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The entrepreneurial ecosystem – an entrepreneurial environment

Summary

DEFINITION OF THE TERM: an entrepreneurial ecosystem is a set of interconnected entrepreneurs, organisations that support entrepreneurship, public institutions, and entrepreneurial processes which foster productive entrepreneurship.

HISTORICAL ANALYSIS OF THE TERM: the metaphor of an entrepreneurial 'ecosystem' (borrowed from biology) is increasingly used by researchers and practitioners to understand the context of entrepreneurship in different geographical dimensions (countries, regions, and cities). An entrepreneurial ecosystem is part of a larger ecosystem, which can be regional, national, international, and even global.

DISCUSSION OF THE TERM: an entrepreneurial ecosystem consists of social, political, economic, and cultural elements that stimulate the development of enterprises.

SYSTEMATIC REFLECTION WITH CONCLUSIONS AND RECOMMENDATIONS: the entrepreneurial ecosystem approach has gained popularity due to a gradual shift from managerial economies to entrepreneurial economies. Analysing the context of entrepreneurship offers a better understanding of entrepreneurial economies from a systemic perspective. It is also an important area within the European policy framework, which is directed at developing entrepreneurship.

Keywords: entrepreneurial ecosystem, entrepreneurship, productive entrepreneurship

Definition of the term

The concept of an entrepreneurial ecosystem is defined in various ways in the literature: the first component of the term, '*entrepreneurship*', is understood as a process for creating new goods and services (Schumpeter, 1934); the second component, '*ecosystem*', comes from the biological sciences, in which an ecosystem (an 'ecological system') is defined as a biotic community, its physical environment, and all the interactions possible in a complex of living and non-living elements. Similarly to biological ecology, the perspective of community ecology focuses on the evolutionary emergence and decline of a wide variety of organisations and institutions that are interrelated and perform diverse but complementary functions in emergence, growth, and survival (Freeman, Audia, 2006). This multifaceted interdependence encompasses both cooperative and competitive relations between different actors that are pursuing their own interests in an ecosystem, all of which contribute to the complexity of the system. All actors within this system depend upon each other and play key roles in the development and maintenance of an entrepreneurial ecosystem.

The term 'entrepreneurial ecosystem' was first used in the literature dedicated to business management by Moore (1993). Moore defined an ecosystem as a community supported by organisations and human individuals who interact with one another. This community generates goods and services for customers, who are also elements of the ecosystem. According to this concept, organisations operate in an entrepreneurial ecosystem that includes customers, suppliers, producers, shareholders, business associations, government agencies, and other stakeholders. The complex interactions that take place between members of an entrepreneurial ecosystem determine their success and survival.

Later definitions of an entrepreneurial ecosystem inclined more towards its systemic and geographical dimension. For example, Cohen (2006) defined an entrepreneurial ecosystem as an interconnected group of actors in a local (geographically) community who take measures towards sustainability by supporting new ventures. An entrepreneurial ecosystem is also defined as a combination of social, political, economic, and cultural elements within a region that support the development of innovative companies and encourage new entrepreneurs and

other actors to take business risks (Stam, Spigel, 2016). A particular attribute of an ecosystem is the bringing together of stakeholders who are often driven by different goals and expectations and, in pursuit of these goals, contribute to shared prosperity without the need for any external intervention.

A broader definition was proposed by Mason and Brown (2014), who defined an entrepreneurial ecosystem as a set of interconnected entrepreneurs (both potential and existing), organisations that support entrepreneurship (e.g. companies, venture capital investors, angel investors, or banks), institutions (universities or public sector agencies), and entrepreneurial processes that occur within an ecosystem, such as the number of start-ups, the number of companies with high growth potential, and the level of entrepreneurial ambition. These actors can be formally and informally linked to one another to create the systemic conditions for entrepreneurship (Cohen, 2006).

