Entrepreneurial Ecosystems

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Entrepreneurial Ecosystems

Drivers, Challenges and Success of Territories

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Foreword

Once upon a time, innovation was simple. Or at least it seemed that way – firm-centric, simple push/pull models for how the process worked, plenty of things that managers could influence and control.

But life is a little more complex than that, especially when we inhabit the delightfully named VUCA world – volatile, uncertain, complex, and ambiguous. Innovating in a context like that is more akin to the kind of country the Red Queen inhabited in the wonderful children's book *Alice Through the Looking Glass*. After running hard for a long time, Alice stops for a moment to catch her breath, exclaiming that "in our world, you'd generally get somewhere else if you'd been running as hard as we have . . .." To which the Red Queen haughtily replies that hers is "A slow sort of country. Now here, you see, it takes all the running you can do to stay in the same place. If you want to get somewhere else, you must run at least twice as fast as that!"

A powerful metaphor for today's challenging innovation context, and one which is instantly recognizable by anyone trying to innovate or support innovation. And it calls into question how we think about the wonderful word "innovation." The challenge remains what it always was – how do we create value from ideas? But the *context* in which this is located has shifted dramatically over the past fifty years.

Mental models matter – they shape not only how we perceive something like innovation but also what we pay attention to, what we give resources to, and how we manage the process. The great innovation writer Roy Rothwell wrote about innovation models back in 1992, critiquing the simplistic views of earlier generations and proposing the need for more networked, interactive, and complex models to deal with the growing challenges innovation was beginning to pose. Thirty years on, and his "fifth generation" framework has well and truly arrived – we're now trying to manage innovation in a globally distributed, digitally enabled, multiplayer networked game. Whether we are managers in commercial enterprises, public servants trying to create and deliver better services, or change agents in not-for-profit organizations trying to make the world a better place, we need to learn new tricks. And for those responsible for policymaking, trying to create a supportive and enabling context, the challenge is the same – how to deal with innovation in a VUCA world?

Characteristic of this search for more effective models has been a shift in language; as we move from seeing the enterprise as the central unit of analysis to one which increasingly locates it in a wider network so the narrative has become one of "ecosystems." Borrowing from biological science, the label works well, describing "the complex of a community of organisms and its environment functioning as an ecological unit" (Merriam-Webster dictionary).

It has been applied in many branches of natural science with the same focus on an interdependent collection of elements with a shared goal or purpose – for example, in geography:

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> An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life [. . .] Every factor in an ecosystem depends on every other factor, either directly or indirectly. (National Geographic Encyclopaedia)

And in the organizational world, the word has increasingly come to be used to describe something in which multiple interdependent elements are linked to focus on a common purpose.

Defining it is one thing; making it happen is another. If we are in an innovation ecosystem, then we need to pay attention to key questions like:

- How to form productive relationships with key partners/players to create shared value?
- How to manage such networks when there may be limits on the influence or control of different entities and where goals may not always be shared?
- What roles do different actors play in creating and/or maintaining the vitality of ecosystems?
- What are the challenges faced by ecosystems in less developed or emerging regions?
- How to create connections capable of generating results for the most different actors in the ecosystem?
- What to foster entrepreneurial education for the success of ecosystems?

That's where this book makes a key contribution, offering a timely and well-researched set of perspectives on these questions. It has a strong foundation in relevant literature, but it also explores the emerging challenges of configuring and operating ecosystems from a number of different stakeholder viewpoints. It also takes a truly global view, recognizing (as Rothwell did thirty years before) that innovation is playing out these days on a global stage, and the context for innovation is not homogeneous. There are perspectives from all around the globe and not just from the "usual suspects" of large economies but also looking at some of the challenges as they play out in small islands or regions.

From the policy perspective, a particular strength of the book is the link with the ongoing stream of research around national or regional systems of innovation – the context within which ecosystems are built and operated. It's a little like those wonderful Russian *matryoshka* dolls, each fitting inside the other; we need to see these interlocking perspectives on the innovation challenge. What favors one particular ecosystem and hinders another is not just the core network of players but the wider financial, educational, regulatory, and institutional context within which they operate. Creating and sustaining these provide powerful levers for policymakers to work with to help create vibrant supportive contexts for innovation.

Back to where we started; once upon a time, we might have thought that innovation was simple. Now we know it is a highly complex, multi-stakeholder game played for very high stakes. Quite apart from commercial and competitive advantage, innovation has become central to our approach to dealing with the huge societal chal-

lenges. If we are to make headway, we need new thinking to underpin our approaches – and particularly, we need to learn how to build and work with entrepreneurial ecosystems. This book is a very helpful guide for that journey.

John Bessant

Contents

Elisa Thomas, Kadígia Faccin, Bruno A. Bittencourt and Olivier Coussi

Chapter 1
Introduction

Welcome to a journey that traverses the diverse landscapes of entrepreneurial ecosystems worldwide. “Entrepreneurial Ecosystems: Drivers, Challenges, and Success of Territories” is a collaborative effort between the dynamic interplay between entrepreneurship, innovation, and the distinct characteristics of various global regions.

This book emerges from the collective synergy of a research project titled “The Role of Universities in Building Innovation and Entrepreneurship Ecosystems (UNEEC),” sponsored by the Research Council of Norway (#309383). Spanning four countries – Norway, Russia, France, and Brazil, the project focused on exploring the dynamics of ecosystems conducive to innovation and entrepreneurship and examining the key actors’ activities within them. At its core, the project was driven by the recognition that socioeconomic ecosystems, much like their natural counterparts, exhibit significant variations. UNEEC ignited a cross-cultural exchange of ideas, bringing together researchers, students, and professors in a collaborative effort to grasp the nuanced structure of entrepreneurial ecosystems.

UNEEC was not merely an academic initiative; it was a journey of discovery that transcended borders and united minds with a common purpose. From Europe to South America, participants engaged in a collection of experiences and connections. This journey led to a Summer School held at the University of Poitiers in France in June 2022. During this event, participants shared insights and pursued knowledge to interlace the global diversity of entrepreneurial ecosystems.

“Entrepreneurial Ecosystems: Drivers, Challenges, and Success of Territories” is the product of this collective endeavor, a mosaic of experiences from the members of the UNEEC project and their research network that captures the distinct essence of entrepreneurial ecosystems from different territories of the world. It unveils narratives that illustrate drivers and challenges, revealing practices and policies that shape the entrepreneurial and innovation ecosystems in different territories. Through this volume, young researchers had the advantage of gaining access to the experiences of professors from different universities and cultures, forging an enriching cross-generational dialogue that exemplifies the essence of knowledge sharing.

Entrepreneurial ecosystems, often symbolized by their potential to cultivate organic collaborations among diverse actors, are expected to catalyze the growth of new enterprises, generate employment, spur innovation, and enhance economic prosperity. The literature surrounding the development of these ecosystems within geographical contexts has flourished with diverse perspectives over the years, from the emphasis on innovation clusters by Porter (1990) and Engel and Del-Palacio (2009) to the Triple Helix model championed by Etzkowitz and Leydesdorff (2000), and the re-

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gional innovation systems approach discussed by Cooke et al. (1997), Asheim and Gertler (2006) among others.

At the heart of our exploration lie entrepreneurial ecosystems (EEs) as networks of actors coexisting within a shared environment – a concept analogous to the natural ecosystem (Moore, 1993). These ecosystems result from coordinated efforts by interdependent actors and factors to establish environments that nurture the success of nascent ventures within specific territories (Audretsch et al., 2019; Stam & Spigel, 2016). It is evident that entrepreneurial ecosystem perspectives, along with related concepts such as business ecosystems and innovation ecosystems, have gained significant traction across various academic fields. These include management, entrepreneurship, economic geography, and regional development. Their popularity has reached such heights that a plethora of literature reviews are available (Cao & Shi, 2021; Fernandes & Ferreira, 2022; Wurth et al., 2022).

Furthermore, these concepts have become prominent in the realm of policymaking, attracting attention from local, regional, national, and international policymakers. These policymakers are keen on proposing and testing ecosystem models to gain insights into the dynamics and processes associated with fostering entrepreneurship and innovation. This surge in interest is evident from the works of influential figures such as Isenberg (2010), and Mack and Qian (2016).

In this book, we present ecosystems as a "heterogeneous constellation" and a "nested network" (Dedehayir et al., 2018). They involve "actors, activities, artifacts . . . institutions and relationships" (Granstrand & Holgersson, 2020). We believe that within the ecosystem, interdependencies arise between partners and stakeholders (Kapoor, 2018), leading to exchange relationships in partner networks (Adner & Kapoor, 2010). In this way, these relationships constitute the potential for entrepreneurship and innovation for individuals, organizations and regions. For this reason, we seek to understand this phenomenon through different theoretical lenses and in different contexts around the world. Throughout the book, it is possible to identify the necessary drivers, the challenges faced by ecosystems, and also the lessons learned from each experience.

Before we dive into different ecosystems, Chapter 2 brings a broader study that seeks to identify and analyze how scientific knowledge has been influencing public policies in European Union ecosystems. From a complementary perspective on the public governance role, a case study of a tourism ecosystem led by a regional government in Brazil is presented in Chapter 3. The reader can observe an alignment between the actions carried out by local agents with the expected functions of a "destination management organizations" at the same time as some dysfunctions from the lack of legitimacy, engagement, and political obstacles.

Chapter 4 presents a broader study of entrepreneurship ecosystems in Central and Eastern Europe, providing insights into peripheral ecosystems. Two particular issues from that region are discussed, the importance of migrant and necessity entrepreneurs. From a very different part of the world, Chapter 5 explores the diffusion of

innovation between actors in an agricultural ecosystem on two islands in the Indian Ocean, Reunion Island and Madagascar. The case studies show a lesson learned from the efforts to develop that agricultural ecosystem, which refers to the need to enroll the actors via concrete actions and knowledge support as videos.

Chapter 6 makes a comparison between an under-represented region and a developed country, when it explores the external drivers and the differences in the ecosystems surrounding social enterprises in South Africa and Norway, two countries with radically different institutional conditions. Results show that, surprisingly, despite the availability of economic resources in Norway, social enterprises report few available sources stimulating social entrepreneurship, and they often meet obstacles. On the contrary, a developed system for philanthropy, e.g., microfinance, fair trade, and religious communities, contributes to more diverse ecosystem in South Africa.

Still in South Africa, Chapter 7 contributes to understanding an ecosystem based on an entrepreneurship program for educational institutions. And Chapter 8, a Brazilian university played a major role in the development of an ecosystem. Chapter 9 keeps discussing the case of a Brazilian university and its ecosystem, but from the perspective of knowledge-based dynamic capabilities. The three chapters about universities provide lessons that allow us to identify success stories and theoretical insights that can be used in different contexts.

Throughout the chapters, this volume underscores the significance of a supportive community and an enabling economic landscape, both essential for fostering entrepreneurial and innovation growth. The levels of development of supportive environments play a pivotal role in shaping these ecosystems, encompassing material resources, human capital, and institutional organizations that participate within the ecosystem (Schmutzler et al., 2020; Spigel, 2017). Therefore, the level of development of a supportive environment for an EE plays a prominent role in shaping the ecosystem. In this context, the ecosystem includes material resources (funds, equipment, facilities) and human capital that are part of institutional organizations that participate in the ecosystem. As we venture into the narratives of successful and aspiring entrepreneurial ecosystems, we acknowledge the ever-evolving global landscape.

To fully understand how EEs are developed in different territories, it is important to look at the ecosystem composition and how actors and factors interact. In some cases, the government was strong in establishing public policies for the development of the ecosystem hoping that an initial top-down “kick” would stimulate further organic collaborative efforts among the actors in the long term, while, in other places, the development of the EE was not pushed form public policies. The same applies to the role of universities, which have, in some places, played a strong role in the development of the ecosystem, while in other places, universities are merely education institutions. A similar analysis can be made of other actors’ involvement, i.e., incubators, technology parks, and industry associations. In some regions, specific actors played a major role whilst, in other territories, the same type of actor did not function as an advanced pro-

moter or inducer of the EE. For a sustainable EE, adaptation to the local specificities is key.

Amidst our exploration, we unravel the complex interaction between public policies, universities, incubators, technology parks, and industry associations and their varying roles in shaping entrepreneurial ecosystems. The journey showcases the resilience and adaptability of ecosystems, emphasizing the importance of tailoring strategies to local contexts. As we reflect on the lessons arising from the successes and challenges of diverse territories, we aspire to highlight unique characteristics of the development of entrepreneurial ecosystems. This book encapsulates the dynamic panorama of worldwide innovation, offering insights for aspiring entrepreneurs, practitioners, researchers, policymakers, and anyone curious about the intricate dynamics that fuel the growth of different territories.

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Chapter 2
Following the Science?

Scientific Knowledge Use in Entrepreneurial Ecosystem Policymaking

Abstract: The academic community is often considered a relevant actor in various policymaking arenas. The literature on the use and impact of research in policymaking has pointed to several ways that knowledge can flow between the academic world to policy (and vice-versa), even though gaps in understanding this relationship exist for this in certain areas, as is the case with Entrepreneurship Ecosystem policies. In this sense, this study aims to identify and analyze how research and scientific knowledge have been used by policy actors in policy documents and policymaking processes related to entrepreneurial ecosystems (EEs) in the European Union. The study focuses on the role of the Joint Research Centre (JRC), a cluster of 10 scientific areas that form the EU Science Hub. We used an altimetry tool (Overton) to identify the use of research in policy documents. The results indicate the prevalence of a *political* approach underpinned by strategic use of knowledge and expertise as well as strong expert concentration and convergence effects. We discuss these results in terms of their implications for EEs policy and research and identify avenues for future research.

Keywords: entrepreneurial ecosystems, entrepreneurship policy, scientific expertise, evidence-based policy, European Union, policy process, Joint Research Centre, policy documents, bibliometric, research use

Introduction

In the last two decades, economic growth and innovation have become key pillars of transnational and national policy efforts throughout Europe (Kuhlmann & Rip, 2018). Supporting the nurturing and subsequent development of entrepreneurial ecosystems (EEs) across the board has been particularly relevant (Audretsch et al., 2019; Autio, 2016). An innovative and globally competitive European Union (EU) ranks high on the policy agenda of most member nations, and these goals are fostered by policy meas-

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ures aimed at nurturing entrepreneurial and innovative ecosystems (see Chapter 1 of this volume for a review). In March 2020, the EU launched a new industrial strategy – against the backdrop of the twin (digital and green) transitions – in which it is stated that "Europe's industry is the motor of growth and prosperity in Europe [. . .] Europe's industry has everything it takes to lead the way and we will do everything we can [policy-wise] to support it" (European Commission, 2000a).

The EU's Industrial Strategy (2020–2024) explicitly refers to the concept of "industrial ecosystems," encompassing "all players operating in a value chain: from the smallest start-ups to the largest companies, from academia to research, service providers to suppliers" (European Commission, 2020). As highlighted in the scientific literature on EEs and innovation ecosystems (IE) (Audretsch et al., 2019; Granstrand & Holgersson, 2020), the EU's aforementioned strategy stresses the importance of social relations (networks) and critical interdependencies among key agents at multiple levels, including the design and implementation of supportive and robust policy frameworks at both the EU and national levels.

Knowledge and its production spaces, especially universities, where most scientists can be found, constitute the core of EEs. However, there is an underlying problem, still little explored in the literature, which refers to the actual use of knowledge about EEs to inform policy, whereas scientific knowledge and expertise can be important drivers of such policies. In other terms, the problem is that knowledge seems to be a relevant driver, but we have little thought about how it is used in EE policy. Indeed, the aim of this study is to explore how scientific research has informed policy related to EEs in the EU. Hence, this chapter seeks to answer the following research question: What roles do scientific knowledge and expertise play in agenda-setting in the context of EEs in the European Union? We argue that answering such research question is critical to expanding our understanding of the framework conditions and institutional settings (at both the national and supranational levels) in which EEs actors operate and how EEs evolve over time.

In the next section, we sketch out the key concepts used to operationalize the study and make sense of its results. Following a short methodological section, we present the main results of the study. The chapter concludes with a discussion and suggestions for future studies.

Scientific Knowledge and Policymaking

The use of scientific knowledge in policy is part of a growing debate on evidence-based policymaking and the impact of knowledge on policy (Cairney & Oliver, 2017; Capano & Malandrino, 2022; Gunn & Mintrom, 2021; Wellstead & Howlett, 2022). Studies on the intersection between research and policy fall into two distinct methodological approaches: *forward tracking*, which starts from research (papers, projects, evaluations

such as the UK's Research Excellence Framework) to identify its use in and impact on policy, and *backward tracking*, in the reverse direction, where the use of research is identified and analyzed from the policy outputs or stakeholders, such as policy documents, interviews with policy makers, among other approaches (Newson et al., 2018; Tahamtan & Bornmann, 2020). Within this debate, it is possible to understand the types and roles of research use in policy. Weiss (1979) distinguished various types of knowledge used in policy, expressed in models by the author, such as the knowledge-driven model, problem-solving model, iterative model, political model, tactical model, and enlightenment model. According to Dunn (1994, p. 17), scientific expertise can be used at various stages of the policy process: (i) when identifying problems in agenda setting, (ii) when forecasting impacts in policy formulation, (iii) when comparing alternatives in policy adoption, and (iv) when monitoring impacts in implementation and evaluation.

Following these approaches, Weible (2008) refers to three basic, frequently intertwined roles that underpin the use of scientific expertise in policymaking. The first pertains to cognition processes linked to *learning*, by altering widely held beliefs amongst policy participants regarding causes and solutions. The second is *political*, which refers to the strategic use of scientific knowledge and expertise to justify or legitimize preferred courses of action. Finally, the *instrumental* use of scientific expertise refers to situations in which participants are willing "to entertain outcomes that conflict with beliefs" (Weible, 2008, p. 620) and follow the data and its policy implications regardless of their normative and strategic preferences. Weible (2008) also refers to four key attributes of expert-based information in the context of policy subsystems: *analytical compatibility*, the degree to which experts use similar theories and methods to understand and explain phenomena; *treatment of uncertainty and risk*, which encompasses the inability of policy participants to grasp the ambiguity and complexity inherent to problems, causes, actions, and consequences (also known as "bounded rationality"; Simon, 1991); *experts and coalitions*, which concerns the legitimacy of expert-based information being used to make and implement policy decisions; and *policy-oriented or adaptive learning*, which involves "interpreting mistakes, making strategic adjustments, and trying new strategies for goal attainment" (Sabatier, 1987, as cited in Weible, 2008, p. 627).

Earlier studies have shed critical light on the importance of the "hierarchy of credibility" (Becker, 1967) among scientific experts. Those thought capable of delivering objective and science-based analysis are located at the top of the expert hierarchy (cf. Conway, 2021), thus enjoying high levels of legitimacy and influence in the eyes of policy process participants. Institutional affiliation also plays a key role in this regard, as independent researchers based at (prestigious) universities are considered archetypical experts and "free of political bias" (Harjuniemi, 2022, p. 1638). These findings are aligned with numerous studies pointing to the so-called "Mathew effect" in science, as there is an in-built bias towards individuals associated with prestigious universities, where prestigious scientists, by the position/status they occupy, tend to gain more and more prestige. Studies conducted in the Nordic countries have shown that

both government authorities and specialized research institutes – some of which have connections with political actors such as trade unions – rank rather high in terms of scientific credibility and institutional status (Harjuniemi, 2022). These experts play a dual role as both independent experts (providing assessments) and policy advocates by acting as sources for new policy ideas. However, Harjuniemi (2022) found high levels of skepticism towards experts who are perceived as spokespeople or advocates for certain interest groups, whether political or economic.

Design, Method, and Case

In this study, we began by identifying policy documents related to EEs in the Overton database.[1] This database is useful for collecting interesting evidence on the impact of knowledge on policymaking (Bornmann et al., 2022), assessing the papers, researchers, and institutions mentioned from policy documents. We searched for policy documents via the term "entrepreneurial ecosystem." A search conducted on November 16, 2022 yielded 16,572 policy documents globally. We identified 3,421 documents from the EU related to EEs. The database contained documents from 1997 to 2022, most of which were concentrated between 2017 and 2022. Overton also classified all the documents from governmental bodies: 449 were legislation, 201 were from agencies, and 128 were legislative research pieces.

To select a sample of policy documents for analysis, we delved into the sources of these policy documents (Table 1).

Table 1: Sources of EEs policy documents from the European Union.

Source	Number of policy documents
Publications Office of the European Union	1,706
EUR-Lex	449
European Economic and Social Committee	282
European Committee of the Region	260
Council of the European Union	208
Joint Research Centre	**135**

Source: Authors' own.

1 Overton is the world's largest searchable (online) policy database that tracks how research papers, institutions, and researchers are mentioned in policy documents produced by government bodies, think tanks and intergovernmental organizations in 182 countries. Policy documents include reports, working papers, legislation, and clinical trials, among others.

Based on this, we selected the policy documents associated with the Joint Research Centre (JRC), representing 135 documents (Figure 1). The reasons for this are explained below.

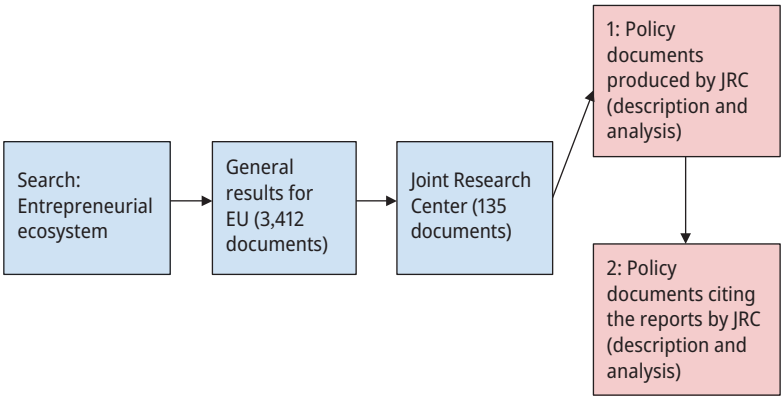

Figure 1: Methodological steps.
Source: Authors' own.

In addition to the 135 JRC policy papers (a set that we refer to as JRC-1), we looked at policy documents that cited the identified EEs-related JRC materials. In total, we found a set of 1,294 policy documents (JRC-2). To analyze these two sets, we manually screened the titles and abstracts of the documents, as well as their summary of contents, and applied the information provided by Overton for analysis of the research use (journals, institutions, and cited authors) in the policy documents from JRC. This information was then used to determine what these policy documents represented and to analyze the research inputs used.

The JRC is an interesting case for analysis. Established in the 1950s, the JRC is responsible for providing science and knowledge services to the European Commission, employing scientists to provide, in the words of JRC, "independent scientific advice and support to EU policy" (Galan-Muros et al., 2021, p. 1). In view of this, it can be argued that the JRC occupies a hybrid space between research and politics (Isett & Hicks, 2020; Wellstead & Howlett, 2022). The JRC not only provides scientific data for policymaking but also develops tools, shares know-how, anticipates emerging issues in the context of EU policymaking and relies on numerous facilities (e.g. laboratories and research centers across the EU) (Joint Research Centre, 2020). Currently, the JRC is a cluster of no less than 10 scientific areas that form the EU Science Hub, including EEs-related topics such as economics, finance, markets, education, employment, and innovation systems. Between 2014 and 2020, the JRC published close to 8,000 peer-reviewed publications, of which 44% were in the top 10% most cited journals and 6% were in the top 1% (European Commission, 2022, p. 9). In 2021, it reported an impact

claim of 430 innovations or scientific results addressing specific EU policy priorities with a high impact level in the context of policymaking (ERC, 2022, pp. 6, 9; Figure 2).

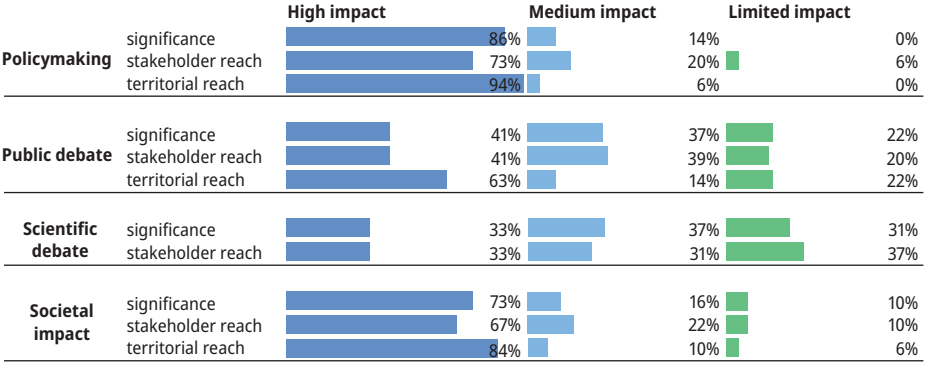

Figure 2: JRC case studies' impacts.
Source: ERC (2022, p. 10).

Empirical Results

JRC-1

This set contains 135 EEs-related policy documents produced by the JRC between 2008 and 2021 identified using Overton. The bulk of these were produced between 2016 and 2021, averaging 16 documents per year. The documents were classified according to the type of document (Figure 3).

Most of the identified documents belonged to the JRC series *Science for Policy Reports* (75 counts), followed by *Technical Reports* (12 counts). The main objective of these two types of publications is to provide "evidence-based scientific support to the European policymaking process" (Galan-Muros et al., 2021, p. 3). In light of the *Payback Framework* model of research impact (Donovan & Hanney, 2011), it can be postulated that all the logical steps from conception and research design to execution, writing and forwarding are influenced by the idea that policymakers will use the reports as critical aid instruments for policy. Following Isett and Hicks (2020), there are types of policy documents created to bridge the divide between academia and policy and to make research more accessible, which is the case of JRC reports. These types of publications also explicitly state that the documents do not reflect the position of the European Commission, seeking to establish a relationship of distance (political neutrality) and knowledge (legitimate expertise) and to reinforce their status as "independent advisers."

The thematic composition of the identified documents can shed light on what EEs issues have been explored by the JRC. Table 2 shows the 25% most cited topics.

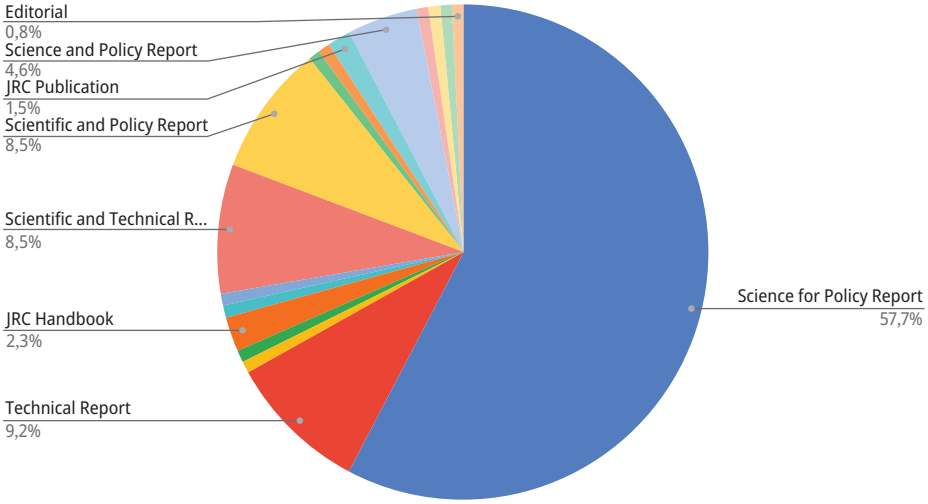

Figure 3: Types of EE-related policy documents produced by the JRC.
Source: Authors' own.

Table 2: Twenty-five percent most cited topics in JRC EEs policy documents.

Topics	Keyword count
Innovation	112
Entrepreneurship	75
Science	64
Framework Programmes for Research and Technological Development	53
Research and development	50
Small and medium-sized enterprises	38
Structural Funds and Cohesion Fund	37
System	32
Competition (economics)	31
Start-up company	28
Venture capital	26
Business model	22
Digital transformation	20
European Social Fund	19
Internet of things	17
Collaboration	16
Knowledge economy	15
Big data	15
Social innovation	14
Triple helix model of innovation	13
European Green Deal	13
Technology roadmap	12
Smart cities	12

Table 2 (continued)

Topics	Keyword count
Regional policy of the European Union	12
Science, technology, engineering, and mathematics	12
Open innovation	11

Source: Authors' own.

As expected, the most recurrent topics lie at the intersection of economics, science, and technology, with an emphasis on the key issues of funding, business and innovation. Other relevant topics include digital transformation, big data, the knowledge economy, and social and open innovation. Another thematic classification grouped JRC policy documents by Sustainable Development Goals (SDGs), with the majority belonging to *SDG 9: Industry, Innovation and Infrastructure* (74 documents), *SDG 8: Decent Work and Economic Growth* (45), *SDG 10: Reduce Inequalities* (23), *SDG 11: Sustainable Cities* (19), and *SDG 12: Responsible Consumption and Production* (19).

Both the analysis of topics and classification of the documents by SDGs revealed a tendency to connect discussions on EEs with sustainability, energy, inequality, and digital issues, as well as a search for more interdisciplinary research approaches. In this respect, it is possible to identify such trends in the EU's own research and innovation policy (Schot & Steinmueller, 2018; Volkmann et al., 2021), which raises the following question: To what extent has the academic community been shaping this debate (agenda setting)? For example, science and technology policy has been greatly influenced by the research community as a political actor with expert knowledge (Radaelli, 1995).

When it comes to the use of research in these documents, it is possible to consider data regarding journals, cited researchers, and affiliated institutions. Overall, the 135 identified JRC policy papers cited a total of 3,934 scholarly books and articles. It is interesting to note the pattern of geographical distribution of these cited scholarly materials (by authorship affiliation; Figure 4). Most of the research concentrates on authors from the EU, followed by the United States. However, it is also worth noting the international nature of the knowledge flows, with studies coming from 125 countries (all the regions of the world), suggesting that the JRC reports on EEs are based on global empirical evidence, research, and scientific debates. That said, the dominance of the Western world may imply a certain convergence or isomorphism in terms of methodological and conceptual approaches. Also, most of the cited scientific publications in JRC policy documents were published between 2008 and 2020, indicating that the reports have used updated literature on the topic.

Regarding the Journals, Figure 5 demonstrates the diversity of the most-mentioned scientific journals.

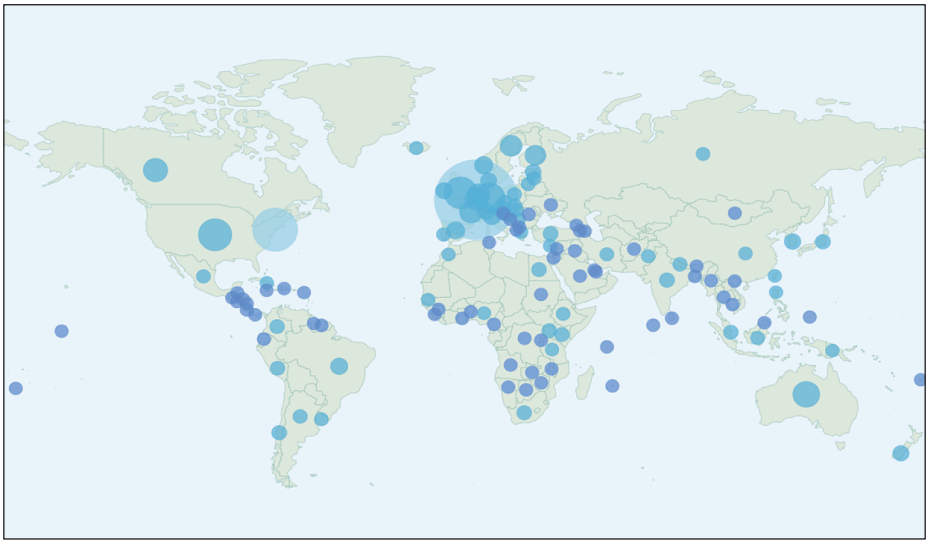

Figure 4: Geographical distribution of research cited in JRC EEs policy documents.
Source: Overton database.

The most predominant journals were *Research Policy*; *SSRN Electronic Journal*; *Natural Hazards and Earth Systems*; *International Journal of Disaster Risk Reduction*; *Regional Studies*; *British Journal of Educational Technology, Sustainability, Computers & Education*; *European Planning Studies*; *Technological Forecasting*; and *Social Change and Science*. Another point worth noting is the predominance of high-level journals well established in their respective areas as the main sources of expertise, which points to the dynamics of reproduction in the circulation of hegemonic scientific knowledge in policy documents, known as the 'Matthew effect', Merton (1968).

To complement this analysis, and given that there is a diversity of the journals being cited, we found it relevant to group them into thematic clusters (top 15% of subjects identified; Table 3).

Besides confirming that a diversity of themes related to EEs were explored by the identified documents, such a grouping also reveals the prominence of the use of research materials stressing the importance of the spatial and geographical dimensions of EEs; the strong presence of citations from the *geography, planning, and development* cluster of journals confirms this trend. Moreover, Overton identified 2,500 scientific institutions linked to the 3,934 studies cited by the JRC's political papers on EEs. These included not only academic institutions but also other organizations that conduct research, such as think tanks and commissions.

The results also show that many research and other inputs mentioned by the JRC emanate from authors affiliated with the European Commission itself – 138 policy documents (8.2%), which is double the best-rated university (Harvard). This insight

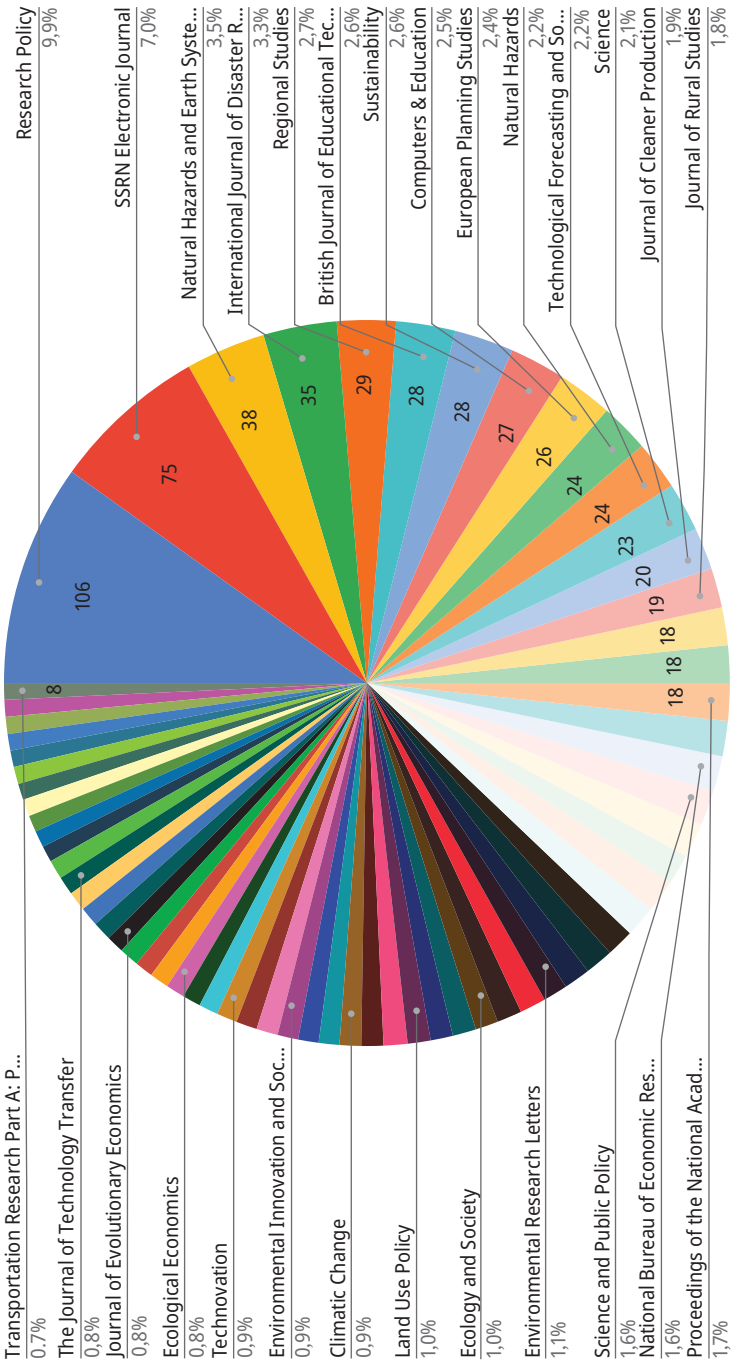

Figure 5: Top journals and materials cited in JRC policy documents.
Source: Overton (compiled by the authors).

