on quantifying research output and citation patterns, thematic analysis is well suited for exploring the relationship between IE and EEs, aligning with the study’s aim to explore the presence of IE within EEs.

Table 1 Phases of a thematic analysis and their application to our SLR

<i>Phases of thematic analysis (Braun and Clarke, 2006)</i>	<i>Description of the process: application of the phases to our systematic literature review</i>
Familiarising yourself with your data	Utilised NVivo’s ‘Text Search’ and ‘Word Frequency’ queries to initially engage with the data, generating word clouds to identify prevalent terms and concepts in the dataset. This visual representation gave us a preliminary understanding of the data’s thematic content.
Generating initial codes	Applied NVivo’s ‘Auto-Coding’ feature to systematically tag text segments with initial codes. The use of the ‘Tree Map’ allowed us to organise these initial codes into a hierarchical structure, facilitating the categorisation of data into emerging patterns.
Searching for themes	Employed NVivo’s ‘Query’ and ‘Word Cloud’ functions to explore connections between codes, assisting in the aggregation of related codes into broader themes. The ‘Matrix Coding’ feature was particularly useful for visualising the relationship between different codes and identifying potential themes.
Reviewing themes	Utilised NVivo’s ‘Chart’ and ‘Map’ features to visually represent the relationships between themes, enabling a thorough review and refinement process. This graphical representation helped in assessing the coherence and distinctiveness of each theme, leading to further refinement.
Defining and naming themes	This step involved writing detailed descriptions and naming each theme, ensuring clarity and relevance to the research questions.
Producing the report	The ‘Reports’ and ‘Extracts’ features in NVivo were used to compile and organise the findings into a coherent narrative. This included the integration of direct quotes from the data, visual representations of themes, and analytical narratives that align with the research objectives.

4 Results

The following sections offer insights into the outcomes and main findings of our study (Tranfield et al., 2003). First, we present a summary of the research corpus. We then present the results of the content analysis, systematically structured in a thematic analysis.

4.1 Literature mapping: descriptive analysis

Only 72 articles constituted the core analytical corpus, signifying a dearth of literature that coherently addresses IE within EEs. Figure 2 illustrates the publication trajectory from 2009 to 2025, illustrating that academic interest in this topic has fluctuated.

Although each concept had been extensively explored separately, the intersection between them only began to attract scholarly attention in 2009. A discernible surge in publication activity occurred between 2015 and 2024 across both databases. Notably, in 2022 WoS and Scopus peaked and reached their highest with a recording of ten publications.

Data tables extracted from the databases brought additional granularity to the descriptive analysis, cataloguing scientific contributions in a series of leading journals.

In this collection, journals like International Journal of Entrepreneurial Behavior and Research, Entrepreneurship and Regional Development, International Journal of Entrepreneurship and Innovation, Entrepreneurship Theory and Practice, and Journal of Business Venturing take a prominent place, reflecting their central role in the entrepreneurship debate and in shaping the discourse on the confluence of IE and EEs.

Figure 2 Evolution of scientific publications (number of articles per year and per database) (see online version for colours)

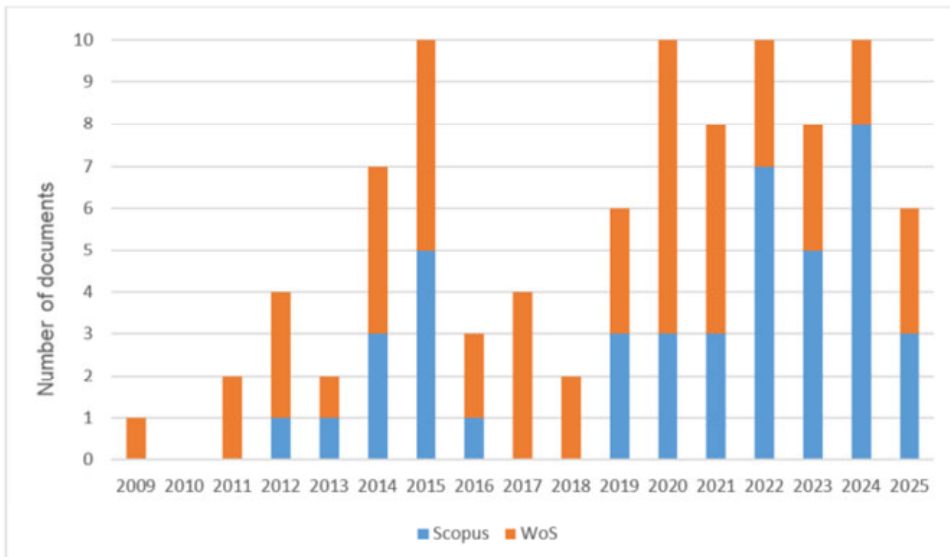


Table 2 Main academic journal rankings

<i>ABS academic journal guide 2024</i>	<i>Number of articles</i>	<i>Percentage</i>
4*	12	16.67
4	3	4.17
3	28	38.89
2	29	40.28
<i>Total</i>	<i>72</i>	<i>100</i>