The literature on entrepreneurial ecosystems indicates that the relationship between entrepreneurship and economic performance is embedded in an (regional) entrepreneurial ecosystem. Stam (2015, p. 1765) defined the concept of an entrepreneurial ecosystem as "a set of interdependent actors and factors that are governed in such a way that they enable productive entrepreneurship". If 'productive entrepreneurship' is understood as entrepreneurial activity in a high-quality entrepreneurial ecosystem that enables a positive contribution to economic growth, this means that the levels and types of entrepreneurial activity and their relationship with economic growth vary systematically across entrepreneurial ecosystems.

There are also definitions in which entrepreneurial opportunities play a large role. According to Qian, Acs, and Strough (2013), an entrepreneurial ecosystem includes all the important factors – economic, social, institutional, etc. – that interactively influence the creation, discovery, and exploitation of entrepreneurial opportunities.

Analyses of entrepreneurial ecosystems derive from the literature in which concepts such as industrial clusters, innovation systems, social capital, and networks were analysed. While these approaches differ in their conceptual and methodological perspectives, they all share the conviction that certain characteristics of the external environment of organisations and companies influence their growth and competitiveness.

Historical analysis of the term

The basic ideas that laid the foundations for entrepreneurial ecosystems emerged in the 1980s and 1990s as part of a shift in entrepreneurship research away from studies focused on individualism and personality research. These moved towards a broader community perspective to account for the role of social, cultural, and economic institutions in the entrepreneurial process. For example, Van de Ven (1993) argued that individual entrepreneurs cannot possess all the resources, institutions, markets, and business functions necessary to develop and commercialise their ventures. Entrepreneurship is a collective achievement that stems not only from the behaviour of individual entrepreneurs but also requires the many actors who play key roles in both the public and private sectors to create industrial infrastructure that facilitates the implementation of innovation.

The works of Pennings (1982), and Bahrami and Evans (1995), in which the term 'entrepreneurial infrastructure' is employed to explain the impact of regional economic and social factors on the entrepreneurial process, also played a significant role in the development of the concept of entrepreneurial ecosystems. Building on earlier attempts to change the narrative of the individual entrepreneur as the sole locus of value creation, the concept of entrepreneurial infrastructure highlights the importance of the phenomenon of entrepreneurship in a broader context which includes temporal, spatial, social, organisational, and market dimensions.

An entrepreneurial ecosystem consists of the various infrastructural elements necessary for the development of entrepreneurship in a given geographic region. Van de Ven (1993) was one of the first to propose three broad elements of an entrepreneurial ecosystem, termed 'infrastructure': (1) institutional solutions that regulate and encourage entrepreneurship; (2) public resources in the form of basic scientific knowledge, funding mechanisms, a pool of competent labour, as well as market demand from informed consumers for products and services offered by entrepreneurs; and (3) private entrepreneurs' economic activity and investment in research and development, production, marketing, and distribution functions.

An ecosystem is a functional whole in which there is an exchange between a company and the environment. It should be emphasised that numerous works devoted to company environments have been published

in the last few decades (Bednarczyk, 1996; Wach, 2008). Nevertheless, the use of the term *ecosystem* in the context of entrepreneurship reflects the growing organisational complexity of economic systems and the creation of a new social order based on network coordination. Networks and their ecosystems shape modern models of socio-economic development, which include a high level of uncertainty generated by dynamically changing environments and increased competitiveness.

Although research on entrepreneurial ecosystems is still in its infancy, some empirical studies demonstrate how a comprehensive entrepreneurial ecosystem enables entrepreneurial development and value creation at the regional level. For example, Mack and Mayer (2016) examined how entrepreneurs' early successes in Phoenix, Arizona contributed to the emergence of a strong entrepreneurial ecosystem based on an entrepreneurial culture and supportive public policies. Similarly, Spigel's (2017) study of entrepreneurial ecosystems in Waterloo and Calgary in Canada suggests that while ecosystems may have different structures and origins, their success comes from their ability to create a cohesive social and economic system that supports the creation and growth of new ventures. Also other authors, including those who investigated regions such as Silicon Valley, Route 128, Washington DC, and Kyoto (regardless of whether they used the term 'entrepreneurial ecosystem'), describe how contexts contribute to entrepreneurial success.