Table 3: Journals' thematic areas.

Journal subject	No. of mentions of grouped journals
Geography, Planning, and Development	329
Economics and Econometrics	324
Strategy and Management	273
Management of Technology and Innovation	247
Sociology and Political Science	226
Management, Monitoring, Policy, and Law	221
Educational Sciences	168
Management Science and Operations Research	161
Business and International Management	144
Environmental Science (all)	137
Development	117
Renewable Energy, Sustainability, and the Environment	109
Ecology	108
Social Sciences (all)	100
Public Health, Environmental, and Occupational Health	99

Source: Authors' own.

points to the discussion regarding the political use of scientific expertise and the nexus amongst experts and policy coalitions (Weible, 2008) on the one hand, and the dual role – scientific advice and advocacy – played by the scientific community on the other (Harjuniemi, 2022). The other most-cited institutions were Harvard University, University College London, the University of Cambridge, the Massachusetts Institute of Technology, the University of California, the University of Sussex, Wageningen University & Research, Utrecht University, the London School of Economics and Political Science, Stanford University, ETH Zurich, and VU Amsterdam. Of these, citations of researchers based in institutions in Brussels (EU), the United Kingdom and the United States constituted 25% of all citations.

JRC-2

While JRC-1 highlighted some key aspects of research use in EEs-related JRC policy documents, JRC-2 sought to identify the use of JRC reports by other policy documents, as JRC reports are designed to provide input and expert knowledge for policymaking. A total of 1,294 policy documents citing or mentioning 286 documents produced by the JRC were identified.[2] The publication dates of the documents ranged from 2010 to 2022

2 This search was performed on December 20, 2022. At the time of the research, the platform was updated.

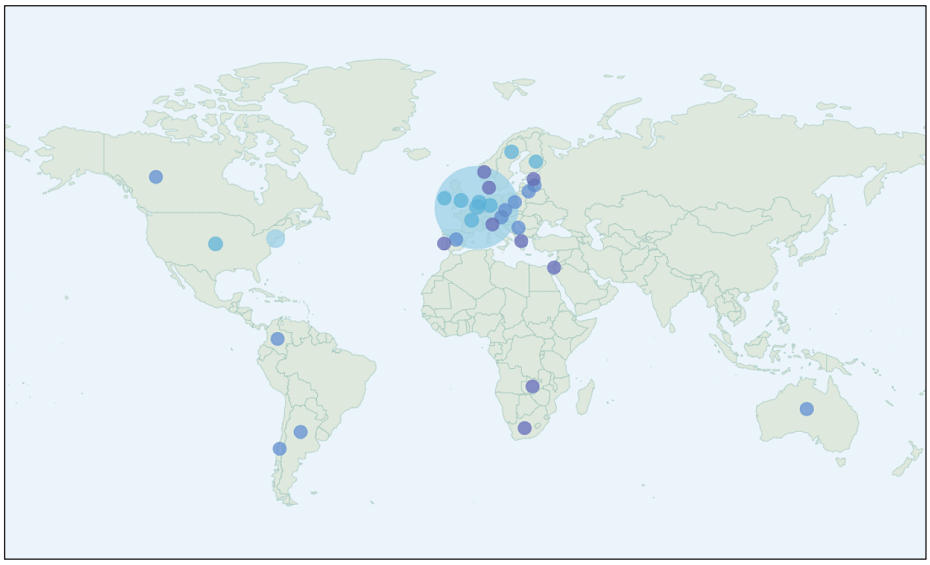

Figure 6: Geographical distribution of policy documents citing JRC work on EEs-related themes.
Source: Overton database.

but mostly between 2018 and 2022. The Overton database classified this set as 1,343 publications, 20 working papers, 5 legal documents, 1 blog post, and 1 clinical guidance. Figure 6 shows the geographical distribution of the JRC-2 set.

Perhaps unsurprisingly, the majority of the 1,294 documents citing JRC work on EEs-related themes were produced in Europe. However, such documents were also produced in North America, South America, Africa, and Oceania. It is interesting to note that the JRC documents pulled research from around the world and concentrated this expertise on being used in the EU context.

Thus, Figure 7 shows that most of the political organizations that cited JRC work were located within the EU, with the EU's Publication Office at about 465 documents (37.7%).

We also found considerable self-referencing of the JRC's own scientific work – 338 documents (27.4%) – which indicates that it found an outlet for in-house knowledge in other productions of the center. The presence of international governmental organizations (IGOs) (notably, UNESCO with eight documents), as well as think tanks such as the US's RAND Corporation can be highlighted. The results reinforce the issue of the use of internal expertise in policymaking (JRC using inputs from other JRC research) and brings up another element, namely the use of expertise derived from government bodies by other (supranational) bodies, such as EU agencies, the Council of Europe, and the OECD.

In terms of topics covered in JRC-2, a similar pattern to JRC-1 can be observed. The documents in JRC-2 covered themes such as economics and innovation, education and research, the EU (as a research and policy object), and other themes related to

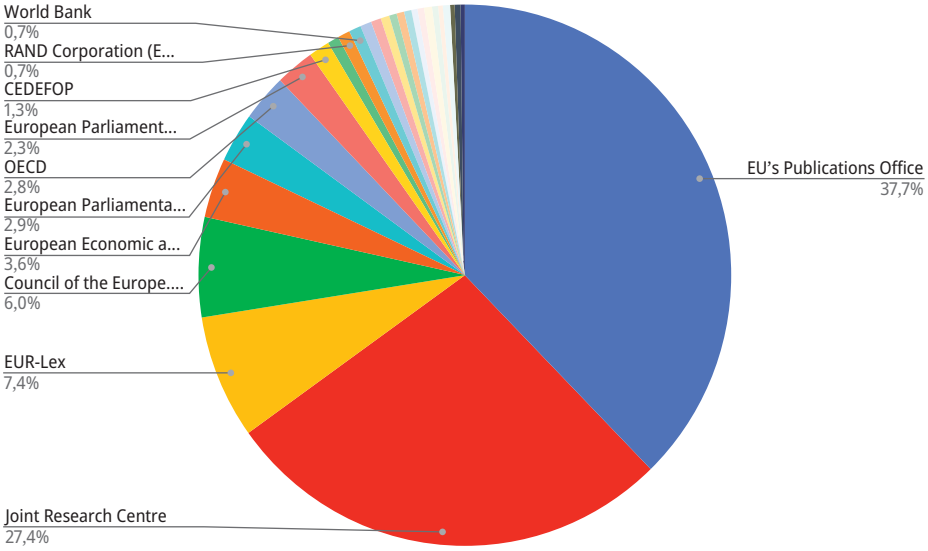

Figure 7: Sources citing JRC work on EEs-related themes.
Source: Overton database (compiled by the authors).

sustainability, energy, and digital transformation. The most predominant SDGs among the 1,294 documents in JRC-2 were *SDG 8: Decent Work and Economic Growth* (462 counts), *SDG 9: Industry, Innovation and Infrastructure* (429), *SDG 12: Responsible Consumption and Production* (159), *SDG 11: Sustainable Cities and Communities* (126), and *SDG 4: Quality Education* (103).

Figure 8 reveals two similarities to JRC-1: (i) the presence of the same set of recognized journals in the areas of science and technology policy, regional studies, and business/economics and (ii) the presence of journals that focus on sustainability issues.

However, JRC-2's external sources were less diverse than those of JRC-1 (i.e. concentrated in fewer key journals and science entities). In this respect, the use of material from IGOs, such as OECD-based research, is noteworthy, as shown in Figure 7. This insight reinforces both the dominance of certain hegemonic ideas, theories, and methods (since it relies on consolidated set of sources), as postulated by the Matthew effect (Merton, 1968), as well as the importance of *analytic compatibility* (Weible, 2008), which refers to the degree to which experts across multiple policy sub-fields at multiple levels (national, EU, OECD, etc.) share similar cognitive and normative approaches in their general understanding and causal explanations of a given social phenomenon.

Also, we investigated the research institutions with the most counts in the JRC-2 policy documents, which were identified via author affiliation as citations or mentions in the text (top 10 institutions; Table 4). The United Kingdom and the United States were by far the primary epicenters of knowledge production, as was the case in JRC-1.

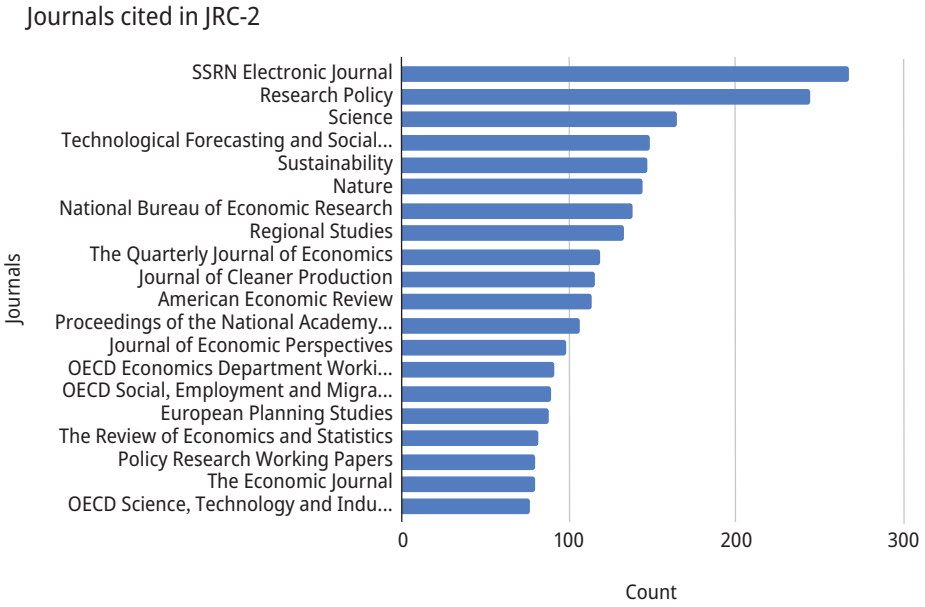

Figure 8: Top 20 journals cited in JRC-2 (2010–2022).
Source: Authors' own (compiled from the dataset).

Table 4: Top 10 scientific institutions in JRC-2.

Institutions	Count
Harvard University, USA	300
Organisation for Economic Co-operation and Development (OECD)	277
University of Oxford, UK	265
Stanford University, USA	262
University College London (UCL), UK	261
Massachusetts Institute of Technology (MIT), USA	243
KU Leuven, Belgium	242
University of California, Berkeley, USA	227
London School of Economics and Political Science (LSE), UK	206
University of Cambridge, UK	189

Source: Authors' own.

The JRC-2 policy documents tended to adopt research from both reputable universities and other prestigious and hegemonic global policy organizations such as the OECD. Furthermore, the documents revealed a more international focus than JRC-1, as they featured more research from high-level (non-governmental) organizations such as the World Bank, the OECD, and UNESCO, as well as pointing to the use of the JRC as a source of expertise outside the EU context. These empirical findings point to the existence of "hierarchical credibility" (Becker, 1967), as expert organizations use the re-

search of other similar expert organizations and policy advocates. They also hint at the apparent role played by collaboration across policy subsystems (Weible, 2008).

Conclusion

This chapter investigated the role of scientific knowledge and expertise in agenda-setting in the context of EEs across the EU through the quantitative analyzes of two major sets of policy documents associated with the EU's Joint Research Centre (JRC).

First, it is important to highlight the limitations of our study. Both sets of documents were analyzed using bibliometric approaches (number of citations, names, and keywords), which considers data aggregates and thus does not embark on a deeper qualitative analysis. Hence, qualitative analysis of the use of research in documents is something to be explored in the future. Another related limitation relates to Overton's coverage (like every database, it has limitations in this sense). For example, the database does not capture all policy documents produced by a government or related body, including JCR. Also, some research mentioned could not be captured by the tool (open documents and open science publications are likely to be more present).

Second, the data from both JRC-1 and JRC-2 suggest the prevalence of a *political* approach, which is evidenced by the strategic use of knowledge and expertise to legitimize specific courses of action (Weible, 2008). This approach was particularly prominent in the use of internal scientific sources and sources from individual scholars and scientific institutions considered cognitively and normatively aligned with the dominant coalitions within the policy sub-field.

Associated with this insight are two key attributes of expert-based information in a policy context, as pointed out by Weible (2008), namely *analytical compatibility* and *legitimacy concerns* generated by the complex interplay between experts, key policy actors, and coalitions. In one respect, these dimensions can be related to a third attribute, the *treatment of risk and uncertainty* (Weible, 2008), wherein resorting to trusted sources and experts (and their key insights and recommendations) could be seen as a means of reducing the risks associated with experimenting with novel ideas or concepts that deviate from the mainstream, both in terms of science and policy advocacy.

Empirical studies have demonstrated that policy audiences (including politicians) exhibit what is known as "the reflection effect," opting to avoid risk when policy outcomes are framed as gains and opting to embrace risky behavior when outcomes are framed as losses (Linde & Vis, 2017). Given the general positive attitude (benefits outstrip the losses) associated with different aspects of EEs in both the scientific and policy literature (Flanagan & Uyarra, 2016), it is unsurprising that policy audiences across and beyond the EU tend to prefer established scientific theories and paradigms as well as recognized courses of action (policy) over riskier approaches.

The use of internal scientific expertise denotes several key aspects worth noting. First, there is a kind of "in-breeding" (Horta et al., 2010) underpinned by a Matthew effect (Merton, 1968), as some hegemonic ideas, experts, and institutions play disproportionately critical roles in agenda setting. Second, in the EEs policy sub-field, one can observe the prevalence of a "hierarchy of credibility" (Becker, 1967), as certain experts and institutions are placed at the top of the expert ladder. What is surprising is the extent to which these top experts are associated, directly or indirectly, with advocacy groups and highly politicized inter- and supranational organizations such as the EU, the OECD, the UN (UNESCO), and the World Bank. Earlier studies have shown that these highly salient and legitimate bodies play a critical role in the development and diffusion of policy ideas or scripts that are later adopted at the national level, often outside the political, economic, and cultural contexts from which they emerge (Czarniawska-Joerges & Sevón, 2005). The result is more often than not policy *convergence* or *drift* (Béland, 2007) that is underpinned by processes of imitation or mimetic isomorphism at multiple levels (i.e. global, regional, national, local, cross-sectoral, etc.; cf. Ramirez et al., 2016).

Returning to the theme of the edited volume – to what extent can the analysis undertaken in this chapter inform us about EEs policy itself, and what are its possible consequences going forward? First, as hypothesized at the outset and confirmed by the thematic analysis, scientific research, and evidence-based knowledge are important drivers in EEs reporting. Second, there is a high level of concentration of influential scientific actors alongside strong isomorphic tendencies, which may result in policy convergence in the long run. The risk in this respect pertains to the extent to which the dominance accrued by this relatively small set of hegemonic models and ideas on EEs may lead to a "hollowing out" of new and innovative concepts, insights and perspectives that may be valuable in aiding policy actors to address emerging situations, such as the unintended effects of global health pandemics and geo-political conflicts. Given the EU's strategic priorities on the wicked problems of the twin transitions (digital transformation and sustainability), there may be a need for scientific experts and policy audiences alike to embrace multi- and interdisciplinary approaches that are often underrepresented in the top (most prominent and cited), disciplinary-based scientific outlets and hegemonic theories. Moving forward, future studies should delve into the qualitative approaches (content analysis, targeted interviews, etc.) underpinning the above findings by, for example, analyzing in more detail both the nature and scope of the scientific content supporting policy recommendations, in addition to shedding light on the network of internal and external experts and their interlinkages with advocacy groups and hegemonic and highly politicized organizations such as the EU and the OECD.

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Chapter 3
Leadership in Entrepreneurial Ecosystems in Tourism: Evidence from a Brazilian Tourist Destination

Abstract: The main goal of this chapter was to explore the dynamics of entrepreneurial ecosystems (EEs) in the context of tourism by examining the effectiveness of leadership exercised by regional governance bodies (RGBs). The study focused on the entrepreneurial ecosystem in tourism (EET) of Ouro Preto, Minas Gerais, Brazil, which is a prominent tourism destination with significant cultural heritage. By analyzing the alignment between local agents' actions and the expected functions of a destination management organization (DMO), the present study aimed to characterize the EET and evaluate the adequacy of RGB leadership in integrating and strategically managing the ecosystem. The findings suggest that while there is alignment between local actions and DMO functions, dysfunctions stemming from a lack of legitimacy, engagement, and political obstacles hinder the maturity and effectiveness of leadership in the EET. In addition to the leadership drivers indicated by the literature, this study proposes adopting formal management mechanisms, legitimation, and the capacity to stimulate innovation as crucial factors influencing the strategic performance of leadership within EETs. By furthering the knowledge on leadership dynamics in EETs, this study contributes to the broader literature on EEs and provides insights for academics and policymakers. This study's findings have implications not only for Ouro Preto, but also for other destinations with similar characteristics. Overall, this study contributed to furthering the knowledge on leadership within EETs, filling the gap in empirical research, and offering practical insights for the strategic support and development of tourism entrepreneurship within EEs.

Keywords: entrepreneurial ecosystem, regional governance bodies, leadership, destination management organization, tourism industry, Brazilian tourist destination, innovation, case study

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Introduction

Entrepreneurial ecosystems (EEs) involve interconnected actors collaborating within a specific geographical area to promote productive entrepreneurship (Stam, 2015; Stam & Spigel, 2017). While EEs have provided valuable insights into regional economic performance (Stam, 2015), further research is needed to explore the relationship between EEs and the tourism industry (Debbage, 2018; Eichelberger et al., 2020). Despite the potential for tourism to offer accessible entrepreneurship opportunities with low capital requirements and high innovation potential (Silva et al., 2017), the application of the EE approach in tourism research has been limited, with few studies explicitly focusing on tourism entrepreneurship within EEs (Bachinger et al., 2020; Eichelberger et al., 2020). Understanding EEs in the context of tourism requires recognizing the unique contextual factors and key agent characteristics that differentiate the tourism industry from other sectors (Brown & Mason, 2017). Customized interventions may be necessary to address the distinct features of tourism-oriented EEs (Brown & Mason, 2017).

Bachinger et al. (2022) examined the structural and systemic conditions of EEs and entrepreneurial ecosystems in tourism (EETs) and found disparities in terms of leadership. In EEs, experienced entrepreneurs typically assume leadership roles, whereas EETs rely on public management for guidance and oversight (Bachinger et al., 2022). Destination management organizations (DMOs) also play a critical role in coordinating and governing EETs. In the context of EETs in Brazil, regional governance bodies (RGBs) in councils, forums, associations, and agencies promote dialogue and management among local actors. These RGBs create a democratic environment to strengthen the region, foster innovation, promote sustainability, and enhance destination competitiveness (Ministério do Turismo, 2013). It is empirically assumed that the closer an RGB aligns with the logic of a DMO, the more effective it becomes (Mira et al., 2017).

Given the core role of RGBs in developing EEs in the tourism sector, these regional entities can coordinate and engage diverse actors, including businesses, governmental and non-governmental organizations, academia, and local communities. Effective regional leadership can create an enabling environment for growth and innovation in entrepreneurial tourism by providing strategic direction, promoting partnerships, and establishing adequate policies. Additionally, RGBs contribute to defining sustainability goals, cultural preservation, and social inclusion, ensuring a balanced ecosystem development that benefits the local community. Through effective leadership, RGBs stimulate collaboration, knowledge exchange, and the creation of support networks, thereby fostering the emergence of new entrepreneurial initiatives and contributing to the economic and social growth of the ecosystem.

To address the recognized need for more empirical studies on EETs (Bachinger et al., 2022; Eichelberger et al., 2020), this study aimed to characterize an EET and examine the effectiveness of leadership exercised by RGBs in integrating and strategically managing the ecosystem from the perspective of DMOs. A case study was conducted in

the EET of Ouro Preto, Minas Gerais, Brazil, which encompasses various activities and programs implemented to stimulate the development of productive entrepreneurship. Ouro Preto was selected due to its prominence as one of Brazil's leading tourism destinations, with its significant cultural heritage recognized worldwide for its historical value, and for its designation as a Cultural Heritage of Humanity by UNESCO (Oliveira, 2020).

This study's findings contribute to an expanded understanding of EETs, as EEs in this industry have unique compositional characteristics (Bachinger et al., 2022). Traditionally, the literature on EEs has primarily focused on manufacturing ecosystems (Stam & van de Ven, 2021), requiring a shift in perception within the field to occur. This study's primary contribution lies in elucidating the leadership dynamics promoted by RGBs, which drive tourism development. Given the role of EEs in fostering entrepreneurial activities, a comprehensive understanding of leadership within EEs offers valuable insights into how tourism entrepreneurship can be strategically supported and cultivated. This holds particular significance for academics and policymakers, especially considering the intellectual and political efforts dedicated to studying and implementing ecosystem approaches. Moreover, it is noteworthy that the tourism sector has been severely impacted by the Covid-19 pandemic, and promoting productive entrepreneurship can allow the industry to recover and stimulate economic growth.

Literature Review

Entrepreneurial Ecosystems in Tourism

Entrepreneurial ecosystems (EEs) are valuable frameworks and policy tools for understanding the dynamic relationship between entrepreneurship and the local environment, playing a key role in catalyzing regional development (Spigel & Harrison, 2018). These ecosystems are complex social constructions characterized by interdependent agents who engage in mutual relations and constant exchanges with their environment (Stam, 2015). Spatial, relational, and social factors shape the unique characteristics of each EE (Brown & Mason, 2017). However, when examining specific industries such as tourism, deviations from the traditional EE model become evident (Bachinger et al., 2022).

An EET can be recognized by identifying and analyzing various elements and actors in the sector. Firstly, a diverse range of tourism companies and ventures, such as hotels, restaurants, travel agencies, tour operators, and transportation companies can be noted, working synergistically to meet the demands of tourists (Cavalheiro et al., 2020). Additionally, the presence of start-ups and innovative technology companies in the tourism sector indicates the existence of an EET, where creativity and innovation are encouraged to address challenges and provide new solutions to consumers. Further-

more, government entities, regional development organizations, educational institutions, and research centers are crucial in building an EET, providing support, resources, and specialized knowledge to drive sector development (Debbage, 2018). Furthermore, the participation and collaboration of local communities, interest groups, and nonprofit organizations are essential for strengthening the EET as they promote sustainable tourism, cultural preservation, and environmental conservation (Bachinger et al., 2020).

Understanding the EET is essential to define a tourist destination clearly. Bornhorst et al. (2010) define a tourist destination as a geographical region, political jurisdiction, or major attraction that aims to provide visitors with satisfying and memorable experiences. A tourist destination's success hinges upon an active ecosystem that stimulates, leverages, and fosters trust among entrepreneurs, promoting interdependence and collaboration, which is crucial for enhancing regional competitiveness (Silva et al., 2017). Effective co-production and a coordinated offering involving various actors are vital for successful tourist destinations (Aarstad et al., 2015).

Exploring tourist activities is an intricate matter, which can be influenced by diverse economic, meteorological, and social factors (Maia, 2015). Tourist destinations strive to provide satisfying and memorable experiences through efficient co-production, coordination, and balance among various actors (Bornhorst et al., 2010; Aarstad et al., 2015). Agents within EEs, including entrepreneurs, universities, investors, financial organizations, and business support entities, contribute differently to entrepreneurial activities (Clark et al., 2020). However, developing an EE requires not only the presence of agents, but also their interconnectivity through formal and informal networks, promoting resource flow and the alignment of objectives (Tabas et al., 2022).

The complexity of tourist activities, influenced by economic, meteorological, and social variables, demands effective governance for adequate development (Baggio, 2008; Maia, 2015; Pulido-Fernandez & Pulido-Fernandez, 2018). The governance of EETs poses a complex challenge due to the diverse agents involved, each with its objectives (Colombo et al., 2019). In contrast to the general EE model proposed by Stam (2015) and Stam & van de Ven (2021), which primarily focuses on manufacturing industries, the EET exhibits distinct characteristics due to the unique nature of the tourism industry. Bachinger et al. (2022) conducted a study highlighting some systemic aspects. They found that in EET, unlike the traditional EE, the leadership is attributed to public entities, which are mainly DMOs, providing guidance, strategy, and a shared vision.

Governance in the tourism sector involves directing tourism at different levels of government through transparent structures of coordination, collaboration, and cooperation aimed at achieving shared collective goals (Duran, 2013). In addition, it addresses interdependencies and responsibilities while supporting solutions and opportunities for tourist destinations (Duran, 2013). In the following sections, we will explore two constructions that support governance in tourist destinations.

Regional Governance Bodies × Destination Management Organization

Brazilian tourist destinations, particularly those involved in the Tourism Regionalization Program, exhibit leadership at the level of instances of RGBs (Ministério do Turismo, 2013). These instances represent public and private entities, society, and cities within the tourist regions. They coordinate, monitor, and manage the tourist region and its ecosystem (*Ministério do Turismo*, 2018). The formation and institutional model of RGBs are determined by representatives from the tourism chain sectors in the public, private, and organized civil society spheres, considering regional contexts and inter-city relationships.

One notable RGB is the City Tourism Council (COMTUR), which operates under the coordination of local governments. This space, which can be advisory or deliberative, is responsible for discussions on planning and implementing public tourism policies at the city level. In addition to COMTUR, other non-state RGBs may focus on tourism planning for local development and inter or intra-city cooperation. These instances can be councils, forums, regional consortia of cities, or private associations (Ministério do Turismo, 2013).

Regarding the leadership of tourist destinations, Mira et al. (2017) suggest that leaders should focus on developing competitive advantages through practical marketing actions, economic aspects, stakeholder relationships, and public policies. In addition, they emphasize the role of DMOs as entities responsible for destination management. Given the scope that defines the role and relevance of DMOs, we aimed to compile, based on the studies of Wang (2011), Pearce (2015), and Mira et al. (2017), the main drivers indicating the leadership roles assumed in EETs (Table 1).

Table 1: Leadership drives in EETs.

Drive	Scope of action
Strategic planning	Provides a roadmap for long-term goals and sustainable development.
Formulation and implementation of tourism policies	Creates a conducive environment for entrepreneurship and provides guidelines for stakeholders.
Market intelligence	Identifies market trends, consumer preferences, and emerging opportunities for informed decision-making.
Development of tourism products and businesses	Fosters innovation, diversification, and competitiveness.
Digitization and innovation	Drives the adoption of new technologies for enhanced customer experiences and operational efficiency.
Monitoring	Evaluates performance and identifies areas for improvement.
Crisis management	Ensures resilience and effective navigation of challenges.

Table 1 (continued)

Drive	Scope of action
Training and capacity building	Empowers local tourism professionals with skills and knowledge for their success in a dynamic industry.
Promotion, marketing, and branding	Enhances visibility, attracts tourists, and creates a distinctive destination identity.
Financing and promotion of investments	Provides necessary resources for entrepreneurship and infrastructure, development, stimulating growth, and job creation.

Source: Elaborated by the authors based on Wang (2011), Pearce (2015), and Mira et al. (2017).

We highlighted that DMOs can have different governance structures, including public government agencies, non-profit organizations, non-profit public-private partnerships, or members-only trade associations (Wang, 2011). While DMOs may vary across destinations, they generally share common elements, and according to the World Tourism Organization (WTO, 2019), effective evaluation of DMOs performance requires strategic leadership, effective execution, and efficient governance.

Methodological Procedures

We conducted an empirical qualitative study in Ouro Preto, MG, Brazil, focusing on Tourism-Related Social Enterprises (TSEs) (Bachinger et al., 2022). Ouro Preto is a UNESCO-designated Cultural Heritage of Humanity site and is part of both the Estrada Real routing program, which is the longest tourist route in Brazil, and the Circuito do Ouro regionalization program, owing to its historical significance as the birthplace of the Inconfidência Mineira (Costa, 2017; Oliveira, 2020).

The data collection process consisted of three stages. First, we conducted documentary research using the Cadastur website (Ministry of Tourism) and the Municipal Tourism Plan of Ouro Preto (2017–2027). Second, we observed and participated in the monthly meetings of the Municipal Tourism Council (COMTUR) in Ouro Preto from April 2022 to September 2022. Finally, we conducted field research, which involved semi-structured interviews with key stakeholders responsible for the governance of the EET, as presented in Table 2.

The interview script underwent content validation by specialist researchers. In August 2022, we conducted an initial interview with a prominent EET actor to gain deeper insights into the empirical field. This interview helped identify other relevant actors through the snowball technique. In total, we conducted 12 interviews between September 22, 2022, and November 23, 2022. The interviews were recorded, transcribed, and had an average duration of 37 min.

Table 2: List of respondents.

	ID	Entity	Interviewees' occupation
COMTUR members	E1	City Board of Tourism	Alternate member
	E2	City Board of the Environment	Titular member
	E3	Radical Gold Tourism and Entertainment	Titular member
	E4	Associative Force of Ouro Preto Residents – FAMOP	Titular member
	E6	Commercial and Business Association of Ouro Preto – ACEOP	Alternate member
	E8	Ouro Preto Circuito do Ouro Convention & Visitors Bureau- Regional Circuito do Ouro	Titular member
	E10	Federal University of Ouro Preto – UFOP	Titular member
	E12	Brazilian Association of the Hotel Industry – Regional Circuito do Ouro – ABIH	Titular member
Local Agents	E5	Bijoca's Mine	Local entrepreneur
	E7	SEBRAE	Project and course analyst
	E9	Board of Economic Development, Innovation and Technology of Ouro Preto	Director of technology and innovation
	E11	Plan Solutions	Business analyst, public management consulting firm

Source: Prepared by the authors.

To analyze the collected data, we categorized the interviews and subsequently regrouped the data (Rodrigues & Leopardi, 1999). The categorization process followed an inductive approach, in line with the exploratory nature of the study. We conducted coding based on the research problem, organizing it into two axes, namely: "who are they?" and "how do they work?", referring to the agents responsible for leading the EET. The following sections present the analysis and discussion of the research findings.

Analysis and Discussion of Results

Tourism in Ouro Preto

Ouro Preto, a city known as an open-air museum, showcases its rich cultural heritage in the Baroque and Rococo styles through its well-preserved urban structures, including houses, fountains, and monuments (Oliveira & Campos, 2010). The region also offers natural attractions such as ecological parks, waterfalls, trails, and historic mines (Costa,

2017). In addition, Ouro Preto is part of the extensive Estrada Real program, a tourist route spanning over 1,630 kilometers across the southeastern states of Minas Gerais, Rio de Janeiro, and São Paulo, to foster regional tourism development (Pires, 2017).

Efforts are underway to preserve the traditions of the route and promote the region's identity and beauty, particularly the colonial paths of Minas Gerais (Instituto Estrada Real, 2022). The Circuito do Ouro, which includes Ouro Preto and fifteen others cities in Minas Gerais, shares cultural, historical, and natural affinities and works towards sustainable regional tourism development (Associação Circuito do Ouro, 2021). In addition, the Gold Circuit, divided into four routes, including the "Scenarios of History" route that encompasses Ouro Preto, promotes regional travel (Gold Circuit Roadmap, 2021).

Ouro Preto offers a solid tourist infrastructure, with restaurants, hotels, inns, and related services available to visitors. Small and medium-sized enterprises play a significant role in the local tourism sector. As of September 2022, there were 171 registered enterprises listed in Cadastur, the Ministry of Tourism's virtual registry for active service providers (Table 3).

Table 3: Service providers registered in Ouro Preto – MG, Brazil in 2022.

Tourism segment	No. of registered enterprises
Tour guide	58
Hostings	38
Restaurant, cafeteria, bar, and similar	33
Tourism carrier	16
Travel agency	10
Provider specialized in the tourism segment	8
Event support infrastructure provider	3
Event organizer	3
Car rental for tourists	2
TOTAL	**171**

Source: Cadastrur – Ministry of Tourism.

The destination's tourism development has been recognized by the Brazilian Ministry of Tourism as one of the 65 destinations with the necessary infrastructure and attractions for national and international visitors, contributing to regional tourism growth.

Leadership and Drivers for EET Development

Once the entrepreneurial vocation for tourism in the city of Ouro Preto has been defined, our focus shifted towards identifying the interconnected and coordinated group of actors that operate within this region to explore this vocation (Stam, 2015;

Stam & Spigel, 2017). To examine the role and dynamics of leadership within this ecosystem, we initiated our research by studying the City Tourism Council, known as COMTUR. These councils typically work as the primary representative bodies for Interorganizational Relations Groups (RGBs) in tourist destinations (Mira et al., 2017).

In Ouro Preto, COMTUR was established in 1995 as an advisory body to the City Hall, providing internal deliberations. However, in 2011, the council underwent a restructuring process (Article 3 of Law 659 of June 20, 2011) to transition from a purely advisory board to a permanent deliberative and supervisory council. Additionally, it was intended to function as a platform for community discussions in Ouro Preto, as stated by the representative of the Ouro Preto Tourism Department.

Presently, COMTUR consists of 16 members, with half of them representing public authorities and the other half appointed by civil society (as outlined in Resolution No. 04/2015). Table 4 displays the current composition of COMTUR for the 2021–2023 term.

Table 4: Agents and Institutions that compose COMTUR in the city of Ouro Preto – MG.

(1) City Board of Tourism
(2) City Department of Culture and Heritage
(3) City Board of the Environment
(4) Public Security Area – 52nd Military Police Battalion
(5) Federal University of Ouro Preto – UFOP
(6) Federal Institute of Minas Gerais – IFMG
(7) National Historical and Artistic Heritage Institute – IPHAN
(8) Ouro Preto City Council
(9) Commercial and Business Association of Ouro Preto – ACEOP
(10) City Museum System
(11) Ouro Preto Circuito do Ouro Convention & Visitors Bureau – Regional Circuito do Ouro
(12) Associative Force of Ouro Preto Residents – FAMOP
(13) Ouro Preto Tour Guides Association
(14) Ouro Preto Development Agency – ADOP
(15) Gold Radical Tourism and Entertainment
(16) Brazilian Hotel Industry Association – Regional Circuito do Ouro – ABIH

Source: Research data (2022).

In line with the previously described methods, this study included interviews with 12 key actors from the EET in Ouro Preto. Among these participants, 8 were representatives of entities actively participating in COMTUR, while the remaining 4 were local agents (refer to Table 3 for a visual representation). The objective of these interviews was to gain insights into the perceived role of influential figures who provide guidance and direction to the tourism enterprises within the EET of Ouro Preto. Upon analyzing the responses provided by the interviewees, it became evident that various entities were mentioned, as illustrated in Table 5.

After analyzing the responses and the mentioning frequency for each agent, it becomes evident that public management plays a significant role in driving the EET,

Table 5: Frequency of agents mentioned in interviews.

Agents/entities	Nature legal	Participation in COMTUR	Freq.
City Board of Tourism	Public	Yes	18
City Board for Economic Development and Innovation	Public	No	15
Ouro Preto Economic Development Agency (ADOP)	Private	Yes	7
Commercial and Business Association of Ouro Preto (ACEOP)	Organized civil society	Yes	7
Ouro Preto and Circuito do Ouro Convention & Visitors Bureau (CVB)	Private	No	6
Association of Tour Guides (AGTOP)	Organized civil society	Yes	4
Ouro Preto Art Foundation (FAOP)	Organized civil society	No	4
Brazilian Micro and Small Business Support Service (Sebrae)	Private	No	3
City Council of Tourism – COMTUR	Organized civil society	***Yes***	***3***
Entrepreneurs and representatives of trade and industry	Private	No	3
City of Ouro Preto	Public	Indirect via Boards	3
City Council for Economic and Sustainable Development of Ouro Preto – CONDES	Public	No	2
City Board of the Environment	Public	Yes	2
Federal University of Ouro Preto – UFOP	Public	Yes	2
Brazilian Association of the Hotel Industry Regional Circuito do Ouro – ABIH	Organized civil society	Yes	1
Association of Mines in Ouro Preto	Organized civil society	Yes	1
Ouro Preto Film Commission	Private	No	1
Associative Force of Ouro Preto Residents (FAMOP)	Organized civil society	Yes	1
Federal Institute of Minas Gerais – IFMG	Public	No	1
National Historical and Artistic Heritage Institute – IPHAN	Public	Yes	1
Plan Solutions	Public	No	1

Source: Research data (2022).

which is in line with findings from previous research on ecosystems of this nature (Bachinger et al., 2022). Additionally, we highlight the substantial representation of organized civil society through local associations. Based on the interviewees' remarks, the City Board of Tourism emerges as the most prominent local agent. This outcome was expected since the board spearheads tourism-related activities in Ouro Preto. Their initiatives encompass proposing public policies for tourism development, ensuring compliance with legislation, and actively seeking project opportunities and financial resources.

