

The foundations of rural entrepreneurship: a systematized approach to cataloguing the elements that make up entrepreneurial ecosystems in rural areas

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Abstract

Rural areas, in particular, rely on entrepreneurial spirit to fuel economic progress. It is crucial to comprehend the specific factors that lead to the prosperity of entrepreneurial ecosystems in rural areas. To better understand what makes rural business communities tick and how to foster an enterprising spirit there, this study takes a novel approach. In order to make use of the academic paper metadata pertaining to entrepreneurial ecosystems that is available in the Scopus database, we use bibliometric approaches. We find a central network of research on entrepreneurial environments by analyzing citations. Using co-occurrence analysis, we can see how the most important parts of entrepreneurial ecosystems in rural areas and in the city tend to cluster together. We use a literature review to decipher the findings. Human capital, networks, entrepreneurial culture, financial systems, governance systems, infrastructure, environmental resources, and the market are all considered non-actor components, whereas actors include academics, businesses, governments, and communities. The characteristics of an entrepreneurial ecosystem in rural regions can be distinguished by their environmental resources. In studies of entrepreneurial ecosystems in general, this component may not be relevant, but in smaller locations, it indicates the distinctiveness and local economic potential. Our research sheds light on what makes rural entrepreneurial ecosystems tick, which can inform efforts by academics, practitioners, and policymakers to boost rural economies through entrepreneurship.

Keywords: Entrepreneurial ecosystem; Rural entrepreneurship; Environmental resources; Co-creation; Local economic potential; Regional development; Citation analysis; Co-occurrence analysis.

1. Introduction

Due to their abundance of desirable natural resources, like farmland, and tourist hotspots, rural areas can be a driving force behind regional economic growth [1]. Rural areas can serve as a springboard for economic progress in developing nations [2]. Rural regions may be rich in natural resources, but they often lack access to other important production components, such as labor and capital [3]. As a result of these restrictions, rural economies are unable to progress. Entrepreneurship, the fourth component of production, offers one potential solution to this problem [4].

There needs to be room for rural communities to expand and develop their economies, and rural entrepreneurship can help make that happen faster [5]. Entrepreneurs in rural areas have unique obstacles in the course of developing and launching new businesses. Problems arise due to a lack of human capital, inadequate infrastructure and facilities, restricted access to resources and markets, unmet social expectations, few finance opportunities, and unsupportive business networks. These problems affect the majority of developing nations [6]. When one considers the

innate ability of entrepreneurs to spot and grab good business opportunities, the central function of entrepreneurship becomes clear [7]. The capacity to capitalize on new company ideas is enhanced via exposure to entrepreneurial education [8], which in turn accelerates economic growth [9] and sustainable development [10]. The basic ideas of entrepreneurship are just as relevant in rural areas as they are in more urban ones, even though they are more commonly used in regional situations [11]. Entrepreneurship has thus become an important factor in the economic growth and long-term viability of rural communities.

Regional, corporate, and individual levels are now all considered in the study of entrepreneurship. Theories of regional development and economic growth, which fall under the umbrella of regional economics, may have relevance to the study of entrepreneurship. The theory of industrial districts put forward by Marshall [12] demonstrates how the local environment impacts economic growth in a given area. The social and economic ties within an area have an impact on the efficiency of businesses in that area [13]. Regional factors impact local entrepreneurship, according to Schumpeter research, which differ from Marshallian studies [14]. A web of interdependent parties working for economic growth is formed by these ties. The interplay of several nodes in a network to ascertain the final product is central to actor-network theory [15]. Studying regional entrepreneurship requires a shift in attention away from businesses and toward non-profits, communities, and governments. Consistent with actor-network theory, collective action theory [16] addresses how players work together to accomplish shared objectives by focusing on their shared interests. Each has regional economic development in mind, even though entrepreneurship isn't one of their primary focuses. Within their ecosystems, these players work toward shared goals, even as they pursue their own unique objectives.