The entrepreneurial 'ecosystem' metaphor (borrowed from biology) is increasingly used by researchers (Stam, 2015) and practitioners (Isenberg, 2011) to explain the context of entrepreneurship in particular geographical dimensions (countries, regions, cities). In the Polish literature, Bednarczyk (1996) and Wach (2008) also highlight the need to create an entrepreneurial environment which is reflected in institutional support for the creation of new companies and their development, as well as for the creation of entrepreneurial attitudes in companies.

Discussion of the term

An entrepreneurial ecosystem consists of structural and systemic conditions (Stam, 2015). The former include social (formal and informal institutions) and physical elements which enable or constrain interpersonal

interactions and can be seen as the primary sources of value creation in entrepreneurial ecosystems. The latter relate to support services provided by various intermediaries that can significantly reduce barriers to the implementation of new projects and shorten the time scale for introducing investments into the market.

Three features identified within complexity theory (self-organisation, emergence, and coevolution) influence the adaptability of an ecosystem that is composed of many interacting organisations. Self-organisation is a dynamic and adaptive process in which systems independently acquire and maintain structure (spatially, temporally, and functionally) without any external influence (such as manipulation, interference, command, or pressure). The phenomenon of emergence in a complex and adaptive system means that any small change in one part of a system will bring unexpected changes in other parts. Coevolution as a feature of a business ecosystem is dynamic in nature and is a process of continuous and simultaneous interactions that help agents (organisations) adapt and evolve within the system. Coevolution occurs at the micro level, where organisations establish their relations with the environment.

The literature offers various classifications developed over recent decades for the factors that support entrepreneurial ecosystems. For example, Feld (2012) highlighted the interactions between ecosystem participants and the various resources (talent, services, or capital) available to them. Isenberg (2011) identified six distinct ecosystem domains: policy, finance, culture, supports, human capital, and markets. This concept greatly expands on the infrastructure elements developed by Van de Ven (1993). According to Isenberg (2011), the development of entrepreneurship stems neither from the specific activity of one person nor from a single idea: it stems from the shared vision of a group of stakeholders who create the right conditions for the development of companies. Isenberg (2010) sees ecosystem stakeholders as the pillars on which the entire structure of entrepreneurship rests.

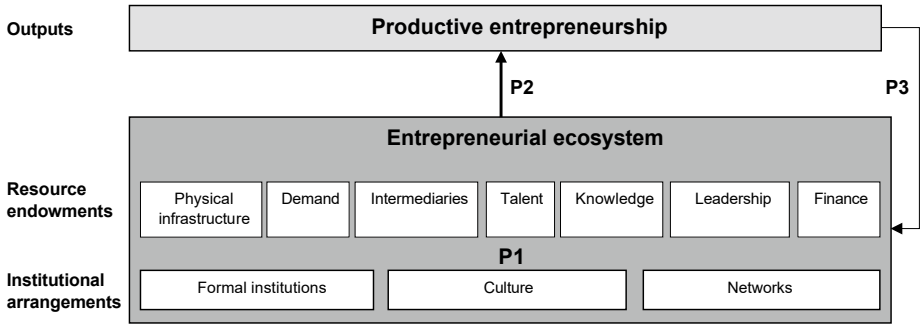
The World Economic Forum put forward a broader set of factors that influence an entrepreneurial ecosystem (World Economic Forum, 2014). These factors are grouped into eight pillars of entrepreneurial ecosystems and cover key resources, such as human capital workforce, funding and finance, and services; the actors involved (talent, investors,

mentors/advisors, entrepreneurs); the formal (regulatory framework) and informal institutions (cultural support) that support entrepreneurship; and, finally, access to customers in domestic and foreign markets.