One notable observation is the occasional overlap between the City Board of Tourism and COMTUR. Some interviewees did not distinguish between the two entities, treating them as a unified representation. This can be attributed to the fact that COMTUR is an initiative of the City Board of Tourism, making it challenging for local agents to dissociate the two, despite the council comprising multiple local representations.

Although frequently mentioned, the City Board for Economic Development, Innovation, and Technology is not among the participating representations in COMTUR. Nevertheless, integration may help the understanding and collaborative alignment of actions promoting local tourism development. Part of this discrepancy stems from the current COMTUR administration (2021–2023) predating the establishment of this recent board (early 2022).

The following composition of COMTUR (2024–2026) should include the board for economic development to ensure comprehensive coordination of all relevant structures that can contribute to growth. Moreover, this board plays a direct role in promoting entrepreneurship. Therefore, the City Board for Economic Development, Innovation, and Technology should be integrated into COMTUR to support the development of policies promoting local tourism.

Among the other mentioned entities, ADOP stands out – the Economic and Social Development Agency of Ouro Preto – a private, nonprofit institution that promotes sustainable development in the city. ACEOP, an association representing the broader business community of Ouro Preto (not limited to tourism), established in 1935, also garnered attention. This association advocates for the interests of the business class and fosters local commerce.

Several other associations were frequently mentioned, including AGTOP, which represents Ouro Preto's tour guides and acts as a tourism agency, supporting guide services. In addition, Fundação Arte de Ouro Preto collaborates with IPHAN (National Institute of Historical and Artistic Heritage) and the City Museum System to preserve the historical heritage of Ouro Preto – an aspect strategically explored within the tourism sector of the city.

Furthermore, two private entities, CVB and Sebrae, warrant mention. CVB, the Ouro Preto and Circuito do Ouro Convention & Visitors Bureau, is an organization dedicated to boosting the economy and promoting a positive image of Ouro Preto, and the Circuito do Ouro through the development of various tourism segments, conventions, events, and extensive tourist promotion of the Circuit. Sebrae, the Brazilian

Micro and Small Business Support Service, focuses on improving micro and small businesses competitiveness and sustainable development, which are prevalent in the tourism sector.

In addition to characterizing the ecosystem, we aimed to analyze the effectiveness of leadership exercised by the RGBs in strategically guiding the EET. Consequently, we examined the activities performed and expected functions of the primary drivers, which signify the assumed leadership within EETs as evidenced in Table 6.

Table 6: Actions carried out by the RGBs at the Ouro Preto EET following the DMOs guidelines.

Drivers of leadership	Actions carried out in loco at the EET	Responsible agents
Strategic planning	– Promote and give visibility to the city as a tourist destination	Board of Tourism and COMTUR
Formulation and implementation of the destination's tourism policy	– Institution of the current City Tourism Plan (Law No. 1,098 of June 14, 2018)	Board of Tourism and COMTUR
Market Intelligence	– Visitor complaint survey – Data collection in conservation parks	– Board of Tourism in partnership with Sebrae and Fundação Getúlio Vargas – Board of the Environment
Development of tourism products and businesses	– Development of the Creative Tourism proposal. – Development of a project to encourage audiovisual tourism	– Board for Economic Development, Innovation, and Technology – Ouro Preto Film Commission
Digitization and innovation	– Digitalization plan for creative destinations and tourism diversification plan (creative tourism) – Games Festival – Valin Week Games (event tourism)	– Board for Economic Development, Innovation, and Technology – Director of Innovation and Technology at Secr. Development Econ., Innovation, and Technology (Co-founder)
Monitoring	– Visitation control in Ecological Parks; identification of risk points for the visitor	Board of the Environment
Crisis management	– Post-pandemic market recovery; tourism seasonality	Board of Tourism, COMTUR and Board of Economic Development, Innovation, and Technology

Table 6 (continued)

Drivers of leadership	Actions carried out in loco at the EET	Responsible agents
Training and capacity building	– Training course for attendants (timekeeping, posture, dress, respect for company rules) – Course for maids, cooks, and other jobs for tourism – Training course for young people in vulnerable situations – Academic Training Course (Tourism) – Academic Training Course (Gastronomy) – Disclosure of free courses to the community	– ACEOP – ACEOP in partnership with Federaminas – SEBRAE – Federal University of Ouro Preto – Federal Institute of Minas Gerais – FAMOP
Promotion, marketing, and branding	– Promotion of the Winter Festival – International Tourism Festival and other events related to tourism – Tourism sites of Ouro Preto – Registration of Tourist Service Providers – CADASTUR	– Federal University of Ouro Preto in partnership with the City of Ouro Preto – Ouro Preto and Circuito do Ouro Convention & Visitors Bureau – CVB and Board of Tourism – Ouro Preto and Circuito do Ouro Convention & Visitors Bureau – CVB, City of Ouro Preto and Circuito do Ouro Routes – Ministry of Tourism
Financing and promotion of investments	– City Tourism Fund – FUMTUR	Board of Tourism and COMTUR

Source: Survey data (2022).

Encouraging innovation is a key aspect of RGBs (Ministério do Turismo, 2013). In line with this, we have observed a growing inclination towards innovation through diversifying tourism products. According to the interviewees, Ouro Preto's tourist appeal extends beyond historical, cultural, and religious tourism. It encompasses various other areas being explored at different stages, such as ecotourism, adventure tourism, gastronomic tourism, event tourism, creative tourism, and audiovisual tourism. These areas were all mentioned during the interviews, along with the associated promotional initiatives.

Furthermore, promoting creative tourism is one of the objectives outlined in the Ouro Preto Economic Diversification Plan (PADE), which involves collaboration among various local agents, including public authorities and civil society. The development of

audiovisual tourism is led by the Film Commission of Ouro Preto, which actively promotes the city as a filming location to increase its attractiveness.

These initiatives indicate that the role of RGBs in Ouro Preto extends beyond formal and legal obligations (Conceição, 2020). The RGBs operate to promote and develop entrepreneurial activities in the tourism sector, primarily coordinated by public entities (Bachinger et al., 2022). However, despite the RGBs achieving positive outcomes in the EET and aligning with the expectations of a DMO, some dysfunctions in the strategic management of the EET were evident from the interviewees' comments. The primary issue is the negative perception of the effectiveness of COMTUR and the challenges faced by the City Board of Tourism.

It can be inferred from the interviewees' statements that many of these challenges stem from a need for more engagement, integration, and perceived legitimacy among local agents. Additionally, managing human and financial resources is perceived as challenging due to insufficient funds for implementing initiatives to improve the EET. Finally, political issues further exacerbate these dysfunctions, hindering the practical execution of actions within the EET.

The results indicate that the RGBs within the EET are making efforts to strategically promote the destination and increase its appeal by formulating strategies. However, there is a need for greater coordination, legitimacy, integration, and alignment among COMTUR members. While all representative entities have demonstrated some activity level, they are currently fragmented and isolated initiatives that still need to achieve the necessary level of engagement and integration.

To improve this, the tourism department should continue emphasizing and communicating the advantages of effective tourism management, providing greater visibility to COMTUR's accomplishments and future projects. In this regard, it is crucial for local agents to explicitly define the roles of COMTUR and each participating representation to avoid misalignments, overlaps, or the diversion of responsibilities and functions. Developing an action plan with clear assignments of responsibilities could assist in achieving this objective.

Recommendations and Propositions

The importance of leadership in the strategic direction of EETs has been confirmed. Coordinated and articulated actions by RGBs are crucial to prevent the dispersion and potential nullification of efforts by the involved actors, thereby positively contributing to achieving collective objectives. We relied on emerging reflections from the reviewed literature and the revealed data to expand the scope of the results obtained in the analyzed case. In addition to the drivers already documented in the literature, we present propositions aimed at deepening our understanding of the factors that influence the strategic performance of leadership, both within the organization and in the continuous development of EETs. These propositions encompass the adoption of for-

mal management mechanisms, leadership legitimation, and the capacity to stimulate innovation.

Professionalizing the management carried out by RGBs is necessary, which entails strengthening existing management structures with adequate technical and managerial capabilities. Such an initiative can improve coordination among the actors involved, promote evidence-based decision-making, and improve the general effectiveness of actions. Furthermore, RGBs need to adopt inclusive management mechanisms that include all stakeholders. This form of engagement can be achieved through discussion forums, public consultations, strategic partnerships, and effective communication channels. Transparency, accountability, and cooperation among the actors are also essential to the sustainable and equitable development of an EET, fostering a trusting environment and strengthening stakeholder support. The adoption of formal management mechanisms by RGBs provides an organized framework for decision-making, ensuring the consideration of all stakeholder interests and needs. This contributes to the legitimacy and acceptance of actions taken, promoting the sustainable development of EET. Combining leadership professionalization with the legitimacy of representative entities strengthens the systemic vision of an EET, enabling the exertion of influence and overcoming political and institutional challenges. Therefore, the following propositions are suggested:

Proposition 1: EET leadership should exercise professionalized management.

Proposition 2: EET leadership should be inclusive.

Proposition 3: EET leadership should have its legitimacy recognized by all parties.

It is also worth noting that the tourism sector is constantly evolving, driven by changes in tourist preferences, technological advancements, and global trends. In this regard, leadership must encourage innovation within the EET, fostering the creation of new products, services, and experiences that meet ever-changing demands. Innovation driven by strategic leadership contributes to the attractiveness of destinations, the diversification of tourism products, and the improvement of the sector as a whole. With that in mind, the following proposition is suggested:

Proposition 4: EET leadership should stimulate innovation and adaptation to changes, allowing the creation and diversification of tourism products, services, and experiences.

These propositions address critical areas of leadership involvement in EETs. Moreover, beyond the context of Ouro Preto, these propositions can be applied to different locations seeking the structured development of their business environments by encouraging continuous and collective advancement in destinations.

Final Remarks

This study aimed to characterize an EET by analyzing the adequacy of leadership exercised by RGBs for integrating and strategically managing the ecosystem from the perspective of DMOs. Based on data collected in the tourist destination of Ouro Preto, MG, Brazil, we observed alignment between the actions of local agents and the expected functions of a DMO. However, dysfunctions stemming from a lack of legitimacy, engagement, and political obstacles hinder the achievement of organizational maturity in the EET. As a result, leadership remains fragmented, and there is a need for greater assimilation of the collective sense by agents.

The city of Ouro Preto and its region possess significant potential for tourism entrepreneurship. This potential can contribute to local development through diversification and innovation of enterprises. However, for this potential to become a reality, RGBs must prioritize the adoption of formal management mechanisms that involve and engage all stakeholders. The professionalization of governance, rather than the proliferation of competing bodies, is an urgent demand for the EET. Representations are crucial but must be legitimate and recognized as integral system parts.

In this regard, we present propositions aimed at deepening our understanding of the factors influencing the strategic performance of leadership, both within the organization and in the continuous development of EETs. These propositions encompass the adoption of formal management mechanisms, leadership legitimation, and the capacity to stimulate innovation.

This study advances the understanding of leadership in EETs, responds to the call for more empirical research focused on this topic, and provides a different perspective from traditional literature. Furthermore, analyzing the experience of the Ouro Preto destination contributes not only to that specific destination but also allows extrapolation of the findings to other destinations with similar characteristics regarding how tourism entrepreneurship can be strategically supported and developed.

To further foster the development of this discussion in academia and management, we suggest future research be conducted from a longitudinal perspective to associate and compare results derived from specific TSE management practices. Additionally, comparative studies can broaden the understanding by incorporating institutional elements that are characteristic of each destination's environment.

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Chapter 4
A View of Entrepreneurial Ecosystems from Central and Eastern European Contexts

Abstract: This chapter is concerned with the study of entrepreneurial ecosystems (EEs) in Central and Eastern European (CEE) contexts. It summarizes the key findings of over 15 years of study of EEs in such places and draws together insights gained from empirical work, which helps us to push forward the theorizing of EEs by incorporating the experiences of regional and national contexts usually overlooked in the mainstream literature. This chapter contextualizes EEs in CEEs as peripheral when considered on the international scale, and thus broadens the discussion to more general insights about peripheral EEs, which have thus far been largely overlooked in research, suggesting that insights from these contexts can fill in some blind spots around migrant and informal or necessity entrepreneurship in particular.

Keywords: entrepreneurial ecosystems, regional context, institutions, economic change, diaspora, migrant entrepreneurs, central and eastern Europe

Introduction

It goes without saying that entrepreneurial ecosystem perspectives (henceforth EE), and their cousin concepts such as business ecosystems and innovation ecosystems, have become very popular in various academic literatures ranging from management and entrepreneurship to economic geography and regional development: so popular that literature reviews abound (Cao & Shi, 2021; Fernandes, & Ferreira, 2022; Huang et al., 2022; Mohammadi & Karimi, 2022; Wurth, et al., 2022). Likewise, they have become popular policy concepts (Isenberg, 2010, 2011; Mack & Qian, 2016; Spigel, 2015),

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and local, regional, national, and international policymakers are interested in proposing and testing ecosystem models to understand the dynamics and processes related to the generation of entrepreneurship and innovation.

From their research origins in a handful of best cases in well-off places, originally in North America but spreading to the UK and Europe, the collection of case studies and insights from around the world has been growing against a backdrop of calls from scholars to broaden our arsenal of cases and draw insights from less favored regions and emerging economy contexts in order to have a truly inclusive conceptualization and discussion, and even to de-colonize entrepreneurial activity (Banerjee, 2022; Essers & Benschop, 2009; Pugh et al., 2021; Tsvetkova et al., 2019).

We will bring together literature on EEs focusing on under-represented contexts of Central and Eastern Europe (CEE): this is a location where we have been conducting work on EEs but we know to be relatively under-represented in the English language literature on EEs to date (Andonova et al., 2020, 2023; Poček, 2021; Schmutzler et al., 2021). We focus on the interesting insights and findings relating to EEs that emerge when we take into account less favored regional and national contexts and look beyond best practice examples of rich knowledge-based EEs into different circumstances and scenarios.

We also draw on perspectives advanced by researchers who study more peripheral regional and national contexts, who have found that there are different dynamics, opportunities, and challenges when we examine entrepreneurship, and interlinked concepts such as innovation and knowledge production and sharing, when we consider the peripheral context. Although this perspective is rapidly gaining traction, peripheries generally, be they peripheral regions within more developed countries, or more peripheralized regions of the word, have previously been understudied and theorized in entrepreneurship (and related fields such as innovation, regional development, management). Thus, we also contribute to the body of work helping us to understand in theoretical and practical policy terms the specificities of economic conditions and activities in the periphery (Anderson, 2000; Carson et al., 2020; Eder, 2019; Pugh & Dubois, 2021).

Our hope is that by summarizing alternative streams of literature with EE work, we expand upon existing knowledge by providing empirical observations and discussions not previously advanced, but that we also lead to a cumulative dynamic whereby EE research adds up to more than just the sum of all its separate parts and becomes a powerful force for helping us to design policies and supports to ensure entrepreneurs can meet their full potential to develop their own companies and livelihoods, and also their communities and regional settings. In this vein, we add two main perspectives through this chapter: the first is a more conceptual contribution around peripheries and what they can tell us about EEs in non-core contexts; the second is a more practical or empirical contribution focusing on what we have found as a result of studying EEs in CEE contexts over the past decade. These locations remain under-represented in published work on EEs so we feel it is important to add them into the mix.

In our piece, context is privileged as a key consideration when we discuss EEs. We are concerned with exploring the role of different contexts on influencing EE functioning and development, and ensuring that different global contexts are given their rightful place within EE discussions. Theoretically, we draw on Welter's conceptualization of context(s) as key to understanding entrepreneurship (Welter, 2011) and that can be observed through institutional, social, societal, and spatial lenses (Granovetter, 1985; Katz & Steyaert, 2004; Poček, 2022; Polanyi, 1957; Weber, 1984; Welter, 2011).

This chapter is structured as follows: we first discuss the idea of peripheries and why we believe it is important to fill the research gap whereby they have been much less investigated in EE research compared to urban cores in the Global North. Then we review the work to date on the CEE context, again highlighting where the current gaps are in this cannon. We then contribute our own perspective based on our empirical studies in CEEs, highlighting the elements of the EE that emerged as important in these contexts. Finally, we look forward suggesting how the addition of perspectives from peripheral regions, and in particular CEEs can actually enhance the wider canon on EEs, and where the current gaps are in this that we need to fill as a matter of urgency. In this chapter we bring together our own research into peripheral and CEE contexts with insights gained through a thorough literature review conducted in dialogue with our own research. The themes we discuss do not represent an exhaustive review of all of the EE elements in CEEs: they serve to highlight interesting EE dynamics that emerge when we study the CEE context but which are not well served in the literature already. In essence, they are aiming to spark a conversation rather than answer a question definitively.

Theoretical Foundations

Entrepreneurship, Innovation, and Knowledge Dynamics in the Periphery

In this section, we will succinctly explain why we believe adding perspectives from more peripheral settings can be key for pushing forwards EE theorizing and policy relevance for large swathes of the world. We draw here not only on narrowly defined EE or indeed entrepreneurship literature but also on the work by those looking at related issues of innovation, knowledge dynamics, and regional economic development in peripheral regions. In sum, this research shows that peripheral regions are indeed different: they have different challenges and opportunities, as well as fundamentally different characteristics in their socio-economic make up and functioning that mean things look quite different compared to many of the core or leading region examples that we see so much of in the EE literature (e.g. the seminal works of Isenberg (2010, 2011) and Spigel (2015, 2016)).

When dealing with peripheries, we must first highlight the fuzziness of this concept (as per Pugh & Dubois, 2021 who fully problematized the term). Sometimes peripheries are used to describe regions within nations which are in the periphery; other times we speak of global peripheries which can refer to whole countries or macro regions of the globe, for example the so called "world systems theory" (see Chirot & Hall, 1982). We think both of these perspectives on peripheries are interesting for EE researchers, both for those looking at more rural, less developed, or economically struggling regions of richer countries, but also those doing research on emerging and developing economies in the Global South, for instance. In the case of CEEs, these are often referred to as "Europe's periphery" or delineated by an East-West divide on the continent. As well as being seen as somewhat behind or lagging in economic terms (Posfai et al., 2017; Rae, 2011), CEEs are also peripheralized in more social dimensions, for example criticized for their gender and LGBTQI inequalities (Irvine, 2021; Mizielińska & Kulpa, 2016). However, in this paper we do not take a normative approach to the periphery, or what Pugh and Dubois (2021) term "bad talking peripheries," and Stenbacka refers to as "othering" them (2011): we want to explore how taking a CCE centered perspective helps us to better understand and advance EE theorizing.

But there are clear signs from previous research that there is something different in peripheries when it comes to socio-economic processes. Scholars of innovation and regional development have found that innovation and knowledge dynamics do indeed have a different color palette in peripheries compared to core areas, but that innovation and entrepreneurship can indeed flourish in such places (Glückler et al., 2022; Grillitsch & Nilsson, 2015; Mayer, 2020; Meili & Shearmur, 2019; Nuur & Laestadius, 2010). For some entrepreneurs, including artists (Hautala, 2015) peripheries can be fruitful sites for their activities, inspiring them to do things differently and giving them the space to explore their creative pursuits. From the entrepreneurship perspective, though peripheral regions can lead to particular challenges due to their contexts (Benneworth, 2004; North & Smallbone, 2006), clearly entrepreneurs can and do exist, and indeed thrive, in peripheral regions (e.g. Amorós et al., 2013; Labrianidis, 2006; Schnell et al., 2017). That is to say that the situation of entrepreneurs in the periphery should not be seen as some problem to be overcome, but to recognize that there can be specific challenges and opportunities related to the peripheral contexts that mean we can't simply copy and paste theoretical and policy approaches developed in the core and expect them to function optimally in these different contexts.

EE in Central and Eastern Europe

Having explained why we think it is important to have more considerations of peripheral contexts in EE work, we now move on to introduce our study context of CEEs. The narrative around the context and development of entrepreneurship ecosystems in many countries of CEE is part of a broader story about the complex process of

structural changes which started in around 1990, as a transition from a state mode of production to a market economy. This was a process that not only introduced possibilities for business ownership, and consequently private profit making in the vast majority of CEE Countries, but that brought about a huge institutional change caused by the transition towards a market economy. That is not to say that innovation in these contexts did not exist prior to 1990. Indeed, it was there, but it focused mainly on the military industry and other sectors related to the life sciences: priorities were determined by the public apparatus, the most famous example of which is the former USSR (Mazzucato, 2011).

Much of the time, this transition towards a market economy was slow and reforms introduced were many, leading to institutional instability and insecurity. Berkowitz et al. (2003) use the phrase "legislative tornado" to describe the number of formal institutional reforms which occurred since the 1990s and often these were non compatible with the institutional structures that existed before. This process was accompanied by other types of institutional revolutions: political, cultural, and economic (Prechell, 2000). It is hardly a surprise, then, that these processes were found to be confusing, not only by the resident populations of these countries but also by scholars from the outside who are trying to understand the phenomena (Fan et al., 2019). With the widespread collapse of incumbent political systems in the 1990s, the period of economic transition to a market economy involved the process of institution building across most of the CEE region.

A common feature of these transition related reforms in the early 90s is that the rules governing entrepreneurship and private business creation were almost entirely imported from abroad, posing implications and complications for how they were applied, enforced and interpreted (Poček, 2016). This had, of course, an impact on entrepreneurship and the development of EEs (Gittins et al., 2015). Initially, in the 1990s period in many parts of the wider CEE region, the culture of entrepreneurship was characterized by risk aversion and its low status in society (Poček, 2020): the connotation of "businessmen" was often understood as those who took advantage of the chaos and made easy money mostly through the appropriation of public resources (Andonova et al., 2020). Recently however there has been a shift in this regard: the original meaning of "businessmen" in this context was replaced by successful "entrepreneurs," young and tech-versatile highly educated people who broke away from that previous negative image (Andonova et al., 2020). The traditional orientation towards pursuing education in engineering and IT has now been turned into an advantage for many in this region: for example Romanian Cluj-Napoca has been called the Silicon Valley of Eastern Europe due to city's dynamic and well-developed IT sector (Fan et al., 2019) with companies such as Microsoft planning investments.

However, whilst the turmoil of the post-communist era generated potential business opportunities, the region also dealt with a huge brain drain (Sergi et al., 2004), through the migration of highly skilled workers who saw that entrepreneurial opportunities were even greater abroad. This migration flow posed a huge threat to the na-

tional production system and particularly to any emerging entrepreneurial dynamics (Schmutzler et al., 2021). In this sense, the CEE context is an especially interesting one to examine how EEs have flourished in a relatively short period of time amidst a complex institutional context and few favorable pre-conditions, with the possibility to conduct research alongside entrepreneurs and policymakers who have experienced very different economic contexts and institutions in their lifetimes.

Against this backdrop, it is little surprise that studies on EE in these contexts call for an adjustment of the EE framework. For example, Chepurenko and Sauka (2017) found that entrepreneurship ecosystems in settings impacted by transition should be assessed more frequently, since these ecosystems are more dynamic due to the institutional instability, compared to others in more stable market economies. This might call for more longitudinally designed studies, perhaps even with a rethinking of research funding structures to allow for longer timescales of projects than the typical one to three years we often are afforded. This trend might be one reason why much EE research is quite "snapshot" natured, and we require more work that can take an evolutionary perspective on EEs (Mack & Mayer, 2016).

As a matter of fact, research in CEEs also found that classical frameworks (Brown & Mason, 2017; Spigel, 2016; Stam, 2015), while being a good starting point for enhancing both scientific understanding and policy assessment of entrepreneurship ecosystems, are not suitable for CEE transition economies (Grigore & Dragan, 2020). These researchers of the Romanian EE found that novel conceptual elements should be introduced so as to understand these ecosystems better, namely, the concept of the political entrepreneur and the impact they have on the development and evolution of EEs (Grigore & Dragan, 2020). Political entrepreneurs are well connected with the political establishment of a country and as such are able to penetrate each sphere of society, including the EE (Di Lorenzo, 2005; Grigore & Dragan, 2020). Political entrepreneurs in the context of EE in transition economies are held responsible for the negative societal image of entrepreneurship, credited with fostering corruption and weakening of the formal institutions, as found in the case of Romania (Grigore & Dragan, 2020). Also researching CEE EEs, Belitski et al. (2016, 2021) have found the presence of corrupt practices, which in the short term may act as a sort of "grease" for the entrepreneurs' wheels, but in the long term might act in a destructive or impeding manner for the EE.

As mentioned above, the Balkan countries have another very distinctive feature; their long history of migration as expressed in the words of Bonifazi and Mamolo (2004), "there is hardly another region of the world where the current situation of migrations is still considerably influenced by the past history as in the Balkans. Migrations have been a fundamental element in the history of the Balkans [. . .]." One of the most recent migration waves was initiated with the economic and social disruption following the fall of the communist regimes in Europe in the late 1980s and early 1990s. To grasp the magnitude of this migration wave, Bulgaria serves as just one example: the economic diaspora amounts to almost 30% of its current population of

7 million people. As a result – and given the relative small market size and the resulting business potential of countries in the Balkans – another element oftentimes overlooked in studies on EE in developed contexts – should be taken into consideration; the role of diaspora and how the diaspora can bridge small-country EEs with those EEs that provide not only for a larger market but also for more (financial) resources and can infuse a cultural change providing the narratives that are so important for entrepreneurship to flourish (Andonova et al., 2020, 2023; Schmutzler et al., 2021).

Where Can We Expand EE Research?

It is possible to make advancements in theory and our ways of looking at the world by applying new lenses and visions. Here, we have done this by changing the context within which we examine EEs, exploring contexts that are not well represented in the main EE literatures to date. When we open the theory up to new contexts, we expose both its strengths and universalities, but also its specificities and gaps. In the following section, we zoom out from our particular contexts in order to discuss the broader gaps we can see in EE thinking to date, which if we are to look forwards into the next decade of EE work, we see an urgency to integrate and address. As we showed in the section "EE in Central and Eastern Europe": the EE concept allowed us to elucidate a number of elements of socio-economic functioning and activity in the CEE context, enlightening us to understand more about the institutions and circumstances within which entrepreneurship can take place from an evolutionary perspective (Mack & Mayer, 2016). However, when we examined our empirical work and reflected back to EE theory, some gaps emerged around these issues that the extant EE theory could not help us to understand, but that we were witnessing "on the ground" in our cases. In the following section we discuss the gaps we identified in EE thinking from our own research, but in dialogue with the extant literature in this space. This is in line with our ambition to push forward our theorizing of EE.

We do not have a traditional methodology section in this chapter, because this is a conceptual rather than empirical piece. But we briefly outline the collected research we have undertaken in CEE contexts, which we draw upon here. CEE is regarded as a group of countries that have emerged from centrally planned economies in which the framework conditions for privately owned businesses and profit making underwent different developmental paths compared to countries in which this framework existed for a longer period of time, throughout history. However, CEE as a region is not always "a single group context" (Smallbone & Welter, 2006, p. 192). Countries in this region indeed differ in their transition dynamics, in the speed of this process, and the political will for its completion and development. This is why in this chapter we adopted an interdisciplinary approach and multiple lens perspective (Okhuysen & Bonardi, 2011) to target the commonalities of the EE development in the CEE region. We

borrow from the literature on institutions in the CEE context (Berkowitz et al., 2003; Poček, 2016; Welter, 2011); management (Chepurenko, 2015; Chepurenko & Sauka, 2017; Grigore & Dragan, 2020; Harrison et al., 2020; Mack & Mayer, 2016; Poček, 2021; Schmutzler et al., 2021; Smallbone & Welter, 2006; Spigel, 2016; Stam, 2015), economic geography (Bonifazi & Mamolo, 2004; Chirot & Hall, 1982; Pugh & Dubois, 2021; Pugh et al., 2021), and we incorporate also some of the findings of the international organizations, such as the UN agencies, working in this region on the transition processes, since they often have a firsthand insight into the data and developments around entrepreneurship in CEEs.

EEs and Migrants

Generally in the EE literature, we see a lack of research that involves migrant entrepreneurs. Already in 2018 the critical role of migrants in EEs was highlighted (Schäfer & Henn, 2018), and there have been contributions since which elucidate elements of EEs when immigrant entrepreneurs are given due consideration. Examples include the interesting case of transnational immigrant entrepreneurs (Duan, 2022; Duan et al., 2022), and considerations of social capital and how this influences EE functioning as a result of structural and relational inequalities (based around immigration status but also other characteristics such as race and gender) (Ozkazanc-Pan, 2022). Although the importance of immigrants to EE development has long been established by, for example, work on key entrepreneurship clusters such as Silicon Valley, and is recognized in the migrants who have a particular sense of ethnic consciousness (Cohen, 1997), and who maintain an emotional and in many cases physical connection with their COO (Brubaker, 2005; Safran, 1991), infuse social and human capital into the EEs of their COO. In essence, this diaspora built a bridge from the EEs in CEEs to well-off places, enabling born-global start-ups, a necessity due to the relatively small internal market of the region. Additionally, they enacted a cultural change within the region by providing legitimization of successful entrepreneurial role models in a context where “businessmen” was traditionally associated with corruption. And finally, they provided the previously lacking business knowledge that added to and complemented the high technical skills already present in the CEE.

Necessity and Informal Entrepreneurs

As we already cover in the introduction, the EE literature has been predominantly representing cases from the Global north and advanced economies. Furthermore, there has been a strong focus on a handful of particularly high functioning EE cases, most usually in large urban environments. The USA, UK, and Northern Europe are over-represented in EE work if we think globally. This situation is rapidly changing

with more and more work coming out from different international contexts, including the Global South and emerging economies. In these contexts, we also have international policymakers who are very active and have been extensively using the EE concept to understand and help productive dynamics, including in relation to necessity and informal entrepreneurs. One of the most active UN agencies in this regard, the ILO, found that for example, despite the efforts in promoting entrepreneurship in schools and delivering schemes for support to youth, most of the new entrepreneurship in the Former Yugoslavian Republic of Macedonia has been motivated by necessity (ILO, 2020). As Cao and Shi (2021) cover this issue of different global contexts for entrepreneurship comprehensively, they find different considerations for EEs when we think about emerging versus established economy settings. In particular, they find three important elements to take into account in the emerging economy settings: resource scarcities, structural gaps, and institutional voids. Here, we build on their foundation by highlighting the importance of necessity and informal entrepreneurs within these larger structural contexts.

Increasing economic formality is a goal in many emerging economy settings, and EEs are cited as one opportunity through which to achieve this (Alvarado & Serviante, 2020; Poček, 2021). On the other hand, high levels of informality are also seen as an opportunity by some researchers, where a vital and dynamic EE could help formalization and the revival of the "hidden enterprise culture" (Williams, 2006; Williams & Windebank, 2006). The ILO found that in many emerging economies, the informal economy could represent indeed "an incubator for business potential and . . . a transitional base for accessibility and the graduation of the formal economy" (ILO, 2002, p. 25).

However, EE development may occur down the wrong path in settings with high degrees of informality and opportunism around entrepreneurship in a vein of "dark" entrepreneurship, as Guerrero and Urbano find in their study of victimization rates in relation to the EE in Mexico (2017). So, this is not only a CEE problem, but as other researchers in this region have found, corruption and political entrepreneurship are profound problems facing this area (Belitski et al., 2016, 2021; Grigore & Dragan, 2020). Studies found that for example in the case of Montenegro, the EE can be a driver of formality, but only when the right institutional conditions are met, and these concern both formal and informal institutional setups, such as the appropriate legal reforms, the fight against corruption and having fair market competition (Poček, 2021). Furthermore, designing supports for entrepreneurship may not be a win-win from a policy perspective, since, as Biru et al. (2021) find, providing entrepreneurship supports might paradoxically disadvantage the EE by leading to less competitive and productive behavior amongst supported firms. This is not an emerging economy specific issue, and there has been a long debate in the literature pertaining to enterprise and entrepreneurship policy that questions whether it is actually at all effective or not (e.g. Arshed et al., 2016; Obeng & Blundel, 2015; Wapshott & Mallet, 2018), but as Biru et al. (2021) highlight, there is a need for more work assisting actors in developing economies attempting to bolster their EEs to do so in the most effective way possible.

Looking Forward: Sustainable EEs in the Periphery?

In this paper we have provided the CEE experience of EEs as a case of EE development in more peripheral parts of the world. In this context, we have found two particular issues that emerge from our own research, which is thus far under explored in the extant EE theory: the importance of migrant and necessity entrepreneurs. We have selected these two elements to discuss in this chapter because we feel they add a fresh perspective on EE theorizing that emerges when we study the CEE context. That is not to say that these issues are not vital in EEs in other parts of the world (in fact we see the same issues also emerging in our work on Latin America). However, the CEE context does a good job of elucidating them and making them obvious to the EE observer. We argue that by adding both migrants and necessity entrepreneurs into our theorizing about EEs we have the potential to advance the theory to being more inclusive of different places and people than it is already. From a policy perspective, we have the opportunity to improve the inclusivity and performance of the EE by better orienting it towards the entrepreneurship that is actually existing on the ground. However, addressing these issues is far from easy from a policy perspective, and there is no quick fix. Transitioning the EE to a more formal mode implies institutional changes, which as we have outlined come with a certain degree of turmoil and also a longer timescale to be achieved. Similarly, changing migration dynamics so more highly skilled workers "stay" in the EE or "return" to it is a longer-term process involving the sustainable and resilient development of the wider CEE area, which we certainly see taking place.

An emerging topic which is taking off too rapidly at the current time to provide a comprehensive overview here is that of sustainable EEs (Volkmann et al., 2021). As the extent of our global climate and environmental crisis becomes clear, it only gets more important to integrate sustainability into all areas, so it is no surprise that researchers and policymakers alike are increasingly turning their attention to sustainable EEs. This can be especially true in emerging economy and global south contexts set to experience disproportionate negative effects of climate change versus their global north counterparts (IPCC, 2022). Volkmann et al. (2021) are calling this pivot towards sustainability the "fourth wave" of research in entrepreneurship, because it is becoming so predominant a trend in the contemporary literature. Bertello et al. (2022) refer to the pressing need to consider both the social and environmental impacts of new ventures' activities, but are concerned with the separation in the literature between work on knowledge intensive business venturing on one hand, and sustainable entrepreneurship on the other. We agree that these two need to be better integrated, and sustainable EE development needs to become a mainstream part and parcel of EE policy and research rather than a sort of niche add on issue alongside the core discussions. We suggest that when we consider the development of CEE EEs, which have the potential to experience high growth in the future due to their historic "catching up," it is para-

mount we embed a sustainable perspective to ensure resilience of the EE going forwards.

As far as EEs go:

> A sustainable entrepreneurial ecosystem (SEE) can be defined as "an interconnected group of actors in a local geographic community committed to sustainable development through the support and facilitation of new sustainable ventures" (Cohen, 2006, p. 3, cited in O'Shea et al., 2021).

Sustainable development is likely to be a key issue for peripheral regions if we think globally: many more peripheral regions are likely to suffer more from climate change and environmental degradation versus the core (IPCC, 2022). By better integrating migrants as well as informal entrepreneurs, the EE has the potential to become more socially sustainable and resilient, which is one of the key tenets of wider sustainability.

Finally, we would like to offer some reflections on the large theoretical question: is EE theory fit for purpose in a range of global settings beyond the global north contexts in which it was developed? By presenting insights from previously conducted EE research in CEE contexts, we have provided some reflections on how extent EE theory holds up when we apply it in these contexts. In some aspects, it holds up well and allows us to visualize certain elements of EE structure and functioning. In other senses, it is lacking, and does not well account for key factors such as migration, and informality that have a particular color when we consider this context. This is without examining more macro economic and political issues of corruption, informality, and rapidly transitioning economies, that we have also seen in our case studies. As such, there are particular elements to consider when we apply EE thinking in these contexts, and we find a number of perspectives that could be better integrated into EE theory going forwards. In this chapter we have attempted to highlight these lacking areas, and fill in some of the blanks around how they could be better incorporated into EE thinking. However, this is a far from exhaustive list and we find that each new context against which we apply EE theory throws up numerous new issues and gaps as we interrogate existing theory. Through this piece we contrite to the growing body of work examining entrepreneurship (and associated themes) in peripheral regions, and contribute to the refocusing of EE research away from global cores and into more overlooked contexts (Pugh et al., 2021; Tsvetkova et al., 2020).