When Cohen initially used the word "entrepreneurial ecosystem" (EE) in 2006, it was in scholarly circles [17]. This system has different names; it was once called the entrepreneurial system [18]. Scholars began to take notice of the entrepreneurship ecosystem in the 2000s, thanks in part to Silicon Valley's meteoric climb to prominence as an entrepreneurial hotspot in the region [19]. An adaptive system that promotes entrepreneurial performance is known as an EE [20]. In this paper, we propose EE as a framework for enabling entrepreneurial endeavors in certain areas. To produce entrepreneurial activities as an output, this structure's actor and non-actor parts work together as catalysts.

A large number of EE-based studies have either looked at the country as a whole [22] or have concentrated on a single industry in great detail [23]. In contrast to more expansive geographic scopes, the EE's composition changes when looking at rural locations. To back this up, Aguilar [24] and McKague [25] listed poverty, lack of access to finance and technology, and cultural values as the main conditions that must be considered in a rural EE. But as said before, an EE's structure isn't just the values of the regions; it also requires the existence of actors for the EE to function as a social system.

Existing rural EE studies do not fully address the problem that some important values have been left out. In order to find the key components of less densely populated regions, it is necessary to conduct a comprehensive review of the existing literature using a bibliometric approach. This will ensure that the critical principles of EE are not ignored. Our research intends to improve rural entrepreneurship by identifying and studying the key elements of an entrepreneurial enterprise (EE) in rural areas.

The study's materials, methods, and research design are thoroughly described in Section 2. After that, in Section 3, we'll talk about the results. Finally, Section 4 presents the conclusions drawn from the study and results.

2. Materials and methods

It is not novel for entrepreneurial studies to employ bibliometrics as a means of conducting literature reviews. Researchers have used this strategy in different ways to get different results and provide different perspectives. For example, in order to find new research topics related to entrepreneurship, Chandra [26] used a combination of co-citation, overlay visualization, and topic mapping. In contrast, Theodoraki et al. [27] used a combination of co-occurrence, co-authorship, bibliographic coupling, and co-citation to look at a holistic view of creating sustainable EE. Using citation and co-occurrence analysis, two well-known bibliometric methods, is the goal of this work (Fig. 1). The original dataset was analyzed, filtered, and finalized using citation analysis (Fig. 1b and c). A dataset including pertinent publications was validated by us. A literature study (Fig. 1e) and a co-occurrence analysis of author keywords (Fig. 1d) were employed in the follow-up investigation to determine the necessary elements of a rural EE.

Methodological framework (opens in a new tab).

Computational methods and network visualization were the backbone of the investigation. Consequently, VOSviewer was employed in this investigation. It is a program that creates a visual representation of the bibliometric network by analyzing the similarities in publication metadata, including author names, keywords, and citations [28].

2.1. Data collection

In the first step, we created a protocol for limiting our search and removing superfluous data in order to gather an acceptable dataset. Information for this study came from the Scopus database. Due to the rigorous peer-review process, only published journal articles were considered for inclusion. Titles, keywords, references, and citations are all part of the consistent information structure provided by this sort of writing.

Since EE is at the heart of this investigation, we opted to use the search term "entrepreneurial ecosystem"; similarly, other scholars have employed this term. Searching Title-Abstract-Keyword for the terms "entrepreneurial ecosystem" or "entrepreneurship ecosystem" was the first step in gathering data. December 2021 was the month in question for the search. For this reason, we only looked at articles published in 2020 and later. From 2006 to 2020, 621 articles were produced by the search. By this point, we had removed duplicates from the dataset and had 618 articles remaining (Fig. 1a). Furthermore, to differentiate between rural publications, we utilized rural phrases as search combinations. In addition to EE, other words for rural regions have been used in earlier research, such as villages [29], small towns [30], and distant locations [31]. Hence, we retrieved a dataset comprising 30 articles by combining the keywords "entrepreneurship ecosystem," "village," "small town," or "remote area" with "entrepreneurship ecosystem" specifically.

2.2. Data analysis

2.2.1. Citation analysis

Despite including the term "entrepreneurial ecosystem," the first dataset included articles that had nothing to do with the subject. Citation analysis helps to separate the important articles from the

irrelevant ones, which could be overlooked when reading the articles in a conventional manner. Direct citations correctly represent the knowledge taxonomy, say Klavans and Boyack [32]. Accordingly, citation analysis is an easy way to screen legitimate inputs before diving into more in-depth analysis.