Table 3 Main journals retrieved

<i>Journal</i>	<i>ABS rank</i>	<i>No. of articles</i>	<i>Journal</i>	<i>ABS rank</i>	<i>No. of articles</i>
<i>International Journal of Entrepreneurial Behavior and Research</i>	3	7	<i>Research Policy</i>	4*	1
<i>Entrepreneurship and Regional Development</i>	3	6	<i>Global Strategy Journal</i>	4	1
<i>International Journal of Entrepreneurship and Innovation</i>	2	6	<i>Journal of Management Studies</i>	4	1
<i>Journal of Business Venturing</i>	4*	5	<i>Strategic Entrepreneurship Journal</i>	4	1
<i>International Journal of Entrepreneurship and Small Business</i>	2	4	<i>Asia Pacific Journal of Management</i>	3	1
<i>Entrepreneurship Theory and Practice</i>	4*	3	<i>Business Research Quarterly</i>	2	1
<i>Technological Forecasting and Social Change</i>	3	2	<i>Contemporary Economic Policy</i>	2	1
<i>Journal of International Business Studies</i>	4*	2	<i>European Management Review</i>	2	1
<i>Small Business Economics</i>	3	3	<i>Service Industries Journal</i>	2	1
<i>Journal of Technology Transfer</i>	3	2	<i>Southern Economic Journal</i>	2	1
<i>Entrepreneurship Research Journal</i>	2	2	<i>International Small Business Journal</i>	3	1
<i>International Journal of Gender and Entrepreneurship</i>	2	3	<i>Structural Change and Economic Dynamics</i>	2	1
<i>European Journal of International Management</i>	2	2	<i>Journal of Management</i>	4*	1
<i>Thunderbird International Business Review</i>	2	1	<i>Journal of Business Venturing Insights</i>	2	1
<i>Journal of Small Business and Enterprise Development</i>	2	3	<i>Journal of Business Research</i>	3	1
<i>Oxford Economic Papers</i>	3	1	<i>Journal of International Management</i>	3	1
<i>Journal of Sustainable Tourism</i>	3	1	<i>Journal of Research in Marketing and Entrepreneurship</i>	2	1

The graphical analysis (Figure 2) shows the ebb and flow of academic interest over the years, with an upward trend in the number of publications and citations indicating growing interest in IE and EEs. The significant peak in publications observed testifies to the intensification of interest in and scrutiny of this niche area by researchers. It suggests that scholars have acknowledged its significance, resulting in an increase in studies intended to delve into its complexities and implications. These measures not only quantify research output, but also highlight the growing importance of this interdisciplinary dialogue, marking a turning point in the evolution of entrepreneurship studies.

Table 4 Geographical coverage

<i>Countries/regions</i>	<i>No. of articles</i>	<i>Percentage</i>
UK	5	6.94
Brazil	4	5.55
Ghana	3	4.16
Bulgaria	2	2.77
Croatia	2	2.77
North Macedonia	2	2.77
Pakistan	2	2.77
Nigeria	2	2.77
Canada	1	1.38
Colombia	1	1.38
Egypt	1	1.38
Hungary	1	1.38
India	1	1.38
Italy	1	1.38
Nepal	1	1.38
Oman	1	1.38
Tanzania	1	1.38
Tunisia	1	1.38
Turkey	1	1.38
Ukraine	1	1.38
Other countries	40	55.55
<i>Total</i>	<i>72</i>	<i>100</i>

Notes: The 'other countries' category includes articles that use large quantitative datasets encompassing a wide range of countries, often covering both developed and developing regions. These articles generally use cross-country comparisons or analyse specific regions with a broad geographical scope. Examples of regions represented in these datasets: Africa, Asia-Pacific, Latin America, Sub-Saharan Africa and Europe.

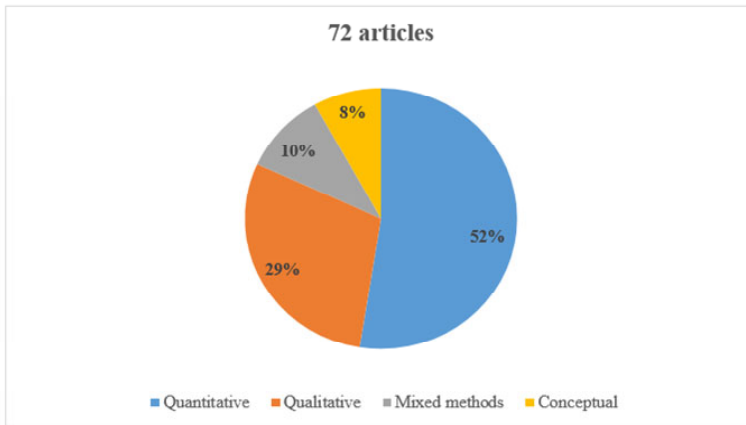
Table 4 shows that the UK leads research in this area, contributing five articles, followed by Brazil with 4. Ghana contributed three articles, while Bulgaria, Croatia, North Macedonia, Pakistan and Nigeria contributed two each, indicating a broad geographic spread of interest. Several countries, including Canada, Tunisia, and others, contributed

one article each, highlighting continued global engagement in this niche area. The ‘other countries’ category encompasses papers using large datasets covering regions such as Africa, Latin America, and Europe, demonstrating the extensive cross-country comparisons employed in this research.

Figure 3 outlines in detail the methodologies employed in the corpus of studies linking EEs and IE, a previously unexplored intersection in entrepreneurship research. Quantitative studies, which dominate the methodological spectrum, employed statistical tools to analyse major trends and patterns in informal entrepreneurs’ characteristics and determinants. These studies often employed longitudinal, cross-sectional, or cross-country analyses, drawing on in-depth datasets such as the Global Entrepreneurship Monitor and World Bank data (Thai and Turkina, 2014).

Qualitative studies, which account for 29% of all data, provided detailed insights into the individual experiences and positions of informal entrepreneurs within the wider context of EEs, particularly institutional ones. Researchers using qualitative approaches, such as interviews, delved deep into questions of how entrepreneurs operate within and are influenced by their ecosystems, exploring the motivations behind IE in specific contexts, such as developing countries in African regions (Adom, 2014). Mixed methods research, which combined quantitative and qualitative approaches, addressed different levels of the concepts by corroborating data from different sources for a comprehensive analysis and integrating statistical data with personal narratives (Williams et al., 2012).

Figure 3 Methodologies applied (see online version for colours)



4.2 *Thematic analysis*

Applying steps 2 and 5 of the thematic analysis, we identified the following three research themes:

- 1 context (44 articles; 61.11%)
- 2 structure (32 articles; 44.44%)
- 3 dynamics (38 articles; 52.78%).

These themes are discussed in the following sections and included in a thematic map in Section 5 (Bürger and Volkmann, 2020).