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Chapter 5
Development of an Agricultural Innovation Ecosystem for Rice: The Case of the Rice Revival in Reunion Island and the PAPRiz Project in Madagascar

Abstract: Rice is the staple food of the populations of two islands in the Indian Ocean: Reunion Island and Madagascar. To guarantee their food autonomy, these islands have carried out agricultural innovations around rice farming: PAPRiz in Madagascar and Riz Reunion in Reunion Island. These innovations are similar in the dimensions covered (process, product, and organizational innovations) but differ in their scope. The study explores how an agricultural innovation is diffused to stakeholders and how they are involved in. With documentary analysis and interviews, the comparison of the ecosystems of these two agricultural innovations shows some differences in structuring: the Reunion ecosystem is in the creation stage, whereas the ecosystem of Madagascar is in the maturity stage. The evolution of these ecosystems shows the importance of the structuration of the ecosystem. Public institutions can play this role to converge the interests of stakeholders. These stakeholders must be enrolled in the ecosystem via actions by a legitimation of the knowledge.

Keywords: agricultural innovation, innovation ecosystem, knowledge diffusion, Indian Ocean, Madagascar, Reunion Island, Stakeholders enrolment, case study, innovation characteristics, rice farming

Introduction

Rice is the staple food of the local population in two Indian Ocean Islands: Madagascar and the Reunion Island with an annual rice consumption of 50 kg per capita (INSEE, 2021) in Reunion Island and 103 kg per capita[1] in Madagascar, the second-

1 Report from the World Food Programme Country Office in Madagascar on April 28, 2019 about the rice sector in Madagascar facing fortification (Accessed on June 28, 2023, at https://madagascar.un.org/fr/download/5149/26548).

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largest rice consumer in the world. To meet their needs, both islands must import rice (over the period 2013 to 2018, Madagascar imported 374,000 tons on average and Reunion imported almost all its rice consumption, i.e., 44,000 tons in 2021). Local rice production is therefore a major issue, which explains the implementation of strategies to increase local production through agricultural innovations. In Reunion Island, the innovation has been initiated by non-profit associations with the objective of reviving the rice farming. In Madagascar, the issue of food self-sufficiency is a major political concern. The Malagasy government has therefore included the *Velirano*[2] or the promises to increase rice production and improve regional production capacities in the Initiative Emergence Madagascar program. Along with these national policies, agricultural innovation projects have been initiated, including the Rice Productivity Improvement Project (PAPRiz), which has increased yields by 5.53 tons per hectare, exceeding the objective set by the project (Agence Malagasy de Presse, 2019). The development of these innovation ecosystems can be a subject of study about innovation ecosystems. In addition, as most of the research explain the motivations of farmers in adopting new practices to identify the favorable support to the adoption of these innovations (Bouzid et al., 2020), this study focuses on the agricultural innovation system, less explored in the literature (Rajalahti et al., 2008a). The objective is to explore how an innovation is diffused to the stakeholders and how they are involved in.

To reach this objective, the first part of the chapter presents the conceptual and theoretical framework. Then, a presentation of the methodology is followed by the results. Finally, a comparative analysis of the two cases is carried out to highlight the lessons that can be learned from the cases.

Conceptual and Methodological Framework

Baregheh et al. (2009) have identified six attributes to delimit innovations: (1) the nature of the innovation, (2) its type, (3) the stages, (4) the social context, (5) the means, and (6) the purpose of the innovation. These attributes can be grouped into two categories: those related to the characteristics of the innovation (nature, type, and purpose) and those related to the construction of the innovation (stages, social context, and means) detailed below.

2 Velirano is a Malagasy word that can be translated to "promises." Velirano represent the promises made by the government to the population and to the development of Madagascar (Accessed on June 28, 2023, at https://www.presidence.gov.mg/realisations.html).

Agricultural Innovation

Innovation is a multifaceted concept that has been defined and understood in various ways across different disciplines. According to the OECD, innovation is "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization, or external relations." One area of innovation is the agricultural innovation, they are mainly designed to increase production and to improve product quality, growing conditions, and the production process (Van Der Veen, 2010).

As this agricultural innovation is influenced by spatial factors and regional contexts. The spatial spillover effect of agricultural science and technology innovation on agricultural green development has been observed in different regions (Zhang et al., 2022). This specific innovation can be characterized according to Table 1.

Table 1: Summary of the characteristics of an agricultural innovation.

Characteristics	Elements	Authors
Categories	Process innovation Product innovation Marketing innovation Organizational innovation	Gault (2013)
Domains	Education Research Demand Intermediary Support structures	Rajalahti et al. (2008b)
Triggers Dynamics Scale Results Impact		Triomphe et al. (2016)

In the innovation process, stakeholders can influence the innovation in various ways. They can take on brokering, intermediating, and co-creating roles in an innovation ecosystem. In addition, stakeholders' acceptance and support of an innovation can shape its spread and impact (Todak et al., 2018).

Stakeholder Enrolment and Knowledge Diffusion

An innovation ecosystem is "the evolving set of actors, activities, and artifacts, and the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors" (Goodman et al., 2017). According to the quadruple helix model, four types of stakeholders are involved in the development of an innovation ecosystem: the industry, the government, the research centers, and the public.

For Hekkert et al. (2007), several processes or functions are critical to the performance of an innovation ecosystem. These functions include entrepreneurial activities, knowledge development, knowledge dissemination through networks, research orientation, market formation, resource mobilization, and legitimacy creation to counteract resistance to change.

Indeed, an innovation ecosystem involves many actors and therefore poses the problem of the alignment between actors throughout the life cycle of innovation ecosystems (Dos Santos et al., 2021). These actors may have different interests and it is therefore necessary to interest them to mobilize a growing number of allies and get them to participate actively in the construction of innovation (Durand et al., 2018). In the same way, Peillon (2001) has shown the need for partner companies in cooperation to use means to effectively coordinate their actions and their decisions within the cooperation. The enrollment of stakeholders in an innovation ecosystem is conditioned by the value that they gain whether it is business and/or political and/or research and/or societal value. In addition, a communication is needed to attract new participants and expand the network (Cunningham & Ekenberg, 2015).

Research Methodology

The study of the agricultural innovation ecosystem is based on a multiple holistic case study methodology (Yin, 2013). The agricultural innovation in Madagascar and Reunion Island were chosen by the specificities of the social formation and the geographical space (Gu-Konu, 1999).

First, the innovation is described for each case. Second, the innovations are compared using the dimensions stated by Triomphe et al. (2013), the typology developed by Arnold and Bell and adapted by Rajalahti et al. (2008a) to agricultural innovations.

Finally, the strengths of each ecosystem are highlighted by studying the functions of innovation ecosystems (Hekkert et al., 2007) with a focus on the diffusion of the innovation and the stakeholders' involvement.

Table 2 summarizes the method of data collection method.

The use of axial coding can be justified based on several reasons. Firstly, axial coding allows for a more structured and systematic analysis of qualitative data (Löf-

Table 2: Summary of empirical materials collected.

Collection method	Nature of materials/contact persons
Documentary analysis	**Réunion Island**: institutional documents, associative documents, post on associative social networks, personal archives of stakeholders, press articles, audiovisual reports. **Madagascar:** institutional documents, institutional posts on social networks, project reports and press articles, audiovisual reports from project actors (ministers, experts, farmers).
Interviews	**Reunion Island:** farmers, civil society activists, territorial institutional actors, cultural actors, citizens not involved with associations (consumers, the curious, etc.). The interviews were done in July 2022. **Madagascar:** videos of interviews of farmers and institutional actors (Minister of Agriculture, Livestock and Fisheries on July 10, 2019; Japanese expert PAPRiz in 2012; Minister of agriculture in 2011 and the speech for the presentation of the educational film "Voly Varin-d'Rajao sy PAPRiz" on October 18, 2011).

fler et al., 2012). This process helps in organizing the data and identifying key themes or concepts that emerge from the analysis.

Case Study of the Innovation Ecosystem of Rice Farming in Reunion Island

Reunion Island is a French island with 868,800 inhabitants. Its surface area is 2,512 km^2, 75% of which is in a natural protection zone and a large part of it is classified as a UNESCO World Heritage Site. The exploitation of land is limited by its relief and the presence of an active volcano. The useful agricultural surface is 42,000 km^2 in 2021. About 55% of it is occupied by the sugar cane farming.

Presentation of the Case

The project to revive rice farming in Reunion Island has its origin from citizen initiatives in the 1970s. It gained new momentum after the movements of protestation against the inflation 2018 in France. One of the farmers said:

> It is an extension of the discussion forums and debates held in the roundabouts. Rice was not the subject. We were talking about purchasing power issues and as supplies were blocked with the movement, we came to talk about producing locally what we eat. And rice came on the table. But there were discussions of many other things: manioc, potatoes, corn. In short, all that was done here before that people turned away to eat things from outside [The notion of outside comes

> from the use of Reunionese Creole. Here, it is necessary to understand what is outside the island, in this case what is imported. The term challenges the notion of Reunionese identity. This aspect of identity will make sense when we reinscribe it further into the system of values and knowledge construction of the innovation ecosystem of the project to revive rice in Réunion.]. [. . .] when the protests stopped, we said to ourselves that it was interesting to continue to think about these subjects.

Another farmer confirms that this was the trigger for the reflection:

> [. . .] during the protests, we had set up a lot of forums on social networks, [. . .]; we kept the pages and the discussions continued. That's how a lot of projects have developed, including rice.

This is the starting point of the revival of the rice in the Reunion Island.

Stakeholders

The observations and the interviews allow us to identify six categories of stakeholders: (1) the growers, (2) the associations, (3) the institutions, (4) the cultural actors, (5) the media, and (6) the consumers.

The farmers are not homogeneous, there are many categories:

- Historical farmer-passers from the farming community of the 1970s who ensure the transmission of the technics to the current revival project leaders.
- Historical farmers who do not share the knowledge.
- Farmers who start growing rice with an only objective of economic profitability.
- Opportunistic farmers or occasional farmers from civil society.
- Motivated farmers who are attentive to the knowledge transmitted and who often engage in a training process.

Description of Innovation Processes and Interactions Between Stakeholders

The economic tensions have created the initial conditions for the launching projects promoted by associations.

Aware of the project, the politicians have made the revival of rice a strategic priority. However, the territorial institutional stakeholders did not structure the projects. The process was managed directly by the associations with the financial support from Europe and the French government targeting the farmers.

Three associations were working on the rice project. They have no interaction or coordination between them. Any knowledge circulated between them. In addition, there even seems to be rivalry, resulting in a withholding of information.

In each association, the knowledge building and innovation processes are similar. They all contacted the planter-passers, often the same ones, to understand the technics. These visits were punctual, short and did not give rise to any feedback, leading the planter-passers to deplore the fact that the associations did not take advantage of "what we have already tried and tested. They do things that we know don't work." However, the knowledge built up in the 1970s and updated by some planter-passers is easily available through publications and studies. Thus, they have been responsible for several technological innovations (recalibrating a seeder designed for a different seed to plant rice, inventing a more efficient weeding tool, etc.) and process innovations (defining an optimum standard deviation between plantings for better yield, etc.).

When the farmer-passers learn that training is being provided by professionals, they make critical comments: "They came just for a moment, they knew nothing about the subject, and now they are giving training. But what are they training on?" This attitude from associative institutions causes distrust among the planter-passers who become hesitant to pass on their knowledge.

For their part, the associations engage in a process of knowledge building through a test-and-error process, recording their observations and results with a view to improve. Despite the lack of consultation between the associations, they all work with the same objective: seed production.

Case Study of the Innovation Ecosystem of Rice Farming in Madagascar

Madagascar is an island of 587,000 km^2 which puts it in the 48th position of the world's largest states in terms of area. Its GDP in 2020 is 13.72 billion USD which, when compared to the population of 27.69 million (2020), gives a GDP of $495.49 per capita.

Food self-sufficiency is a strategic and political challenge for a country with a growing population. In 2007, the number 3 in Madagascar Action Plan was the launch of a sustainable green revolution aimed at doubling rice production (from 3,420 thousand tons in 2005 to 7,000 thousand tons in 2012). In 2013, the National Development Plan aimed to achieve food self-sufficiency and make Madagascar the breadbasket of the Indian Ocean and sub-Saharan Africa.

Presentation of the Case

The Rice Productivity Improvement Project (PAPRiz) is a technical cooperation project between two institutional actors: the Japanese government via the Japan International Cooperation Agency (JICA) and the Malagasy government via the Ministry of Agricul-

ture. The objective of this project is to help in the development of a rice-growing techniques adapted to the Central Highlands of Madagascar, and to strengthen links within organizations involved in rice production.

The first phase lasted 6 years (2009–2015) and involved five regions of the Central Highlands (Alaotra Mangoro; Bongolava; Vakinakaratra; Analamanga; Itasy). In July 2015, a joint JICA-Ministry of Agriculture final evaluation concluded that the project was a success in terms of its relevance, effectiveness, efficiency, impact, and sustainability. The project resulted in an increase in rice productivity of one ton per hectare in the target areas through improved rice techniques; a variety selection; a promotion of seed multiplication and distribution systems; a design of technical instructions; a strengthened linkages among stakeholders; and a provision of agricultural materials for farmers. This set of elements is referred as the "technical package."

The second phase of the project lasted 5 years (2015–2020) and involved six new regions (Analanjirofo; Boeny; Betsiboka; Antsinanana; Amoron'i Mania; Menabe) benefiting from the technical package developed in the first phase.

The third phase is currently in gestation and aims at improving productivity and strengthening the rice industrialization through a provision of agricultural inputs.

Stakeholders

The stakeholders behind the project are two institutional stakeholders: the government of Madagascar and the government of Japan.

For the Malagasy government, the project contributes to the challenge of food self-sufficiency. During an interview of the Minister of agriculture on a local television, he stated "The project helps us a lot in the achievement of the objectives of the President of the Republic which is the self-sufficiency in rice in Madagascar." The government contributes to the financing of the project by covering the operational expenses for the implementation of the project (offices, travel, etc.). It also provides human resources (a project director, a project manager, project staff certified by the Ministry and administrative staff).

The Japanese government intervenes through JICA and finances the project, the technical expertise, the training of local technicians and the delivery of equipment (vehicles and office materials).

In addition to these two institutional stakeholders, other actors gravitate around the project, whose number and scope of actions vary according to the phases described below.

Description of Innovation Processes and Interactions Between Stakeholders

The phase 1 of the project begins by connecting and strengthening the links between stakeholders under the leadership of the Ministry of Agriculture.

At each region, the regional office of agriculture (ROA) oversees designing the technical package adapted to the agroecological and social conditions of the area, to provide the appropriate services to rice farmers. The technical package developed is then tested and validated at the FOFIFA research center's model sites.

The basic seeds produced by FOFIFA are transferred to Seed Multiplication Centers (SMCs), seed farmer groups (SFGs), seed farmers (SFs) or directly to the farmer. SMCs, SFGs, and SFs contribute to the production of improved seeds in the same way as FOFIFA. Farmers using improved seeds can also select the most productive seeds. Technical support for seed producers is provided by the Agriculture and Livestock Circumscriptions (CirAE) and the Official Service of Control (SOC) of seeds and plants ensures the monitoring and control of seed production until certification.

This combination of seed selection and adapted tools have increased yields, as one farmer noted:

> With the traditional method, we had 3 tons of rice per hectare. Since we started working with Papriz, we only need 6kg of seeds, compared to one bucket before [. . .] the season has been good, as our yield has increased by 4 tons per hectare.

The success of the first phase of the project is undeniable: about 3,000 farmers have benefited from the new technique. The Japanese expert PAPRiz described the first phase of the project as a "success" which allowed the Minister of Agriculture to initiate the second phase of the project aiming to bring the technique to other regions of Madagascar. To widely disseminate the successful experience of Phase 1, a film was produced, and the cascade extension model was mobilized.

The film features two stars of Malagasy cinema: Rajao and Pasitera. This educational material mixes entertainment and teaching through sketches and explanations of the method. It facilitates the understanding of the new rice growing techniques promoted by the project and convinces the viewers of the advantages of the PAPRiz method in terms of yield. It was shown free of charge in the regions in Phase 1 (15,000 VCDs and 500 DVDs were distributed).

The PAPRiz 2 cascade extension model involves three levels of trainers: master trainers (MTs), PAPRiz trainers (PTs) and farmer trainers (FTs). In each region, master trainers provide training and support to PAPRiz trainers. At their turn, the PAPRiz trainers provide technical support to the farmer trainers. These farmer trainers provide theoretical and practical training in PAPRiz techniques to farmers in their area with the support of master trainers and PAPRiz trainers.

The provision of the technical package at the level of the farmers' plots are completed by the granting of PAPRiz bags containing improved seeds and mineral fertil-

izers necessary for two rice growing seasons. Afterwards, the farmer trainers provide the farmers with PAPRiz bags in return for a percentage of the price of the PAPRiz bags sold.

Discussion

To draw lessons from these two cases, a comparison of the characteristics of the innovations will be made. Then, the involvement of the actors and the diffusion of the innovations will be heighted.

Characteristics of the Innovations

To understand the context of the region and the specificities of each case, the category, and the domain of the two innovations are compared.

Category of the Innovations

The PAPRiz Project and the revival of rice farming are composed of three types of innovation. First, process innovations were encountered in both cases. In the case of the PAPRiz project, the process innovation is materialized by the technical package including farming techniques, the use of selected seeds, the use of small agricultural equipment, the economic calculation of yield, etc.[3] Currently, in 16 irrigated perimeters in the Analamanga, Amoron'i Mania and Betsiboka regions, 1,700 farmers are collaborating with the PAPRiz project in the implementation of P-dipping, which is a cultivation method involving the application of phosphorus to the root zone of the rice plant to maximize yields in phosphorus-deficient soils prior to transplanting.[4] In the case of Reunion Island, the process of innovation refers to the manufacture of a furrow-drawing machine, the testing of the impact of the manure variety of production, the development of a device to keep birds away, and the development of a harvesting mechanization. The technical innovation is the result of the research process of a technical itinerary undertaken by one of the associations between 2019 and 2021.

3 PAPRiz presentation and "Voly Varin-d'Rajao sy PAPRIZ" educational film (Accessed on June 30, 2023 at https://www.jica.go.jp/madagascar/french/office/others/pdf/publications01_04.pdf).

4 Madagascar: 6 million tonnes of rice by 2023 with PAPRIZ published on local newspaper (Accessed on June 30, 2023 at https://www.temoignages.re/politique/co-developpement/madagascar-6-millions-de-tonnes-de-riz-en-2023-avec-papriz,104613).

The product innovation is achieved through the improvement of the seeds used. The PAPRiz project has enabled the design of a national catalog of the species and cultivated varieties to provide farmers with new, more efficient seed varieties.[5] In the case of Reunion Island, a comparative approach between two rice varieties (*le Dourado* and *le petit Chini*) was carried out during the first attempt to revive the rice farming in the 1970s to assess yields and vulnerability to birds.

Both innovations have an organizational dimension. For the case of Madagascar, the project uses the integrated approach of working with local extension agents, the model farmers, to disseminate the technical package (Andriamihajaniaina, 2018). These knowledge dissemination mechanisms are also found in the case of Reunion Island with the construction of communities around rice that will, for example, propose recipes for meals composed solely of local products.

Table 3: Comparison of the dimensions of the two innovations.

	Revival of rice farming in Reunion Island	**PAPRiz project in Madagascar**
Type of innovation	Process innovation Product innovation Organizational innovation	Process innovation Product innovation Organizational innovation
Field of innovation	Agriculture	
The role of pre-existing local practices and knowledge	The knowledge held by the planter-passers was the starting point for the project leaders of the revival	The techniques are not new, but simplified so that most farmers can apply them
Triggers and drivers of innovation	Food self-sufficiency	
The dynamics of innovation	– Collecting information and knowledge from the planters – Testing and experimentation	– Testing and development of techniques in 5 regions/design of technical package – Dissemination stage to 6 new regions /focus on increasing productivity – Productivity improvement phase and strengthening of rice industrialization

5 https://midi-madagasikara.mg/2018/01/30/varietes-de-semences-un-nouveau-catalogue-national-pour-redynamiser-les-filieres-agricoles/ (Accessed on June 30, 2023).

Table 3 (continued)

	Revival of rice farming in Reunion Island	**PAPRiz project in Madagascar**
The scale at which the innovation is conducted	Local	National
The results and impacts obtained	Not yet perceptible: innovations are underway, and the results and impacts will only be visible in the long term	– The PAPRiz 2 project has reached more than 27,400 families* – Increased yield per hectare (average yield increase of 2 to 2.5 tons/ha) – Development of effective and efficient teaching materials and development of small agricultural materials (Andriamihajaniaina, 2018)

Source: Authors.
Note: Article published in the newspaper Madagascar Tribune on November 23, 2020 (Accessed on June 30, 2023 at https://www.madagascar-tribune.com/Pres-de-5-millions-de-tonnes-de-production-annuelle.html).

Table 3 summarizes these elements of comparison and shows that in Reunion Island, agricultural innovation is still in progress, as the effects will only be observable in a few years, whereas in Madagascar the innovation is entering a mature stage. Even if the two projects respond to a concern for self-sufficiency, they differ in terms of results (the results are not yet perceptible in the case of Reunion, whereas they are of several kinds in the case of Madagascar) and the scope of the innovation (the innovation carried out in Reunion has a local scope, whereas the Malagasy innovation has a national dimension because of the number of regions concerned and the stakeholders involved).

Finally, agricultural innovation in Reunion Island is local, whereas in Madagascar the PAPRiz project is national.

Domain of the Innovations

It is possible to compare (Table 4) the two cases according to five domains: the demand domain, the business domain, the education and research domain, the intermediary domain, and the support structures.

The ecosystem of the PAPRiz project is both structured and structuring, with all six domains present. Thus, research results are transformed into marketable seeds by SMC after multiplication. Research on mechanization is transformed by CFAMA into

Table 4: Comparison of the structures of the agricultural innovation ecosystem in the two cases studied.

	Revival of rice farming in Reunion Island	**PAPRiz project in Madagascar**
Areas of application	– Non-profit institutional actors: civil society associations – Individual stakeholders: farmers	– Public institutional actors: Malagasy Government and Japanese Government – Individual actors: farmers
Company's field	Absent	– Research center for profit (seed multiplication center and CFAMA)
Education and research field	– Non-profit institutional actors: civil society associations – Individual actors: planters	– Research center for profit (FOFIFA and CFAMA)
Intermediaries' area	– Cultural actors – Media – Public institutional trainers – Consumers	– Non-profit institutional actors: seed farmer group (SFGs) – Individual actors: seed farmers (SF) – Educational actors (trainers) – Media
Support structures (project funding)	– Public institutional actors: Europe, French government, and local authorities	– Technical and financial development cooperation actors: JICA (funding and expertise)
Support structures (organization and implementation of projects)	– Non-profit institutional actors: civil society associations	– Public institutional actors: Agriculture and Livestock Circumscriptions, Official Service of Control, Government of Madagascar – Trainers

Source: Authors.

machines that are sold directly to farmers or through other farmers. In the case of Reunion Island, there is no company. For Arnold and Bell (2001), the enterprise domain is particularly important because it is where knowledge is translated into goods and services, and thus where wealth is created.

Another difference concerns the place of research within the field of education and research. In Madagascar, research has been entrusted to two specialized organizations (FOFIFA and CFAMA), whereas in Reunion Island, researchers have been solicited but are not involved in the ecosystem. The associations play the role of a project promoter while contributing to the development of the research.

Knowledge Diffusion of the Innovation and Stakeholder Enrolment

The innovation ecosystem in Reunion Island is not yet structured. The rice revival is carried out by the associations. However, these associations do not have a synergy and tend to be rivals. This rivalry seems to block the development of the innovation. For Madagascar, the involvement of the public institutions has structured the ecosystem. The two phases of the PAPRiz project in Madagascar can be the key to this structuration. The first phase of the ecosystem which involve public and research institution is shown in Figure 1.

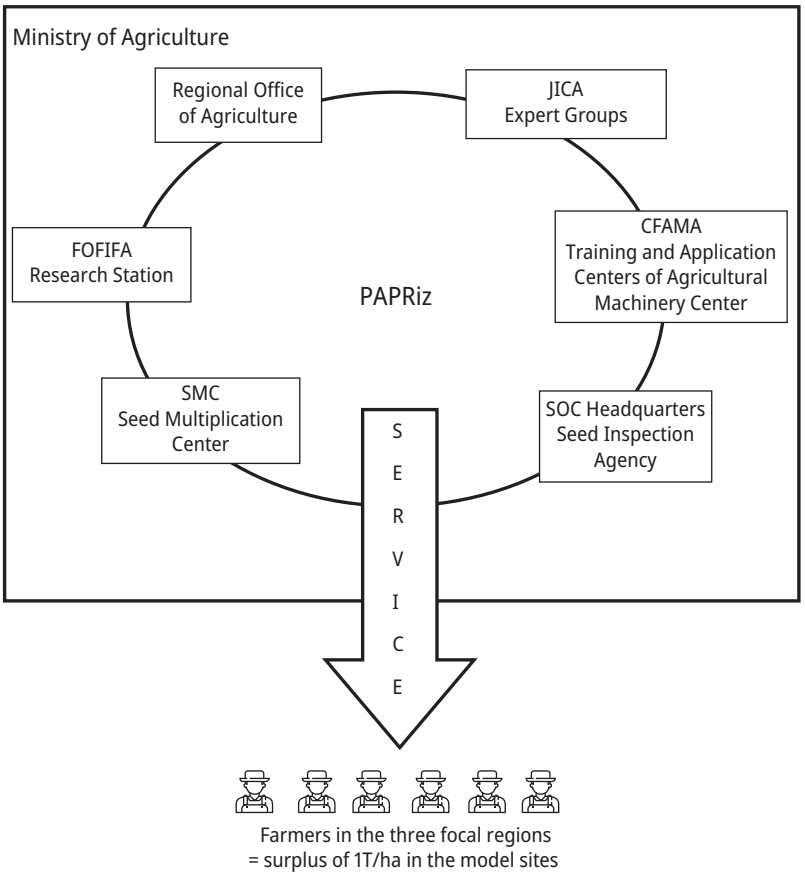

Figure 1: Concept of the project PAPRiz.
Source: PAPRiz Project Phase 1.

After this first phase, the diffusion is done by cascade. This second phase of extension is shown in Figure 2. As the project is a national project, the cascade extension model helps the knowledge to be spread in large scale.

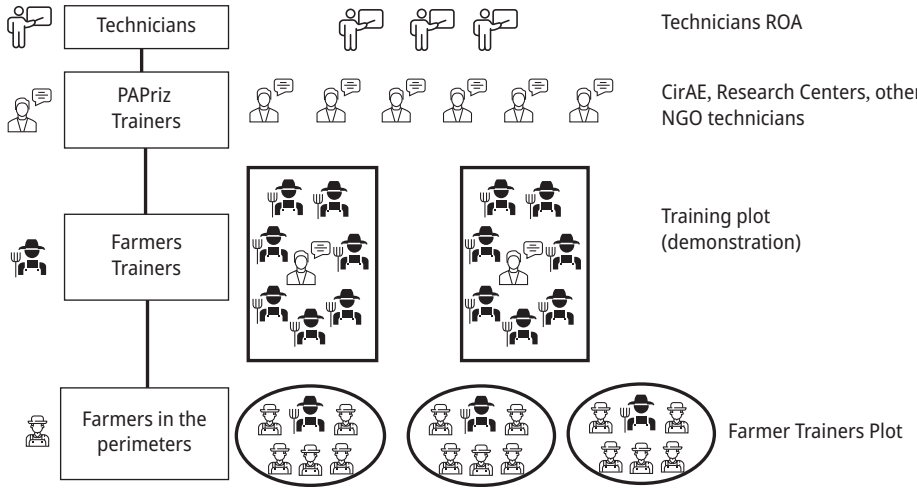

Figure 2: PAPRiz 2 Extension Model.
Source: PAPRiz Project.

In addition, the communication is used to support the extension model and to attract new stakeholders. For Roger (1995), there are two main types of channels: mass media and interpersonal communication channels, which are all relationships involving at least two people exchanging information during informal discussions, seminars, training sessions, etc. Both types of channels were used in both cases with some variations.

In both cases, audiovisual teaching materials (videos) have been developed. However, In Reunion Island, they focus more on the problems encountered, whereas in Madagascar they serve to disseminate the new rice-growing technique and to legitimize it to the target audience. The video attracts the attention of the farmers, and they are interested in watching it. Table 5 presents the content of the teaching material.

Table 5: Content of the audiovisual teaching material "Voly varin-dRajao sy PAPRiz."

Script	Duration	Content	Message/objective
Introduction	2 min	Sketch with two stars of the Malagasy cinema	Capturing attention
Demonstration / Explanation	3–5 min × 5	Demonstration of each stage of rice production	Explain the new technique
Justification	1–2 min × 5	Sketch demonstrating the advantages of the new technique	Incentive/ legitimation
Conclusion	2 min	Sketch on the increase of the yields	Incentive/ legitimation

Source: Adapted from PAPRiz documents (Japan International Cooperation Agency).

This educational material involves two movie stars in a successful saga in Madagascar: Rajao and the Pastor or *Pasitera*. The use of stars is important because it allows the farmers' attention to be captured while at the same time valorizing the profession of farmer. The use of the figure of the Pastor is not insignificant: the Pastor inspires confidence, and his words have a certain authority with the public. These stars even go into the field to participate in animations on the PAPRiz technical package [23].

Other audiovisual productions have been developed. These different audiovisual productions allow to demonstrate the efficiency of the innovation while being vectors of diffusion of the innovation.

Conclusion

The results of this study confirm the multidimensional character of agricultural innovation (Bouzid et al., 2020) and the fact that the diffusion of an innovation is explained by the strengths and weaknesses of the system's structure as well as its fundamental functions. The study also presents multiple contributions.

First, the research has demonstrated the importance of the public institution in the structuring and evolution of the ecosystem. The public institution plays a structuring role and allows the convergence of interests. Its intervention can cover several domains and is decisive for the implementation of the ecosystem's coordination structures.

Second, the case studies confirmed the need to enroll the actors via actions (concrete realizations) and/or proof supports (video, seed production). The dissemination of knowledge and its appropriation requires concrete points of realization that make knowledge tangible to transform knowledge into know-how.

Finally, the evidence supports convince stakeholders and farmers. They legitimize the knowledge. Legitimizing knowledge plays a dual role: it creates a network and it de-institutionalizes old, often strongly entrenched, agricultural techniques.

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Chapter 6
Institutional Isomorphism and the Conditions for Social Entrepreneurship: A North-South Comparison

Abstract: Social enterprises must be understood based on the local and national contexts they are embedded in, which influence how the organizations are formed and designed. How the development of social enterprises differs in developed and developing countries is less understood. In this chapter we explore external drivers and the differences in the ecosystems surrounding social enterprises in Norway and South Africa (SA), two countries with radically different institutional preconditions. Norway represents a governance model where most of the production of welfare lay within the public sector. However, the recent need for restructuring of the welfare state has led to structural changes which better facilitate the development of a social entrepreneurship ecosystem. SA, on the other hand, has a large institutional void caused by a small public welfare system where SA social entrepreneurs are active. The study was designed as a multiple case study of social enterprises and collaborating actors in their ecosystems. The data consists of 23 interviews in addition to statistics from the two contexts.

Main findings are that social entrepreneurship in Norway has developed as a supplement to the public services in small niches strongly regulated by policies, while the SA social entrepreneurs are more numerous and often act as independent service providers in a more diverse ecosystem. Despite the availability of economic resources in Norway, social enterprises report few available sources stimulating social entrepreneurship and the presence of various obstacles. Meanwhile, a developed system for philanthropy, e.g., microfinance, fair trade, and religious communities, contribute to a more diverse ecosystem in SA.

Keywords: institutional isomorphism, entrepreneurial ecosystems, social entrepreneurship, social enterprise, social innovation, welfare society, public sector innovation, philanthropy and social investment, professionalization, institutional logics

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Introduction

Social enterprises are organizations that often arise at the intersection of the public, private, and voluntary sectors. They consist of new organizational forms, areas of work and funding opportunities, and are part of different types of networks. In different national contexts, social entrepreneurship is increasingly put on the political agenda and enterprises develop from a variety of institutional landscapes, both in countries with an extensive welfare model and in developing countries where the welfare system is gradually emerging. Thus, the conditions for social entrepreneurship are context-dependent on the elements in the different entrepreneurial ecosystems (EEs), e.g., on external drivers such as political and legal regulation, financial opportunities, organizational structures for civic engagement, and professional networks and platforms for competence development.

Social entrepreneurship and the development of social enterprises have been on the agenda for some time in South Africa, and the field of organizations has evolved over a couple of decades, even though the term itself may be a more recent phenomenon (Littlewood & Holt, 2015). By the time of the first democratic election in 1994, South Africa had an extensive third sector that focused on service activities funded by international donors. Since the election, the African National Congress (ANC) has focused on the social, economic, and political transformations of South Africa. This political shift led to a change in international donors' interest from funding NGOs towards funding the newly elected government (Claeyé, 2016). This resulted in a crisis in the third sector (Patel et al., 2012), which had to reinvent itself from being a welfare movement to direct service delivery (Taylor, 2013). This included a shift from being "do-good organizations" to being more business-like (Claeyé & van Meurs, 2013). Thus, the political regime shift affected the turn towards extended use of market mechanisms in third sector organizations. The South African welfare state is not as developed as in northern Europe, leaving a greater social responsibility to the *welfare society* where non-governmental organizations such as private and voluntary actors contribute with a larger share of the production of services. Social enterprises can thus play an important role in the development of a welfare system in the country, as the authorities are unable to meet the enormous social needs of the population, and private organizations cannot offer work and financial security to the citizens who need it (Littlewood & Holt, 2015; Loga, 2018). Social enterprises fill the role of welfare pioneers and offer solutions to needs that the public sector does not cover.

In contrast, Norway represents a governance model where most of the social responsibility and the production of welfare lay within the frame of the welfare state, that is, within the public sector. More than 80% of welfare services are performed within the public sector in Norway, 13% by private actors, and 8% by civil society actors (Enjolras et al., 2020a; Selle et al., 2018). In comparison to other countries, the Norwegian state has an extensive financial capacity to bear the large and universalist welfare responsibility and is thus one of the most comprehensive welfare states in the

world. Even though there is support for a broad public welfare state across the political spectrum and among the Norwegian population, social entrepreneurship and a desire to stimulate the development of more social enterprises is increasingly on the political agenda. While one might point to the welfare pioneers in the gradual development from a local welfare municipality to a national and universal model in the history of the Norwegian welfare state, social entrepreneurship is a rather new concept in the Norwegian context. However, a recent focus on the need for a restructuring of the welfare state is linked to the need for the development of greater diversity in service production, quality improvement, and individual adaptation, as well as to the stimulation of user participation and more active citizenship (Loga et al., 2015; Loga, 2018).

This chapter discusses external drivers and the conditions for social entrepreneurship in two highly different institutional contexts: South Africa and Norway. The chapter is structured as follows: We begin with an introduction to the theoretical framework of organizational fields and isomorphic pressure. We then proceed to describe the methodology used to examine the two contexts. Thereafter, we discuss isomorphic pressure in the two contexts, and thus elaborate on the varying elements in the ecosystems for these types of organizations, before we conclude our findings in the overall perspective of the book. The main aim of this chapter is to explore some of the differences in the EEs in the two contexts. Our findings relate to the book's main discussion by comparing two highly different institutional preconditions for the development of social enterprises.

An Institutional Approach: Organizational Fields and Isomorphic Pressure

The use of the "ecosystems" metaphor in entrepreneurial literature has rapidly increased over the past two decades (Audretsch et al., 2019; Malecki, 2018), but there is little consensus on the definition of EE (Alvedalen & Boschma, 2017). Cohen (2006) defined EE as ". . . an interconnected group of actors in a local geographic community committed to sustainable development through the support and facilitation of new sustainable ventures" (p. 3), a suitable definition in the exploration of social enterprises in Norway and South Africa due to the explicit focus on local geographic community. However, there is a level of uncertainty regarding what "real" EEs contain (Audretsch et al., 2019). The European Commission (2016) published a model for the EE surrounding social entrepreneurship consisting of six factors they deem necessary for the development of the field. These factors are built on two main pillars – public policies and ability to self-organize (EU, 2016) – and consist of (1) political acknowledgement and legal forms, (2) access to markets, (3) public support for the start-up and scaling up of SEs, and fiscal framework, (4) access to finance, (5) networks and

mutual support mechanisms, and (6) research, education, and skills development (EU, 2016). While all these factors have been pointed to as important for development of the field of social entrepreneurship, different factors play different roles in different contexts (Eng & Engedahl, 2020) depending on the social, political, and institutional environment the social enterprises act in (Mair & Martí, 2009). While actors and agency are highly in focus in Ecosystem theory, the neo-institutional approach – inspired by the classic of DiMaggio and Powell (1983) – primarily focuses on the meso level and informal elements in institutions such as culture, myths, and logics. Furthermore, institutional settings will influence EEs because socio-technological transformations are influenced by the resources, competitiveness, suppliers, consumers, and politics in the surrounding context (Cloitre et al., 2022). In this chapter we try to combine the two theoretical approaches, exploring the different informal elements in the two different institutional contexts (McGuirck et al., 2022). A main focus of the chapter is therefore the exploration of the underlying conditions for the development of EEs for social entrepreneurship in Norway and South Africa through an institutional approach.