Figure 2 shows the core network that was used to create Dataset A, which is a collection of articles linked together through citation linkages. Articles on rural areas that were part of the core network later became Dataset B.

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Using VOSviewer (online version: <https://tinyurl.com/yrhbarmf>), we can see the citation analysis of 618 publications in EE studies, with 415 of them (red label) forming the core network.

2.2.2. Co-occurrence analysis

To identify EE components, co-occurrence analysis uses author keywords as the analytical unit. Word associations can be seen visually through co-occurrence analysis. In addition, it shows how close words are to each other according to how often they appear with other terms [28]. You can see clusters of related words in Figure 5 (Dataset A) and Figure 6 (Dataset B).

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Author keyword clusters in EE papers, visualized using label color and overall link strength (label size) in VOSviewer (online version: <https://tinyurl.com/26ja39rk>).

Nonstandard word forms can lead to bias in word interpretation. As a result, making the keywords look neat was crucial. The initial stage involved standardizing the vocabulary using American English expressions (for example, "behavior" instead of "behaviour"). Then came the process of addressing plural nouns (for example, "entrepreneurs" to "entrepreneur"), abbreviations (for example, "global entrepreneurship index" instead of "GEI"), codes for categorizing literature (for example, JEL classification), and different ways of expressing the same idea (for example, "entrepreneurial ecosystems" and "entrepreneurship ecosystem"). In order to clean up keywords, these requirements created a thesaurus. The first dataset produced 544 terms. Because they produced congestion in the map representation, not all keywords were examined. As a result, we narrowed our search to 79 terms that appeared five times or more. Core subjects "entrepreneurial ecosystem," "entrepreneurship," and "ecosystem" were among eight more phrases removed from consideration. These words were used as search terms during the data gathering phase. Beyond that, we omitted terms that had nothing to do with EE components, such as names of locations (like "china"), terms pertaining to research and analysis (like "literature review" and "global entrepreneurship monitor"), and completely unrelated words (like "COVID-19" and "crisis"). Figure 5 shows the final map, which effectively displays all seventy-one phrases used in EE research. There were sixty-two keywords in Dataset B. When we processed the prior dataset, we removed 10 items that shared these criteria: "ecosystem," "entrepreneurship," "entrepreneurship model," "literature review," "forecast," "global entrepreneurship monitor," "bangladesh," "chile," and "mexico." Due to the lower number of inputs in Dataset B compared to Dataset A, the phrase "entrepreneurial ecosystem" was included in the study. To further illustrate the interconnected nature of a larger network, we used the term "rural" to group related words together. The analysis

concluded by drawing a network map of sixteen keywords used in rural EE research, with a threshold of two occurrences for each word (Fig. 6).

2.2.3. Systematic literature review and network analysis

Although bibliometrics is a helpful tool, it can't tell you what exactly constitutes EE because of its limits. The analysis method isn't perfect; it depends on registered article metadata, which could leave out important details that aren't labeled as metadata. Consequently, reading the article and grasping the concept of the network as a whole necessitates a qualitative approach to evaluating the data.

To evaluate the terms found in significant publications, we used the citation (Fig. 3) and co-occurrence (Fig. 5, Fig. 6) networks as crucial pieces of information. At this point, the citation network was used to track down every phrase in the spotlight. So, using the article review results as a basis, we analyzed the word relationships in the co-occurrence network. New research topics will be addressed by this set of analysis.

3. Result and discussion

3.1. The core of influential entrepreneurial ecosystem studies: citation analysis

Picking out papers that are actually useful for EE is the primary goal of citation analysis. The "core network" of EE studies, consisting of 415 papers, was produced at this stage (Fig. 2). The core articles contributed more to this study than the other 203 that were not part of this network, even though they were all connected to EE. The core network supplied a reliable knowledge resource for additional research thanks to direct citation analysis.