4.2.1 Theme 1: Context

This theme is prominent in research on this topic. IE is context-dependent (Welter et al., 2015), shaped by economic, institutional, and socio-demographic factors. These contextual factors influence the entrepreneur's decision to register their firm or business at the outset. The length of time for which firms remain unregistered was shown to be positively correlated to access to financing, but negatively related to crime and political instability (Ejiogu et al., 2022). Given developing countries' unique social, cultural, political, and economic dynamics, studies situated IE within their particular societal contexts (Ejiogu et al., 2022), paying close attention to economic, institutional, and socio-demographic factors and how they determine entrepreneurial behaviour. In addition, in conflict-affected regions, armed conflicts paradoxically create new opportunities for IE to thrive despite institutional breakdowns (Salvi et al., 2025).

- Economic

Access to financing is difficult in regions where financial institutions are underdeveloped, capital markets are in their infancy, and non-bank financial intermediaries lack the resources to support small businesses (Kauffmann, 2005; Ejiogu et al., 2022). Notwithstanding these challenges, entrepreneurs frequently use family and kinship connections to secure funding (Khayesi et al., 2014), and migrant remittances are another common source of funding (Ratha et al., 2009). Similarly, access to land is governed by cultural customs and community ownership (Shipton, 1994; Shipton and Goheen, 1992). In addition to navigating legal and informal institutions to acquire land, entrepreneurs must deal with concerns related to extortion, gender-based discrimination, and community approval (Ejiogu et al., 2022).

Economic recession and crisis periods exacerbate the need for aid in many regions, but the budgets for traditional sources of aid have declined, pushing more people into the informal sector as a means of survival (Moore et al., 2020). Meanwhile, this sector provides goods and services at lower prices, operates outside any institutional support, and is characterised by self-reliance (Anderson et al., 2013). The sectoral composition of the economy also affects the overall size of the informal sector, with higher levels of informality in distribution and construction than in manufacturing (Castells and Portes, 1989; International Labour Organization, 2012; Kemal and Mahmood, 1998; Williams and Shahid, 2016; Santos et al., 2021). The ease of business registration remains a significant obstacle to formalisation, with complex and costly procedures dissuading numerous entrepreneurs (de Soto, 1989; Kemal, 2007; Gulzar and Junaid, 2010; International Finance Corporation, 2012; Williams and Franic, 2016). Furthermore, a lack of awareness about regulatory processes also contributes to informality (Williams and Shahid, 2016).

- Institutional

Formal institutions consisting of codified laws and regulations are core to any EE. However, various studies have pointed out that failures within these institutions can

force entrepreneurs into the informal sector. Such shortcomings include inadequate redistributive and procedural justice, corruption in the public sector, over-regulation, and weak law enforcement by formal institutions (de Soto, 1989; Murphy, 2005; Braithwaite et al., 2007; Shahid et al., 2020, 2022). Furthermore, substantial procedural requirements and business registration costs are significant barriers. In many developing countries, the high costs of business registration and cumbersome procedures deter the formalisation of businesses (Williams and Renooy, 2013; Bruhn and McKenzie, 2013; Williams and Franic, 2016). Since formal institutions in such countries are generally inefficient, informal businesses do not develop trust in them, leading to further increases in operating costs (Williams and Shahid, 2016).

Corruption in public institutions and criminal contexts acts as an informal tax on formal operations (Buehn and Schneider, 2012; Berdiev et al., 2018; Berdiev and Saunoris, 2020) by increasing their costs and, therefore, pushing entrepreneurs towards informality to avoid extortion and bribery (Horodnic et al., 2019). The literature shows a negative relationship between rates of corruption and government effectiveness in controlling tax evasion (Buehn and Schneider, 2012; Berdiev et al., 2018). High levels of public sector corruption in some countries erode trust in government institutions and drive entrepreneurs to operate informally (Ahmed, 2009; Gulzar and Junaid, 2010; Williams and Shahid, 2016). Institutional asymmetry, or the gap between formal rules and group-level norms, also pushes entrepreneurs toward informality (Zanella et al., 2024). Interestingly, some research has indicated that corruption may also lead informal entrepreneurs to formalise to avoid frequent requests for bribes and reduce transaction costs themselves (Darkwa Amanor et al., 2007).

- **Socio-demographic**

Age, gender, and income levels significantly influence the likelihood and nature of IE. Most studies have found that younger individuals are more likely to initiate informal businesses, mainly due to a lack of formal employment opportunities (Pedersen, 2003; Williams and Martinez Perez, 2014; Shahid et al., 2022). However, evidence from case studies has shown a U-shaped relationship in which both younger and older people are more likely to engage in IE, mainly due to other kinds of socio-economic pressures (Kemal and Mahmood, 1998; Williams and Shahid, 2016). Gender plays a crucial role, with female entrepreneurs often driven by necessity more than their male counterparts (Adom, 2014). Studies indicate that women in IE typically start businesses to accommodate family needs and achieve work-life balance, though many transition to opportunity-driven motives over time (Ratten, 2016). Social, economic, structural, and cultural factors also constrain women's entrepreneurial activities, further complicating their engagement in formal markets (Woldesenbet Beta et al., 2024).

Informal entrepreneurial activities are further impacted by income differences. Higher-income individuals may participate in IE to overcome formal sector restrictions, while lower-income people are more likely to do so out of need (Williams and Shahid, 2016).