In examining the applicability of an entrepreneurial ecosystem in creating a 'sustainable valley', Cohen (2006) identified seven main components of such a system: an informal network, a formal network, a university, government, professional and support services, capital services, and the talent pool. These components, which emerged very early on in the development of the concept of an entrepreneurial ecosystem, largely refer to people: starting with formal and informal networks and ending with representatives of the institutions and organisations identified.

Building on existing research, Stam and Spigel (2016) developed an integrative model of entrepreneurial ecosystems which consists of ten elements and entrepreneurial outcomes (cf. Figure 1). These elements are the operational constructs of the broader concepts of institutions and resources within an entrepreneurial ecosystem. The conceptualisation of this model was based on the development of an infrastructure for entrepreneurship (Van de Ven, 1993), the foundations of which is a social system. This model of an entrepreneurial ecosystem includes institutional arrangements and components of infrastructure linked with resource endowment. The institutional arrangements component includes formal institutions, culture, and elements of a network. The resource endowment component includes physical infrastructure, finance, leadership, talent, knowledge, intermediaries, and demand. The third infrastructure component consists of entrepreneurial firms that commercialise innovations. This component, called productive entrepreneurship, is considered an outcome of an entrepreneurial ecosystem and is conceptualised as new value creation. Productive entrepreneurship refers to "any activity that contributes directly or indirectly to net output of the economy or to the capacity to produce additional output" (Baumol, 1993, p. 30). This term implies entrepreneurial activity that creates total wealth. It also reflects the interdependence between entrepreneurs and governments: the latter are concerned with increasing aggregate wealth, while entrepreneurs are dependent on the context that is shaped by governments.

Fig. 1. Elements and outputs of entrepreneurial ecosystems



Source: (Stam, van de Ven, 2021).

The integrative model of an entrepreneurial ecosystem consists of three key mechanisms: the interdependence and coevolution of elements, upward causation of the ecosystem on entrepreneurship, and downward causation of entrepreneurial outputs on the quality of the ecosystem (Stam, Van de Ven, 2021). This model extends what has been proposed in the existing literature by introducing a broader range of causation, including the evolutionary processes between the elements of an ecosystem. The presence of these elements and the interactions between them are crucial to the proper functioning of an ecosystem.

One of the characteristic features of an entrepreneurial ecosystem is the flow of information during the entrepreneurial process. Information is exchanged in order to create new ventures, merge current companies, and invent new innovations together. This enables access to knowledge on buyers, new technologies, operating or delivery possibilities, equipment availability, and marketing concepts; thus, it facilitates finding new opportunities for products or services (Mason & Brown, 2014).

An entrepreneurial ecosystem is characterised by interconnectedness and an approach based on both cooperation and competition between the different actors. Cooperative relations arise between actors who can achieve complementary benefits by integrating their functional specialisations. Competitive relations arise when different entrepreneurs pursue alternative business paths.

Contemporary organisations operate in complex conditions which require the innovative integration of competition and cooperation. This

may lead to situations in which the competition between organisations is ill-matched with contemporary challenges in the economy. The concept of an ecosystem is that it is able to adequately capture such complex relations. Considerations devoted to entrepreneurial ecosystems often mention clusters and their positive impact on venture creation, which stem from their unique nature related to the coexistence of competition and cooperation.

Systematic reflection with conclusions and recommendations

An entrepreneurial ecosystem comprises social, political, economic, and cultural elements that enable support for the development of entrepreneurship. An entrepreneurial ecosystem consists of separate but interrelated actors operating in a given area. It includes, for example, the following elements: universities and research organisations, skilled human resources, formal and informal networks, government institutions, capital investors, venture capital investors, professional service providers, and an entrepreneurial culture that is linked to all these factors in a dynamic and open way (Cohen, 2006; Isenberg, 2011).

The entrepreneurial ecosystem approach has become popular due to a gradual shift from managerial economies to entrepreneurial economies. In the latter, entrepreneurship is considered a key factor in economic development (Schumpeter, 1934).

