Fostering Productive Entrepreneurship: An Entrepreneurial Ecosystem Perspective

Jonathan Mukiza Peter Kansheba

UiA University of Agder

Doctoral Dissertations at the University of Agder 371

Jonathan Mukiza Peter Kansheba

Fostering Productive Entrepreneurship: An Entrepreneurial Ecosystem Perspective

Dissertation for the degree of philosophiae doctor (ph.d)

University of Agder

Department of Management

School of Business and Law

2022

Doctoral dissertations at the university of Agder:

ISSN: 1504-9272

ISBN: 978-82-8427-081-4

Acknowledgements

"If the Lord had not been on our (my) side"-let Israel say this! (Psalms 124:1). It was in the fall of 2019 when I was introduced to an incredible scholarly journey as a PhD researcher. At beginning little did I know that it is going to open for me the world that is full of opportunities. Moreover, I would have not reached this far without the trust, support, kindness, and friendship of many individuals whom I would like to sincerely acknowledge.

My first and foremost thanks goes to my Almighty God through Jesus Christ, His mercy upon me endures forever. God has been my provider throughout the race, and unto him I take my refugee. I can now confidently stand out and shout "*God is my Ebenezer as up to here, the Lord has been my helper* (1 Samuel 7: 12b).

Rev. Canon Peter N. Kansheba (*his soul RIP*) and Rachel L. Kansheba. Dear father and mother, you have been always very special people to me since my childhood. Your special care, love, and guidance have made me to become whom I am today. I will not forget my father`s prophecy back in 2008 at our family farm (shamba) when he said "*Jonathan, this shamba will provide for you till you become a professor"*. Though you are not physically with me to celebrate this achievement towards that dream, but your prophecy will come to pass. To my dear mother (Ma Rahel), your lovely face, cherishing, and encouraging words kept me moving on despite ups and downs. I will always be indebted to your love.

Professor Andreas E. Wald, my PhD supervisor. You have been a great mentor I have ever met. Thanks for your extraordinary support throughout my PhD journey. You have been not only an academic father to me, but also a friend. You have nurtured and molded me into a real scholar. You have been always there for me; your doors have never been shut down every time I knock at your door. I will not forget I day you came straight away at my office looking for me under the working desk saying "*where is Jonathan? We have an appointment, and I cannot find him!!!"*. You have taught me how a supervisor should be. Words are not enough to express your kindness, encouragement, support, and advice. Your name will always be marked in my memories.

I also extend my special thanks to Professor Stein Oluf Kristiansen (scholarship project director) and Professor Neema Mori (scholarship coordinator at University of Dar es Salaam, Business School). I would like to appreciate the love and support from Professor Roy Mersland,

the PhD program director and all administrative, academic, and technical staff members of the School of Business and Law at the University of Agder.

My special appreciations also go to my friends and colleagues at the School of Business and Law for their support, good cheer, and encouragement. These include Dr. Judith Iddy, Isaya Mwanyamba, Godsaviour Christopher, Tatenda Mgwira and his family, Jovinary Kajuna, Johari Twaha, Tumaini Kabudi, Rukia Pazi, and all my fellow 2019- PhD cohort colleagues.

Lastly, I would like to extend my sincere thanks to my family members and friends in Tanzania for their patience and support in the face of missed vacations and phone calls. Thanks to my dear sisters Anastella (and her daughters) and Gloria Kansheba, my brothers Samwel (and his family), Lameck, Dr. David (and his family), and Benjamin Kansheba. My dear and lovely brother Alaik A. Laizer (and his family). God who brought and united us the way back in 2009 had a clear purpose for our destinies. You have been always in full support in times I need you most. Brother Kombo Mdegella (and his family)- our brotherhood will endure forever. Dorcas Singano-your support and sacrifice during my PhD scholarship applications and throughout my studies will always be remembered. Burton John-what a brother and friend, may our brotherhood nourish day after day.

Jonathan Mukiza Peter Kansheba

School of Business and Law, University of Agder (UiA), Kristiansand, Norway.

January 2022.