Table 5 Context

<i>Context</i>	<i>Key points</i>	<i>Key authors</i>
Economic	Economic conditions push more people into informal entrepreneurship, with difficult access to finance and land, and complex registration procedures deterring formalisation.	Anderson et al. (2013), Santos et al. (2021), Ejiogu et al. (2022), Moore et al. (2020)
Institutional	Corruption, over-regulation, and high business registration costs push entrepreneurs to informality, eroding trust in institutions and acting as an informal tax.	Bruhn and McKenzie (2013), Williams and Renooy (2013), Williams and Shahid (2016), Berdiev et al. (2018), Berdiev and Saunoris (2020), Shahid et al. (2020, 2022)
Socio-demographic	Age, gender, income levels, and education influence informal entrepreneurship, with younger and older individuals, women, and lower-income people more likely to engage informally.	Hendy and Zaki (2013), Williams and Martinez Perez (2014), Williams and Shahid (2016), Shahid et al. (2022)

Education and skills are considered a pivotal asset in determining the formal or informal nature of entrepreneurial activities. Higher levels of education generally correlate with a greater likelihood of formal business operations. However, in many developing countries, even well-educated individuals may opt for IE due to bureaucratic barriers and unclear regulatory frameworks (Youssef et al., 2018). In some regions, those with higher education levels are more likely to engage in IE, achieving higher informal wages rather than transitioning to formal employment (Burki and Afaqi, 1996; Kemal and Mahmood, 1998). This trend reflects the extensive informal sector and the challenges of formalising businesses. Conversely, vocational training and specific skill sets can reduce the propensity for informality by equipping entrepreneurs with the necessary tools to navigate formal business requirements. In Turkey, for example, vocational training significantly lowers the likelihood of informality (Hendy and Zaki, 2013).

4.2.2 Theme 2: Structures

EEs have social, material, and cultural attributes (Spigel, 2017) that influence IE. Social attributes are resources composed of or acquired through the social networks within a region [Spigel, (2017), p.53]. Social networks are vital for offering support and resources, through both strong and weak ties (Komlósi et al., 2022; Jack, 2005). Factors in the decision to formalise include material attributes, such as universities; formalised rules, such as entrepreneurial policies; well-regulated markets; and cultural attributes, including a supportive culture and history of entrepreneurship.

- **Social**

A significant part of the EE is made up of social attributes (Spigel, 2017): the social networks and relations that provide support, resources, and opportunities for entrepreneurs. The effectiveness of a network depends on finding an appropriate

balance of strong and weak ties, as different types of ties provide distinct resources for entrepreneurs (Jack, 2005; Boafo et al., 2022). Access to a variety of resources is essential for informal entrepreneurs in the entrepreneurial process, including kin and family ties, remittances, and informal financial networks (Ratha et al., 2009; Khayesi et al., 2014; Ejiogu, 2018; Ejiogu et al., 2022). With the underdevelopment of formal financial institutions in most countries, such informal networks ensure only one thing: the inflow of capital required to keep the business running. A combination of strong and weak ties provides access to resources, information, and market opportunities that allow informal businesses to grow and be sustainable (Boafo et al., 2022). Effective networking enables entrepreneurs to cope with the challenges imposed by the absence of formal support structures and to take advantage of community-based resources and support systems.

Political interventions in the entrepreneurial process have traditionally focused on pre-formalisation efforts. However, Cavotta and Dalpiaz (2022) shifted this focus, emphasising the importance of political involvement after the official act of formalisation. They showed that a range of intermediaries and actors with different resources, such as influence, knowledge and connections, can be required to facilitate extrication work, for example to recreate networks, re-scope opportunities and re-orient employees' mindsets from informal to formal.

- **Material**

According to Berdiev and Saunoris (2018), formal entrepreneurship benefits from increased human capital investment from tertiary education (Jiménez et al., 2015; Saunoris and Sajny, 2017). Omri (2020) also examined factors influencing both formal and IE and showed that secondary and tertiary education have positive impacts on formal entrepreneurship, whereas only tertiary education has a negative impact on IE (Omri and Afi, 2020). This study also indicates that tertiary education increases both formal and opportunity entrepreneurship, which in turn improves environmental quality. Thai and Turkina (2014) found that IE is positively correlated with population size and unemployment and negatively connected to financial development, all indicators of governance and tertiary education (Omri, 2020). Their study explicitly highlights the role of universities and higher education in fostering an environment conducive to formal entrepreneurship. On the other hand, according to Cavotta and Dalpiaz (2022), policymakers could design interventions that provide structure, give access to such a network of intermediaries, and support actors for businesses in the process of formalisation. Intermediaries are therefore important in increasing entrepreneurs' and employees' trust in formal institutions and in the ability of formalising firms to remain on the market (Wolfe et al., 2022).

Another important material attribute is physical infrastructure, which improves connectivity and linkages that facilitate entrepreneurs' ability to recognise and realise entrepreneurial opportunities and, in so doing, strengthen start-up activity (Audretsch et al., 2015; Ejiogu et al., 2022). Transport and electricity are identified in the literature as critical physical infrastructure for the development of entrepreneurship in Africa (Nkechi et al., 2012). Poor infrastructure, unreliable electricity, and limited internet access were found to further restrict entrepreneurial activity, particularly for women entrepreneurs (Peter and Orser, 2024). Consequently, these physical infrastructures have a significant influence on

informality (Ejiogu et al., 2022). Furthermore, having access to essential services such as electricity and phone connectivity seems to reduce the probability of informality, as such access may require a business license or commercial registration (Hendy and Zaki, 2013). Given these impediments, even formal entrepreneurs may find it difficult to access the necessary resources and support within the EE. As a result, the task is even more challenging for informal entrepreneurs, whose lack of formal recognition and support systems makes their entrepreneurial journey much more difficult.

Table 6 Structure

<i>Structure</i>	<i>Key points</i>	<i>Key authors</i>
Social	Social networks and relations provide vital support and resources, with strong and weak ties offering different benefits, enabling entrepreneurs to cope with the lack of formal support structures.	Khayesi et al. (2014), Ejiogu (2018), Bofo et al. (2022), Cavotta and Dalpiaz (2022)
Material	Investment in tertiary education, physical infrastructure, and well-regulated markets fosters formal entrepreneurship, while intermediaries and support actors are crucial in the formalisation process.	Thai and Turkina (2014), Berdiev and Saunoris (2018), Omri (2020), Omri and Afi (2020)
Cultural	Entrepreneurial culture and historical practices influence informal entrepreneurship, with supportive cultures promoting traditionalism and affecting social perceptions of entrepreneurship.	Sparks and Barnett (2010), Williams et al. (2012), Saunoris and Sajny (2017), Ejiogu et al. (2022)