A key concept in institutional theory is organizational *fields*, defined as "those organizations which, in the aggregate, constitute a recognized area of institutional life: key suppliers, resources and product consumers, regulatory agencies, and other organizations that produce similar services or products" (DiMaggio & Powell, 1983, p. 148). According to neo-institutional theory, organizations within a field relate not only to a common market or legal system but also to common so-called *rational myths* and to values and norms. In this chapter, we consider social entrepreneurship and social enterprises as such a field of organizations. The informal structures that organizations in a field are related to can also be described as institutional *logics*, which comprises socially constructed and historical patterns of material practices, assumptions, values, beliefs, and rules (Thornton et al., 2012). For example, one can say that organizations in a private market relate to different institutional logics than voluntary organizations in civil society. The private sector is characterized by commercial values, where the sale of goods and services to achieve profit and return for stakeholders are central. In the voluntary sector, care and solidarity for vulnerable groups, as well as dealing with social challenges are central values (Mair et al., 2015). Meanwhile, the public sector is driven by a much more regulated legal system, where values such as equal treatment, universalism, and justice are emphasized.

While institutional logics refers to the informal structures of organizational fields, institutional isomorphism concerns the external driving forces in an organization's environment that place pressure on organizations and make the field conformist and homogenized. DiMaggio and Powell (1983) describe three different isomorphic forces that lead to change: (1) Coercive isomorphism, (2) Mimetic isomorphism, and (3) Normative isomorphism.

Coercive isomorphism is a result of both formal and informal pressure exerted on organizations by other organizations they depend on, as well as cultural expectations in

the society in which the organization operates. In some cases, organizational change is a direct response to government mandates. Legal frameworks affect many parts of organizations' behaviors and structures and lead to organizations' changing in order to reflect rules and laws that are institutionalized and legitimized by and within a state. As a result, organizations become more homogenized within the field and organized around rituals of conformity to wider institutions. Coercive forces influencing social enterprises might include both macro structures (such as the economy or public welfare system in a country) as well as more specific policy and legal framework directed specifically to social entrepreneurship and social enterprises locally. In some countries, this could consist of public funding sources for social entrepreneurship, or a legal framework made for social enterprises as a specific organizational model.

Institutional *mimetic isomorphism* arises as a response to uncertainty in an organization and is particularly relevant when it comes to young organizations or in the formation of new fields of organizations (DiMaggio & Powell, 1983). Mimetic isomorphism may also be in play when there is a lack of a regulative framework and coercive pressure, e.g., where social enterprises develop in an organizational field with a weak structure of political, economic, and legal regulation. When goals are ambiguous or the environment creates symbolic uncertainty, organizations can shape themselves based on other organizations by mimicking organizations in their field. There will often be organizations they compare themselves with, but which are also perceived as more legitimate or successful organizations in the field.

The third source of isomorphic pressure is normative forces, which stem mainly from professionalization, and are termed *normative isomorphism* by DiMaggio and Powell (1983). Professional equality can be safeguarded through, e.g., alumni networks, professional organizations, and professional conferences. There are two aspects of professionalization that are important: (1) the resting of formal education and of legitimation in a cognitive base produced by university specialists and (2) the growth and elaboration of a professional network that spans organizations. Universities and professional training institutions are important for the development of organizational norms among professional leaders and their employees. However, such networks for knowledge sharing can also be more experience-based, sometimes taking the form of collaboration between academia and the field of practice (see, e.g., Cinar et al., 2023).

Methodology

The data material in this study is based on method triangulation through interviews, participatory observation, and quantitative data from existing reports on the mapping of social enterprises in the two contexts. Our primary data are 23 qualitative, semi-structured interviews lasting between 45 and 120 min with social enterprises and other

key actors in their ecosystem such as investors, facilitators of professional networks, and accelerators. Eleven of the interviews were conducted with Norwegian entrepreneurs and other actors in their field, and similarly, 12 interviews were conducted in South Africa with social entrepreneurs and other actors working with them. The informants were recruited through searches in databases and reports, e.g., research reports on the ecosystem of social enterprises (Eimhjellen & Loga, 2016; Gordon Institute of Business Science, 2018). The social enterprises were selected based on the requirement of a minimum of two years of active operation and coherence with the EMES criteria for social enterprises (Defourny & Nyssens, 2010; EMES, 1997, 1998). The other actors were selected based on their reputation and knowledge of the field. The data collection was performed mainly as part of a master thesis project (Eng & Engedahl, 2020). This project included a semester abroad in Cape Town in the spring of 2019, with an internship at a Cape Town-based social enterprise called Neighbourhood Old Age Homes (NOAH). This internship provided first-hand knowledge about social entrepreneurship in South Africa.

The quantitative data this article builds on consists of the mapping of social enterprises in Norway performed in 2015–16 by Loga & Eimhjellen and presented in the report "Development of social entrepreneurship in Norway" (Eimhjellen & Loga, 2016). This mapping of social enterprises included 380 organizations in this field, and a survey was sent to them to explore central characteristics of both the organizations and their connections to an EE. In addition, the chapter builds on secondary data and statistics presented in two reports mapping social enterprise in South Africa: "Emerging Social Enterprise Ecosystem in East and South African Countries" (World Bank Group, 2017) and "Social Enterprises in South Africa – Discovering a vibrant sector" (Gordon Institute of Business Science, 2018).

The Entrepreneurial Ecosystems in South Africa Versus Norway

The South African public sector struggles to meet the enormous social needs of the population, which provides institutional voids for social entrepreneurs and enterprises to develop and offer solutions. The social entrepreneurs often operate within education, health, and energy to eradicate poverty, reduce inequality, and contribute to the country's socio-economic development (World Bank Group, 2017). In Norway, the need for restructuring of the comprehensive welfare state opens scope for social enterprises to deliver new solutions, in addition to being a supplement to the existing public services. Norwegian social enterprises mainly act within the areas of work inclusion, youth drop-out, elderly care, and the inclusion of refugees and asylum seekers (Eimhjellen & Loga, 2016). Based on the European Commission's (2016) model for EEs for social enterprises, a thorough study of the Norwegian and South African social enterprise EEs has

been conducted from the standpoint of the ecosystem actors. The identified main traits and challenges of each EE factor are summarized in Table 1.

Table 1: Main traits and challenges of each EE factor summarized (Eng & Engedahl, 2020).

Ecosystem factor	Norway	South Africa
Public policy and ability to self-organize	– Supplement to public welfare services – Bottom-up growth – High risk of displacing good existing solutions	– Providing "new" welfare services – High ability to self-organize – Social entrepreneurs challenge the "status quo"
Research and education, and skills development	– A narrow but growing field of research and education	– Several study programmes and research centers – Researchers create the knowledge base and contribute to policy development
Political acknowledgement and legal forms	– No separate legal form – The term "welfare profiteer" causes misconceptions and affects the public discourse – Social entrepreneurship is promoted politically by parties both on the national and local levels	– No separate legal form – Hybrid organizational forms are widespread – Cooperation and personal relationship can bring recognition from the public sector
Access to market	– Limited competence and understanding in the public sector – Narrow gap for non-profit organizations in tenders	– The public sector is a challenging customer segment to reach – Poorly regulated welfare services – Greater market access in the private sector and civil society
Startup and scaling programmes	– Several actors but few large ones – Critics of the value gained from participation	– Many large actors – Social entrepreneurs help each other rather than participating in formal programmes
Fiscal framework and access to finance	– Public funding schemes but few impact investors – The Government agency, Innovation Norway, strongly influences the field – Little private capital for social enterprises	– Limited public funding – Diversity in funding sources – Foreign donors – Little fiscal support for day-to-day operations
Networks	– Few open networks – A small field of actors – Large participation in networks	– Several open networks – Widespread use of informal networks – Few joint network arenas

Based on the findings presented above, three elements were highlighted as specific challenges in the two contexts but in different capacities: presence or absence of a welfare state, access to fiscal resources, and the professionalization of the field. These will be discussed in the following sections.

Coercive Isomorphism and the Presence or Absence of a Welfare State

To understand the development of EEs for social enterprises in Norway and South Africa, it may be useful to shed light on the isomorphic forces, and not only the actors, which contribute to shaping this field of organizations. As mentioned, coercive isomorphism can be seen both as the macrostructure of the welfare state, or at a micro-level as a specific policy directed to stimulate the development of social enterprises. Considering this, how does coercive isomorphism affect the conditions for social entrepreneurship in the presence or absence of a welfare state?

In northern Europe, the development of social enterprises is highly formed by the welfare state, and social enterprises develop as a supplement to public services and in minor gaps or niches where the public services are not sufficient or where there might be room for quality improvement. One feature of the Norwegian welfare model is a heavy reliance on universal public social services and transfers and, consequently, small income differences and low poverty rates. Another feature is extensive social legislation, which provides a safety-net "from cradle to grave." Additionally, as advanced by Pedersen and Kuhnle (2017), three dimensions might be considered characteristic of the Nordic welfare model: (1) the active role played by local and national state agencies in providing welfare benefits and services, (2) the principle of universal social rights (services and cash benefits are not selective, nor targeted on the basis of needs but are available to the entire population, including the middle class), (3) the value of equality. Scandinavian countries have historically inherited small class, income, and gender differences. The fact that childcare, elderly care, and care for the disabled are public responsibility enables women's high labor-market participation and reduces gender inequalities (Enjolras et al., 2020b).

When welfare services are universal and mainly provided by the state, it narrows the institutional voids for social enterprises as it constitutes a small market for private producers of social services and greater challenges in gaining access due to the welfare composition. Many of the Norwegian social entrepreneurs interviewed considered it appropriate to cooperate with the public sector, becoming partners or "co-producers" in their delivery of services. One informant explained the importance of such collaborations:

> [. . .] the welfare state is extensive and most of the services the social entrepreneurs offer is already provided by either municipalities or the state. Nevertheless, there are a number of gaps that the public sector cannot cover, and this is where I think social entrepreneurs have the biggest advantage and they should be good at identifying such gaps. It is precisely in those gaps that I think they have the potential for the greatest gain (21).

Even though the public sector has the main responsibility for welfare production in Norway, the informant emphasizes that there may still be room for social enterprises in these small institutional voids as niches. South Africa, on the other hand, is a country with selective welfare services and fewer resources, resulting in a much larger share of private and voluntary providers in the mix of welfare producers. Nevertheless, this may provide more opportunities for social enterprises to develop in South Africa than in Norway, as the unmet needs are greater, the initiatives taken from civil society have a larger scope, and the infrastructure for impact start-ups are more developed.

Coercive isomorphism leads to organizations changing to adapt to rules and laws that are institutionalized and legitimized by and within a state, e.g., in a policy document (Meyer & Rowan, 1977). Despite the fact that the welfare system is highly developed in Norway, policy development for social enterprises seems undeveloped (Enjolras et al., 2020b; Sætre, 2023). Even though the government encourages such initiatives, there is little legal and economic assistance to help these organizations develop and grow. Policy documents putting social entrepreneurship on the agenda are emerging (e.g., Meld. St. 30; Meld. St. 29; NOU, 2016), but based on our interviews these policies have not yet had a significant influence on the field of social entrepreneurship in Norway. A Green Paper on the social economy (Economic Development Department, 2019) has been published in South Africa, but explicit engagement in policies for social entrepreneurship remains limited. Therefore, even though the welfare state represents an important institutional framework for how social enterprises develop in Norway, this framework also functions as coercive pressure. Therefore, social enterprises primarily act in small niches, as a supplement to and often in co-production with public services. When it comes to coercive pressure which is aimed directly to facilitate social entrepreneurship, it is reasonable to assume that coercive isomorphism is limited in both contexts.

Mimetic Isomorphism and the Access to Financial Funding

According to DiMaggio and Powell (1983), organizations experiencing uncertainty related to objectives or environments will be affected by mimetic isomorphism. This means that organizations will try to copy another organization in their environment when they experience uncertainty. For social enterprises, this may occur in situations where welfare services are opened to public tenders and social entrepreneurs must compete against ordinary, for-profit organizations. In such situations, they will seek

to emulate a for-profit organization in order to be competitive, or they may emulate actors in the public sector to improve their likelihood to receive government grants. Thus, the institutional pressures surrounding the social enterprises can, in particular situations, permeate the enterprise (Cinar & Benneworth, 2021).

In response to the lack of policies and due to the limited sources for funding, Norwegian social entrepreneurs seem to have two paths open to ensure their economic sustainability. The first is to seek out public grants. In order to gain access to such grants, Norwegian social entrepreneurs have expressed that they seek to promote the social purpose rather than the commercial in encounters with the public sector through the use of a non-profit organization. This may be related to the fact that Norwegian welfare services are strictly regulated and consist of many statutory tasks for municipalities. The second path is to seek out private funding, e.g., through philanthropists. Ferd SE is a major philanthropist in Norway, and the social enterprises seeking to be a part of their portfolio mainly choose to organize as a limited corporation. On the other hand, being a private limited corporation can be challenging as many social entrepreneurs encounter mistrust for being a "welfare profiteer" from, e.g., public actors due to conflicting social and commercial objectives (Loga et al., 2015). Social entrepreneurs organized as limited companies most often seek funding from the public office supporting start-ups, Innovation Norway. Compared to many other countries – and despite great prosperity in parts of the population – there are few private sources that support social entrepreneurs in Norway. This has led to an increased focus on hybrid organizations, where social enterprises mimic both the public and private sector in order to gain legitimacy.

Compared to Norway, South Africa is characterized by less regulation of public welfare services and a larger proportion of non-profit organizations and NGOs that are welfare providers. Public procurement is not as prominent, as there is a considerably smaller welfare state. According to our informants, the focus of social entrepreneurs is not on securing contracts with the public sector, but rather on shaping themselves into organizations that are financially sustainable. The difference between how Norwegian and South African social enterprises deal with this uncertainty seems to lie in the number of funding opportunities available. There are far more private financing opportunities in South Africa compared to Norway. Philanthropy is widespread and sources of funding are available both internally in the country and through foreign humanitarian sources. Several of the interviewed enterprises in South Africa have organized as hybrid organizations (meaning they have both a for-profit and a non-profit entity) to gain access to multiple sources of funding. The for-profit entity is commercially oriented, and the profit is reinvested into the non-profit entity to achieve the social objectives. The non-profit entity will then also seek donations from actors who only support voluntary organizations.

Furthermore, when the informants were asked who they looked up to as a role model or for inspiration, most of the Norwegian social entrepreneurs mentioned other, successful social entrepreneurs. In contrast, the South African informants men-

tioned specific "for profit" commercial companies in their field. They highlighted their commercial ambitions and their aim to become independent of humanitarian gifts and support schemes. The lack of an extensive public welfare state in South Africa seems to lead to a higher acceptance of social purpose combined with a commercial view on social entrepreneurship. Norwegian social entrepreneurs, on the other hand, highlight their social purpose and tone down their commercial purposes to appear as much as possible as a non-profit agent.

Normative Isomorphism and the Professionalization of Social Entrepreneurs

The third form of influence in a field of organizations is what DiMaggio and Powell (1983) define as normative isomorphism, which is about professionalization created through formal education and expansion of professional networks. It has been argued that higher educational institutions could play an important role in stimulating social innovation, and in that sense social enterprises also, but in practice they have had little systemic impact (Cinar & Benneworth, 2021). Furthermore, education is highlighted as an important factor in the EE surrounding social enterprises (EU, 2016). Our study finds a large difference in the educational offer within social entrepreneurship in Norway and South Africa, where the latter excels. Several universities in South Africa offer educational programs and have research centers dedicated to social entrepreneurship, while organizations like SEA and ASEN contribute with practical learning networks. The common denominator for the academic institutions seems to be that they both build competence in the field of social entrepreneurship and educate students, while also creating hubs for start-ups and alumni networks where experiences, challenges, and successes can be shared. In doing so, the academic sector appears to be taking on a role where they disseminate knowledge about and understanding of social entrepreneurship. Thus, in South Africa, universities play an important role in developing social entrepreneurs and their professional networks. This is notably different from Norway, where universities play a minor role in the EE for social enterprises. The field of social enterprise is only to a small degree connected to universities, in terms of education, social impact hubs and in building professional networks for social entrepreneurship.

There are only a few Norwegian universities that offer classes or internships in social entrepreneurship, and these have developed only in recent years. An interesting common denominator between the universities that offer internships is that they all send their students to South Africa in order to gain theoretical and practical knowledge about and experience with social enterprises. Compared to South Africa, there seems to be a lack of professionalization in the Norwegian organizational field. This was also an issue one of our Norwegian informants addressed:

> I think it is challenging with the social entrepreneurs seeing as they are not professionalized, but if they are to succeed, they must professionalize. The beating heart for the solution will not be sustainable if they fail to sell it (21).

The quote suggests that Norwegian social entrepreneurs are more driven by idealism than professionalism. In addition, there is a lot of uncertainty related to what social entrepreneurship *is* in Norway, and when the organizational field is not professionalized, it can act as a barrier to growth. This contrasts with the field in South Africa, where the majority of our informants have been part of the academic courses at SEA. SEA has a broad focus on what a social entrepreneur should learn, and by bringing in other social enterprises as mentors, they help to create professionalization and organizational norms around social entrepreneurship.

In the light of DiMaggio and Powell (1983), it can thus be said that the normative isomorphic forces may have less to say for the emergence in Norway than in South Africa, where universities play a more important role in the EE. South Africa has come a long way with the professionalization of the field and seems to emphasize education in social entrepreneurship to a greater extent than in Norway.

Conclusion

Taking a neo-institutional approach and combining it with theory of agency in EEs, this paper discussed external drivers for the EE for social enterprises in two highly different institutional contexts. We identified some traits and challenges in the EEs in the two contexts and explored three prominent elements highlighted by central actors in the EEs. The differences between the two contexts are also reflected in the organizational field. The South African organizational field is larger, more established and more diverse (e.g., in terms of organizational forms), and appears to have a more advanced ecosystem which facilitates the development of social enterprises. On the other hand, this organizational field is in an earlier and less developed phase in Norway, resulting in a small but specific organizational field. Here, the forces of mimetic isomorphism force organizations to pursue one of two pathways: that of a voluntary organization or a limited company.

Social enterprises exist at the intersection of the public, private, and voluntary sectors. The different sectors are characterized by different institutional logics. Due to the institutional framework, e.g., the comprehensive Norwegian welfare state, social enterprises in this context appear to be more likely to promote values from the institutional logic of the voluntary sector and to tone down the commercial purpose and the logic of the market. This is also related to the fact that the public sector in most cases is the customer, and within the public sector there exists skepticism towards private welfare service providers. This is the opposite of the situation in South Africa, where the social enterprises are more likely to use hybrid organizational forms which

reflect both commercial and social objectives. In addition, social enterprises in South Africa did not similarly tone down their commercial purpose, but rather characterized their commercial ambitions as a formula for success and a desire to be able to do without humanitarian and philanthropic gifts.

The coercive forces can be divided in the macrostructure, e.g., the welfare model, and in the policy aimed directly at social entrepreneurship. In both contexts, the policy development for social entrepreneurship is scarce. In Norway, the welfare state represents coercive isomorphism. It shapes the field into specific niches where public services fall short and leads social enterprises to develop services which supplement the public sector. In South Africa, there are not similar coercive forces that shape the field accordingly. Instead, social entrepreneurs have a stronger role as pioneers in a wide variety of areas and issues that require solutions.

In Norway, social entrepreneurs organized as limited companies most often seek funding from the public office supporting start-ups, Innovation Norway. Compared to many other countries – and despite great prosperity in parts of the population – there are few private sources that support social entrepreneurs in Norway. There are far more private financing opportunities in South Africa compared to Norway. Philanthropthe Figurey is widespread and sources of funding are available both internally in the country and through foreign humanitarian sources. Use of hybrid organizational forms gives social enterprises access to multiple sources of funding to ensure their financial sustainability.

Universities play a completely different and far more important role in the EE in South Africa than in Norway. In other words, education in Norway does not seem to be a key element in the EE, whereas it plays a key role in South Africa. For social enterprises to present innovative solutions and to improve and challenge established services, it is necessary to professionalize the field of social entrepreneurship – as it is in South Africa – and to emphasize the potentially positive contributions which social enterprises can make to a more sustainable and entrepreneurial welfare state.

In Norway, it is first and foremost coercive and mimetic isomorphism which shape the EE, while mimetic and normative isomorphism to a larger extent characterize the EE in South Africa. The differences in the institutional prerequisites in these two highly different contexts may provide a two-way learning potential on how to improve the EE.

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Christle de Beer

Chapter 7
Evaluating the South African Entrepreneurial Ecosystem: The Entrepreneurship Development in Higher Education Case study

Abstract: The Entrepreneurship Development in Higher Education (EDHE) programme was established at the end of 2016 in response to various challenges in the South African context. These include high rates of graduate and youth unemployment, the desire to increase third-stream income at universities, and the national drive for the creation of SMEs and the concomitant job creation presented by these. The aim of this chapter is to give an overview of the entrepreneurial ecosystem (EE) in South Africa and to determine how the EDHE programme has contributed to this. In this chapter a review of literature and empirical data gathered in other studies, indexes, and reports will be studied to paint a picture of the EE in South Africa. It will then study the outcomes of the EDHE programme in detail to learn successes and failures, and specifically investigate the link to entrepreneurial universities. Finally, this chapter will determine what lessons may be learnt that are of value to other emerging economies, and aspiring entrepreneurial universities, and how entrepreneurship development impacts on EE the greater context. Our findings relate to the book's main discussion by providing details about the drivers that impact the EE in South Africa.

Keywords: emerging economies, entrepreneurial ecosystem, entrepreneurial universities, entrepreneurship development

Introduction

In emerging economies, often struggling with economic growth and related challenges, entrepreneurship has in recent years been put forth as the key driver of economic development. The reasons for this are the potential of entrepreneurship to stimulate job creation, thereby alleviating poverty, increasing innovation, and generating solutions to problems faced in the community (GEDI report, 2017). As such there has been a concomitant drive to develop and support the entrepreneurial ecosystem (EE), with many countries implementing policies and developing initiatives to provide end-to-end support for small businesses and entrepreneurs, including funding (UNECA report, 2021).

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The term entrepreneurial ecosystem (EE) is used to refer to "interconnected elements, such as leadership, culture, capital, markets, human skills and support that foster entrepreneurial development" (Isenberg, 2010, p. 3). Research has shown (Atiase et al., 2018; Kansheba & Wald, 2020) that well-established EE leads to job creation, increases in household income, and economic growth. Various entrepreneurship-economic growth-related measures exist and have been applied to determine the relative success of countries' EE. Of these, South Africa has been shown to be in a favorable position as an entrepreneurial leader in sub-Saharan Africa, by the Global Entrepreneurship Index (GEI) and the Legatum Prosperity Index (LPI) of 2018. However, these indexes also reveal that South Africa performs poorly in start-up skills, and that South Africa's higher education, coupled with low skill perception, is less effective in equipping the population to be entrepreneurs (Bate, 2021). Add to this the low graduate absorption rate in the country (only 22% of graduates find employment), and this raises the importance of entrepreneurship in universities, and for universities themselves to become entrepreneurial.

Recognizing this gap, the Entrepreneurship Development in Higher Education (EDHE) programme was developed by the South African Government Department of Higher Education and Training (DHET) together with Universities South Africa (USAf) and the University Capacity Development Programme (UCDP) (National University Entrepreneurial Ecosystem Report, 2020). This chapter will examine in more depth the EE in South Africa to analyze the findings of the GEI and LPI indexes, specifically in the context of higher education. This chapter will furthermore evaluate the EDHE programme in detail as a case study, and determine how this programme has contributed to entrepreneurship development in South Africa. Lastly, this chapter will aim to articulate some lessons learnt that may be of value to other emerging economies as they seek to bolster their EE, and for aspiring entrepreneurial universities as they move towards embracing this new, third mission.

The South African Context

There is a paucity of research about entrepreneurship in Africa published in mainstream journals, according to Naudé and Havenga (2005). Sadly, this picture has not changed much in recent years as extant literature on the concept still remains scarce (Sheriff & Muffatto, 2015). As such relevant national and international reports and indices were reviewed to determine the present state of the entrepreneurship ecosystem (EE) in South Africa, such as the Global Entrepreneurship Monitor Report (2017/2018), the Global Entrepreneurship and Development Institute Report (2017), the Global Entrepreneurship Index (2018), the Legatum Prosperity Index (2018), the Aspen Network of Development Entrepreneurs Report (2019), the National University Entrepreneurial Ecosystem Report (2020), and the United Nations Economic Commission for Africa report (2021).

According to the National University Entrepreneurial Ecosystem Report of 2020, South Africa is the economic powerhouse of Africa, accounting for approximately 21% of the continent's USD 2.19 trillion GDP. However, the country continues to experience severe income inequality, with 55.5% of South Africans living below the poverty line (Statistics South Africa website, Stats SA). Furthermore, South Africa has high unemployment rates due to several factors including a mismatch between the skills of the labor force and those required by the economy and a lack of entrepreneurship skills development (GEI index, 2018). According to StatsSA the official unemployment rate for 2021 was 32.6% with 46% youth (including graduates) unemployment. If you take into account that the higher education system (universities, colleges, and Technical and Vocational Education and Training (TVET) colleges) produces about 190 000 graduates per year in South Africa, that translates to just 41 000 graduates finding employment (UNECA Report, 2021). Looking at the populace, the Global Entrepreneurship Monitor (GEM) report of 2018 shows that just 9.2% of adults created a start-up (as compared to the global average of 15%). The reasons cited for this low rate of entrepreneurial activity are bureaucratic red tape, low transfer of research and development, lack of entrepreneurship education at schools and poor cultural and social norms towards entrepreneurship. These statistics paint a bleak picture of the EE of South Africa.

However, recently the Thompson Reuters Foundation found, in its 2019 global survey of social entrepreneurship, that in South Africa it had become easier for social entrepreneurs to access grants, attract staff with the required skills and make a living from their work in the last three years. These findings seem to indicate that there has been a slow upward turn in the development of the EE in South Africa, as opposed to previous years. This has been supported at the national level with several policies aimed at youth development, and the establishment of the South African Government Department of Small Business Development (DSBD), who provides support for small businesses and cooperatives. The mandate of the DSBD is to advance entrepreneurship among the youth, women, and people with disabilities (historically marginalized groups) in order to contribute to job creation and economic growth. It is clear that the higher education sector in South Africa has a role to play in addressing the high unemployment rates through capacity development alignment and targeted intervention in entrepreneurship training. This is complemented by the South African Government who is committed to fostering entrepreneurship to advance economic development and job creation priorities (Omidyar Network, 2013).

Also in 2019, the Aspen Network of Development Entrepreneurs (ANDE) mapped out the EE in South Africa illustrating support available to entrepreneurs. According to this map, 214 organizations provide support in the EE as either direct finance providers (71), capacity development providers (89), and ecosystem support players (53). Direct finance providers in South Africa constitute 70% of all funding available and include fund managers, private equity, venture capital and angel investors, crowd funders, commercial banks, the government, and direct foreign investment (which is

the additional 30% of finance available in the system). Capacity development providers are either "for profit organizations" or "not for profit" programmes run by government, corporate, or other organizations. However, the map does identify several gaps including the segmented and fragmented nature of support which inhibits access; a mismatch between capacity support and funding; a lack of early-stage funding; and a lack of coordination between initiatives as there is a lot of duplication and overlap in certain areas.

The African Regional Science, Technology, and Innovation Forum is a platform where regional innovation networks are created for the sharing of best practices in achieving global innovation and technology mandates. This forum is usually attended by representatives of all African member States of the United Nations, the African Union Commission, the African Development Bank, the regional economic communities, civil society, business and industry organizations, academic and research institutions, agencies and organizations of the United Nations system, and other international agencies and organizations, together with all development partners. At the forum held in 2020, a resolution was taken to transform universities in Africa to become providers of goods and services as universities are recognized as central to developing innovative and technology-driven economies. This transformation means moving universities from its original mission of teaching and learning, and academic research towards adding value to the knowledge created in the university. As such, the Entrepreneurial University can be seen as one where the university contributes to economic development in the region by knowledge transfer and commercialization of research (UNECA Report, 2021). Universities in South Africa have embraced this opportunity, with many working towards the development and implementation of policies to foster an enabling environment for entrepreneurship. However, higher education in South Africa faces a host of other challenges. In 2015 a nation-wide protest by students against the rising cost of higher education and decreasing government funding support demanded free, and decolonized, education. Given the racial discrimination historical context of South Africa, there has been a long-standing call for curriculum to be revised and decolonialized, however such a large-scale overhaul of education in South Africa comes at a massive cost (GEDI Report, 2017). But the protest revealed a far more concerning reality, student poverty in South Africa. The University of the Free State conducted a survey which found that students face a variety of problems with finances to meet their basic needs (such as food and accommodation), their living conditions and living arrangements (which impacts on their ability to study or complete assignments), to physical and psychological well-being (Ruswa, 2021). These problems were only exacerbated by the COVID-19 pandemic and associated lockdowns. Many higher education institutions continued their academic programme online, which inadvertently excluded students from participation due to lack of access to the internet, a capable computer, and their living conditions at home. Another aspect which impacts higher education in South Africa is the transformation imperative as defined by the Higher Education Act, which mandates higher education institutions to respond to the human resource, economic, and devel-

opment needs of South Africa while redressing past discrimination, ensuring representivity and equal access, and contributing to the advancement of all forms of knowledge (Badat, 2010).

Against this background the EDHE programme was developed. The goals of the EDHE Programme are centered around three focus areas: student entrepreneurship, entrepreneurship development in academia, and developing entrepreneurial universities. Through these three pillars, the EDHE Programme runs several initiatives targeting students, graduates, and academics. These initiatives aim to develop the entrepreneurial capacity of students, academics, and leaders; equip academics across disciplines to encourage an entrepreneurial mindset and culture; embed entrepreneurship in the curriculum across disciplines; optimize existing entrepreneurship research and encourage contextually relevant new research.

In the following section the EDHE Programme will be discussed in detail using information from the EDHE website as well as information provided in an interview with the EDHE programme founder and current Director. The EDHE Director kindly provided the latest progress report of the EDHE programme which was submitted to the USAf board, which gives detailed data about the success of the various initiatives in this programme for the year 2022. These various initiatives can be considered the drivers the impact upon the EE in South Africa. As will be discussed in detail below, the community of practice mechanism is the main driver of sustainable entrepreneurship development because it is a volunteer model, and allows the initiatives and programmes that each community of practice develops to be responsive to the needs of entrepreneurs and universities in South Africa.

The Entrepreneurship Development in Higher Education (EDHE) Programme

The EDHE programme was established in 2016 from within the University Education Branch of the South African Government Department of Higher Education and Training (DHET). According to the founding Director, the challenge was to build a scalable programme with limited financial resources, and as such the first iteration of the programme was a bootstrap model. The founding Director realized early on that to ensure the success and sustainability of the programme would require both a bottom-up and a top-down approach. The bottom-up approach would rely on volunteers who are champions for entrepreneurship and identifying these. The top-down approach would depend on university leadership recognizing the value and importance of entrepreneurship development.

The EDHE is run out of Universities South Africa (USAf), the representative organization of the 26 public universities in South Africa. It was the buy-in of USAf that secured the top-down approach to ensure the success of the programme. The programme

was then developed in alignment with the principles of the University Capacity Development Programme (UCDP). According to UCDPs mandate, it supports curriculum development initiatives that examine new and alternative contents and pedagogies which are relevant to the South African context. The next challenge that the founding Director had to overcome was clarity of purpose for the EDHE programme, and for this reason the 3 main pillars of the EDHE programme was identified as: student entrepreneurs; entrepreneurship teaching & learning and research; and entrepreneurial universities.

With this clarity of purpose, the programme was structured as a membership model, where each of the 26 public universities elect to participate in a community of practice (CoP), a single commitment of their choice for a period. Using the membership model was the tool to secure voluntary participation, and drive the bottom-up approach which makes the programme sustainable. According to the founding Director, the CoPs were decided on as the mechanism to build communities instead of a series of activities or projects, because communities are able to maintain momentum and longevity whereas activities sometimes lose steam after a period and are time-based.

In the early stages of identifying the CoPs, the founding Director recalls a few challenges which were specifically identified in the entrepreneurship development context. Firstly, the entrepreneurial mindset was not present in many of the actors in the higher education sector, such as the teachers, researchers, students, university leadership, and the DHET. Secondly, the existing entrepreneurship development activities did not take into account the nuances of gender, and what impact being a woman has on entrepreneurship. Specifically, the challenges of being a mother and an entrepreneur, gender-based violence and the other physical risks facing women in South Africa, and the cultural mindset which negatively impacts on women's desire to be entrepreneurs. It is with these challenges in mind that the five CoP were selected and the associated activities designed.

The purpose and role of the CoPs are to:

- Share relevant knowledge, resources, and best practice
- Transfer practical skills
- Influence policy
- Support and promote national EDHE projects regionally and locally, and
- Determine success indicators for EDHE

In exchange for participation in a CoP all members benefit from attendance to EDHE events, which includes a limited amount of sponsored attendance. These include:

- Student Entrepreneurship Week (SEW) – where partner institutions design and present a programme to equip students for entrepreneurship as a potential career.
- The EDHE Entrepreneurship Intervarsity – a competition to identify the top student entrepreneurs at each university, showcase their businesses, and invite investment into this cohort of start-ups.

- Student Women Economic Empowerment Project (SWEEP) – a project which serves a special purpose aimed at equipping student women for entrepreneurial activity in the context of gender-based violence and the under-representation of student women in entrepreneurship.
- The EDHE Awards – recognizing excellence in entrepreneurship teaching and learning, and supporting entrepreneurship at a university leadership level.
- Kick-off – a workshop bringing together academics and support professionals in entrepreneurship on the commercialization of research.
- The EDHE Lekgotla – a gathering of university leaders, academics, support professionals, students, practitioners and thought leaders to facilitate the sharing of good practices and emerging practices and initiatives in university entrepreneurship.
- The EDHE Studentpreneurs Indaba – an event that is aimed at connecting student entrepreneurs with existing start-ups or small businesses in an effort to share knowledge, create opportunities, and leverage networks.

There are five CoPs, and each institution can elect which CoP most aligns with their needs and capacity. These act as drivers which impact the EE in South Africa by designing and implementing initiatives that are responsive to the needs of each actor in the EE. These are:

(1) CoP for Student Entrepreneurship

The purpose of this CoP is to mobilize the national student and graduate resource to create successful enterprises that will ultimately lead to both wealth and job creation. Within this CoP the main activities are SEW and the Entrepreneurship Intervarsity. In 2018 the first SEW was hosted with the theme: "The best of both worlds" on 15 university campuses across South Africa. Each university presented its own programme in line with the theme, with speakers from industry and academia. The participating universities are free to organize the programme as they see fit, across one day or multiple, with a range of talks, pitching sessions, career advice sessions, etc. Each year the SEW is launched at a different host university in a different province in South Africa, to provide the opportunity for the hosting university to strengthen its entrepreneurial activities. In 2022, the University of Venda was the host and at the kick-off event 292 students attended in person, with a further 288 joining online. At this stage, all 26 publicly funded universities in South Africa participate in SEW, hosting various student entrepreneurship initiatives on their campuses for one week, after the kick-off event.

The EDHE Entrepreneurship Intervarsity encourages and supports student entrepreneurship across the 26 public universities in South Africa. The Entrepreneurship Intervarsity invites submissions from students and graduates in four categories: Innovative Business Ideas; Existing Business in Tech; Existing Business in Social Impact; Existing Business in the General category. After 3 rounds of competition, the 24 finalists are in-

vited to pitch their business ideas at a national competition. Category winners in the national finals win cash prizes and qualify for business support and mentorship to develop their business ideas and/or grow their winning businesses. The overall winner receives a large cash prize and the title of national Studentpreneur of the Year.