Table of Contents

Chapter One

Introduction

1.1. Motivation

Entrepreneurial activities and entrepreneurs do not emerge in isolation rather in a very integrated and complex system (ecosystem) with multiple actors (Cowell et al., 2018). The magnitude of entrepreneurship's contribution to socio-economic development is contingent upon the respective country's entrepreneurial enabling environments (ecosystems)-EEs (Colombo & Dagnino, 2017). As the newly emerged research stream, entrepreneurial ecosystem has increasingly captured the attention of scholars, policy makers and practitioners (Malecki, 2018). Moreover, the term entrepreneurial ecosystem has been used to express and explicate the frameworks on how entrepreneurs and start-ups interact with other actors. The success of entrepreneurs is fueled by conducive entrepreneurial supporting environments characterized by multiple interconnected players who offer valued resources to them (Audretsch et al., 2019). Thus, the phenomenon of entrepreneurial ecosystems has been recently used as the framework to describe and explain the integrated nature of economic, political, social, and cultural aspects that boost the growth of innovative new enterprises and supports high risk endeavors (Philip, 2017).

Roundy (2017) depicts that an effective entrepreneurial ecosystem involves sharing of knowledge, opportunities for learning and resources which induce innovation and as the result boosts economic activities. Vibrant entrepreneurial ecosystems and their effects on economic growth can be illustrated by successful entrepreneurial ecosystems such as in London, Tel Aviv, Singapore, Silicon Valley and Boston. These entrepreneurial ecosystems are characterized by having advanced financial service systems that facilitate access to venture capital, good infrastructures, technological innovation, investment in research and development activities through universities and serious government efforts to support entrepreneurial initiatives (Acs et al., 2017).

The concept of entrepreneurial ecosystems has been defined in different ways. Some scholars associate entrepreneurial ecosystems with clusters and regional innovation systems (RIS) that are confined by geographical boundaries. For example, Cohen (2006) referred to entrepreneurial ecosystem as interconnected group of actors in a *local geographic* community

committed to sustainable development through the support and facilitation of new sustainable ventures. Similarly Spigel (2017) referred to the phenomenon as union of *localized* and interconnected elements such as cultural outlooks, social networks, investment capital, universities and active economic policies that support innovative ventures. Other scholars have widened the scope of entrepreneurial ecosystems beyond geographical boundaries. They view entrepreneurial ecosystems as a *network* that is not necessarily locally confined. The more influential and widely applied meaning was coined by Isenberg (2010) who referred to entrepreneurial ecosystem as a set of interconnected elements (within a network) such as leadership, culture, capital, markets, human skills and support (Audretsch, Cunningham, Kuratko, Lehmann, & Menter, 2019; Mack & Mayer, 2015; Stam, 2015).

Accordingly, it can be argued that an entrepreneurial ecosystem is an interconnected system with multiple players at both micro and macro level, entrepreneurial organizations such as venture capital providers, business angels and banks; various institutions such as universities and public sector agencies; and entrepreneurs at large, that both formally or informally connect, mediate and govern entrepreneurial performance (Philip, 2017; Theodoraki, Messeghem, & Rice, 2018). Isenberg (2010) postulated further that an entrepreneurial ecosystems' sustainability should not be viewed from geographical boundaries alone rather from an extended network point of view. For instance, under the influence of globalization, entrepreneurial ecosystems may bring together participants that are not necessarily found within same geographical location, for example putting the role of crowdfunding (Velt, Torkkeli, & Saarenketo, 2018) and crowdsourcing (Maroufkhani, Wagner, & Ismail, 2018) into context.

Spingel and Harrison (2017) distinguish the EE concept from the older concepts of clusters and RISs. The disparities arose from the focus of the EEs. While clusters and RISs focus on older and established firms, the EEs put much emphasis on the entrepreneur/start-up centric viewpoint (Kansheba and Wald, 2020). Thus, they focus on the needs of entrepreneurs and their related new ventures. Unlike large (established) firms, entrepreneurs, and their start-ups (at different phases of their development) require different sorts of expertise and they acquire resources in different ways (Maroufkhani et al., 2018). On the other hand, forms of networks and assistances forged by clusters and innovation systems emerge from either the formation of economies of scale and scope within an area or the stickiness of tacit knowledge that links it to a place in clusters and innovation systems (Spingel and Harrison, 2017).