- Cultural

According to Stuetzer et al. (2014), entrepreneurial culture influences individual perceptions and intentions in relation to business opportunities. Culture exerts a profound influence on the prevalence and character of IE, particularly in developing countries, where it constitutes a pivotal element within the broader EE. In some geographical contexts, business activities have historically been conducted without the need for formal registration, operating instead within the accepted norms of society, an indication that the informal sector predates colonial rule and continues to thrive due to deeply rooted cultural practices (Sparks and Barnett, 2010; Ejiogu et al., 2022). Cultures that favour institutional collectivism and human orientation promote traditionalism and spur an external locus of control while discouraging assertiveness (Thai and Turkina, 2014). This degree of social support underpins the social resources available for entrepreneurship and influences the social perception of entrepreneurship, as well as the risk–reward profiles common to people in these cultures. In addition, entrepreneurship always occurs within a cultural context (Williams and Vorley, 2015), and cultural elements significantly determine individual behaviour (Anggadwita et al., 2017). Furthermore, the effectiveness of policies aimed at encouraging formal entrepreneurship often depends on the cultural context and the relative pervasiveness of informal activities (Saunoris and Sajny, 2017). Research on informal economies in deprived neighbourhoods in developed countries, particularly France, reveals that individuals with greater economic and cultural resources, gleaned from non-delinquent environments, tend to succeed more in business (Tafferant, 2007). Similar patterns have also been observed among

migrants involved in IE in Austria, shaped by socio-political and contextual factors (Rezaei et al., 2014). Bureau and Fendt's (2011) findings highlight the role of culture within the EE. While IE is often seen as a response to over-regulation and government oppression, it can also reflect a rational economic strategy for entrepreneurs constrained by state-imposed institutional barriers (Maloney, 2004; Williams et al., 2012).

4.2.3 *Theme 3: Dynamics*

The literature unveils a few pivotal dimensions of informal sector dynamics that relate to entrepreneurial motivations and opportunity pursuit, market accessibility, and adaptive strategies.

- **Opportunity pursuit**

Informal entrepreneurs are motivated by a mix of necessity and opportunity, and motivations are usually categorised in terms of push and pull factors. Push factors include chronic unemployment, dissatisfaction with previous jobs, and lack of alternative income sources; these factors propel people into starting informal businesses out of a sense of compulsion or urgency (Williams et al., 2012). Conversely, pull factors include positive entrepreneurial attitudes such as independence, financial incentives, and lifestyle choices (Dana, 2008; Anderson et al., 2013). There is a prevalent perception that IE in developing countries is predominantly necessity-driven, particularly in regions with limited formal job opportunities (Adom, 2014). However, studies reveal that a significant portion of informal entrepreneurs also choose this path for its flexibility, potential for higher earnings, and independence (Cross, 2000; Perry and Maloney, 2007; Adom, 2014). For example, in Ghana, 65% of informal entrepreneurs cited necessity as their primary motivation, while 35% chose informality for the advantages it offers (Adom, 2014).

Moreover, motivations are also dynamic; hence, necessity-driven entrepreneurs can, with experience and access to resources over time, become opportunity-driven (Williams, 2009; Williams et al., 2012). This dynamic portrays the intricacy in motivations underlying IE: both necessity and opportunity reside together (Welter and Smallbone, 2004; Rezaei et al., 2013).

- **Market accessibility**

Formal and informal businesses often differ fundamentally in processes, customers, and goals, with limited natural transition from informality to formality (Frese, 2024). Informal entrepreneurs usually identify and exploit market gaps that are either underserved or entirely unserved by formal businesses due to lack of regulations controlling market entry (Dana, 2008, Al Mataani et al., 2017). These gaps represent opportunities for necessity-driven entrepreneurs to transition into opportunity-driven entrepreneurs. For instance, an owner of a hardware shop may have started the business as a survival strategy but gradually transitioned into one that is opportunity-driven by identifying a market gap (Adom, 2014). Furthermore, the ability to operate freely inside markets is important because it is the only way for entrepreneurs to use their resources to maximise profits (Saunoris and Sajny, 2017).

A well-designed pro-market institution that provides clear-cut regulations and support systems may promote the transition from informal to formal entrepreneurship (Dau and Cuervo Cazorra, 2014). Evidence also shows that corruption impedes market accessibility and destroys the process of developing efficient market arrangements, as it favours corrupt over efficient contractors. Corruption therefore discourages people who may engage in entrepreneurship in formal markets (Berdiev et al., 2018).

Informal businesses often coexist with formal ones, creating a complex competitive environment. Informal firms may win market share from formal companies, frequently by flouting intellectual property rights and reducing incentives for formal firms to innovate (Piperopoulos et al., 2021). However, IE also works as a testing ground for new market opportunities, allowing entrepreneurs to experiment with lower risks and investments (Welter et al., 2015). Conversely, barriers such as limited access to market information, poor infrastructure, and inadequate communication systems can trap informal entrepreneurs in small-scale operations (Igwe et al., 2020). In some cases, informal and formal firms develop a symbiotic relationship, with informal businesses providing cheap solutions for formal firms through subcontracting and other arrangements (Santos et al., 2021; Castells and Portes, 1989).

- Adaptive strategies

Adaptive strategies include bricolage (Desa and Basu, 2013; Wolfe et al., 2022), effectuation, opportunity, and necessity-driven entrepreneurship (Elo and Emmanuel, 2022). Entrepreneurs use these strategies regularly to respond to ever-present resource constraints and regulation challenges. Research has shown that minority and migrant entrepreneurs adapt to such constraints through necessity-based or opportunity-driven strategies and that they often combine formal and informal practices in their entrepreneurial activity (Ramadani and Dana, 2017; Ramadani et al., 2014; Elo and Vincze, 2019; Elo and Emmanuel, 2022), adapting their businesses to the business environment with varying degrees of formality (Ramadani et al., 2014; Elo and Emmanuel, 2022). Additionally, entrepreneurial creativity and hybrid entrepreneurial strategies may significantly foster alternative solutions (Elo and Vincze, 2019; Elo and Emmanuel, 2022). Studies found that migrant entrepreneurs often use hybrid models, blending informal and formal activities as they transition toward formality and growth (David et al., 2024).