According to the founding Director, the Entrepreneurship Intervarsity was created to motivate the university to support its student entrepreneurs, as the university needs to identify which students they will be nominating in the four categories. The founding Director recalls the very first Entrepreneurship Intervarsity, in 2018, where at the conclusion of the competition letters were written to the Chancellors or Rectors of each university who had submitted students to the competition. In the letters the Chancellors or Rectors were congratulated for having supported the students to the point of attending the competition. The student from one specific university had made it to the top 5, but unfortunately did not win the 2018 round. The founding Director continues this account by saying that the same student returned to Entrepreneurship Intervarsity the following year, and told the Director that following the letter sent to their Chancellor, they were given financial and other support to grow their business by the Chancellor's office. Indeed for the period of 2018–2019 they were able to grow the business so much that they were able to return in the year 2019 to win the competition. This, says the founding Director, is the power of the Entrepreneurship Intervarsity.

In the last competition 3,457 registrations from students at 26 universities were received of which 1,682 were successful. Of these 677 were from women, 866 submissions were received in the Innovative Business Ideas category, and 811 in the various Existing Business Categories.

SWEEP is a burgeoning new project, which started as an event to connect student women with successful women entrepreneurs and is now seeking to establish student chapters at each of the 26 public universities. The purpose of each student chapter is to: develop an awareness of entrepreneurship; equip student women with transferable and practical skills and opportunities; and provide opportunities for the development of expertise and thought leadership. This purpose will be achieved as each chapter promotes opportunities to support, connect and grow through mentoring, networking, training, coaching, and providing access to women entrepreneurs and women in business. This may be through events or conferences. The chapter also seeks to provide an enabling platform for the exchange of ideas and experience between studentprenerus and working women in the entrepreneurship space. Lastly each chapter must provide a safe space for student women entrepreneurs to address challenges they face such as Gender-Based Violence and other forms of discrimination.

The first university chapter was officially launched during the annual EDHE Lekgotla held in July 2022 at the Boardwalk hotel in Gqeberha. Nelson Mandela University which hosted the Lekgotla together with EDHE has established the very first SWEEP university chapter, comprising of 6 members who will lead the SWEEP agenda at the university under the guidance of EDHE. In celebrating Women's Month, for August 2022,

the National Association of Student Development (NASDEV) hosted a Women in Leadership Conference in partnership with EDHE and SWEEP at the University of KwaZulu-Natal in Durban. This conference resulted in 46 new members joining SWEEP, and student chapter applications from 6 other universities in South Africa.

(2) CoP for Entrepreneurship in Teaching and Learning

The Entrepreneurship in Teaching and Learning CoP aims to support university staff and students to develop an entrepreneurial mindset and an understanding of entrepreneurship elements. This may be achieved by incorporating elements of entrepreneurship into curricula, and by upskilling staff with essential entrepreneurship training. By capacitating staff, they are enabled to capacitate students to move toward entrepreneurial action.

The EDHE Awards recognize those public universities who make significant advances in achieving this purpose. Academics across all disciplines are invited to enter and share their innovative entrepreneurship learning and teaching practices. The founding Director says that this award seeks to recognize and reward universities in a public forum, which in turn, encourages more universities to participate. But, the second purpose is to encourage the sharing of curriculum and best practice so that universities do not compete, but instead learn from each other, to ensure entrepreneurship training is improved across the country. In 2022, 23 submissions were received from 15 Universities in South Africa.

(3) CoP for Entrepreneurship Research

The large chasm between innovation and entrepreneurship in South Africa is a significant barrier to successful student and graduate entrepreneurs. This chasm is in part due to a lack of early-stage funding, but also due to a lack of knowledge and understanding of entrepreneurship in the South African context. The purpose of this CoP is not only to instill an entrepreneurial mindset amongst graduates and academics, but also to encourage research in this space. Specifically understanding how practical skills can be transferred and how business principles can be applied in another discipline.

The Kick-Off workshop provides an opportunity for academics, practitioners, industry, government, and support professionals to engage on these issues. In particular, the workshop aims to build capacity for research commercialization; provide academics with insights into best practices, approaches, and strategies for supporting students at universities; and researchers to translate their research into meaningful and impactful outputs.

(4) CoP for Entrepreneurial Universities

In recognizing the third mission of universities, which seeks to increase third-stream income, there has been a shift towards instilling an entrepreneurial mindset at the university leadership level. What this translates to is creating a conducive environment that will enable universities to adapt strategically and embark on projects whereby third-stream income can be generated through innovative business ideas. The purpose of this CoP is to develop, refine, and reimagine institutional policies that will enable the development of the entrepreneurial university.

The EDHE Lekgotla (in its sixth year running in 2022) provides an opportunity for all actors in the EE to engage around issues in creating a conducive environment for entrepreneurial universities to flourish. The founding Director states that it is important that this environment is not competitive and only supportive. The Lekgotla is structured in three streams: a showcase – where best practices are shared; a think-tank – where specific challenges and issues are discussed, and strategic solutions proposed; and a launchpad – where new ideas or initiatives are mobilized.

(5) Studentpreneurs CoP

This CoP is different from the other four listed above in that it consists of a maximum of 26 *bona fide* student entrepreneurs, nominated as representatives by and of their universities. The purpose of this CoP is to identify the challenges experienced by student entrepreneurs at higher education institutions in South Africa, and act as an advocate for student entrepreneurs in finding solutions to these challenges.

The first EDHE Studentpreneurs Indaba was held in 2022, in partnership with the Higher Education Leadership and Management Programme (HELM). The HELM programme is another USAf intervention targeting persons in leadership positions within universities and upskilling them in various aspects of university management. However, with a grant received from UCDP, the HELM programme has now made provision for piloting national student leadership interventions. As such the Indaba afforded student attendees the opportunity to learn about student leadership. At this Indaba 269 people attended in person, and 114 virtually and all 26 universities in South Africa were represented.

Discussion

The EDHE Programme spans across institutional and regional boundaries, with all 26 public universities in South Africa listed as partner institutions. The main role of the EDHE Programme is to provide strategic focus, create enabling environments, collabo-

ration, partnering and unlocking existing capacity and resources in higher education institutions and beyond. As such, this programme addresses some of the challenges in the South African EE that has been highlighted in this paper. Recently, in a self-evaluation, USAf published several reports [The National University Entrepreneurial Ecosystem Report, 2020; The United Nations Economic Commission for Africa (UNECA) study on advancing Entrepreneurial Universities in Africa, 2021] detailing the challenges they face and recommended interventions. As the organization responsible for administering the EDHE programme, these reports provide deep insight into the EE in South Africa and the contributions of the EDHE programme to date. These findings are reported below, but were also discussed with the founding Director of the EDHE programme to gain insight and a richer understanding of the findings.

According to these reports, a key challenge faced by the EDHE programme is a lack of clarity in two dimensions in the field of entrepreneurship, as applied to both teaching and learning and to research. In the one dimension, there is a need to clearly define the term and related terminology. In the other, there is a need to determine the most appropriate measurement of entrepreneurial activity as well as what constitutes an entrepreneurial activity. When it is not clear what entrepreneurship and entrepreneurial activities are, it is not possible to determine the most accurate way to measure the relative success of a universities' engagement in these activities. Most importantly, there is a need to clarify institutional expectations of the entrepreneurial university, and this is where the measurement of entrepreneurial activity is increasingly important. If the institution does not clearly define what constitutes an entrepreneurial activity, it is not possible to assess if they are achieving the goal of becoming an entrepreneurial university.

The founding Director states that the other challenges experienced by the EDHE programme relates to the specific historical context of higher education in South Africa. Before 2005, higher education institutions in South Africa were divided into Universities and Technikons, with the latter providing vocational training. However, in the historical context of South Africa, Technikons were not supported in the same way as Universities. In an effort to redress this disparity, in 2005 Universities and Technikons were merged or their names were changed. The result of this is that many universities are fairly new, and with the name changes many alumni now no longer feel like the new university is their alma mater. This means that it is increasingly difficult to engage alumni networks to support entrepreneurship at universities, and even in cases where this is possible, very few alumni from South African universities are high net-worth individuals. The founding Director states that this presents significant challenges to fund-raising for the EDHE programme.

Moving from this, another challenge experienced by the EDHE programme as it engaged with its 26 partner institutions, is the need to normalize entrepreneurship as a career choice. Many students and graduates are hesitant to pursue entrepreneurship as they view themselves as job seekers, not job creators. There is also a need to shift the understanding of entrepreneurship away from being solely a job creation

opportunity, and instead as the more holistic community impact and engagement opportunity it offers.

Finally, these reports found that in the pursuit to become an entrepreneurial university several factors need to be addressed. More work needs to be done to broaden the appeal of entrepreneurship across the university, from changing and adapting the curriculum such that entrepreneurship is taught outside the traditional disciplines (such as business studies), to delivering more entrepreneurial activities on campus. There is a need for better communication, advocacy, and awareness of entrepreneurship and the support offered by the university. However, universities need to note that their role will largely be to provide opportunity and access as universities are traditionally set up to be stable and consistent, while entrepreneurship needs disruption and flux. But this does not mean that universities cannot shift towards becoming more practical in their approach and increase their focus on developing and supporting entrepreneurship action.

Recommendations

The EDHE programme has chosen a multi-pronged approach to addressing the needs of the EE in South Africa, but with a specific focus on universities, as several reports and indexes illustrated the need for entrepreneurship education, teaching and learning, and research. Universities in South Africa are motivated by a variety of other factors and actors to pursue the journey towards becoming entrepreneurial universities. At a national level, the South African Government has its own agenda and motivation for supporting entrepreneurship as it seeks to improve the economic growth of the country and improve job opportunities for its citizens. It is this alignment of needs and wants that have created an enabling environment for the EDHE programme to flourish.

The UNECA and National University Entrepreneurial Ecosystem Reports have provided some insight into the challenges faced by universities in South Africa in their pursuit to become entrepreneurial as well as some of the nuances of the EE that directly impact this. Their reports conclude with key recommendations, some of which have broader application not just at a university level, but also to other emerging economies.

Firstly, it is important to conduct an audit to determine the key actors and activities in the EE and, similarly, the aspiring entrepreneurial university. Overlap and duplication result in a waste of efforts, resources, and support. It is also important to establish a body that is responsible for championing entrepreneurship along with the necessary funding, positions and job descriptions, and clearly defined activities. At a national level, this may be a government department, such as the DHET or DSBD in South Africa. At a university level, this may be a person or department (potentially

those involved in knowledge or technology transfer) or even the establishment of a business incubator. In creating an enabling environment for entrepreneurship, there is the need for clear policies and strategies, and these need to align across the country and within universities. An oversight or regulatory body is also needed to ensure entrepreneurship development activities are undertaken in alignment with the strategy and that it is possible for all students to engage with these opportunities.

The founding Director states that the most critical factor for the success of the EDHE programme, and to ensure similar initiatives are also successful if duplicated, is the freedom of the programme to change, adapt, experiment, and respond to the needs of entrepreneurs and entrepreneurial universities. Through the CoP model it is possible to remain flexible and close to the needs of these key actors, and to discontinue initiatives that do not work. Furthermore, in response to the specific challenge identified with regards to fund-raising from alumni, a new CoP for Entrepreneurial Alumni has been created. This illustrates exactly how quickly this model allows you to pivot and respond to challenges.

It is equally important to establish partnerships and identify delivery partners in pursuing entrepreneurship development. These may take the form of entrepreneurship capacity development through internships and job placement opportunities that serve as a springboard for budding entrepreneurs, or through early-stage funding to assist entrepreneurs in starting their first business. Another avenue is through the delivery of entrepreneurship education and mentorship. National and institutional structures can be leveraged to establish these kinds of relationships with the clear goal in mind to capacitate entrepreneurs in the country.

Another recommendation, from the founding Director which has gained traction, is the creation of Economic Activation Offices (EAO) that will function similarly to technology transfer offices, and are established in collaboration with their hosting universities. EAOs are envisioned as playing a central (internal) role in the university's entrepreneurship and innovation ecosystem, with a key focus on the facilitation and coordination of support, networking and information sharing in the broader university community. The EAO is meant to seek to support collaboration between university leadership, faculty, support staff, and students as it relates to entrepreneurship within the university ecosystem.

Conclusions

It is apparent from the case studied as well as the associated review of the South African context that higher education has an important role to play in fostering and enabling the entrepreneurial ecosystem. As universities engage in activities that move them toward the third mission of becoming an entrepreneurial university, there is a positive impact on the surrounding entrepreneurial ecosystem. As is highlighted by

the triple helix model of innovation, universities, industries, and governments need to work together as their activities impact upon each other. The same is true for the entrepreneurial ecosystem, and the more cohesion there is between these three main actors the greater the success of the ecosystem.

The EDHE programme has identified an approach that is fit for purpose in the South African context. By being positioned in the USAf it has gained top-down support, and by being structured as a volunteer membership model it has gained bottom-up support. In this way the programme ensures continued support and sustainability. The CoP mechanism allows the programme to remain agile and responsive to the needs of entrepreneurs and universities across the five dimensions identified, and also ensures that the initiatives and programmes designed can act as drivers of significant impact in the entrepreneurship ecosystem of South Africa.

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Chapter 8
Entrepreneurial Universities as Core Actors in Innovation Ecosystems: The Brazilian Case

Abstract: Innovation ecosystems are characterized by innovative activities that depend on collaboration between different actors, including universities. We seek to understand the more proactive dynamics of a university in promoting practices capable of generating positive externalities for the formation and development of innovation ecosystems. For this reason, the objective of this work is to enhance the understanding of how innovation ecosystems are formed and developed based on the orchestration of an entrepreneurial university. For that, qualitative interpretative research was carried out, through a unique case study at a university in Brazil. Data were collected through interviews and document analysis. A process approach was used to analyze the data, seeking to understand the phenomenon in its "temporal dimension." Our findings relate to the book's main discussion by exploring the dual role of the university in the process and the importance of collaborative practices.

Keywords: innovation ecosystems, entrepreneurial universities, orchestration, triple helix

Introduction

Phenomena related to innovation have been considered important mechanisms for economic and social development (Isenberg & Onyemah, 2016; Nicotra et al., 2018), bringing to the center of the debate between academics and executives the question of how collaborative and dynamic environments of people and organizations can be developed with the objective of generating a competitive and entrepreneurial scenario. Among contemporary contexts of innovation, it is remarkable, in empirical and

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theoretical terms, that the phenomenon of innovation ecosystems has been gaining prominence in the literature (Bogers et al., 2019; Gomes et al., 2018). This prominence is due to the exponential growth of data, information, and knowledge; the need for collaboration and coordination related to diverse organizations and individuals; and the adoption of technologies that can facilitate the connectivity of ecosystems of multiple actors (Ritala & Gustafsson, 2018).

Leading in an innovation ecosystem usually focus on a large company (Moore, 1993) or university (Foss & Gibson, 2015; Schaeffer et al., 2018), using orchestration mechanisms to connect and develop all links in the structure. In this context, countries such as the USA, South Korea, Israel, and the main European economies present basic and applied science as driving forces for entrepreneurship and innovation. In these countries, universities are seen as important catalysts for regional economic and social development, as they are considered natural incubators that create new ideas and technologies, promote the creation of new businesses, and offer a variety of resources and capabilities that contribute to sustained competitive advantage (Urbano & Guerrero, 2013).

Thus, the university comes to be seen as a support structure for innovation, providing trained people, consistent results in research and knowledge for industry. For Etzkowitz (2003), these science and technology institutions are undergoing a second revolution, where, through the ability to generate applied knowledge and the ability to form new ventures, social and economic development are incorporated as part of their mission, granting them the title of entrepreneurial university (Casado et al., 2012). Thus, in the debates about the future of science and technology institutions, the concept of the entrepreneurial university emerges as a new way of being globally competitive and locally involved (Etzkowitz et al., 2008; Stensaker & Benner, 2013).

In this sense, we seek to understand, this more voluntaristic dynamic of the actor (university) in promoting daily practices (in the areas of science, technology, and innovation) capable of generating positive externalities for the promotion of economic and social development (innovation ecosystem). Thus, to address the problem of forming an innovation ecosystem based on the practices of an entrepreneurial university as an actor capable of influencing and promoting institutional change, the following research question is proposed: What are the entrepreneurial practices of a university that influence the development of an innovation ecosystem, and how do they do so? Such questioning aims to contribute to actions that have tangibility in the ecosystem, allowing for the role of universities in the construction and orchestration of innovation ecosystems.

Thus, this chapter aims to advance the understanding of how innovation ecosystems are formed and developed based on the orchestration of an entrepreneurial university. The proposal is to analyze the institutional change that some practices of this actor can trigger, paying close attention to those that contribute to the construction and orchestration of innovation ecosystems.

Theories

Innovation Ecosystems

The understanding of innovation ecosystems is characterized by a focus on institutions (Adner, 2006), such as companies, universities, investors, and governments, and their closely intertwined interactions. Ikenami et al. (2016) highlight that an ecosystem is a self-organized institution, with at most one "magnet actor" that attracts other actors, but as it does not have control, it cannot be said that there is a leader. However, this facilitator has orchestration characteristics (Moore, 1993; Schwartz & Bar-El, 2015), that is, the ability to attract other actors to the ecosystem and coordinate them to make it more robust and resilient (León, 2013; Moore, 1996). It is argued that innovation ecosystems can be orchestrated by universities since a university starts to act as an "attractor" for the development and transfer of disruptive ideas through splits or other partnerships with consolidated high-tech companies. The cases of MIT in Boston (Massachusetts, USA) and Stanford University in Palo Alto (California, USA) are examples imitated elsewhere in the world, such as in the UK around Cambridge and Oxford.

Local universities play an important role in advancing knowledge flows within an innovation ecosystem. These institutions are centers of research and innovation, agents of knowledge exchange and catalysts of technological innovation. Universities have a great capacity to produce knowledge by generating research and creative talent and promoting mechanisms for transferring knowledge for acceptance and innovative application by companies. In this sense, Lester (2005) identifies a series of ways in which universities contribute to local innovation processes, and their contributions, in turn, guarantee the health of their respective ecosystems. The author states that universities can help attract new human knowledge and financial resources from elsewhere. In addition, universities can help to adapt knowledge originated elsewhere to local conditions, can assist in the integration of areas previously separated from technological activity, and can contribute to unlocking and redirecting knowledge that is already present in the region but that is not yet being used productively (Lester, 2005).

Fetters et al. (2010) bring together a series of cases based on what they call U-BEEs (university-based entrepreneurship ecosystems), pointing out their components and success factors and detailing their development process. The authors define that an entrepreneurial ecosystem based on a university is integrated and comprehensive; connects teaching, research, and outreach; and is articulated by the entire university and its extended community to foster entrepreneurial thinking and action throughout the system.

Within this context, it is argued that universities have a very important role that started in the 20th Century based on large American investments in R&D. These organizations became a focal point for monitoring the external technology activities of many US industrial research laboratories before 1940, and at least some of these con-

nections between universities and companies involved the development and commercialization of technologies and products. These links between academic and industrial research were strongly influenced by the decentralized structure and financing of higher education in the USA, especially for public institutions within the systems (Rosenberg & Nelson, 1994). Due to their multiple roles of not only generating knowledge and ideas but also acting as a source of entrepreneurial behavior, universities have emerged as a foundation for entrepreneurial and innovation ecosystems.

The Role of Universities in the Development of Innovation Ecosystems

The end of the nineteenth century saw a revolution in the university academy, in which research was introduced as a mission of universities in addition to the fundamental teaching role. This movement became known as the first academic revolution. The transition from a closed university to a more open and market-related model arose in an embryonic way at this time in the USA where, for lack of funding for research except for agriculture, individual and collective initiatives in search of resources emerged (Etzkowitz, 2003). Many universities around the world are still experiencing this paradigm. However, the increase in the importance of knowledge and economic development research opened the door to a second revolution, which brought to the scene a third academic mission: the role of the university as an agent of socioeconomic development (Etzkowitz & Leydesdorff, 2000; Yusof & Jain, 2010). Since the beginning of the 1980s, North American universities have considerably increased their business activities in several areas: patenting and licensing, creation of incubators, science parks and technological centers, and investment in start-ups, among other indicators (Siegel, 2006).

Fetters et al. (2010) propose a model that connects the entrepreneurship ecosystem with concepts such as technopoles, defined as a cluster of innovative and research-intensive small and medium-sized companies, with the innovative value chain defined as the generation of ideas, conversion, and diffusion, emphasizing the interconnected relations among academia, business, and government. Among the entrepreneurial activities of universities associated with the ecosystem are diversity in the offerings of entrepreneurship courses; incorporation of entrepreneurship in core businesses; development of innovative teaching methodologies and materials; conferences conducted by students, entrepreneurs and alumni as teachers and lecturers; development of new ventures on campus; educational extensions focused on entrepreneurship in areas such as family businesses, social entrepreneurship and business innovation; and financing multidisciplinary research and extension actions that build a meta-ecosystem connecting entrepreneurs and support organizations (other universities, government agencies, government, NGOs) and business entities.

In turn, Dabic et al. (2018) summarize the four main entrepreneurial activities of a university: (1) cooperative projects in the commercialization of research results through intellectual property rights, that is, patents and licenses; (2) the creation of spin-off companies; (3) the establishment of innovation and technological infrastructure for cooperation between science and industry, such as technological and research parks; and (4) offices for technology transfer. Despite being found in much of the literature, the university's internal practices related to entrepreneurship, as well as other academic activities, were not included in the synthesis performed by the authors.

Thus, this chapter proposes the inclusion of a pillar called entrepreneurial direction to encompass the university's practices that promote entrepreneurship, such as the offering of courses related to the theme, the inclusion of entrepreneurship in undergraduate courses, the development of conferences and entrepreneurial events, the promotion of university internationalization, the selection of entrepreneurs as professors and speakers and training that stimulates a more entrepreneurial culture among the employees of the university itself. Figure 1 presents the main pillars of an entrepreneurial university that influence an innovation ecosystem.

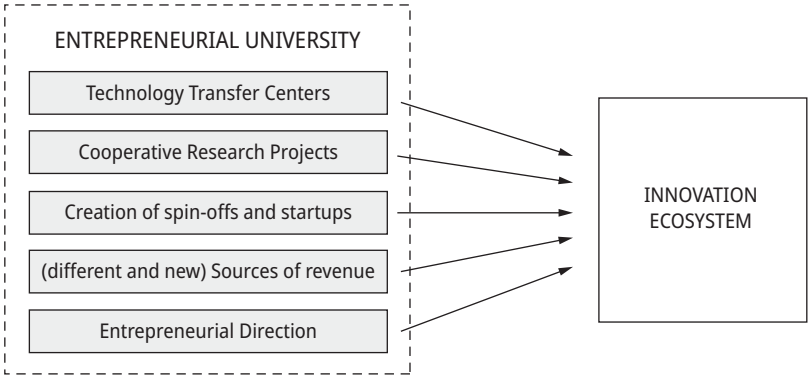

Figure 1: Pillars of the entrepreneurial university with influence on innovation ecosystem.

However, for such initiatives to influence and reverberate in the development of an innovation ecosystem, aspects such as the alignment of institutional objectives, access to university and other regional resources, the coordination of research initiatives and the participation of the business community along with the local government at various levels must be emphasized.

Methods

To address the research question, a qualitative approach was used that makes it possible to obtain greater proximity to the problem and improves the understanding of the phenomenon as it is studied in more depth. We also opted for the research strategy of a single case study, where procedural analysis was used (Langley, 1999) due to the need to understand the context and events that influenced the formation of the studied innovation ecosystem. The chosen case was from the University of Vale dos Sinos (UNISINOS), as we understand that it has important elements that make research feasible, namely: (1) the transformation process that the university has been going through recently has drawn attention and has been recognized by the academic community; (2) it consists of a significant time interval, with at least two decades of observations that can be analyzed; (3) it presents, in terms of structure, the configuration of a defined environment or close to the characterization of an innovation ecosystem in its surroundings; (4) a diverse range of actors is involved in the process; and (5) it offers some kind of openness for conducting research and access to primary and secondary data.

UNISINOS is a private university located in the state of Rio Grande do Sul, in Brazil, with approximately 31 thousand students in undergraduate and graduate courses, both on campus and via distance learning. The university is operated by the Antônio Vieira Association (ASAV), which maintains 21 units in Brazil. UNISINOS has already graduated approximately 75 thousand students, whose training reflects the institution's strategic options: transdisciplinary, continuing education and regional development. The workforce consists of approximately 1,048 professors, over 90% of whom have master's, doctoral, or postdoctoral experience, in addition to approximately 1,094 employees. The university has campuses in São Leopoldo and Porto Alegre but is also present in eight states in the country (UNISINOS, 2019). Over its almost sixty years of existence, it has undergone profound transformations, started with a more traditional teaching model, focused on humanities, today UNISINOS has been transformed an entrepreneurial university that centralizes and orchestrates a dynamic of innovation where research institutes, incubators, start-ups, multinationals, and regional companies' orbit, connected to the academic environment of the institution.

Based on the constitutive pillars of a procedural analysis proposed by Bizzi and Langley (2012), Table 1 was created with the objective of briefly elucidating the methodological elements of this research.

From July to October 2018, forty retrospective interviews were conducted with key figures involved in UNISINOS's entrepreneurial practices connected to the innovation ecosystem. The selection of respondents followed the criterion of having or having had a relevant role in a university action or practice to improve or develop the surroundings, such as participation in projects, agreements with companies, incentive programs for start-ups, and international agreements.

Table 1: Methodological elements of the study.

Elements	Research in question	Definition
Temporal orientation: retrospective or real time	Retrospective	A retrospective case research usually starts from knowing an outcome and working backwards to understanding how it happened, as in a detective story.
Unit of analysis: spatial and temporal delimitation	The entrepreneurial practices of a university	As noted by Langley (1999), processes have fluid limits and varying degrees of temporal incorporation. They spread across space and time (Pettigrew, 1992).
Sample: depth versus breadth	Actors involved in the university's entrepreneurial transformation process	Detailed single case studies tend to produce a rich understanding of specific contexts. Sampling in process research in bound to involve an element of convenience given the complexities and whims of access.
Data: observation, interviews, and documentation	In-depth interviews, documents, and files.	The data sources for process research are multiple and eclectic, with a particular emphasis on the "big three" elements of qualitative research: observation, interviews, and files each with complementary strengths and weaknesses. Triangulation involving the use of multiple sources is preferable since the weaknesses of one source can be offset by the strengths of others.
Analysis and interpretation: sensemaking strategies	Visual maps with time scaling	Langley (1999) proposed seven different strategies to address the task. The visual mapping strategy involves the representation of processes using flowcharts, tables, and other types of visualizations. More temporally dynamic representations include flowcharts of changes in relationships over time.

During the interviews, models made with Lego® blocks were used to help build the transformation process of UNISINOS from the perspective of the interviewee (illustrated in Figure 2). Based on the assumptions of "design play," which is anchored in the reality-meaning-game triad (Harteveld, 2011), this methodology was adapted by the Lego company, who coined it Lego Serious Play (Kristiansen & Rasmussen, 2014), where the main pillar lies in "thinking with your hands."

While the interviewee reported his experience in the process and built the model, the researcher carried out interventions with sticky notes to demarcate events and practices that interviewee considered to be important so that the interviewee was led to reflect on and give more details about the identified practices. After the interviews,

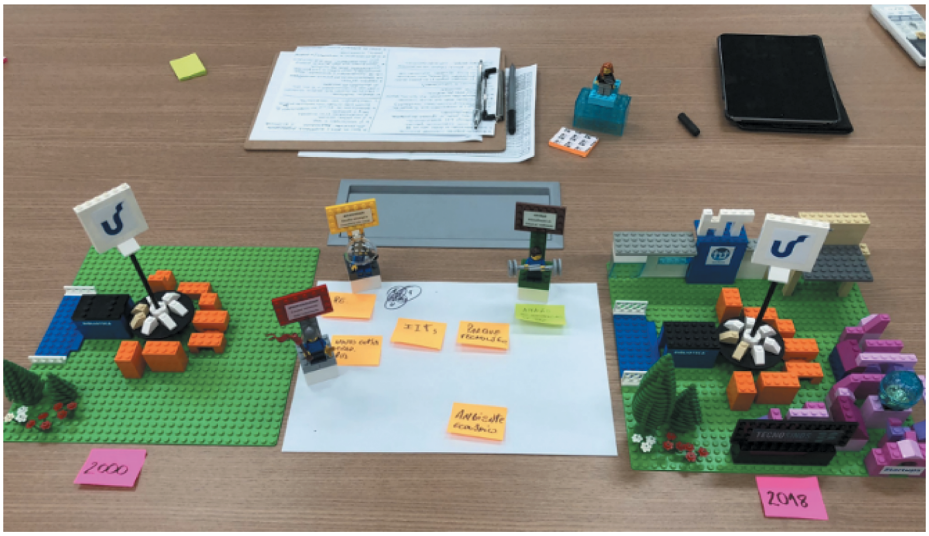

Figure 2: Prototyping of the innovation ecosystem development process.

the transcription stage was carried out, where the content of the notes taken was explored based on the logic of content analysis proposed by Bardin (2011).

The research was delimited through longitudinal cuts in four phases. Such demarcations were built from the identification of important events, which emerged in both primary and secondary data, and were characterized by the analysis of their content as triggers of transition in the process of formation of the innovation ecosystem around the university. An illustration of the research phases, with their respective periods and main events, is presented in Table 2.

Table 2: Methodological phases of the research.

PHASE 1: 1996 to 1997	**PHASE 2: 1998 to 2005**	**PHASE 3: 2006 to 2012**	**PHASE 4 2013 to 2019**
Creating a new institutional context	***Fulfilling a purpose-called ecosystem***	***Consolidating the change of entrepreneurship and innovation***	***Establishing a collective entrepreneurial culture***
– UNIDINOS foundation, based on humanities and focused on teacher training	– Inauguration of the Informatics Pole and UNISINOS business incubator	– Structuring of the technological park and the arrival of new companies and start-ups	– Inauguration of technological institutes (ITT) and installation of multinationals in the park

Table 2 (continued)

PHASE 1: 1996 to 1997	PHASE 2: 1998 to 2005	PHASE 3: 2006 to 2012	PHASE 4 2013 to 2019
Creating a new institutional context	***Fulfilling a purpose-called ecosystem***	***Consolidating the change of entrepreneurship and innovation***	***Establishing a collective entrepreneurial culture***
– Initial articulations between the university, government, and companies for the creation of an IT center	– Investment in academic excellence of the teaching staff and in the opening of new PPGs	– Events and conferences focused on entrepreneurship and innovation	– National and international recognition and of university
	– Closer connection with the market	– Development of research and projects with companies	– Spread and decentralized entrepreneurial actions
	– Fundraising for the development of entrepreneurial projects at the university	– Actions and partnerships at the international level	– Strengthening entrepreneurship as a transversal practice
	– Beginning of a new administration with a charismatic posture and open to change	– Benchmarking with academic centers and reference clusters in innovation	– Diffusion of entrepreneurial culture in all spheres of the university

From the theoretical review we identified eighteen entrepreneurial practices at the university that influenced the formation of the innovation ecosystem over these four phases, and these practices were related to the five main pillars (listed in Figure 1). However, from the immersion in the field provided by the adoption of a procedural approach for a single case, it was possible to deepen the phenomenon and the consequent identification of new practices, which in turn brought about the emergence of four other pillars with characteristics of an entrepreneurial university.

From the analysis of this set of activities and the impacts that they promote in the ecosystem, it was possible to draw a distinction between the characteristics of direct and indirect interference.

In this way, the proposal to categorize practices was based on the criteria of reverberation in the ecosystem, essence in terms of spread, mobilization of actors and evidenced scope. It was understood that these parameters represent a direction for a better analysis of the impact reflected by the university's entrepreneurial practices. Table 3 summarizes the four factors considered in each of the groups.

Table 3: Criteria adopted to distinguish practices.

Directly related	Indirectly related
Reflect tangibilization to the ecosystem	Reflect ecosystem support
Exogenous character to the university	Endogenous character to the university
Involvement of different actors	Unique university involvement
They demonstrate characteristics or elements of an innovation ecosystem	They demonstrate characteristics or elements of an entrepreneurial university

Each practice was made based on the content analysis generated by the reports of the in-depth interviews. The obtained results showed a configuration of a set of 20 (twenty) practices undertaken by the university that represented a direct influence on the formation of the ecosystem, 10 (ten) of which have already been considered in previous works, such as those by Fetters et al. (2010) and by Dabic et al. (2018). The other 10 (ten) remaining practices belonging to this group emerged in the research, and their common characteristic is their relational character; that is, they are collaborative practices that involve the participation of different actors for their achievement.

On the other hand, the coined practices of indirect influence portray a set composed of 16 (sixteen) actions, among which 8 (eight) emerged through the research, mainly concentrated in the pillar of entrepreneurial direction. Table 4 shows the list of all practices evidenced in the UNISINOS innovation ecosystem process.

Table 4: Mapping the entrepreneurial practices of the university.

Pillar	No.	Related practice	Evidence in the literature	Relationship	Phase			
					1	2	3	4
Technology transfer centers: creation of technological institutes and research labs	P1	Business incubator and/or accelerator creation	Existing	Direct	×			
	P2	Creation of research institutes	Existing	Direct				×
	P3	Technology Park creation	Existing	Direct		×		
Connecting public-private partners: relational work, elements that refer to the triple helix	P4	Political articulations for campus development	Emerged in research	Direct	×			

Table 4 (continued)

Pillar	No.	Related practice	Evidence in the literature	Relationship	Phase			
					1	2	3	4
	P5	Conducting benchmarking for exchange and recognition of best practices	Emerged in research	Direct			×	
	P6	Development of projects including all spheres of the triple helix	Emerged in research	Direct	×			
	P7	Partnerships regional, national, and multinational companies	Existing	Direct	×			
	P8	Lobby for investments in and with university	Emerged in research	Direct			×	
Culture and institutional environment: entrepreneurial DNA in all spheres of the university, environment focused on business	P9	Connections between entrepreneurship and innovation activities and policies of university	Emerged in research	Indirect				×
	P10	Intrapreneurial posture in all spheres	Emerged in research	Indirect				×
	P11	Training and recruitment focused on entrepreneurship and innovation	Existing	Indirect				×
Entrepreneurial direction: activities strongly grounded and focused on the development of entrepreneurship – courses, disciplines, lectures, visits, contests	P12	Development of conferences and pro-entrepreneurship events	Existing	Indirect			×	
	P13	Training of qualified labor	Emerged in research	Direct		×		
	P14	Inclusion of entrepreneurship in undergraduate programs	Existing	Indirect				×
	P15	Offer of courses related to entrepreneurship	Existing	Indirect				×
	P16	Selection of entrepreneurs as teachers and speakers	Existing	Indirect		×		

Table 4 (continued)

Pillar	No.	Related practice	Evidence in the literature	Relationship	Phase			
					1	2	3	4
Promotion and creation of spin-offs and start-ups: stimulation and support for new business	P17	Development of new Existing ventures on campus	Existing	Direct		×		
	P18	Making resources available or connecting with investors	Emerged in research	Direct			×	
	P19	Emergence of start-ups and technology companies in the region	Existing	Direct		×		
	P20	New incubation process	Emerged in research	Direct		×		
Revenue sources: diversification of resources input	P21	Raising public and private project finance	Existing	Direct		×		
	P22	Commercialization of spaces at the university	Emerged in research	Direct		×		
	P23	Commercialization of licenses and patents	Existing	Indirect				×
	P24	Market investments at the university	Existing	Direct		×		
Local, regional, and global insertion: practices that encourage community development, the presence and recognition at both national and international levels	P25	International certification	Emerged in research	Indirect			×	
	P26	Connection with academy and international market	Emerged in research	Direct			×	
	P27	Promotion of university internationalization	Existing	Indirect			×	
	P28	Participation and sponsorship of local and regional events	Emerged in research	Indirect			×	
	P29	Actions for the community and region	Emerged in research	Direct		×		

Table 4 (continued)

Pillar	No.	Related practice	Evidence in the literature	Relationship	Phase			
					1	2	3	4
Guidance for academic research: creation of PPGs, incentive for publication, promotion registrations patents	P30	Concentration of masters and doctors in the program	Emerged in research	Indirect		×		
	P31	Creation of portals to exchange materials and experiences	Emerged in research	Indirect				×
	P32	Encouraging publications	Emerged in research	Indirect			×	
	P33	Presence of several PPGs	Emerged in research	Indirect		×		
Cooperative research projects: partnership between the university and companies in favor of market demands	P34	Development of research aimed at market demands	Existing	Direct			×	
	P35	Connection projects between entrepreneurs and organizations	Existing	Direct				×
	P36	Joint publications with the industry	Existing	Indirect				×

Ultimately, a video was created (Vídeo, 2019). In this video, the history of this movement was reconstructed through the construction of a model "prototyped" using Lego® blocks. The sequence of episodes that occurred was narrated according to the obtained reports simultaneously with the materialization of the main milestones of the process, highlighting the entrepreneurial practices performed and the actors involved. Four respondents were selected, with at least one representative from each defined category (UNISINOS, enterprise, and government), who met the following criteria: (a) time of involvement with UNISINOS of over ten years; (b) proximity to the strategic processes and decisions adopted by the university over the past twenty years; and (c) willingness to evaluate the video and send their feedback regarding the content presented. After watching the video, they were asked to respond to an e-mail they had received by indicating on a scale of 0 to 100% how well the audiovisual montage represents what happened at UNISINOS and its innovation ecosystems along with a descriptive paragraph. The average approximation to reality attributed by the interviewees was 97.75%, which agreed with the qualitative reports, allowing us to validate the reconstruction of the history, main events methodological phases and practices employed.