EE functionality is described by the logic of the socially embedded character of the entrepreneurship process, which encompasses a wide range of people, resources, and capacities (Audretsch et al., 2019; Isenberg, 2010). This necessitates the development of new theories that address these concerns in a way that provide a comprehensive understanding of innovative entrepreneurship. As pointed out by Colombo and Dagnino (2017), a better understanding of the processes through which EEs emerge, change over time, and how are governed and sustain high-growth start-ups, is particularly important. Moreover, Spingel and Harrison (2017) conclude further that the dynamics that drive older concepts (e.g., clusters and RIS), such as economies of scale, economies of scope, and knowledge spill-overs, are insufficient to explain EEs functionalities.

1.2 Current state of knowledge, research potential, and research objectives

Despite the growing number of studies on entrepreneurial ecosystem, there is still a limited understanding of the concept in terms of its theoretical and empirical foundations. For instance among of the novel questions embedded the concept are: what is the theoretical and conceptual distinction between the new concept of EE and conversional concepts such as clusters, industrial districts, and regional innovation systems? what are its micro and macro theoretical and empirical foundations? how do EEs evolve and who govern them? Moreover, extant studies on entrepreneurial ecosystems focus on distinguishing relevant eco- factors, outputs, and outcomes that create vibrant and sustainable entrepreneurial ecosystems (Audretsch et al., 2019).

Consequently, Nicotra et al. (2018) developed a measurement framework for testing the causal effects between eco-factors, output, and outcome of entrepreneurial ecosystems. However, less has been done in term of synthesizing the findings of extant studies but also empirically validating the proposed EE framework. Therefore, the first significant research objective of this doctoral dissertation is a systematic synthesis to explore the research status quo to strengthen the theoretical and conceptual foundations of the EE concept. The first objective also sought to explore emerging and potential future research avenues.

Research Objective 1:

a) *To explore the key theoretical and conceptual foundations of the concept of entrepreneurial ecosystem.*

b) *To explore the emerging and potential future research streams (avenues) of the entrepreneurial ecosystems.*

The rapprochement from the EEs literature indicates that despite its increasingly importance and attention among scholars, policymakers, and practitioners, the concept is still under-theorized, conceptual dominated with insufficient empirical validation. As an effort to fill the empirical gap, Nicotra et al. (2018) developed a measurement framework to guide empirical studies on the EEs research. The framework suggests a direct causal relationship between eco-factors and eco-output (s) of entrepreneurial ecosystems. According to Isenberg (2010) eco-factors are various forms of capital that coherently define the quality and depth (vibrance) of the entrepreneurial ecosystems. These include *financial capital* (access to finance and market), *institutional capital* (policy, regulations, norms, infrastructure, support structures: R&D services, mentors, advisors, incubators, accelerators), *knowledge capital* (basic, tertiary, & high education, entrepreneur-specific trainings, qualified human capital), and *social capital* (networking, trust, entrepreneurial-specific cultural support).

On the other hand the productive entrepreneurship (PE) is considered as the main eco-output of the vibrant EEs (Nicotra et al., 2018; Malecki, 2018). Moreover productive entrepreneurship (PE) is considered as a tool of enormous importance in propelling country's socio-economic growth and development (Audretsch et al., 2019). Baumol (1990) and Acs et al. (2017) refer to productive entrepreneurship as any productive entrepreneurial activity that contributes directly or indirectly to the net output of the economy or capacity to produce additional output and ultimately increase total welfare. Nicotra et. al (2018) further added that the total value creation by productive entrepreneurship should exceed the sum of the value created by individual entrepreneurs. Targeting and stirring productive entrepreneurship promote competition and market efficiency that finally increase people`s welfare (Audretsch & Belitski 2017). Customers get access to a wide variety of goods and services due to the presence of quality and differentiated products from new entrants and incumbents. Nicotra et al. (2018) classify productive entrepreneurial activities into two as early-stage and high-growth entrepreneurial activities.

To enrich our understanding on the EE phenomenon, there is a need for empirical validation on the extant conceptualization. Thus, this doctoral dissertation aimed at empirically testing the prior mentioned EE measurement framework developed by Nicotra et al. (2018). It further refined the model by postulating the role of (product and process) innovation on the causal relationship between eco-factors and eco-output of entrepreneurial ecosystems. Innovations through invention of new products and processes positively impact entrepreneurial performance and socio-economic development (Scuotto et al., 2019). Carayannis and Grigoroudis (2012) add that innovations enable entrepreneurs to continuously identify and explore new ideas and markets that eventually improves customers` satisfaction.