You may find out how many links are in each document by doing a citation analysis. The number of links in a citation analysis shows how often one thing is referenced or "cited" by another item. Thus, the amount of links pointing to an item can be understood in two ways based on the year it was published (Table 1). To start, the number of connections, which stands for the number of "cited by," indicates the extent to which the first published paper was influential within the network. The number of papers that have referenced Cohen's work is indicated by the 88 links in his first article on sustainable EE [17]. Second, by linking to earlier pieces, a later article can learn more about a topic. The most recent publication with the greatest ties between them is that of Kansheba and Wald [33]. A rigorous literature review, their analysis draws on 41 publications inside the core network. Consistent with previous works, the subsequent essay adds to the development of EE.

For the sake of their analysis, Theodoraki et al. [27] classified EE papers as either "emergence" (2006–2014), "approval" (2014–2017), or "expansion" (2017 and later). For each time period, the three most-linked and consequential papers were as follows: Cohen [17], Stam [34], and Spigel [35]. Despite making substantial contributions to the core network, these publications do not appear to have any citation links in the visualization (Fig. 3).

Due to the way his model lays out the framework, systemic circumstances, outputs, and results of an entrepreneurial ecosystem, Stam has a great deal of popularity among EE scholars. Others

followed the Stam model's lead and investigated actor networks[51], regional entrepreneurship[52], and EE outside of cities [30]. When looking at EE and entrepreneurship, the most cited article was Spigel's [35]. The research grouped EE characteristics into three groups: material, social, and cultural. The first article in the core network to introduce the idea of EE was by Cohen [17]. In order to assist and facilitate new initiatives, Cohen [17] emphasized the significance of connecting actors in certain regions.

Citation research on the core network uncovered seminal works that laid the groundwork for EE's main ideas. Other researchers' investigations of EE, its components, and its results have been shaped by these conceptions [34]. Some of these parts, like conditions, qualities, and shared values, are actors, while others, like actors, are non-actors [17,43, 35, 45]. In the beginning, researchers looked at EE from many angles and figured out what it needed. Composition of ecosystem components might vary depending on the characteristics of a place. This study takes these results into account and provides background information for the subsequent co-occurrence analysis, which aims to explain rural EE in its unique context.

3.2. Terms in the entrepreneurial ecosystem in general and rural context: co-occurrence analysis

Figure 4 shows the results of a co-occurrence analysis that determined which words were most often used in the core network. In the figure, the sum of all the link strengths shows how many times other writers have referenced a certain article's text. The 71 words that were mentioned in the influential papers can be divided into four groups: actor components, non-actor components, outputs, and outcomes (Table 2). "University," "triple helix," "stakeholder," and "community" are all part of the first group that pertains to players [43,53,54]. Policy, networks, institutions, collaboration, education, culture, and location are the non-actor components [35,55]. Beyond that, we found words in additional groups, such as EE's output and consequence. A few examples of what comes out of the EE category are "innovation," "start-up," and "new venture" [56,57]. A trio of terms—"sustainable," "regional," and "economic development"—make up the category of outcomes [34,35,58]. Figure 5 shows how these phrases are illustrated in six clusters by the core network. The next step was to use cluster information and term categorization to extract the core elements of EE. To better understand the essential characteristics and the relationships between them that underpin EE, terms derived from clusters and categories (Table 2) are useful.

Dataset B's co-occurrence analysis provided a visual representation of the rural EE study's term relationships (Fig. 6). Excluding the terms "rural" and "entrepreneurial ecosystem" from the co-occurrence analysis of the keywords, thirteen concepts were uncovered from the twenty-two publications on EE in a rural context (22). Words like "community," "policy," "network," and "new venture" stood out in this very tiny network; they were also present in the EE studies network.

As an actor, "community" is frequently associated with "institution." Both of these players have been emphasized by scholars as crucial to EE, which has resulted in new enterprises [31] and regional growth [59]. Because development is the most heavily linked node in the network, EE research on rural areas has a heavy emphasis on regional development. Our research leads us to believe that the purpose of studying EE in a rural setting was to further an area's development. In addition to the community as an actor, this network emphasizes non-actor regional features, such as agriculture. Since Freitas and Kitson [31] state that actors adjust to the circumstances of their ecosystems, this is an issue worth discussing.