Research examining the motivations, experiences, and perspectives of entrepreneurs and the determinants of IE and frugal innovations (Igwe et al., 2020) found that the latter develop in many forms in society through social networks and local interactions. As some study participants explained, business owners form associations and clubs (which could be considered sub-ecosystems of IE), coming together to contribute and generate capital, knowledge, and information to help members develop or expand their businesses. Sometimes groups contribute capital to buy expensive machinery, and ideas are exchanged through social interaction. The study states that through frugal innovation, business owners have found ways to overcome the economic and socio-cultural barriers that affect entrepreneurial intention, motivation, and behaviour, creating entrepreneurial communities where the activities of entrepreneurs thrive (Igwe et al., 2020).

Table 7 Dynamics

<i>Dynamics</i>	<i>Key points</i>	<i>Key authors</i>
Opportunity pursuit	Informal entrepreneurs are driven by both necessity and opportunity, with motivations evolving over time from necessity-driven to opportunity-driven as they gain experience and resources.	Welter and Smallbone (2004), Williams (2009), Williams et al. (2012), Anderson et al. (2013), Adom (2014)
Market accessibility	Informal entrepreneurs exploit market gaps unserved by formal businesses, operate freely to maximise profits, but face barriers like limited market information.	Dau and Cuervo Cazorra (2014), Al Mataani et al. (2017), Saunoris and Sajny (2017), Berdiev et al. (2018), Igwe et al. (2020), Piperopoulos et al. (2021)
Adaptive strategies	Entrepreneurs use adaptive strategies like bricolage and effectuation to overcome resource constraints and regulatory challenges, often developing hybrid strategies that combine formal and informal practices.	Desa and Basu (2013), Elo and Vincze (2019), Igwe et al. (2020), Elo and Emmanuel (2022), Wolfe et al. (2022)

Building on the descriptive mapping (Table 4; Figure 3), the corpus suggests that quantitative cross-country studies tend to foreground macro-institutional context, while qualitative and mixed-method studies more often surface ecosystem mechanisms (intermediaries, informal networks, cultural norms) that structure access to resources and legitimacy. We therefore interpret ‘context-structure-dynamics’ as varying by region and method rather than as uniform across settings. The signs of an informal sub-ecosystem are most evident when studies describe recurring clusters of informal actors, informal rules or norms of exchange, and a stable flow of resources that operates in a semi-autonomous manner. In contrast, ‘formal voids’ or ‘margins’ narratives portray informality as a fragmented and reactive activity, shaped primarily by exclusion from institutions within the formal ecosystem (banks, incubators, formal networks).

5 Discussion and conclusions

The aim of this paper is to link the concepts of IE and EEs and to question the inclusivity of current EE frameworks with regard to IE. It focuses on three main themes: context, structure, and dynamics. The analysis reveals that ecosystems are approached in a fragmented way in the literature on IE and that informal entrepreneurs remain largely excluded from substantive debates on EEs. These findings align with IE research emphasising institutional constraints and heterogeneous pathways, while extending it by specifying ecosystem mechanisms (intermediaries, networks, and resource circuits). They also challenge an implicit ecosystem assumption that ‘productive entrepreneurship’ is necessarily formal, by showing how informality can be structurally embedded in local opportunity systems.

The thematic analysis highlights the influence of economic, institutional, and socio-demographic context on IE, and shows how many systemic barriers limit informal entrepreneurs’ access to resources, markets, and pathways for formalisation. Economic factors heavily impact the decision to formalise a firm (Kauffmann, 2005; Ejiogu et al., 2022). In addition, inadequate institutional frameworks make things harder for informal

entrepreneurs, who are often pushed into informality by the failings of formal institutions, such as corrupt practices, over-regulation, and inadequate judicial systems (Murphy, 2005; Braithwaite et al., 2007; de Soto, 1989). The impact of socio-demographic factors (age, gender, education, and income levels) on IE is further highlighted. Because of a lack of formal employment opportunities, younger people and those with higher education levels frequently resort to IE (Pedersen, 2003; Williams and Martinez Perez, 2014; Burki and Afaqi, 1996; Kemal and Mahmood, 1998). According to Williams and Shahid (2016), women are more likely than men to start businesses and continue operating in the informal sector (Dana, 2000).

The structure of an EE is made up of social, material, and cultural attributes (Spigel, 2017). Social networks provide informal entrepreneurs with access to resources, particularly financial ones (Khayesi et al., 2014; Ratha et al., 2009; Ejiogu, 2018). Access to material and cultural attributes, such as universities (tertiary education) and physical infrastructure, can also have a significant impact. Studies suggest that policies must address this mismatch by aligning formal regulations with societal values to facilitate formalisation and integration into the EE (Williams and Franic, 2016; Horodnic and Williams, 2019). However, current EE designs recreate structural exclusion and privilege actors who are already in formal networks, institutions and infrastructures.