Innovative and proactive entrepreneurs are opportunity creators (Del Giudice et al., 2014) and successfully engage in productive entrepreneurial activities more than less innovative entrepreneurs who are associated with low survival rate and stagnant growth (Antony et al., 2017). Given the over-changing economic and business-related environments entrepreneurs and their related startups need to innovate in order to remain competitive (Scuotto et al., 2017). Vibrant entrepreneurial ecosystems are the habitat of such innovative entrepreneurs (Herman, 2018). Economies with quality and conducive entrepreneurial ecosystems have higher innovation performance than economies with poor entrepreneurial ecosystems (Acs et al., 2018). Entrepreneurial ecosystems provide necessary inputs (both intangible eg., human and technological know-how and tangible eg., infrastructures) for innovation performance (Carayannis et al., 2017).

Research objective 2: *To examine the relationship of innovation in the entrepreneurial ecosystems and productive entrepreneurship.*

Recent extant (few) empirical studies on testing the entrepreneurial ecosystem conceptual and measurement framework by Isenberg (2010) and Nicotra et al. (2018) provide contradictory findings regarding the causal relationship between eco-factors and outputs. For instance, Corrente et al. (2019) document a direct relationship between eco-factors and eco-output in European countries (developed economies) whereas Kansheba (2020) shows that such relationship in the context of developing countries using Sub-Saharan African economies is an indirect one and more pronounced when mediated by innovations. Inadequate conclusive evidence on the direct causal relationship between eco-factors and eco-outputs of the EEs calls upon a need for further inquiry to explore other logics that have the potentials of improving the current theorizing on the existing EE framework.

Thus, building on the entrepreneur-centric view of the EEs, this doctoral dissertation further aimed at filling the above gap by postulating the role of entrepreneurial attitude on the relationship between EE quality and successful (productive) entrepreneurial activities. The idea is that the stronger the EE vibrance (quality) characterized by abundance of actors and their variant supporting activities, the higher the entrepreneurial attitude and morale by entrepreneurs, and ultimately the higher the birth rate of early-stage and high-growth entrepreneurial activities. Entrepreneurial attitudes at either (psychological/individual) micro level (Colakoğlua, & Gözükarab, 2016; Amidzic, 2019) or (sociological/country) macro level (Draghici et al., 2014; Nitu-Antonie, 2017) are largely influenced by the EEs in which they operate in. It is reported that apart from internal motivations that influence the entrepreneurs there are also external motivations such as resources and opportunities (Mueller, 2006).

Vibrant EEs provide for tangible resources (financial capital and infrastructures) and intangible resources (knowledge, skills, and networks) that develop and increase the entrepreneurial attitude of both potential and nascent entrepreneurs (Roundy, 2017). However, EEs are evolutionary in terms of their configurations and elements (Liguori et al., 2019). With that regard, entrepreneurial attitudes become dynamic given the changes in the quality of a particular EE (Mack & Mayer, 2015). Thus, people with high entrepreneurial attitudes are more likely to engage in entrepreneurial activities and maximize their utilities than those with lower entrepreneurial attitude (Jason & Evan, 2005). Fitzsimons & Douglas, (2005) further posit that entrepreneurial attitude involves an individual`s ability to identify and utilize potential lucrative entrepreneurial opportunities and how culture supports and embraces entrepreneurial behaviours.

Research objective 3: *To examine the relationship of entrepreneurial attitude in the entrepreneurial ecosystems and productive entrepreneurship (early-stage and high-growth activities).*

Fourthly, this doctoral dissertation sought to examine the role and the functioning of the EEs during the heightened uncertainties particularly in the context of Covid-19. The role of entrepreneurial ecosystem to promote business continuity during disruptive events cannot be ignored (Maritz et al. 2020). However, this depends on the quality of the ecosystem reflected by the presence of conducive culture, facilitating policies and leadership, availability of dedicated finance, infrastructures and relevant human capital, venture-friendly market for

products and institutional and infrastructural support (Isenberg 2011). Well-functioning and performing EE are evidenced by the presence of large number of new start-ups joining early-

stage entrepreneurial activities (Kansheba and Wald 2020), and innovative and high growth start-ups with longer survival rate (Nicotra et al. 2018).