Research on EE that incorporates academics as a primary or secondary influencer is located in Cluster A1. According to [60], EE actors' networks are orchestrated by universities. Regional EE

performance in terms of knowledge and technology transfer is impacted by restricting university influence [61]. Academic entrepreneurship, knowledge commercialization, and university spin-offs are other outcomes of higher education; all three necessitate cooperation with other players to increase production.

Startups (six), universities (with a link strength of six), and new ventures (five) often co-occur when innovation is taking place. With five connections, innovation is the most linked concept in Cluster A2 to the incubator. Successful incubation relies on a close-knit network of actors and resources, since incubators provide university-level expertise to participants in the program [64]. This work fits nicely with the anticipated results of EE, which promote the launch of novel businesses [38]. The accelerator is another type of support that helps businesses scale up [65], which in turn leads to the growth of an ecosystem [66].

Policies, projects, and networks frequently feature rural areas, which have a total link strength of 21. According to Cowell [67], a network is necessary for EE. The capacity of various ecosystems to offer this amenity varies. The EEs of Catalonia, a central region in Spain, and the Canary Islands, a distant place, were compared by Freitas and Kitson [31]. Since core-region ventures have institutions that facilitate mutually beneficial networks, they believe that remote-area ventures have a weaker supporting ecology.

enterprises play a crucial role in fostering entrepreneurial activity within an environment, and the development of new enterprises is a measure of an EE's effectiveness [68]. A company's launch is the end result of an EE's interplay between its parts. Finance and capital are the components shown in Cluster A3. For example, Ghio et al. [69] stated that when it comes to finance, local banks play a crucial role in deciding whether high-tech businesses get started. Furthermore, financial backing is essential for a company's expansion plans (Zhang and Roelfsema, 2017). Curiously, both articles [69,70] bring up cultural influences on money matters, such how people feel about putting their faith in their neighborhood cooperative banks.

EEs necessitate a wealth of information to enable individuals in enabling the finding of opportunities. There are two sources for opportunity-related knowledge: players inside the cluster, such well-established local ventures that share business experiences [49], and actors outside the cluster, like knowledge from universities [43]. New local initiatives are anticipated to be established as a result of opportunity identification in smaller regions like rural areas. When people have the necessary information, they can confidently assess the potential of their area and seize economic possibilities. Cooperation across EE actors is one strategy for expanding human understanding, as pointed out by Cetindamar et al. [71].

The term "EE" refers to a system in which social values and culture play a role in the interactions between the many actors. According to Spigel, cultural traits are essential components of EE [35]. When done right, culture can encourage and facilitate new business formation; when done wrong, it can stifle it [72]. While culture has always played an important role in EE, a prevailing entrepreneurial culture is necessary for an ecosystem to foster entrepreneurial endeavors.

New initiatives, small-to medium-sized businesses, and networks are all connected by experience. Boosting venture performance [73] and value co-creation [74] are just two examples of how actors' past experiences promote entrepreneurial actions within the network. Every single one of the participants contributed to the recorded experience. For entrepreneurial endeavors, players pool their knowledge and build their human capital [75]. Human capital development in rural areas means that people there are better able to spot economic possibilities and find creative solutions to

problems. For this reason, the quality of the network is crucial for rural residents to increase their knowledge and skills. In rural locations, for example, the actor's background is likely to give rise to enabling regulations and the development of local resource management, both of which are important components of ecosystem engineering (EE) [76].

Cluster A6 focuses on social and community issues. Communities are an integral part of the value chain that entrepreneurs use to create their products [77]. In a community, people are more likely to share their knowledge, come up with new ideas, and support local businesses. In light of this, it is imperative that other EE actors work to strengthen entrepreneurial communities so that they can sustain and restore ecosystems [78]. Rural EE studies connect locals to regional growth and innovative projects (Fig. 6). Rural places can build entrepreneurship on these unique resources. The most immediate stakeholder in making the most of this rare chance is local communities. Communities that actively participate in site development, such those involved in agriculture [80] and tourism [79], reap the benefits of the site.