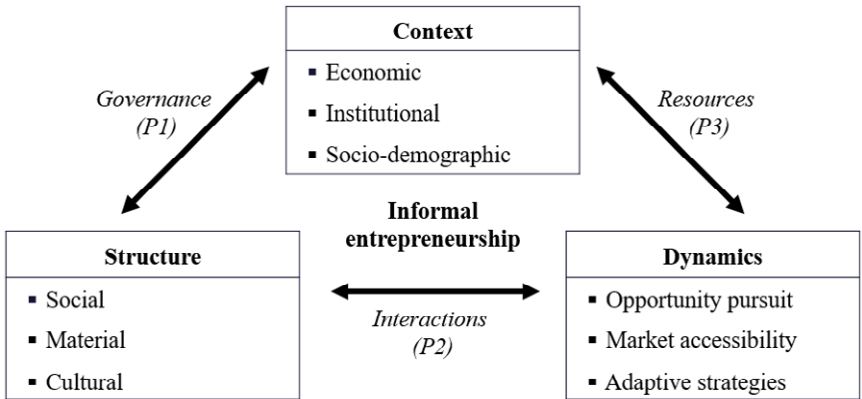
Dynamics are processes that influence relations between informal entrepreneurs and the market. According to the literature, entrepreneurs are often perceived as necessity-driven; however, scholars suggest that their motivations are dynamic, meaning that with experience and access to resources, necessity-driven entrepreneurs can become opportunity-driven over time (Williams, 2009). An important finding from the thematic analysis pertains to market accessibility: informal entrepreneurs usually identify and exploit market gaps that are either underserved or entirely unserved by formal businesses because of a lack of regulations controlling market entry (Al Mataani et al., 2017). Similarly, entrepreneurs have developed several adaptive strategies, such as bricolage, effectuation, and necessity-driven entrepreneurship (Elo and Emmanuel, 2022), to adapt to specific contexts. This dynamic element portrays the intricacy of informal entrepreneurs' motivations; both necessity and opportunity reside together (Williams et al., 2012).

From this analysis, we propose a holistic model based on three dimensions: context, structure, and dynamics (Figure 4). These dimensions serve as a framework for mapping research at the crossroads of IE and EEs and for understanding their relationships. They provide a basis for rethinking EEs as systems that must actively tackle the structural exclusion of informal entrepreneurs if they are to be effectively inclusive.

The study of the aforementioned relationships indicates three links between the dimensions: governance, interaction, and resources. These three links correspond to the EE logic emphasised by Cao and Shi (2021). The governance logic refers to the decisions and actions which contribute to the coordination of the EE (Knox and Arshed, 2022), particularly to the transition from informal to formal entrepreneurship. Interaction is the relational dynamic between stakeholders in the EE, particularly relations with informal entrepreneurs. Resources are the means by which informal entrepreneurs pursue opportunity.

Mechanistically, governance shapes the perceived costs and feasibility of compliance and registration; interaction shapes bridging ties to intermediaries and formal-market access; and resources shape capability to upgrade, document transactions, and meet formal requirements. Importantly, the review indicates that some entrepreneurs may remain informal strategically when formalisation yields low net benefit or when partial participation in ecosystem resources is possible without immediate registration; inclusive ecosystems may therefore still contain stable informal segments.

Figure 4 IE ecosystems triptych model



Based on these logics, we formulate three review-derived propositions. For each proposition, we indicate potential empirical testing strategies for future research in the following section.

- P1 Create the conditions to foster the transition from informal to formal (governance).
- P2 Create the conditions to foster the links between informal and formal entrepreneurship's sub-ecosystems (interactions).
- P3 Create conditions to foster access to resources and the pursuit of opportunities (resources).

5.1 Avenues for future research

Research on the IE ecosystem is still in its infancy (Webb et al., 2013; Salvi et al., 2023). There is still much to learn about the connections between EEs and IE, which offers great avenues for future research. Based on the three dimensions and the three logics in our model, we propose a series of new research questions.

- Digging deeper into the economic, institutional, and socio-demographic context may provide valuable insights into the various factors that drive IE and the transition from informal to formal entrepreneurship in developed, developing, and even emerging economies. Future studies could investigate how fragile or unstable institutions shape exclusionary practices within EEs (Williams and Vorley, 2015), or how socio-cultural norms such as gender roles and informal labour traditions influence the visibility and legitimacy of informal entrepreneurs (Marlow and Martinez Dy, 2018; Brush et al., 2019). There are also potential avenues to explore how

unfavourable conditions, such as armed conflict or economic shocks, create new structures of informal activities and informal opportunities (Salvi et al., 2025).

- Evaluating the structural elements of EEs, including their social, material, and cultural attributes, could shed light on how these elements affect IE and the potential for transition to formality (Salvi et al., 2023). Research could also explore how dominant ecosystem infrastructures such as incubators, accelerators, or universities may unintentionally exclude informal entrepreneurs (Neumeyer, 2020), and how structural reforms could make EEs more inclusive. In particular, the spatial dimension of EEs, often overlooked, also merits closer attention, as entrepreneurial interactions can exceed administrative boundaries (Fischer et al., 2022).
- Analysing IE dynamics (pursuit of opportunities, market accessibility, and adaptive strategies) is essential to gaining an overall picture of how entrepreneurs navigate in their EEs. The role of bricolage, effectuation, and frugal innovation as mechanisms for coping with exclusion deserves deeper theoretical and empirical investigation (Desa and Basu, 2013; Elo and Emmanuel, 2022). This includes exploring how social boundaries determine who is included or excluded from accessing ecosystem support (Neumeyer et al., 2019), and how informal entrepreneurs develop resilience, preparedness, and learn skills to deal with institutional reversals (Frese, 2024; Kromidha and Bachtar, 2024; Kiptoo et al., 2024).
- Exploring the interactions of informal entrepreneurs with both formal and informal networks can provide insights into their navigation processes within EEs. We can also consider that there is an informal entrepreneurial sub-ecosystem that is characterised by an identity and a logic of action and made up of actors and factors supporting this entrepreneurial dynamic. One challenge is to understand the relationship between this sub-ecosystem and other sub-ecosystems (Cloutier and Messeghem, 2022). Recent studies also highlight the growing hybridisation of formal and informal practices, especially for migrant entrepreneurs (David et al., 2024).
- Focusing on the role of EEs' governance (Colombo et al., 2019) could promote understanding of how informal entrepreneurial activities are shaped. Diverse stakeholders (entrepreneurs, NGOs, micro-finance institutions, policy makers, etc.) help support or regulate this entrepreneurial activity (Bergman and McMullen, 2022). The challenge is to better understand the coordination and modes of governance in this sub-ecosystem. Future research could in this sense analyse how governance structures can integrate marginalised groups of entrepreneurs without erasing their own practices and identities. The use of digital platforms as informal governance tools needs to be further investigated as well (Ditta Apichai et al., 2024).
- Finally, analysing the allocation of resources, including financial, social, and human capital, within EEs can shed light on the process of pursuing opportunities. The aim is to understand how to facilitate access to resources for informal entrepreneurs (Welter et al., 2017). What resources could contribute to the formalisation of IE?