The phenomenon of an entrepreneurial ecosystem makes it possible to assess the systemic development of entrepreneurial economies and the extent to which economic systems support entrepreneurship, which is treated as a key attribute of the system (Isenberg, 2011; Stam, 2015). This approach is an instrumental way to gather and integrate a large variety and amount of data to measure the (changing) nature, performance, and outcomes of (regional) economies (Stam, 2015). Thus, the entrepreneurial ecosystem approach has the potential to provide a framework that can be useful in developing economic policy. There is a growing interest in ecosystems as a way of understanding the context of entrepreneurship at the level of an organisational macro-community. Analysing the context of entrepreneurship offers a better understanding of an entrepreneurial economy from a systemic perspective.

Although the concept of an entrepreneurial ecosystem has become very popular over the past decade, it is defined and measured in a variety of ways. Despite the abundance of academic literature on entrepreneurial ecosystems, it has not yet led to the creation of a coherent framework for economic policy. An important reason for this is the limited access to reliable, accurate, and comparable entrepreneurship ecosystem indicators. An entrepreneurship ecosystem comprises a set of interdependent actors and factors that enable the development of productive entrepreneurship (Stam, 2015; Stam, Spigel, 2016).

An entrepreneurial ecosystem therefore requires a shift from traditional economic thinking to a newer economic perception of people, networks, and institutions (Stam & Spigel, 2016). The term 'ecosystem' is increasingly used in discussions devoted to an organisation's strategy. Its emergence stems from a growing interest in interdependencies between organisations, which are also reflected in related concepts such as business models, platforms, coopetition, networks, technological systems, supply chains, and value networks. The concept of an ecosystem thus enables the creation of new business models and added value.

Ecological and economic systems share many characteristics, e.g., they are characterised by a high complexity of interrelated elements. The differentiating factor between these systems is the human element, which shapes behaviours and is expressed in economic and social systems as a value. An additional attribute of this approach to entrepreneurship is the recognition of the prominent role of entrepreneurs in building and sustaining a given ecosystem in collaboration with other stakeholders relevant to this ecosystem (Stam, 2015). An entrepreneur thus occupies a central position in an entrepreneurial ecosystem as a key actor in the process of building and maintaining it. This entrepreneurial ecosystem points to dynamic, institutionally embedded interactions between individuals' entrepreneurial attitudes, capabilities, and aspirations that lead to the allocation of resources through the creation and realisation of new ventures.

Using the system approach to entrepreneurship is a further step towards a better understanding of it. Information regarding the context of entrepreneurship (Stam, 2015) enables identification of the weakest links that hinder the effectiveness of the entire entrepreneurial ecosystem

and offers a holistic approach to entrepreneurship focused on the role of the ecosystem and the processes of its development, adaptation, and sustainment. This represents an important area in European policy efforts directed at developing entrepreneurship.

The concept of an entrepreneurial ecosystem is a debatable phenomenon that requires seeking answers to fundamental conceptual, theoretical, and empirical questions. First, this phenomenon is seen as relatively tautological; entrepreneurial ecosystems are systems that create entrepreneurship. Such tautological reasoning ultimately provides little information for academic research or public policy. Second, this approach only provides long lists of relevant factors, without a clear rationale for their causes and effects or explanation as to how they are linked to the history of specific areas. While these factors provide a certain point of reference, they do not offer a coherent explanation of their interdependent impact on entrepreneurship or, ultimately, on prosperity. For example, a study conducted by the World Economic Forum (World Economic Forum, 2014) found that access to markets, human capital, and finance are the most important aspects for the development of entrepreneurial firms. Third, the appropriate level of analysis of an entrepreneurial ecosystem remains unclear. Geographically, it could be a city, region or country. It could also be other systems that are less strictly defined in space, such as sectors or technologies that enable the creation and growth of companies. Most elements of the system can be distinguished at a regional/sub-national level (e.g., regional labour markets), while conditions can be created at both regional and national levels (e.g., national laws and regulations). In addition, entrepreneurs of fast-growing companies, especially entrepreneurial employees of large established firms, can act as ecosystem connectors on a global scale, merging separate regional entrepreneurial ecosystems.

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