3.3 The rural entrepreneurial ecosystem's suggested components

We saw in the last section how the parts of EE are connected and how they match up with results and outputs, both generally and in rural regions in particular. This provides support for the claim that the components (actors and non-actors) constitute an integral part of EE in rural areas. Nonetheless, we classified the list into standard words according to its description as it included terms with comparable meanings. One example is the grouping of "academic" with terms like "student," "university," and "incubator" to describe this part as part of the knowledge transfer process. Table 4.3.3.1) summarizes this clustering. The players who played a part

In a complicated system like an EE, there are many different players who each play a unique function (Ref. [36]). Market participants, professionals, government, financial institutions, society at large, and entrepreneurs were the participants in EE that Purbasari et al. [54] classified. In the network, they all communicate with one another. To keep up with an ever-changing environment, nodes in a network share information and work together.

Entrepreneurs, as prominent members of the business community, differentiate between SMEs and innovation-driven firms [67]. Their requirements are distinct; for example, small and medium-sized enterprises (SMEs) rely on government regulation to sustain themselves and keep the economy stable. On the other hand, in order to scale up consistently, innovation-driven businesses must network with angel investors. As a result, businesses ought to play a pivotal role in the ecosystem and contribute significantly to it.

Knowledge spillover within ecosystems is made possible through academic infiltration [81]. With this information, people can be smarter when it comes to seizing business chances [82]. In order to change people's intentions to engage in entrepreneurial activities, universities provide interdisciplinary information about knowledge spillover [83]. Opportunities for exposure to resources and markets are identified through co-creation, which is made possible by knowledge within an ecosystem [17]. Academic institutions shape entrepreneurial goals, according to Kumar and Das [84]. In order for rural entrepreneurs to identify and take advantage of economic opportunities, academics play a crucial role in distributing research findings and community services. Accordingly, the authors of this study argue that universities help foster entrepreneurial spirit in rural areas.

Instead of being generated from the top down, EE is formed from the bottom up, according to Thompson et al. [85]. If developing an ecosystem demands a strategy approach, then EE needs strategic actors like legislators [87]. Already existing, this ecosystem evolves and changes shape as its parts do. Environmental actors, according to Zahedi and Otterpohl [88], help shape ecosystems. The role of the government in fostering long-term planning is critical in any ecosystem. The current policy is to use a combination of EE elements, including enabling policies, to help rural communities get into the market and make better use of their resources [89]. On top of that, it can function effectively when led effectively [90]. By facilitating the coordination and management of resources by actor networks, rural local governments contribute to regional development.

In turn, EE aids players in efficiently managing an institution's operations [20,91]. In order for actors to engage in entrepreneurial activity, EE supplies them with the necessary services. As a result, the ecosystem is appealing to the players to help foster an entrepreneurial spirit in the region. This discovery points to a collaborative growth dynamic, suggesting that EE and actors have mutual ties. There is space for actors to enhance, expand, develop, and transform EE, boosting entrepreneurial performance in the field. There are four types of actors that we identified: academics, businesses, communities, and governments. Both the process and the outcomes of categorizing these players adhere to the quadruple helix [53]. Academics like Barbulescu and Constantin [92] and Schütz et al. [93] are familiar with the quadruple helix, therefore this grouping also makes it easier to discuss this study.

3.3.2. Crucial parts of a rural startup environment

The dynamics between rural actors impact the framework of the ecosystem that fosters entrepreneurship, and these dynamics show themselves as shifts in the business climate. On the flip side, this setting is conducive to rural businesses' success. Human capital, networks, financing, governance, infrastructure, environmental resources, markets, and entrepreneurial culture are all examples of non-actor components.

Human resources. Knowledge, expertise, skills, talent, and the workforce are all parts of this component [94]. An entrepreneur's success or failure hinges on their human capital. Success in business is dependent on an entrepreneur's level of education and work experience [75]. It is possible to take advantage of business chances to generate and produce more through knowledge spillover [[95], [96], [97]]. An ecosystem's capacity to foster entrepreneurial behavior and the desire to launch and run a business is directly proportional to the rate of information spillage within it [84,98]. Sharing information across areas can help rural communities' minds grow. As a result, small towns can take advantage of opportunities brought about by a focus on the market and their own resources.

Entrepreneurship in rural areas is built upon human capital. Its importance in rural EE is highlighted by the fact that it drives innovation, encourages entrepreneurial intents, and optimizes resource utilization.