Highly disruptive events, such as the outbreak of the Covid-19 pandemic, have brought unprecedented levels of uncertainty in the market thus distorting the environment in which entrepreneurs operate. Mason and Hruskova (2021) identified four (4) potential ways in which Covid-19 counter measures could affect different EE elements. Firstly, skyrocketing business failures due to lockdowns has significantly reduced entrepreneurial intention by discouraging risk taking behaviour. Secondly, the support organizations such as universities, accelerators, incubators, and technical service providers have suffered losses resulting to permanent or temporary cessation of operations. Thirdly, finance providers such as venture capitalists, angel investors have grown reluctant to invest in start-ups instead they opt to support established business ventures. Fourthly, restrictions on social gatherings have put a strain on the magnitude of social networking activities between EE actors such as entrepreneurs and business leaders or mentors thus hindering knowledge transfer.

The functioning of EEs can be well understood through the interconnectedness between entrepreneurial stakeholders and their importance in fostering entrepreneurial development (Isenberg, 2010). Bischoff and Volkmann (2018) identify three (3) ways in which EE stakeholders are interconnected to foster EE functioning namely, stakeholders' engagement, collaboration, and support. Stakeholder engagement pertains to involvement of internal and external stakeholders by creating networks for knowledge and resources sharing which eventually results into innovative business strategies (Shams et al. 2019). Stakeholder engagement entails involving key stakeholders in firm's decision making by establishing constructive dialogue and productive communication with them to balance their interests and ultimately foster business performance (Chandler and Werther 2014).

On the other hand, stakeholder collaboration entails communicating, teaming up and partnering with various stakeholder groups in creating shared values and collective understanding (Denning and Dunham 2010). Stakeholders` collaborations within an EE fosters the flow of tangible resources as well as the exchange of knowledge which leads to collective proactive decisions amid difficulties (Bischoff and Volkmann 2018). Furthermore, stakeholders` support

is crucial for (firms`) entrepreneurs` survival (Freeman et al., 2010). Different stakeholders provide different types of support that contribute to entrepreneurial success (Bischoff and Volkmann 2018). Stakeholder support is crucial for a healthy EE by building trust among actors which facilitates flow of resources (Theodoraki et al., 2017).

Research objective 4:

a) *To examine how the government countermeasures in reaction to the Covid-19 pandemic affect the perceived quality and performance of entrepreneurial ecosystems.*

b) *To examine how entrepreneurial ecosystems` stakeholders` engagement, collaboration, and support curb down the Covid-19 economic consequences on EEs perceived quality and performance.*

1.3 Structure and contribution of the dissertation

The overarching objective of this doctoral dissertation is to contribute a more granular understanding on the EE phenomenon-an infant with increasingly attention research area within entrepreneurship. Therefore to achieve this goal, all four research papers in this dissertation address at least one of the research objectives as mentioned earlier.

Research paper 1 entitled *Entrepreneurial ecosystems: a systematic literature review and research agenda*, addresses the research objective 1. Thus, the purpose of this paper is to present a systematic review of extant literature on entrepreneurial ecosystems and to develop a research agenda. Following Tranfield et al. (2013), the study deployed a systematic literature review of 51 articles obtained from three comprehensive databases of Web of Science, Google Scholar and Scopus. The analysis includes two phases. First, a descriptive account of research on entrepreneurial ecosystems and second, a content analysis based on a thematic categorization of entrepreneurial ecosystems research. The findings show that the concept of entrepreneurial ecosystems is both under-theorized and it has been recently dominated by conceptual studies. The focus of empirical research is on technology-based industries in Western economies using cases studies as methodological approach. This review contributes to the body of knowledge on entrepreneurial ecosystems research by providing a systematic review following a thematic grouping of extant research into antecedents, outputs, and outcomes of entrepreneurial ecosystems. It reveals existing theoretical and empirical gaps in research as well as offering avenues of future research on entrepreneurial ecosystems.