Results

Based on the data collected in the interviews, documents, and from the time scale, four phases in the formation of the ecosystem were identified.

Phase 1 (1969 to 1997): Sowing a New Institutional Context

The history of the university began in 1969 and it was officially inaugurated in 1974. In 1983, Father Aloysio, rector of the university, obtained recognition from the Ministry of Education (MEC), and his statute was published in 1991. In 1995, the first Master of Business Administration (MBA) course was launched.

In 1996, in a joint movement of UNISINOS, including companies, civil society organizations and government, the implementation of a computer center around the university began to be designed, with construction commencing in 1997. In the same period, the implementation of the UNISINOS technology-based business incubator (UNITEC) was announced. The practice of creating a company creation center can also be seen as an influence of the entrepreneurial movement that started with the new relationships that were established with the productive sector. The university seemed open to change and started to adopt synergistic practices for the entrepreneurship and innovation movements, with the incubator's implementation being a clear demonstration of this purpose. There were indications that the transformation of the university was the beginning of a new phase (see Table 5).

Thus, Phase 1 was characterized by the time interval between the founding of UNISINOS and the period of partnerships among the university, government, and companies to create a computer hub, where the three spheres sought synergy to strengthen the region and enjoy mutual gains with the structure and dynamics to be built.

Phase 2 (1998 to 2005): Fulfilling a Purpose Called the Ecosystem

The new phase marks the beginning of Father Bohnen's fourth term. During this interval, because of the partnerships among companies, government, and the university, the São Leopoldo Informatics Center was inaugurated in 2001, and it was initially composed of ten pioneering companies (CWI, Meta, Gama, Sispro, SKA, CSI, Altus, Micromega, GVDASA, and Digistar). Nevertheless, in 1998, work began on the UNITEC building (UNISINOS incubator), whose main role was to function as an incubator for new businesses.

With the implementation of the incubator, practices such as providing an incubation process triggered reflexes in the ecosystem through the emergence of start-ups

Table 5: Summary of entrepreneurial practices in Phase 1.

Entrepreneurial university pillar	Practice	Source	Evidence
Connection with public-private partners	Development of projects including the Triple Helix spheres	Emerging in research	"So, this is how today's triple helix governance begins, because in the place the company, university and municipality came together to create the São Leopoldo IT hub, and that was the embryo of Tecnosinos." (Interviewee 8)
	Political articulations for campus development	Emerging in research	"Yes, articulation with the representative governmental bodies at the municipal, state, and federal levels. So, for example, the PPG's articulated with the ministries and agencies such as Capes, Finep, among other development entities. In the case of the incubator, technology park and Innovation Portal, the articulation took place with the departments of the state of Rio Grande do Sul and the municipality, the municipal government, among others." (Interviewee 1)
	Partnerships with regional and multinational companies	Fetters et al. (2010) and Leyden and Link (2013)	"Altus and UNISINOS have had a partnership for technological development over there for so many years, right? But they don't necessarily need to have something going on all the time. In order words, Altus does it when it needs, to, or when UNISINOS brings something up too, since they are very close, it also helps, we can write a project like this." (Interviewee 13)
Technology transfer centers	Creation of a business incubator	Dabic et al. (2018) and Leyden and Link (2013)	"And, in addition, in the ecosystem there is an incubator, it is geographically inserted in the technology park. But there is the incubator itself, the incubator to leverage or create conditions with the incubation, for nascent companies, companies called technology-based." (Interviewee 2)

and the establishment of technology companies around the university. In parallel, investments in improving infrastructure around the campus were accelerating.

The unleashing of collaborative practices that reverberated in the formation of the ecosystem also provoked new internal attitudes at the university, which started to adopt a posture strongly anchored in research and in connection with the market. However, the financial crisis that broke out in the mid-2000s hit the university and imposed the need for more radical changes. Change came with the arrival of Father Marcelo Aquino, who was appointed rector at the end of 2005 and began a process of entrepreneurial transformation at UNISINOS. Table 6 summarizes the entrepreneurial practices of the university observed in this period.

Table 6: Summary of entrepreneurial practices in Phase 2.

Entrepreneurial university pillar	Practice	Source	Evidence
Promotion and creation of spin-offs and start-ups	Development of new ventures on campus	Dabic et al. (2018)	"Here, in this logic, comes the opportunity of the Brazilian-Korean joint venture, to install a semiconductor factory on the UNISINOS campus, with the objective of giving an important dimension to the growth of this concept of science, technology, innovation connection. A few years ago, SAP had already placed its (lab) in Latin America, so it already had a large company headquartered." (Interviewee 20)
	Emergence of start-ups and technology companies in the region	Dabic et al. (2018)	"We have some very cool cases, right? Like Super Cooler, we have Dobra with the wallets, from the GIL guys. We have the X4 which is for 3D printers. There are several cases that are born, let's say, out of the curiosity of these entrepreneurs in transposing what they received as tools inside the classroom, to a real-world application." (Interviewee 10)

Table 6 (continued)

Entrepreneurial university pillar	Practice	Source	Evidence
	New business incubation process	Emerging in research	"We did not want to let the project die and we learned about the Roser Prize. But we didn't have any notions of entrepreneurship, but we decided to sign up and see what happened. So, we presented the project, everything in here, and we ended up in third place, which gave us an incubation period here at Unitec. So, it was a turning point for us." (Interviewee 33)
Technology transfer centers	Technology Park creation	Dabic et al. (2018) and Leyden and Link (2013)	"Tecnosinos emerged over there in the 90s, in an initiative between the public sphere of the municipality of São Leopoldo, the entrepreneurs of the region and the university itself, with the technological incubator [. . .] and in light of that came the opportunity to develop this concept no longer limited only to that space at the bottom of the São Leopoldo campus, but the Tecnosinos frontier is to become the entire university campus, right?" (Interviewee 20)
Entrepreneurial direction	Training of qualified labor	Emerging in research	"We also have graduates from UNISINOS who part of some of the big companies in the technology park are. So, for example, there is one (GVdasa), there are a lot of people, graduates from UNISINOS who work today in these big companies like SAP, right? Even HT. So, the context of collaboration, it actually happens. And the companies, they start to create a dynamic of dialogue also with the university graduates." (Interviewee 26)

Table 6 (continued)

Entrepreneurial university pillar	Practice	Source	Evidence
	Selection of entrepreneurs as teachers and speakers	Fetters et al. (2010) and Foss and Gibson (2015)	"I participated in the selection process in the first semester, I passed, which was precisely in this question, then, as a guideline at the time of the program, to pull professor who were aligned with the market into the undergraduate course, right? Not having something only academic, mixing a little more." (Interviewee 4)
Revenue sources (diversification thereof)	Raising public and private projects funding	Dabic et al. (2018)	"Now, resources that are available in these ministers, of science, technology, and innovation, of education, Finep, which are resources that we non-reimbursable, this is the adequate funding for me to be able to build this ecosystem and course, return it with science, technology, and innovation. So that was a little bit of how we made it possible." (Interviewee 20)
	Commercialization of spaces at the university	Dabic et al. (2018)	"And then suddenly, the Undergraduate Programs can no longer afford the bills for this UNISINOS here. So, what we are doing is that this UNISINOS over here can help fund the other one, selling out space." (Interviewee 3)
	Market investments at the university	Dabic et al. (2018)	"But both UNISINOS, in fact ASAV, and this group of entrepreneurs gathered here in the IT hub, they saw that there was a potential for growth in the hub, okay? And they started investing in infrastructure and building two condominiums, one of them is called Padre Rick, and the business building (Partec) which is this first building there, there are two now here, right?" (Interviewee 8)

Table 6 (continued)

Entrepreneurial university pillar	Practice	Source	Evidence
Local, regional, and global insertion	Actions for the community and region	Emerging in research	"Here is an interesting highlight, and in the review of the 2016 business models we mapped the regional market and then the regional market in Rio Grande Sul, 97% of the companies, depending on the survey they point out 95 or 99, are micro and small companies. So, we understood that we needed to provide for this segment. For that, we reestablished an approximation with Sebrae." (Interviewee 2)
Guidance for academic research	Concentration of masters and doctors in the faculty	Emerging in research	"I saw the university growing, my hiring there in 2000 and many doctors in 2000, and it was also a year. . . at that time, the university still had a good. . . it had . . . it had resources and they invested in training for the teaching staff, especially masters so that they could finish their doctorates, I arrived already as a doctor, and others too." (Interviewee 6)
	Presence of several PPGs	Emerging in research	"So, I think that for this evolution, two movements like this one greatly contributed. One of them was the university's own research, so investing heavily starting with the qualification of professors, many went on to doctorate studies with the support of UNISINOS, creating graduate program, right? Of the three, four that we had at the beginning of the century now we have I don't know, I don't even know the math, but there are almost 50 graduate programs in all. So, I think that this movement of betting on academic qualification influenced this ecosystem because you don't . . . you . . . don't this whole research relationship with companies has a lot to do with hourly professors giving classes only at undergraduate programs without a stronger investment in research." (Interviewee 30)

Thus, Phase 2 is the beginning of UNISINOS's entrepreneurial transformation process and the embryo of what came to be an innovation ecosystem.

Phase 3 (2006 to 2012): Sedimenting the Change in Entrepreneurship and Innovation

Under the leadership of Father Marcelo Aquino, in 2006, the UNISINOS innovation ecosystem was undergoing a period of consolidation. Through lobbying political entities, UNISINOS members sought investments and made efforts to attract recognized companies to the technology park. As a result, multinational companies and recognized international benchmarks, such as SAP and HCL, became part of the entrepreneurship and innovation conglomerate orchestrated by the university.

A strategic plan began to be implemented based on the following two strands: to work on the recognition of the park as a globalized technology platform in Brazil and to advance in the consolidation of companies' technological innovation strategies with projects that encouraged entrepreneurship, such as the Talents program and the Roser award. In 2009, the number of companies jumped from 23 to 75, and the Informatics Center was renamed Parque Tecnológico São Leopoldo (Tecnosinos), gaining international prominence when it was selected as the best technology park in Brazil. In addition, its incubator, UNITEC, received the second-best award in the world for the availability of resources and connecting start-ups with accelerators and angel investors.

This phase triggered the beginning of the construction of another unit for incubating more start-ups: UNITEC II. Thus, the innovation ecosystem that had begun to pulse strongly around the university also gained another member after the inauguration of Padre Rick Condominium, becoming an important business center. In 2011, internationally established relations, especially with Korea, were reflected in the construction of a factory of the Korean semiconductor company HT Micron. The establishment of important companies in the ecosystem reverberated internally at the university through opportunities for the development of research aimed at the demands of the companies themselves. Table 7 summarizes the entrepreneurial practices observed in this period.

Thus, Phase 3 was built with series of entrepreneurial practices were beginning to be adopted by the university. The changes became increasingly visible, reverberating with the achievement of several national and international awards.

Phase 4 (2013 to 2019): Establishing a Collective Entrepreneurial Culture

In 2013, the university introduced a movement to divide its fields of knowledge into seven schools (Humanities; Health; Creative Industry: Communication, Design, and Languages; Law; Management and Business; and Polytechnic). This action resulted in

Table 7: Summary of entrepreneurial practices in Phase 3.

Entrepreneurial university pillar	Practice	Source	Evidence
Public-private partners connection	Benchmarking to exchange and recognize best practices	Emerged in research	"These trips, they . . . the international missions, right? A group of top management executives who are traveling together and looking, right? And these inspirations were of great value for the consolidation system. I remember it as if it were today. We were looking at some models, talking to executives at those universities and learning about it, designing our own system, right?" (Interviewee 25)
	Lobby for attracting investments in and with the university	Emerged in research	"So, this whole movement was, it was very well articulated, right? This company didn't get here out of nowhere, they thought this was the place . . . the best place in the world to (become) a semiconductor company. So, there was an effort by the university to reveal the importance of this place, of this university, for these companies to establish themselves here. It (the university) looked for financing, financial engineering, to carry out this operation, to build a building, right? With BNDES financing for an international joint venture company, right?" (Interviewee 1)
Entrepreneurial direction	Development of conferences and pro-entrepreneurship events	Fetters et al. (2010) and Foss and Gibson (2015)	"So, we created an event too . . . then I called the Núcleo staff and said 'guys, let's turn this into a week of entrepreneurship and innovation'. So, for a few years, we started to organize an event, and then this event also had . . . with the idea of being an integrating forum for the management and business area, the park's initiatives, we had great success." (Interviewee 6)

Table 7 (continued)

Entrepreneurial university pillar	Practice	Source	Evidence
Promotion and creation of spin-offs and start-ups	Making resources available or connecting with angel investors	Emerged in research	"There are other start-ups that joined Ventiur (accelerator) too, you know? Which are going through the same process as us, Deskfy is one of them." (Interviewee 34)
Local, regional, and global insertion	International certification	Emerged in research	"Internationalization happens with concrete actions, agreements, exchanges, post-doctorates, doctorates done abroad in partner universities, as I was saying about Korea, but it would also involve, for example, the search for the business management school for the type of seal with an international business school." (Interviewee 2)
	Connection with the academy and the international market	Emerged in research	"We also started a very rich contact with the Korean embassy. The last three or four ambassadors have all come to visit UNISINOS and now for the opening of the Brazil/Korea Forum, we will also receive the new Korean ambassador." (Interviewee 15)
	Promotion of university internationalization	Fetters et al. (2010)	"We have several agreements, UNISINOS even, as a university, has hundreds, and I think there are 236 agreements with other universities outside the country. We have one with Berkeley, which is also another area that is very important, and we also have an agreement with Germany." (Interviewee 26)
	Participation and sponsorship of local and regional events	Emerged in research	"These guys come here, so we give them a lecture, until last year we gave them a lecture at Unitec and Tecnosinos. Then we invited an entrepreneur from a start-up and an executive from a medium or large company who told these guys what it is like to be a talented Tecnosinos, what they need to have, develop to undertake, what characteristics they need to be able to work in companies, right?" (Interviewee 8)

Table 7 (continued)

Entrepreneurial university pillar	Practice	Source	Evidence
Guidance academic research	Encouraging publications	Emerged in research	"So basically, we started looking for a way within the university for us to exercise our profile, which is working with companies, guiding applied masters and doctorates, because we are very encouraged to publish articles, to be on the cutting edge." (Interviewee 1)
Cooperative research projects	Development of research aimed at market demands	Dabic et al. (2018)	". . . [T]he project with Altus that we are even delivering this week now, closing closed. It was a project that started in 2012, was written in 2010, was rewarded in 2011 and received (the funding) in 2012. At the end of 2012, when this resource came in, we assembled the team for the 2013, and we are delivering it now in 2018. So, it's a nearly six-year project, right?" (Interviewee 4)

more autonomy and identity for the units, in line with the entrepreneurial dynamics that surrounded their organization through the relationships of the ecosystem, which motivated teachers and coordinators to idealize Technology Transfer Centers (TTCs) that, with the support of the rector, were achieved through financing from the government and development agencies. The arrival of these TTC represented a milestone for the consolidation of the ecosystem, which now has a wide network of means focused on entrepreneurship and innovation.

As the institutes were consolidated, opportunities to sell licenses and patents opened. Thus, the UNISINOS Innovation Portal was born, a space dedicated to relationships with companies and the productive sector. As a reflection of this practice, the number of start-ups incubated in Tecnosinos doubled from one year to the next, while three more loci of technology materialized: UNITEC II, to house new start-ups; UNITEC III, aimed at corporate R&D centers; and PARTEC Green, an eco-friendly building pioneer in Rio Grande do Sul that received the LEED certification.

These new pieces of the ecosystem brought more robustness to the group, and in 2014, UNISINOS was recognized as the best university in the South Region; the technological park, the best in Brazil; and the incubator, the best in the world. Such distinctions had a very positive impact on attracting new companies to the ecosys-

tem. In the same period, the HT Micron factory was inaugurated, bringing with it a series of meanings.

Although it was still in its initial stages, the innovation ecosystem that grew around the university demonstrated that UNISINOS managed to enable a context of innovation and entrepreneurship and to orchestrate a real institutional change that could be experienced throughout its organizational field. The current configuration comprises 108 national and international companies, a turnover of more than US$129 million, 18 patents and 116 intellectual property records. Large global companies have joined dozens of start-ups incubated and graduated from the innovation and technology unit (UNITEC), generating innovation, and further driving the economy.

Based on the appreciation of the narrative related to the UNISINOS experience as a university that implemented practices to create an ecosystem, we elaborated Table 8.

Table 8: Summary of entrepreneurial practices in Phase 4.

Entrepreneurial university pillar	Practice	Source	Evidence
Technology transfer centers	Creation of research institutes	Dabic et al. (2018) and Leyden and Link (2013)	"But they were built, we submitted projects looking for a non-refundable public resource for the construction of all this infrastructure, but only infrastructure, their operation must be self-sustainable. So how does it sustain itself? Providing services to society. The society I speak of now are companies, companies, some institutions or organizations that demand services that we have the capacity for." (Interviewee 1)
Institutional culture and environment	Connections between entrepreneurship and innovation activities and policies across the university	Emerged in research	"From a structural point of view, we can look at your representation here which is very nice. Today, any student who enters the university, they have at their disposal a structure to innovate and to undertake. It is undeniable that they have it." (Interviewee 10)

Table 8 (continued)

Entrepreneurial university pillar	Practice	Source	Evidence
	lntrapreneurial posture in all spheres	Emerged in research	"The excellence groups are formed by certain researchers, and they also aim to bring students and people interested in research, who can provide service to companies, for the market in an applied manner. So, along these structures that we see here from the institutes, we also see human resources structures for research forming around that. So, we see a big difference from this university here, which was the university most centered on the issue of teaching, right?" (Interviewee 16)
	Training and recruitment focused on entrepreneurship and innovation	Fetters et al. (2010) and Vorley and Nelles (2010)	"We seek to bring activities related to entrepreneurship to our administrative staff, we must ensure that everyone is in this same vibe. Even in the selection process we use these methods." (Interviewee 16)
Entrepreneurial direction	Inclusion of entrepreneurship in undergraduate programs	Fetters et al. (2010) and Foss and Gibson (2015)	"Over the years, these subjects have been appropriated by other schools, right? And today, bringing it to 2018, I have students from geology, engineering, nutrition, all taking the same subject together. So, it already is a movement that today is transversal and that absorbed most courses." (Interviewee 10)
	Offer of courses related to entrepreneurship	Fetters et al. (2010) and Foss and Gibson (2015)	"Over the years, we started to have entrepreneurship subjects for all courses, in addition to creating a whole web, extension courses, pocket courses, and offering support to anyone who wants to turn themselves to entrepreneurship." (Interviewee 8)

Table 8 (continued)

Entrepreneurial university pillar	Practice	Source	Evidence
Revenue sources (diversification thereof)	Commercialization of licenses and patents	Dabic et al. (2018)	"We would like licenses and patents to exist, right? We do have patents today, and we don't have any licensees, okay? But this is changing. So now we've recently received four letters of ... patent, one a long time ago and four more, now we have five, right?" (Interviewee 1)
Guidance for academic research	Creation of portals for sharing materials and experiences	Emerged in research	"There is a group called NIT, which during a period stimulated the discussion to train human resources in this area, in the training of teachers, and stimulated some initiatives. There is a space called Open UNISINOS, which is an open space for publishing materials, videos, sharing produced materials. There is a community in the virtual learning environment for teacher training." (Interviewee 26)
Cooperative research projects	Connection projects between entrepreneurs and support organizations	Dabic et al. (2018)	"Here is an interesting highlight, and in the review of the 2016 business models we mapped the regional market and then the regional market in Rio Grande Sul, 97% of the companies, depending on the survey they point out 95 or 99, are micro and small companies. So, we understood that we needed to provide for this segment. For that, we reestablished an approximation with Sebrae." (Interviewee 2)

Table 8 (continued)

Entrepreneurial university pillar	Practice	Source	Evidence
	Joint publications with the industry	Dabic et al. (2018)	"So basically, we started looking for a way within the university for us to exercise our ... our profile, which working with companies, guiding applied masters and doctorates. To publish applied articles, that is, everything towards the market, right? Everything that looks for answers to market problems." (Interviewee 12)

Finally, the last phase (4), which can be understood to last until the present, reflects the consolidation of the new institutional environment created, with the spread of an entrepreneurial culture in all spheres and hierarchical levels of the university.

Discussions

The four practices evidenced in Phase 1, all direct, represent predecessors to the formation of a dynamic of entrepreneurship and innovation, which can be defined by the sowing of a new context, where the developed initiatives opened space for the conception of the innovation ecosystem. The combination of the practices evidenced in Phase 2, on the other hand, confirms a second stage of the evolutionary process of the ecosystem, which ascended to a construction stage, where the different actors involved contributed in different ways to their formation. The cycle is configured as a set of practices in progress, being carried out in search of a purpose and reflecting the benefits of the accumulation of experiences from the previous phase. In addition, it is possible to note that the practices of this second period are also mostly direct.

The set of practices mapped in Phase 3 (half direct and half indirect), in turn, allow us to point out which efforts were used to sediment change and that the formed innovation ecosystem showed signs of evolution in terms of materiality, strengthening of relationships and internal and external recognition. Finally, the composition of the ten practices observed in the last stage of the process, mostly indirect, essentially constitutes the establishment of a new culture, largely based on the dynamics of entrepreneurship and innovation, reflecting the consolidation of the ecosystem.

It is important to highlight that the attainment and the separation by groups of practices with influence on the ecosystem are presented as an alternative for a better understanding of the process and definition of the paths to follow. The adoption of

this type of reading allowed the present chapter to relate the incidence of each type of practice (direct or indirect) to its observance in the phases of the ecosystem evolution process.

Through this analysis, it is evident that the initial stages of the formation of an ecosystem demand a more intense concentration of practices with a direct influence. The practices that were framed within this perspective have a collaborative essence with tangible repercussions in the ecosystem. The aspect of materiality, characteristic of these practices, is important for the construction of meaning of the change that is being proposed, as well as to foster new practices that feed back into the process. The development of projects involving the spheres of the triple helix, the creation of a business incubator, the creation of a technological park and the development of new ventures on campus exemplify well the sowing of a new institutional context and the subsequent realization of the purpose of training the innovation ecosystem. Thus, in the initial stages of formation and orchestration of innovation ecosystems, it is important to prioritize this type of practice.

In turn, indirect practices focus on the most evolved stages of the ecosystem, presenting themselves as support and consolidation actions. Despite their more peripheral and intangible character, these practices are not less important than those in the other group. The relevance of this type of practice lies in providing new foundations that support the achievements obtained in the previous stages. In this sense, practices such as international certification, development of conferences and pro-entrepreneurship events, joint publications with industry and inclusion of entrepreneurship in graduation represent the sedimentation of institutional change and the establishment of a new culture that permeates everyone involved in the context. As important as it is to highlight the segmentation of practices for a better understanding of the phenomenon, a balanced composition of practices seems to be fundamental for the evolution of an ecosystem. Their interdependence is notorious, and both direct and indirect practices motivate the incidence of new practices that, in a rhythmic and clearly relational process, build the dynamics of entrepreneurship and innovation in question.

The analysis shows that, due to the accumulation of entrepreneurial practices at the university, with direct and indirect influences on the ecosystem, the ecosystem is evolving, with no predefined recipe of what these practices are. In this respect, it is worth noting that the phases' transition milestones were proposed based on this accumulation of practices, which in turn translate into tangible and symbolic aspects of the ecosystem. This reinforces the fact that the very characteristics of the practices, which in essence are collaborative, even involve actors from different organizational fields. These findings are in line with previous observations on the practices and stages of evolution of Brazilian entrepreneurial universities (Fischer et al., 2020).

A cross matrix was built, listing the 36 practices in both the rows and columns, to signal where there was an interface between the practices, and this matrix enabled a visual representation of the links, as shown in Figure 3.

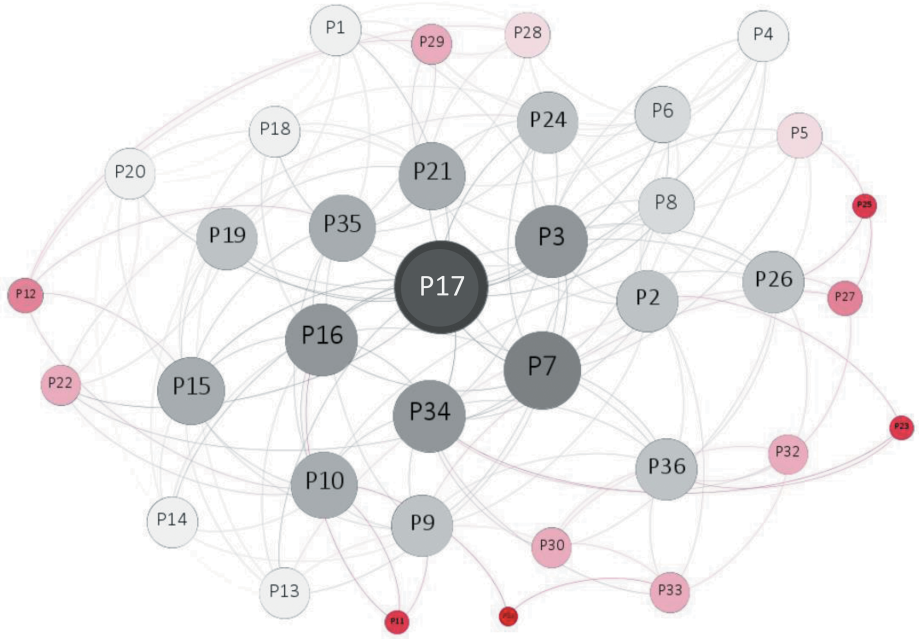

Figure 3: List of the set of entrepreneurial practices mapped in the research.

The greatest volume of relationships is observed for practice 17, which concerns the development of new ventures on campus; this practice leads to many entrepreneurial actions at the university that have an impact on the ecosystem. In the map of relations, the size of a sphere, as well as its color, demonstrates the incidence of connections for each practice – the larger and darker the sphere is, the greater the number of direct or indirect connections with other practices. In this sense, practices 3 (creation of technology park), 7 (partnerships with regional, national, and multinational companies), and 34 (development of research aimed at market demands) also deserve to be highlighted, all of which have a direct influence on the ecosystem; that is, these practices directly led to the formation of the structured set of organizations orchestrated by the university.

Thus, through the identification of the set of practices revealed by the procedural analysis of the case study, it is possible to make the first proposition of this chapter, which concerns the close connection between the entrepreneurial practices of a university and the formation of an innovation ecosystem: *(Proposition 1) The development of an innovation ecosystem is influenced by an interrelated set of different entrepreneurial practices at a university.*

The model presented in Figure 4 illustrates the evolution of practices based on the observance of evidence in each of the phases of UNISINOS's entrepreneurial trajectory, relating these practices to the evolution of its innovation ecosystem. In this

sense, what is included are different configurations for the evolution of an ecosystem, as proposed since Moore's (1993, 1996) seminal work, where he proposes four life cycle phases (birth, expansion, leadership, and self-renewal). The level of completeness attributed to the UNISINOS ecosystem is based on the joint analysis of empirical reports and literature, supporting the understanding of a stage of consolidation of the same (Foss and Gibson, 2015), but which still does not support more advanced steps such as those observed at MIT, Stanford, Oxford, and Cambridge, among others.

In the first level of analysis, specific actions, however isolated, are undertaken but already show an embryonic principle of configuration aimed at entrepreneurship and innovation. In the next stage, construction, new practices are established based on a focus concentrated on the formation of the ecosystem, working mainly on aspects related to the materiality of the new institution. Subsequently, the formation progresses to an evolution status once the arrangement is already formed. At this moment, a more balanced composition of practices that directly and indirectly influence the ecosystem is allowed, highlighting the complementarity of actions and the importance of endogenous movements at the university. When the ecosystem is consolidated, its basic structure is already constituted, with an established dynamic, and there is a proliferation of practices that indirectly contribute to its progress, such as the consolidation of an intra-entrepreneurial posture at the university.

It is worth noting that other practices, regardless of their degree of influence, can and should be mapped since the research presented here does not exhaust this overview. As mentioned earlier, the evolutionary study of practices undertaken by universities that are already well known for the formation of their ecosystems may reveal this obscure part. Evidence, including components and characteristics raised by previous studies, allows us to infer that such practices must be related to more exogenous and intangible factors, such as quality of life, sociocultural values, and diversity (Dalcin et al., 2017; Hwang & Horowitt, 2012). With the deepening of the analysis of these practices, it is concluded that they have different characteristics in terms of sensitization in the ecosystem and can be stratified in terms of direct and indirect influence, revealing a second proposition: *(Proposition 2) The entrepreneurial practices of a university can be categorized into those with direct and indirect influence in the formation of an innovation ecosystem.*

With the unveiling of the research, it was found that the set of practices had a certain heterogeneity, being able to be segmented into two major strands, which we chose to define as having direct and indirect influence. The practices with direct relationships represented a greater numerical participation in the set; these practices were defined as those that strictly led to the objective of forming an innovation ecosystem and were mostly observed in the initial stages of the formation of the ecosystem, such as in the design and construction stages. In turn, indirect practices also had an influence on this formation, however, in an unintended way in this regard, based more on supporting it from the internal transformation of the university itself and

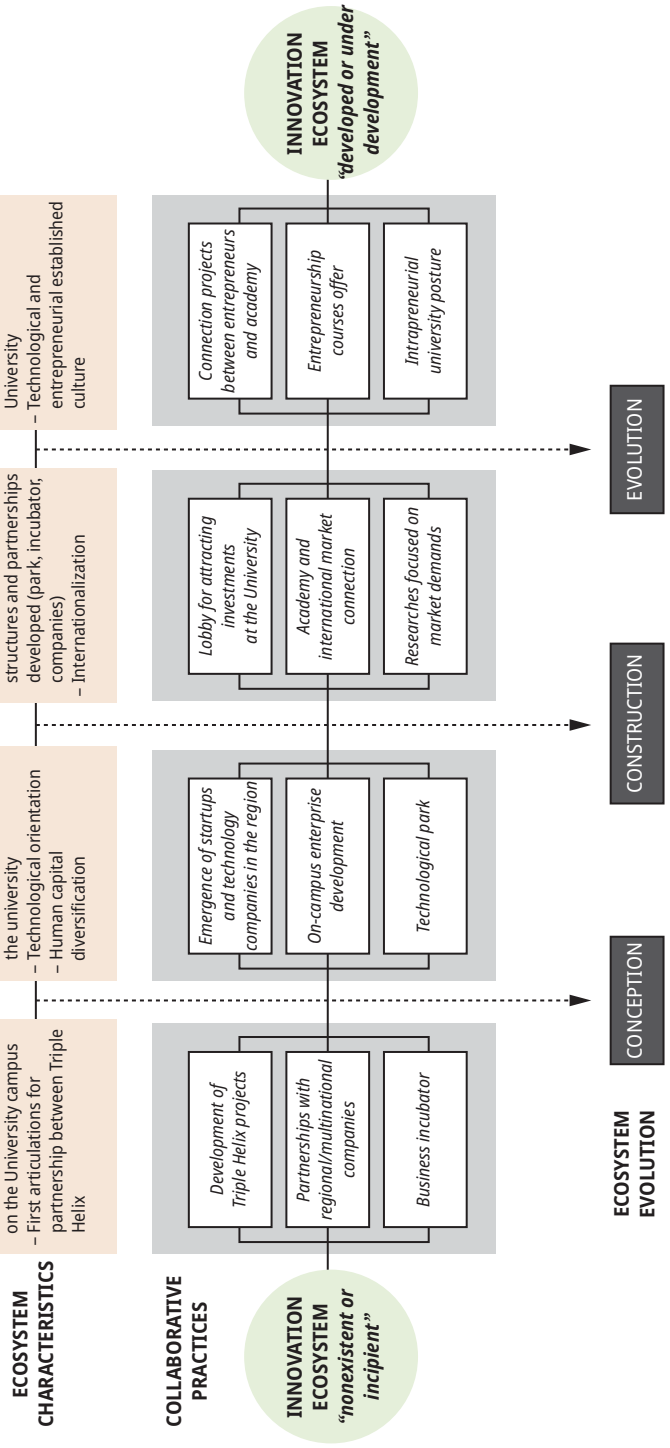

Figure 4: Theoretical-conceptual framework.

showing their importance in more structured phases of the ecosystem, such as evolution and consolidation. This reflection reveals a third proposition:

(Proposition 3) For the creation of ecosystems, it is necessary to concentrate directly related practices in the initial phases, while as an ecosystem matures, the practices become more indirect. Table 9 consolidates the proposals created and the developments that emerged from the procedural analysis of the formation of the innovation ecosystem orchestrated by the university.

Table 9: Set of proposals emerging in the study.

Propositions	Developments
The development of an innovation ecosystem is influenced by an interrelated set of different entrepreneurial practices at a university.	– The development of an innovation ecosystem can take place through a set of different entrepreneurial practice orchestrated by a university; – Each entrepreneurial practice at a university that influences the formation of an innovation ecosystem has at least one connection with another practice; and – The entrepreneurial practice of a university that influences the formation of an innovation ecosystem, and that have a greater number of connections with other practices can be considered more relevant to the process.
The entrepreneurial practice of a university can be categorized among those with direct and indirect influence in the formation of an innovation ecosystem.	– The entrepreneurial practice of a university that have a **direct influence** on the development of an innovation ecosystem are concentrated in the Conception and Construction stages of the same; and – The entrepreneurial practice of a university that have an **indirect influence** on the development of an innovation ecosystem have a supporting role, being present in stages of Evolution and Consolidation.
For the creation of innovation ecosystem, it is necessary to concentrate practices directly related in the initial phases, while as the ecosystem, matures, the practices become more indirect.	– Initial stages of ecosystem formation demand a more intense concentration of practices with a direct influence, which have a collaborative essence with tangible repercussion in the ecosystem. – More evolved stages of the ecosystem have support and consolidation practices, which are more peripheral and intangible.

In summary, the conduct of empirical research, associated with the existing literature survey, allowed us to point out a set of thirty-six (36) entrepreneurial practices at a university that have significant relationships among them in the formation and development of an ecosystem. The study's contribution in this regard lies in presenting a list with details of each practice, signaling at what stage of the institutional transformation process it was observed, and this chapter serves as a possible reference for new studies, both theoretical and empirical. In addition, it is possible to consider the emergence of outstanding practices that have a greater number of connections and, therefore, are more likely to foster new practices that stimulate the ecosystem. Finally, this chapter seeks to fill the research gap related to studies on entrepreneurial ecosystems in emerging economies, responding to the appeals of Schøtt (2008) and Cao and Shi (2021).

Conclusions

Based on the question "What are the entrepreneurial practices of a university that influence the development of an innovation ecosystem, and how do they do so?", this chapter sought to develop an understanding of how innovation ecosystems are formed and developed from the orchestration of an entrepreneurial university.

The entrepreneurial transformation process experienced by UNISINOS over the past few decades not only has led to an internal change in its organizational aspects but also has shown flexibility in the formation of an innovation ecosystem around it. The study of innovation ecosystems, especially on the governance of an entrepreneurial university, has enabled advances in the literature of both phenomena by identifying the practices undertaken by that influence the formation and development of such structures. In this way, the work of Fetters et al. (2010) is added to the case study of the formation of an innovation ecosystem based on the university; practices are revealed that had not been considered before, and a categorization is proposed according to their influence on the same.