A spirit of entrepreneurship. Knowledge and experience in entrepreneurship are influenced by entrepreneurial culture. The foundation for entrepreneurial activity within an ecosystem, according to Spigel [35], is culture. This bolsters the monetary and interpersonal qualities. But it's also possible for a well-established culture to stifle entrepreneurial endeavors [86]. For example, communities often struggle to adopt new, seemingly contradictory entrepreneurial values due to entrenched traditional norms and paradigms.

One possible component of entrepreneurial culture is a particular culture that has been proposed in relation to the growth of EE. In an entrepreneurial setting, this factor is linked to the entrepreneurs' common beliefs. The personalities, experiences, and dynamic skills of community members who are entrepreneurs are reflected in shared values [99]. According to Audretsch et al. [100], local subculture helps encourage entrepreneurship by influencing the establishment of new enterprises in the area. Members of the community can benefit the existing EE by acting as agents connected to fresh entrepreneurial knowledge and expertise. Over time, this cycle modifies and transforms the culture of entrepreneurship.

Through a never-ending cycle of information exchange, experience accumulation, and the introduction of new ideals, entrepreneurial culture in rural EE is always changing and redefining itself. Entrepreneurial endeavors in rural areas are guided by this culture.

Connected devices. Network provisioning is an example of an EE service. In a rural setting, this factor is linked to organizations that provide support, such as businesses and farmers' clubs. There is a significant social function for networks in professional networks [42,90]. This part helps entrepreneurs connect with employees and other members of the workforce, which is a great way to pick up useful informal knowledge [18]. As an academic institution, this network affects the development of human capital. Funding and new customers can be found through networks as well.

Networks offer a living, breathing web of relationships and resources that boost rural communities' growth and prosperity and the capacities of individual entrepreneurs. For entrepreneurs in rural areas to succeed, networks are essential infrastructures.

Regulatory frameworks. The government's participation in ecosystem governance is substantial, given its roles as regulator and policymaker. The government can improve the system's components through policy. This is crucial for SMEs, say Cowell et al. [67]. If policies are well-designed, they can pave the way for businesses to find possibilities, research them, and secure the resources they need to take advantage of them. By providing stability in terms of market access and resource availability, supportive policies help businesses stay in business and even thrive in the long run. Establishing a conducive environment for businesses to flourish and contribute significantly to rural economic development requires a well-designed governance system that prioritizes policies that benefit rural enterprises.

System of financial funds. In this context, "financial component" means the ecosystem's capacity to supply capital [101]. In rural communities, there are a variety of sources for company capital, such as family, friends, and banks. Locals can be given microcredit by the latter. Microcredit enables local companies to expand by embracing cutting-edge technologies, and the creation of new firms is an obvious advantage of the investment [102]. In addition to meeting new demands, microfinance helps raise living conditions in rural communities [103].

More than just a conduit for capital, rural Eastern Europe's banking system propels change. Entrepreneurs' ability to realize their ideas, economic growth, and the quality of life in rural areas are all positively impacted by increased access to financing.

Support systems. Businesses are able to gain access to markets through the creation of ecosystem infrastructure [35]. Infrastructure also makes it possible for businesses to take advantage of resources, and policies help to curb exploitation so that entrepreneurial endeavors can continue [104]. In addition to its physical aspects, infrastructure plays a crucial role in connecting

entrepreneurs to resources and markets, which in turn shapes entrepreneurial ecosystems in rural areas. Its strategic development, aided by well-considered policies, creates possibilities for businesses, safeguards resources, and encourages long-term entrepreneurialism. Building and maintaining an entrepreneurial ecosystem relies heavily on infrastructure.

Resources for the environment. The growth of EE, especially in rural regions, relies heavily on the endowment of environmental resources [90]. But other resources are hard to come by in rural regions [105]. Using the nearest available resources can help you overcome this disadvantage. The availability of natural resources encourages company owners to launch companies and manufacture goods [106]. Tourism is a resource that businesses use to help the environment. Rural communities that are rich in history and culture have an edge in the marketplace because of these factors [107,108]. The tourism industry boosts the local economy by drawing in more money from outside.