Research paper 2 entitled *Small business and entrepreneurship in Africa: the nexus of entrepreneurial ecosystems and productive entrepreneurship*, focuses on research objective 2. The impact of entrepreneurship and small business activities in Africa has habitually been lower and receives less attention in research. This study aims at investigating the mediation role of innovations on the relationship between entrepreneurial ecosystem approach and productive entrepreneurship. Using panel dataset of 35 African countries, the study contributes to the existing literature in two ways. First, the panel regression findings contribute to the theoretical debate and fill the empirical gap in EE research. The findings reveal mixed (positive and negative) and weak insignificant direct influence of eco-factors such as finance, government support and programmes, knowledge, market, and culture on productive entrepreneurship. However, their influence is more pronounced when innovations mediate the relationship. Second, it provides new insight to policymakers and practitioners in developing

policies and programmes that foster entrepreneurial ecosystems and improved innovation performance for better entrepreneurship development. It concludes with suggestions for future research.

Research paper 3 entitled *Entrepreneurial ecosystems quality and productive entrepreneurship: entrepreneurial attitude as a mediator in early-stage and high-growth activities*, addresses research objective 3. This study examines the mediation effects of entrepreneurial attitudes (EAs) on the nexus of the entrepreneurial ecosystem (EE) quality and productive entrepreneurship for early-stage and high-growth entrepreneurial activities. The study employs global entrepreneurship monitor (GEM) panel data of 137 economies from 2014 to 2018. Random effect panel regressions and relative effect size estimations were used for data analysis. The study's findings show complementary mediation effects suggesting that EE quality steers entrepreneurial activities via the EA. However, such mediation is much more vivid towards high growth than early-stage activities.

Vibrant EEs provide necessary resources that boost the attitude of potential and nascent entrepreneurs to engage in early stage and high-growth entrepreneurial activities. Research limitations/implications – The study utilizes GEM data to explain the EEs and EA dynamics and their related effects on entrepreneurship at the macro level. Future research may study the phenomena by using micro level data. The paper explores a less empirically researched question on how EEs steer entrepreneurship growth and development. It reveals a need for new perspectives/logics (e.g. mediation/ moderation) for improving the explanations on the extant

EEs framework. It further informs policymakers and practitioners to design entrepreneur-centred EE policies and programs.

Research paper 4 entitled *Cushioning the Covid-19 economic consequences on entrepreneurial ecosystems: the role of stakeholders` engagement, collaboration, and support*, focuses on research objective 4. The Covid-19 (corona virus) disruptions have necessitated a new way of

thinking about how entrepreneurship and its environments (ecosystems) function in times of heightened uncertainty. Based on a sample of 237 entrepreneurial ecosystem (EE) stakeholders in Tanzania - an emerging economy, the study examines the pandemic economic consequences steered by government countermeasures on the EE- perceived quality and performance. It further examines the role played by EE stakeholders` engagement, collaboration, and support during the crisis. The structural equation model results suggest that strictness of government counter measures for containment of the current pandemic predicament has a bearing on EE-perceived quality and performance by fuelling EE vulnerability via amplifying the magnitude of the negative effects. The findings further indicate that stakeholders` engagement and collaboration play a significant role in improving the EE-perceived quality and slowing down EE-vulnerability. It concludes by providing the implications and avenues for future research.

The rest of this dissertation is organized as follows. Chapter 2 (research paper 1) synthesizes the EE literature and provides a comprehensive overview of the current knowledge within the research field. Chapter 3 (research paper 2) presents an empirical study on the mediating role of innovations on the relationship between entrepreneurial ecosystems and productive entrepreneurship. Chapter 4 (research paper 3) presents and empirical study on the mediating role of entrepreneurial attitude on the relationship between entrepreneurial ecosystems and productive entrepreneurship. Chapter 5 (research paper 4) examines the Covid-19 pandemic consequences on the EE, and the role played by stakeholders` engagement, collaboration, and support. Chapter 6 concludes the dissertation by presenting the theoretical and practical (managerial) implications. The chapter further presents avenues with potentials of future research. Figure 1 below summarizes the structure of the dissertation and gives a brief graphical overview of the research papers` titles, research approach, the methods employed, the data employed, and the underlying research objectives.