It was shown that the evolutionary process of an ecosystem orchestrated by a university presents a different configuration of practices during phases, where the initial stages are based on actions that have a direct impact on the design and construction of the ecosystem. In more advanced stages of evolution and consolidation, there is a role for the university that is more focused on supporting the ecosystem, with the adoption of practices that indirectly influence its development. Thus, this chapter enabled a better understanding of the moments and the ways in which these practices are adopted, as well as the main actors involved and their roles.

In summary, the structure presented argues that the set of practices mapped in this research, including those already indicated by the literature and those that emerged in this chapter, should be analyzed from perspectives that reflect their rela-

tionships, degrees of influence, forms and characteristics. It is maintained that the development of an innovation ecosystem influenced by the entrepreneurial practices of a university can be better understood based on an analysis involving these factors, and thus, academic and managerial initiatives can be provided to drive its evolution.

Finally, the set of direct practices, with a collaborative essence, allows tangible repercussions in the ecosystem. Thus, projects involving the spheres of the triple helix and the creation of business incubators and technology parks perfectly exemplify the sowing of a new institutional context and the subsequent realization of the purpose of building and orchestrating innovation ecosystems.

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Chapter 9
Dynamic Knowledge-Based Capabilities in Creating Innovation Ecosystems: The Case of a University

Abstract: This work aims to understand how knowledge-based dynamic capabilities (KDBCs) can improve the development of innovation ecosystems (IEs) throughout their life cycle, for which a single case study of a university ecosystem (UNISINOS) was discussed. Data was collected through semi-structured interviews and document analysis, and information was analyzed through content analysis with categories defined a priori. Among the main findings, the following stand out: (1) throughout the life cycle of an EI, different KDBCs are mobilized to promote its development; (2) we were able to identify the existence of microfoundations related to different KDBCs of knowledge acquisition, generation, and combination; and (3) we provide an ecosystem perspective of KDBCs in a developing country.

Keywords: innovation ecosystems, universities, dynamic capabilities based on knowledge, micro-foundations

Introduction

Many organizations feel pressured to change the way they operate their business to face market competition. Knowledge-intensive organizations such as universities are structured around knowledge. Its essence is the ability to solve complex problems through innovative and creative solutions (Ichijo & Nonaka, 2007). For Ichijo and Nonaka (2007), knowledge-intensive organizations are considered organizations that stimulate knowledge, offering the market the use of sophisticated knowledge. To be able to deal with the complexity of companies' behavior in turbulent environments and with high competition based on innovation, Teece et al. (1997) introduced the concept of dynamic capabilities (DC). For the author, learning mechanisms, such as knowledge-related activities, are prominent drivers of the evolution of DC.

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Among these DCs, a specific one is responsible for the ability to acquire, generate and combine knowledge, the Dynamic Knowledge-Based Capabilities (KDBCs) (Zheng et al., 2011). Based on the knowledge developed, innovation in organizations stands out due to the exponential growth of data and information, the collaboration and coordination needs related to different companies and individuals, as well as the adoption of technologies that can facilitate the connectivity of multiple actors, develop an ecosystem (Ritala & Gustafsson, 2018).

In this sense, the concept of innovation ecosystems (IE) stands out. The ecosystem approach aims to expand the capabilities that an individual actor has to generate knowledge for innovation so that this process occurs in collaboration with other actors (Adner, 2006). Researchers and managers began to recognize a close relationship, and even a dependence, between the innovation process and the existence of an IE, imprinting a new relational logic (of cooperation and competition) in which the focus became the value created by the ecosystem and no longer the value created for the individual company (Schwartz & Bar-El, 2015). Given its potential to create joint value, the development of EI has proven to be a challenge for many companies, institutions and governments.

In this scenario, Universities have demonstrated orchestration potential, as they contribute to the social development and economic growth of the societies in which they operate. For León (2013), EI can be organized by universities, since they start to act as an attraction for the development and transfer of disruptive ideas. Thus, the aim of this article is to understand how Knowledge-Based Dynamic Capabilities (KDBCs) (Zheng et al., 2011) can enhance the development of EI throughout its lifecycle. Based on the dimensions of Zheng et al. (2011) on KDBCs, the following question was raised: what are Dynamic Capabilities Based on Knowledge and how can they leverage the development of university innovation ecosystems?

For that, qualitative, deductive and longitudinal research was carried out. The method chosen was the case study of the Innovation Ecosystem at UNISINOS University, in southern Brazil. Data collection took place through 25 interviews, in addition to document analysis. The data triangulation procedure was performed and the collection was based on theoretical saturation. Data analysis was performed using content analysis, with a priori categorization.

Among the main findings, the following stand out: (1) throughout the life cycle of an EI, different KDBCs are mobilized to promote its development; (2) we also identified the existence of microfoundations related to different KDBCs of knowledge acquisition, generation and combination; and (3) we provide an ecosystem perspective of KDBCs in a developing country.

Theoretical Basis

Dynamic Capabilities and Microfoundations

Dynamic capabilities (DC) were initially proposed in strategic management research. Since then, they have come to occupy a prominent position not only in the area, but also in others, encompassing innovation management (Bogers et al., 2019), ecosystem and platform management (Hannah & Eisenhardt, 2018; Helfat & Raubitschek, 2018), international business (Kretschmer & Garrido, 2019; Vahlne & Johanson, 2017; Wu & Vahlne, 2020), entrepreneurship (Arend, 2014; Zahra et al., 2006), among others.

DC occupy a privileged position in the interest of Management scholars who seek to explore the foundations that explain how organizations adapt and renew themselves in the face of changes in the external environment. Naturally, with new studies, they were expanded on several research fronts, which allowed diversifying the field while dispelling criticism (Vijaya Sunder et al., 2019).

Origin and Strands

The logic of dynamic capabilities are derived from the resource-based view (RBV) (Barney, 1991; Wernerfelt, 1984). DC expand the conditions, presented by the RBV, which allow the possession of heterogeneous resources by companies to offer a competitive advantage. They examine how these resources can be organized in contexts of high uncertainty and rapid change (Teece et al., 1997). The resource-based view loses relevance in such scenarios, as the possession of resources may not be sufficient for sustained competitive advantage, or even such resources may not even exist in such circumstances (Furr & Eisenhardt, 2021). On the other hand, DC renew the role of innovation and adaptation to change as essential skills in a disruptive world (Teece, 2007; Teece et al., 1997).

Although many definitions for DC have been presented throughout his research flow, there is no significant discrepancy between the three most used theoretical bases, since they are complementary to each other and provide sufficient clarity about what is behind the concept (Schilke et al., 2018), especially about what they are (Eisenhardt & Martin, 2000; Helfat et al., 2007) and what their foundations are (Teece et al., 1997).

In the first of these, DC were defined as the “ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teece et al., 1997, p. 516), being considered the precursor work of the field. This approach adds dynamism to the renewal process for competitive advantage in which companies reorganize skills, competencies and resources to operate in environments where change is a permanent or probable state. To this end, managerial processes and deliberate routines support DC (Eisenhardt & Martin, 2000; Winter, 2003), which

in turn are dependent on positions, as a configuration of assets, and the paths the company has taken or may take (Teece et al., 1997).

Eisenhardt and Martin (2000), as well as Teece et al. (1997), decompose DC as a set of strategic processes, which employ specific resources to match and create changes in the market. However, they focus more on adapting organizational routines to different degrees of market dynamism. Finally, the third most used foundational approach is that of Helfat et al. (2007, p. 1), who defined DC as "an organization's ability to purposefully create, extend, or modify its resource base." This approach is more comprehensive and integrative than the others, not only because it extends the ability to organize resources to organizations, a broader delimitation than companies, but also because it avoids equipping DC, performance or competitive advantage (Schilke et al., 2018).

Dimensions and MF

The seminal work by Teece et al. (1997) presented a typology of organizational processes that support DC, updated by the author ten years later (Teece, 2007). While Teece et al. (1997) established that organizational and managerial processes can assume coordination, learning and reconfiguration roles in the organization, Teece (2007) provided a model that disaggregated DC into sensing, seizing and reconfiguration capabilities. Several works recognized these three instances as specific dimensions, categories or functional processes of DC. As noted by Schilke et al. (2018), Teece's (2007) typology is an elaboration rather than a replacement of Teece et al. (1997), particularly for more precisely instantiating dynamic capabilities from microfoundations.

A microfoundational approach decomposes collective-level phenomena, such as capabilities and routines, into lower levels of analysis (Foss & Pedersen, 2016). Microfoundations are anchored in micro-actions and interactions at the individual or group level, and for a long time they were neglected in research on strategic change (Felin & Foss, 2005). Unpacking collective level phenomena into microfoundations reveals the role of individuals in capacity building (Felin & Foss, 2005) as well as demonstrates how elementary level interactions are related to higher level outcomes (Foss & Pedersen, 2016). In addition, microfoundations clarify the foundations of capabilities and reveal the origins of organizational processes and routines (Felin & Foss, 2005).

Helfat and Peteraf (2015) identified managerial cognitive capabilities as microfoundations of dynamic capabilities, given that the heterogeneity of DC is related to the heterogeneity of managers' cognition. At work, they indicated that specific cognitive abilities support sensing, seizing, and reconfiguration: perception and attention have repercussions on sensing; problem-solving and reasoning reverberate in seizing; language, communication, and social cognition have repercussions in recofiguring. In short, microfoundations are an elaboration that makes DC a more actionable concept for managers and organizations.

Teece (2007) observed that microfoundations circumscribed in processes, procedures, systems and structures allow companies to change their resource base not only to react to external change, but also to innovate in new business models and transform the market in which they operate. Various microfoundations were related to the dimensions of the DC. Teece (2007) observed that in sensing, R&D orientation, market segmentation, creation of relational assets and exploration of technologies are microfoundations to identify opportunities for organization. In turn, seizing is related to capturing value by taking advantage of market opportunities, supported by microfoundations such as the choice of business model, decision-making structure, corporate limits and business diagnosis. Finally, reconfiguration addresses the ongoing orchestration of assets to ensure that sensing and seizing are aligned with the organization's asset mix. The combination, reconfiguration and protection of assets precedes a package of processes linked to knowledge management, organizational learning and management of the organization's integration and coordination skills.

For this work we follow the conceptualization of process-based DCs (Teece, 2007; Teece et al., 1997) for a few reasons. The first is that it is the number one, most used, and thus widely accepted (Schilke et al., 2018). The second is that the authors understand the dimensions of sensing, seizing and reconfiguration of DC supported by microfoundations, which suits our proposal. We openly assume this when studying collaborative practices, as processes, throughout the development of an innovation ecosystem.

The Review Studies Adopted as a Way to Refute Part of the Criticism

Dynamic capabilities have withstood the test of time and remain a vibrant field of management research. Schilke et al. (2018) identified more than eight thousand results linked to "dynamic capabilities" in Google Scholar in the year 2016. We extended these results covering the following years and, unsurprisingly, we recorded more than 13 thousand results in 2021. coverage obtained a lower total than the previous one, which is consistent with the argument that DC remain a sustained focus of interest for scholars.

Recent studies have been useful to demystify embarrassments about the dynamic capabilities, inherent to another phase of the field, which is not the current one. Schilke et al. (2018) carried out a review of 298 articles, presented between 2008 and 2018. These studies were published in the most influential journals in the field of management, which allowed researchers to build a review based on the highest quality in the field. The authors reported that not only did he progress in his theoretical considerations, from his approach inclined towards integration with adjacent theories, but also in his nomological network of relationships. This made it possible to refute criticisms regarding tautology, underspecification and the lack of clarity about the antecedents

and consequences of the model. In addition, most of the studies were empirical, which reflected the maturation of the literature, thus refuting criticisms regarding the predominance of theoretical work.

We also looked for more recent reviews, both to compare results and to gain insights into the frontier of knowledge. Among them, we highlight the review by Vijaya Sunder et al. (2019). These authors analyzed 133 articles published over 26 years in 21 top journals. Based on a morphological analysis, they proposed a "five-dimensional" structure, viz., (1) building blocks of DC, (2) input variants for building DC, (3) influencing factors that impact DC, (4) desired outcomes of DC, and (5) assessment yardsticks for DC (Vijaya Sunder et al., 2019, p. 13). The findings are consistent with the previous work by Schilke et al. (2018), since most (71%) of the reviewed articles were empirical, with strong practical value, thus renouncing the criticism that DC are tautological. The structure offered by the authors to integrate the field is a guide that may be relevant for researchers to more specifically position their contributions in the DC literature. These results demonstrate that, over the last decade, DC scholars have dedicated themselves to remedying the main criticisms of the model, having been successful (Schilke et al., 2018).

DC and Knowledge

Another relevant flow in the field was to identify knowledge as an intrinsic resource to DC. Different approaches (Zahra & George, 2002; Zollo & Winter, 2002) have analyzed how knowledge and learning management are significant for sensing, seizing, and reconfiguring the organization's assets. In addition, knowledge management itself can help to clarify more precisely the understanding of dynamic capabilities, since "are seen as integrated sets of knowledge management activities that changes, renews and exploits the knowledge-based resources of the firm" (Nielsen, 2006, p. 60). The ability to recognize opportunities for renewing the organization's resource base depends on knowledge (Eisenhardt & Martin, 2000; Teece, 2007). This relationship gains even more prominence in an economy based on collaboration, in which integrating internal and external knowledge is an increasingly necessary condition for organizations (Teece, 2007).

As observed by Zollo and Winter (2002), the maintenance of a certain degree of routines and processes is developed through the accumulation of experiences, articulation of knowledge and knowledge codification processes. These knowledge creation routines, based on integration, are considered crucial DC (Eisenhardt & Martin, 2000). DC can be broken down into different knowledge management activities (Nielsen, 2006). This author identified three dynamic capabilities; of development, recombination/integration and use of knowledge, diffused in eight KM activities, namely, creation, acquisition, capture, assembly, sharing, integration, leveraging, and exploitation of knowledge. The special treatment given to knowledge throughout the development

of the field allowed fertilizations for both literatures. In other words, it has allowed advances in the understanding of what and how DC are constituted, providing organizations with more actionable elements to act in dynamic markets.

Dynamic Capabilities Based on Knowledge

We turned our search to a unique set of DCs, the dynamic knowledge-based capabilities (KBDC). The subcategory of knowledge-based dynamic capabilities was proposed by Zheng et al. (2011) as a useful model for validating and operationalizing DC. From the integration between DC and the resource-based view, KBDC represent the "ability to acquire, generate and combine knowledge resources to sense, explore and address environment dynamics" (Zheng et al., 2011, p. 1038). Since then, different works have been devoted to deepening the understanding of how knowledge resources inside and outside the boundaries of organizations are useful for strategic renewal (Denford, 2013; Nielsen, 2006). Almost ten years after the seminal work, we identified in the year 2021 in Google Scholar a growth rate of almost twenty times on this unique category of DC. The Journal of Knowledge Management has indisputably been a beacon for KBDC navigators.

These capabilities involve not only explicit knowledge, but also tacit knowledge (Zheng et al., 2011), whose creation practices are considered necessary for integration with other knowledge actors (Faccin et al., 2019). Those authors defined KBDC as being formed by three sub-skills: knowledge acquisition skills (KAC), knowledge generation skills (KGC) and knowledge combination skills (KCC). KAC refer to the firm's ability to identify and acquire useful external knowledge. Thus, they can be understood as the absorption capacity (Beuter Júnior et al., 2019). Absorptive capacity was introduced by Cohen and Levinthal (1990, p. 128) as "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends." Later, they were refined as a type of DC "pertaining to knowledge creation and utilization that enhances a firm's ability to gain and sustain a competitive advantage" (Zahra & George, 2002, p. 185). KGC are the knowledge generation capacities as "ability to develop and refine the activities and processes that facilitate creating/generating new knowledge" (Zheng et al., 2011, p. 1039). Finally, KCC demonstrate the organization's ability to combine internal and external knowledge, and results of previous sub-skills. These authors point out that the three dimensions are interdependent and that KCC is directly linked to innovative performance, supported by KAC and KGC.

DC are a comprehensive (Arndt, 2019) and complex (Schilke et al., 2018) structure. For example, Vijaya Sunder et al. (2019) found 81 individual DC. Although the field has grown in terms of both quality and quantity, a rich future research agenda provides scholars with insights. As identified by Arndt (2019), returning to foundational roots, as by Teece et al. (1997) and Eisenhardt and Martin (2000), in order to position new contributions, it is fundamental for a better understanding of DC. In other words, the

frontier of knowledge must not forget its roots nor lose sight of efforts to unify the field. There is room for researchers to explore DC mediators, antecedents, moderators and consequences, as well as to broaden the understanding of its dimensions and microfoundations (Schilke et al., 2018). Process-based approaches can offer an important contribution to theorization of DC, demonstrating how they evolve or change over time (Schilke et al., 2018).

What Does This Study Add? How Do We Contribute?

It is noteworthy to mention that we sought to contribute to the empirical research of a model considered difficult to operationalize (Zheng et al., 2011). We offer insights into both the DC literature and the growing ecosystem literature in management research. We also selected a particular instance of KBDC, sized by microfoundations of collaborative practices, thus providing an accurate operationalization on DC. This converges to its idiosyncratic and context-dependent nature (Eisenhardt & Martin, 2000). We seek to advance in the empirical application of KBDC from a qualitative, longitudinal and retrospective research, identifying how KBDC and microfoundations (collaborative practices) are created and renewed throughout the development of an innovation ecosystem in a university. We intend to contribute with the recommendations of the recommended research agenda, either through the use of a procedural approach, or through the use of micro-fundamentals of DC.

Innovation Ecosystem

Based on biological concepts, traditional models of innovation systems were reviewed and theorized from an analogy with ecosystems and ecology, describing the evolutionary characteristics of interactions between individuals, their relationships with innovative activities and the environment in they operate (Moore, 1993). Lindeman (1942) introduced the idea of an ecosystem into biology as an energy transformation system and provided a formal notation for trophic flow and ecological efficiency. For Tansley (1935), the term ecosystem can include organisms and all abiotic factors in a habitat.

According to Autio and Thomas (2015), the term “ecosystem” has been applied in a wide variety of contexts outside its original context in biological systems. The term business ecosystem was first introduced by Moore (1993). This expression has been increasingly adopted in academic and organizational contexts. Building on the analogy developed by Moore (1993), the ecosystem concept is now generally used in management research to refer to a network of organizations that are linked or operate around a focal company (hub company) or a platform (Adner, 2017; Autio & Thomas, 2014). Ritala et al. (2017) defend the use of “eco” evoking two characteristics pointed

out by Moore in his seminal article: interdependence and coevolution. Moore (1993) analyzed the point at which the interactions between companies and the collective value creation process are complex. This view was echoed in Christensen and Rosenbloom's (1995) notion of value networks, considering the value network as the context, or nested business system, in which a given company competes and solves customer problems. Compared to the concept of Christensen and Rosenbloom (1995), the concept of ecosystem is broader, as it encompasses the diverse community of organizations, institutions and individuals that affect the fate of the focal company and its customers and suppliers, including complements, regulatory authorities, the judiciary and research institutions (Teece, 2007).

Furthermore, ecosystems can be seen as dynamic and intentional networks in which participants co-create value (Adner & Kapoor, 2010). In this definition, ecosystems are collaborative arrangements through which companies combine their individual offerings into a coherent customer-facing solution (Adner, 2006). Adner (2017) reports the existence of two opposing, but not mutually exclusive, views on ecosystems. In the affiliation approach, ecosystems are understood as communities of associated actors defined by their networks and platform associations. From a structural point of view, they are seen as configurations of activities defined by a value proposition.

Ecosystem as affiliation emphasizes the distribution of traditional industry boundaries, growing interdependence, and the potential for symbiotic relationships in productive ecosystems. It focuses on issues of access and openness, highlighting measures such as the number of partners, network density, and the centrality of actors in larger networks. In the business context, analyzes carried out at the level of a "health ecosystem," "Microsoft ecosystem," "Silicon Valley ecosystem," or an "entrepreneur ecosystem" easily fall into this category (Adner, 2017).

In this context, an EI can be considered as a network of interconnected organizations, arranged around a focal company or platform, incorporating production and use participants and focusing on the development of new values through innovation (Autio & Thomas, 2014). For delimitation purposes, this article adopts the understanding of ecosystem as affiliation (Adner, 2017), here adapted and understood not as a region, but as a structured set of organizations, which share and generate positive externalities from this collective, being orchestrated by a hub company (university). Furthermore, based on Adner and Kapoor (2010), the ecosystem is defined as the set of participants that are directly related to the company (hub company) or customer.

Method

To answer the research question, "what are Knowledge-Based Dynamic Capabilities and how can they leverage the development of university innovation ecosystems?", a qualitative and deductive approach based on Eisenhardt (1989) was adopted. Seeking

to maximize a novelty, we opted for the single case study method, based on Yin (2013). Thus, the empirical field proposed for this research refers to an Innovation Ecosystem, composed of a university, the Universidade do Vale do Rio dos Sinos (UNISINOS).

UNISINOS is a university located in the state of Rio Grande do Sul (RS) and is among the largest private universities in Brazil, with approximately 31,000 students in undergraduate and graduate courses in face-to-face and distance education. Over its almost sixty years of existence, it has undergone profound transformations, migrating from a more traditional teaching model, focused on the Human Sciences, to a model of connection with the teaching and research market focused on business requirements. Thus, through a succession of events and practices adopted by a multidisciplinary group of actors, UNISINOS was transformed, reflecting on its surroundings. What is observed today is an Entrepreneurial University that centralizes and orchestrates an innovation dynamic where research institutes, incubators, startups.

The history of its transformation and the impact caused in the formation of an Innovation Ecosystem was based on four major moments, called "phases" and described by Bittencourt (2019): Phase 1, from 1969 to 1997, Phase 2 from 1998 to 2005, Phase 3 from 2006 to 2012, and Phase 4 from 2013 to present. Thus, this research adopts the phases of Bittencourt (2019) and defines as a unit of analysis the set and dynamics of microfoundations based on the knowledge of UNISINOS.

Data collection was performed through 25 interviews with a semi-structured script based on Zheng et al. (2011). A case study protocol was prepared, containing the planning of all data collection and semi-structured interview scripts (Yin, 2013). A theoretical saturation technique was used to define the number of interviews and respondents were chosen by snowball. Data were also triangulated with document analysis, in which all documents made available by the institution were used: reports, spreadsheets, minutes, books, theses and articles. Finally, data were analyzed using content analysis, based on, with categories defined a priori.

Presentation of Data Analysis

Phase 1 can be considered one of the most important phases of changes in the University ecosystem. In the analysis of the period and the interviews, the protagonist of a University is observed in the promotion of the movement with the productive sector, but its disposition and agility in making available resources so that the institutional bond is established stands out. As highlighted by Ranga and Etzkowitz (2013), projects involving the Triple Helix can be considered from the perspective of a platform, for the formation of institutions, so that together these actors initiate a new institutional design, which starts to influence the modus operandi of the University and the externalities it reverberates. At this stage, there were seven microfoundations: three related to acquisition, two to generation, and two to knowledge combination.

Thus, in a first phase, the Acquisition capacity is considered the most relevant, precisely because it is an initial period in which the University learns and acquires knowledge from other actors more than it generates. In addition, during the first phase, one of the most relevant knowledge was Managerial. In this first period, the Dynamic Capabilities Based on Knowledge are intensely evidenced, with the University interacting strongly with actors from the public and private spheres to achieve its objectives. This type of connection proved to be fundamental for the beginning of a broader process, confirming the importance of collaborative practices, which often involve, in addition to synergy, the adjustment of the institutions' own positioning.

Phase 2 is marked by 10 microfundamentals: 4 linked to acquisition, 4 to generation and 2 to knowledge combination, directly linked to the development of an Innovation Ecosystem in its surroundings. Among them, two characteristics of an Entrepreneurial University stand out. The first concerns the promotion and creation of startups. Within this pillar, practices for the incubation process of new companies were identified, made possible by the creation of a business incubator in the previous phase, which, therefore, leveraged the emergence of startups and technology companies in the region and the development of new ventures on campus. The last two pieces of evidence had already been highlighted in the literature by the work of Dabic et al. (2018), representing an empirical finding. In turn,

Thus, during the second phase, the Acquisition and Generation capabilities are considered the most relevant, precisely because it is a period of evolution, in which the University continues to acquire knowledge, but starts to generate knowledge. In addition, in the second phase, one of the most relevant knowledge continued to be Managerial. Such practices heat up the innovation dynamics characteristic of an ecosystem, influencing new actions for its construction.

In Phase 3, 8 microfoundations with influence on their ecosystem were identified, with emphasis on the strengthening of the Public-Private Partners Connection: 1 linked to the acquisition, 6 to the generation and 1 to the combination of knowledge. In this context, there is a greater impetus for the development of initiatives that translate the desired ideals into concrete actions, so that the practice of attracting investments in and with the University becomes a reality and a necessity for the University. Alongside the practice of partnerships established through international missions, the Local, Regional and Global Insertion also has repercussions at this time due to the connection with academia and the international market, which consequently leads to a promotion of university internationalization based on obtaining international certifications. Thus, in the third phase, the Generation capacity is considered the most relevant, precisely because it is a phase in which the University is already more consolidated in managerial, technological, institutional and academic terms. In addition, in the third phase, one of the most relevant knowledge remains Management. Therefore, as stated by Dabic et al. (2018), new and more companies and startups enrich the dynamic, giving the space the character of a living, pulsating and collaborative organism, in tune with the premises of an ecosystem.

Phase 4 represents the consolidation of the innovation ecosystem, with 11 micro-foundations being identified: 1 linked to the acquisition, 8 to the generation and 2 to the combination of knowledge. The link between entrepreneurship and innovation activities and policies throughout the University is also evidenced by the expansion of the Technology Transfer Centers in this last phase of analysis through the creation of research institutes, where five different schools of knowledge now serve the requirements of market no. robust physical structures equipped with state-of-the-art laboratories, consolidating the evolution of the university ecosystem. Thus, during the fourth phase, the Generation capacity is considered the most relevant, precisely because it is a phase in which the University already has national and international coverage in its portfolio of courses, research and processes. In addition, in the fourth phase, one of the most relevant knowledge remains Management. The practices evidenced in the period reflect the symbolic character of the transmission of messages that the University intends to convey: through the communication of new organizational structures, the offer of courses and disciplines focused on entrepreneurship and innovation, the dissemination of awards and recognitions, the inauguration of new and imposing physical structures by government officials, among other characteristics of an innovation ecosystem.

A good innovation ecosystem will have an attractive living environment, a large number of creative and competent engineers, real estate developers and a favorable business environment. Therefore, quality housing and other amenities for the best talent are also a high priority, fundamental to an ecosystem (Teece, 2007).

In total, 36 micro-foundations related to KDBCs were identified during the four phases, contributing to the gap pointed out by Teece (2007), the need to explore the micro-foundations of dynamic capabilities. Table 1 summarizes all the micro-fundamentals of the four phases (represented in the dotted lines), related to the 3 KDBCs: (a) ability to acquire knowledge (represented in green); (b) capacity to generate knowledge (represented in blue); and (c) combining ability (represented in orange). The total micro-foundations of each KDBC are represented in red.

Discussion and Final Considerations

This research constituted a single case study, with the objective of deepening knowledge on the following question: What are Dynamic Capabilities Based on Knowledge and how can they improve the development of university innovation ecosystems?

We revealed that throughout the lifecycle of an innovation ecosystem, different KDBCs are mobilized to drive its development. We also identified the existence of microfoundations related to the different KDBCs of acquisition, generation and combination (Zheng et al., 2011), which allowed us to detail practices that were present throughout the development of the IE. Thus, at the beginning of an ecosystem's life

Table 1: Total micro-foundations related to KDBCs during the four phases.

	Dynamic capabilities based on knowledge				
Microfoundations	Acquisition	Generation	Combination	Total	
	benchmarking Institutionalization of the University Investments in intellectual capital	Core knowledge development Ecosystem legitimization	Collaboration Consolidation of the IT hub	7	Phase 1
	Resource Mapping benchmarking Development of entrepreneurial and innovative thinking investment in technology	National and international recognition Expansion of courses Investment in incubator Applied research development	Attract new companies Collaboration	10	Phase 2
	Collection	Succession Implementation of new courses New knowledges Creation of Technological Institutes University Expansion Legitimation in international environments	Establishment of national and international partnerships	8	Phase 3

Table 1 (continued)

		Dynamic capabilities based on knowledge			
	Internationalization of the University	Consolidation of Technological Institutes Incorporation of distance education at the University Creation of the Porto Alegre Campus Division of knowledge areas in six schools Recognition park expansion Process with Inmetro Creation of the Innovation Portal	Creation of the Alliance for Innovation Creating new partnerships	11	Phase 4

Source: research data (2020).

cycle, the ability to acquire knowledge proved to be fundamental to lay the foundations for the development of EI. As primordial knowledge is established, the ability to generate knowledge begins to gain prominence with institutional investment in physical structure and support for human capital.

Finally, the ability to combine knowledge with collaborative innovation projects that allow the establishment of a network of actors to create common value stands out. Although all KDBCs are present in all phases of the innovation ecosystem cycle, the results show that the microfoundations associated with them change, as well as the intensity in which KDBCs appear for IE development. Thus, we provide an ecosystem perspective on Dynamic Knowledge-Based Capabilities.

Identifying the different KDBCs that are mobilized throughout the lifecycle of an innovation ecosystem can help managers to outline practices capable of driving an IE. Furthermore, the microfundamental mapping can serve as a guide for universities that want to orchestrate KDBCs to create or enhance IE.

As research limitations, we point out: (a) retrospective interviews that make the interviewee talk about things that have already happened, which can cause details to be forgotten and/or reinterpreted; and (b) many employees did not experience the four phases reported in the interviews, making it difficult to obtain results, especially in Phase 1. We also suggest that future studies adopt quantitative methods and use

the proposed theoretical-conceptual model, which can contribute to the identification of microfoundations of Dynamic Capabilities Based on Knowledge for the creation and improvement of the innovation ecosystem.

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Chapter 10
Final Considerations

In this concluding chapter, we embark on a reflective journey, taking stock of the empirical findings, insights, and experiences shared throughout this book. By synthesizing the knowledge acquired from the challenges, drivers, and lessons learned, we aim to provide a comprehensive overview of the development of entrepreneurial ecosystems (EEs) and equip readers with a deeper understanding of the dynamics at play in this rapidly evolving field.

What guided our inquiry was how the experience of developing entrepreneurial ecosystems could facilitate the development of others. We started from the understanding that each network of actor relationships is unique and has a specific set of characteristics. In other words, we were not looking for a successful model that could be replicated. Not least because we do not believe in it. However, we defended the importance of praising and learning from the different experiences and studies we encountered along our journey.

We know that while regions like Silicon Valley in the United States, Berlin in Germany, and Tel Aviv in Israel have earned worldwide recognition for their ability to transform their ecosystems into vibrant hubs of new firms, job creation, innovation, and wealth generation, it is crucial to recognize that numerous other regions worldwide strive to implement programs and policies that yield similar outcomes. Their efforts often fall short of achieving comparable results.

One prominent obstacle many regions face is the lack of necessary resources and infrastructure to foster the growth of new firms and innovation. Thriving ecosystems often benefit from a confluence of factors, including access to ample venture capital, well-established research institutions, supportive government policies, advanced physical infrastructure, and a solid entrepreneurial culture. As we saw in some of our chapters, regions that lack one or more of these critical components often face an uphill battle in cultivating a thriving ecosystem.

On the other hand, while some regions face limitations and resource constraints that can impede their progress, others with similar obstacles have overcome these challenges through innovative strategies and leveraging their inherent strengths. These success stories highlight the importance of considering the regional context, institutional structures, and cultural dynamics when formulating policies and fostering collaborations to promote entrepreneurship and innovation.

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The journey through the pages of this book has taken us on an exploration of the multifaceted world of entrepreneurial and innovation ecosystems. With each chapter, we travel through different perspectives of the world of the entrepreneurial ecosystem. This book has delved deep into the challenges in developing these ecosystems, the drivers that have influenced and shaped their growth, and the lessons gleaned from lesser-known regions. From the chapters, we have provided a comprehensive understanding of the complexities involved in fostering and nurturing entrepreneurial ecosystems in different regions of the globe. The combination of experiences has offered unique insights, contributing to a holistic perspective.

Throughout the chapters, we have understood the drivers behind the development of ecosystems in different territories. By exploring specific characteristics such as government policies, educational institutions, social entrepreneurship, and leadership, we have unearthed the essential ingredients necessary for fostering an environment conducive to innovation and entrepreneurial success. Through in-depth case studies, we have demonstrated how these drivers can fuel the development of thriving entrepreneurial ecosystems and create a virtuous cycle of innovation, collaboration, and economic growth.

For instance, the entrepreneurial ecosystem in tourism has the leadership of regional governance bodies in the Ouro Preto region (Chapter 3). Through collaborative efforts among various regional actors, such as academic institutions, industry players, government bodies, and community organizations, they have succeeded in creating an ecosystem that encourages entrepreneurial activities and attracts investment. In South Africa (Chapter 6), the public sector struggles to meet the population's social needs, opening the doors for social entrepreneurs and enterprises to develop and offer solutions in several realms, such as education, health, and energy. While South Africa and regions such as Ouro Preto in Brazil may not have gained global prominence, they represent a diverse array of locales grappling with the challenge of nurturing a conducive environment for innovation, new firm creation, and economic growth.

The case of Madagascar and Reunion Island (Chapter 5) reinforced the importance of public policies in articulating the interests of the different stakeholders and promoting the development of the agricultural innovation ecosystem. Nevertheless, not all regions benefit from supportive public policies for the development of their EEs, as shown by Chapter 2, which presented a concern about the concentration of influential scientific actors and strong isomorphic tendencies that may not answer for the variety of ecosystems and regional needs.

Although we have found many drivers that have facilitated the development of ecosystems in the territories, our journey has also highlighted the challenges faced throughout this process. We can identify that some challenges are specific to the reality of each region, and others can be generalized to any context. From the lack of supportive infrastructure and limited access to capital to the increasing migration and informality (as seen in Chapter 4), these hurdles pose formidable barriers to creating thriving entrepreneurial communities. On the other hand, the difficulty of articulating the different actors and aligning them to build common objectives was highlighted in

many cases. Even so, these regions have demonstrated resilience and ingenuity in pursuing EE development despite facing their own unique set of obstacles. By addressing these challenges head-on and analyzing strategies for overcoming them, we have shed light on the crucial factors that must be considered in order to pave the way for successful ecosystem development.

At the end of this journey, more than exploring the drivers and challenges of entrepreneurial ecosystems, we take away lessons learned from these territories and these discussions. By examining the successes and challenges these regions face, we have gained valuable insights that can be applied to diverse contexts around the globe. For example, the islands of Reunion and Madagascar (Chapter 5) have demonstrated remarkable resilience and resourcefulness, often utilizing their unique local assets to foster vibrant entrepreneurial communities. We also explored the new role of universities in orchestrating entrepreneurial ecosystems (Chapters 7–9). We realize that the diversity of the ecosystem is often more important than the economic resources available, as was evidenced in the comparative chapter between South Africa and Norway (Chapter 6). Finally, we also took with us the importance of highlighting cases not usually explored in academic literature, such as the Global South and Central and Eastern European contexts.

The regions analyzed in the book, spanning different continents and encompassing a range of socio-economic contexts, have endeavored to implement programs and policies aimed at incentivizing the generation of new firms, fostering innovation, and contributing to regional development. However, their journeys have unfolded with varying degrees of success. Understanding the factors that shape their outcomes is paramount, as it allows us to uncover the complexities and nuances associated with entrepreneurial ecosystem development.

By addressing the challenges, analyzing the drivers, and drawing lessons from lesser-known regions, we have uncovered a rich tapestry of knowledge and insights. It is our hope that the findings and perspectives shared within these pages will serve as a guiding light for individuals and organizations dedicated to fostering vibrant entrepreneurial ecosystems that drive innovation, create jobs, and contribute to sustainable economic growth. The experiences shared in this book not only offer inspiration but also provide practical guidance for policymakers, entrepreneurs, and ecosystem builders seeking to get inspired by and adapt these lessons to their own contexts. As we navigate the ever-evolving landscape of entrepreneurship, let us remember the power of collaboration, adaptability, and a shared vision to shape the future of entrepreneurship and transform communities worldwide.

Based on this journey around the world, it is possible to reflect that the construction of this book is very much related to the purpose of developing an entrepreneurship ecosystem. In order to develop these cases and studies, different actors needed to relate, exchange, and learn in a logic of partnership. We formed a heterogeneous constellation that allowed us to bring representativeness to contexts often not explored in the literature. In this way, we can also highlight collaboration as a driver, diversity as a challenge, and the importance of broadening our horizons as a lesson learned.

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Index

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