The rural Eastern European region's natural resources are more than simply an asset; they are the driving force behind local innovation, entrepreneurship, and thriving markets. In addition to being essential to the ecosystem, these resources shape and determine the possibilities for long-term sustainability.

Market. Keywords, titles, and abstracts do not typically identify the market as an EE study's primary focus. Out of the total number of market occurrences recorded, only three fall short of the criterion. After looking over some major studies, though, it becomes clear that these factors are related to and just as crucial as the market [35,55] and demand [57] when it comes to building an ecosystem. If a region's markets and resources are stable, then operations can continue normally. Due to the inherent unpredictability of rural markets, business owners there must have absolute assurance that their products and services will sell. Because it confronts the issue of remoteness, market certainty is critical in rural places when access infrastructure is questioned [105]. According to Cunha et al. [106], EE could be made more sustainable if the market was more accessible. This component necessitates that business players have access to both resources and infrastructure. Furthermore, both internal and external factors inspire entrepreneurial endeavors that provide positive results [109].

Rather than being a static location for transactions, the market in rural EE is a dynamic force that both affects and is affected by many parts of the ecosystem. The entrepreneurial landscape is shaped by its certainty, accessibility, and alignment with other components, which propel rural communities into economic fortune.

Final Thoughts 4.

Both actors and non-actors make up rural entrepreneurship ecosystems (EE). People, organizations, and governments all play important roles in this ecosystem. Natural resources, human capital, the market, business networks, capital, legislation, and infrastructure are all non-actor components that these actors reflect and impact in their systemic role. In the past, researchers have looked at the ways in which different parts of EE work together to foster entrepreneurship in certain areas. The health of the ecosystem as a whole is revealed by the circumstances and interactions of various parts.

A different way to build a rural economy is through rural EE. Existing literature on rural EE is enriched by the components recognized within EE. We need a deeper comprehension of how EE

in rural areas fosters entrepreneurship. Researchers might build on this work by integrating ideas like co-creation and the entrepreneurial process with rural EE to better understand this field.

By facilitating the successful completion of the entrepreneurship process, EEs seek to foster entrepreneurship within an ecosystem. Finding and capitalizing on possibilities to start a business or develop a new product is the first step in the entrepreneurial process. Hence, the procedure can't proceed until the EE components are in excellent shape. In light of these findings, future studies should investigate in depth how rural EE components relate to the identification and pursuit of rural opportunities. Also, there's a lot of room for exploration in this study's assessment of the idea of EE in a rural setting. We suggest that future empirical research use villages as representative units to allow for a more thorough examination. To better understand the elements of rural EEs, it is helpful to look at administrative areas like villages, which have institutional frameworks.

Furthermore, in line with the developing idea of service-dominant logic [110], our investigation reveals the participation of numerous players. Value co-creation, in which different players trade value to accomplish shared goals, is a new idea in this theory. Multiple actors in rural EE work together to co-create social values, which changes the ecosystem at a macro level. This is made clear by combining the ideas of value co-creation and EE. Microscopically, the ecosystem facilitates the identification and shared pursuit of commercial prospects. This inquiry raises questions and sets the stage for future research that will investigate how the identified EE components facilitate co-creation in rural entrepreneurship in more detail.

Databases, articles, books, chapters, and conference proceedings are only a few of the data sources and types of literature that bibliometrics makes available for study. Other methods include co-authorship, co-occurrence, bibliographic coupling, and co-citation analysis. The results can vary depending on the method or methods used. Since our research relies on just one database (Scopus) and one kind of data (journal), we are cognizant of its limitations. The literature and research on entrepreneurial ecosystems in rural areas may not be covered in full. Because of this restriction, other sources' potentially useful ideas may have been overlooked. Another possibility is to look at the same setting with different data. Still, there has to be more study on how to standardize information from different kinds of sources. Oversimplifying the complexity of rural entrepreneurship ecosystems by categorizing components into actor and non-actor categories would be a mistake. It is possible that this study's methodology failed to sufficiently account for the fact that different regions may have distinctive features. To take this into account, future studies could assume that the components of rural EE are homogeneous and zero in on a single region rather than doing a broad overview of the topic.

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