Table 8 Future research avenues exploring the link between IE and EEs

<i>Link between IE and EEs</i>	<i>Potential research questions</i>
Context	• What are the economic, institutional, and socio-demographic contexts that influence informal entrepreneurship in different countries (developed, developing, or emerging)? • How do fragile or unstable institutional environments shape the exclusion or integration of informal entrepreneurs within entrepreneurial ecosystems? • To what extent do socio-cultural norms (e.g., gender roles, informal labour traditions) influence the visibility and legitimacy of informal entrepreneurs in local ecosystems?
Structures	• How do the structural elements of entrepreneurial ecosystems, such as policy, social and cultural attributes, impact informal entrepreneurship? • In what ways do dominant ecosystem infrastructures (e.g., incubators, accelerators, universities) exclude informal entrepreneurs or fail to accommodate their needs? • How can structural features be reconfigured to make EEs more inclusive for diverse and marginalised forms of entrepreneurship?
Dynamics	• How do informal entrepreneurs adapt their strategies and processes in response to changing economic and social conditions? • What role do adaptive mechanisms such as bricolage, effectuation, and frugal innovation play in enabling informal entrepreneurs to navigate exclusion? • How do changes in policy or market changes affect the trajectory of informal entrepreneurs within and across ecosystems?
Interactions	• How do informal entrepreneurs interact with formal and informal networks to access resources and opportunities? • What mechanisms enable or hinder the formation of links between informal and formal ecosystem actors? • How do informal entrepreneurial sub-ecosystems sustain themselves through internal interaction?
Governance	• What is the role of formal institutions, policies, and regulatory frameworks in shaping informal entrepreneurial activities? • How do governance models (top-down, grassroots, hybrid) enable or obstruct inclusive coordination within entrepreneurial ecosystems? • How can ecosystem governance structures integrate marginalised actors such as informal entrepreneurs without erasing their context-specific practices and identities?
Resources	• How are resources, including financial, social, and human capital, allocated within the entrepreneurial ecosystems of informal entrepreneurs? • What obstacles prevent informal entrepreneurs from accessing ecosystem resources, and how can these be addressed? • How do informal entrepreneurs leverage alternative or community-based resources to compensate for exclusion from formal ecosystem support?

6 Contributions

6.1 Theoretical contributions

IE is often studied by focusing on the reasons entrepreneurs remain informal, and theorised according to formalised economic, econometric, and conceptual models (Dell'Anno, 2022). Furthermore, IE is mainly viewed and analysed in the literature through an institutional lens, which underscores the significant role institutions play within the EE.

Thus far, there has been little to no research offering a holistic analysis encompassing all dimensions of the EE (Spigel, 2017) in a single study, nor an ecosystemic reading of IE, which is one of the main contributions of this paper. By integrating context, structure, and dynamics, this research provides a comprehensive framework for IE. It broadens the theoretical framework by integrating the concept of EEs and questioning the existence of a sub-ecosystem that is specific to informal entrepreneurs. This approach highlights the interconnection of different ecosystem actors and their impact on the entrepreneurial journey, offering new insights into how informal entrepreneurs operate and move to formality.

The second contribution addresses the lack of inclusivity in EEs. Studies about EEs often focus on specific types of entrepreneurship (Brush et al., 2019; Neumeyer, 2020) but leave IE in the shadows. This paper highlights the need for further inclusivity within these ecosystems by focusing on the integration of informal entrepreneurs into the EE. By recognising IE, this research highlights the importance of developing policies and support systems that address all entrepreneurs' needs.

The third contribution is a multilevel approach. The existing literature on IE tends to focus either on micro-level (individual) or macro-level (institutional) factors, often neglecting the meso-level dynamics that bridge the two. This paper contributes by addressing meso-level and multi-level interactions by proposing the IE ecosystem triptych model, which is composed of context, structure, and dynamics. This model highlights three main logics of EEs adapted to the context of IE. This research focuses on governance, interaction, and resource allocation to understand how IE evolves in different contexts and what conditions allow the transition from informal to formal (Salvi et al., 2023).

6.2 Practical contributions

This study also has significant implications for EE stakeholders, particularly policy-makers and entrepreneurial support organisations. We emphasise the importance of enhancing networking opportunities and resource allocation specifically for informal entrepreneurs, facilitating their access to financial, social, and human capital and potential transition to formalisation. For policymakers, the study calls for streamlined regulatory frameworks and reduced barriers to formalisation by simplifying business registration processes and making regulatory information accessible (Jiménez et al., 2017). As for support organisations, it is essential to develop programs that support informal entrepreneurs by providing them with financial resources and social support systems to create a framework for their formalisation (Bergman and McMullen, 2022). For incubators/accelerators, revise intake rules to allow participation via alternative proof of activity (e.g., transaction history, association membership, micro-accounts) rather than

requiring immediate formalisation and registration. For finance providers, expand eligibility criteria and product design to accept informal records and to incentivise staged compliance (progressive documentation requirements) and for mentoring and support organisations, offer modular mentoring formats that build capabilities before formal registration.

Overall, this review reframes IE as a patterned component of EEs rather than an external residual category. By specifying governance, interaction, and resource mechanisms, the triptych model clarifies how ecosystems exclude or include informal actors and why formalisation is often staged and non-linear. This contributes a mechanism-oriented agenda for future ecosystem research and for policy designs that broaden participation while reducing barriers to formalisation.

6.3 Limitations

Our review is shaped by terminology choices (e.g., ‘IE’ vs. adjacent labels), a journal-ranking filter that may under-represent context-rich outlets, and reliance on secondary interpretation of published findings rather than primary field evidence. We therefore provide a transparent search-string appendix, screening accounting, and a sensitivity-check procedure that relaxes the ranking filter.

Declarations

All authors declare that they have no conflicts of interest.

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