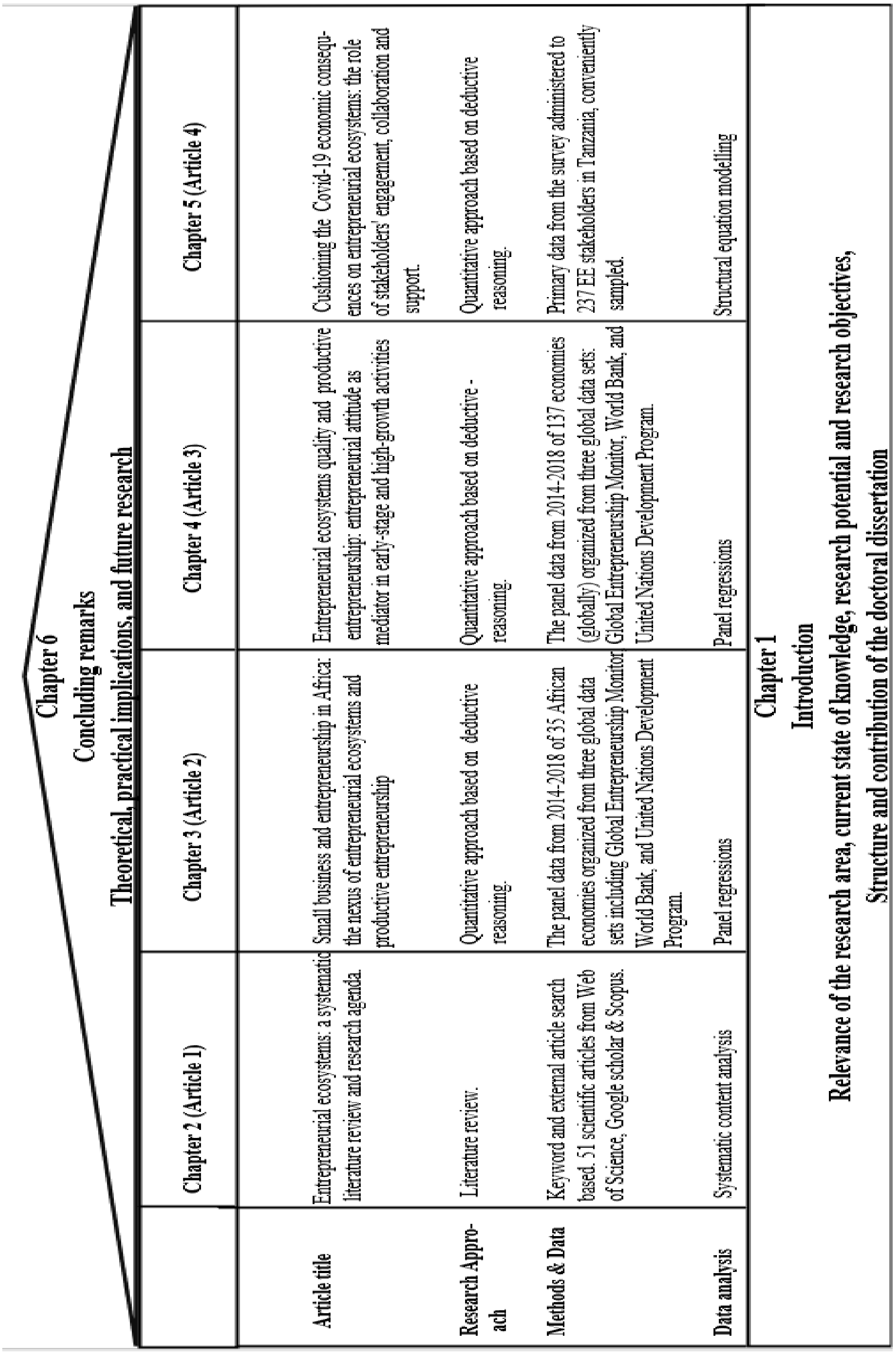


Figure 1.1: Structure of the doctoral dissertation

This page is intentionally left blank

Kansheba, J. M., & Wald, E. A. (2020). Entrepreneurial ecosystems: a systematic literature review and research agenda. *Journal of Small Business and Enterprise Development, 27 (6),* 943- 964. DOI 10.1108/JSBED-11-2019-0364

Chapter Two

Entrepreneurial Ecosystems: A Systematic Literature Review and Research Agenda

Abstract

The emerging concept of entrepreneurial ecosystems has captured the attention of scholars, practitioners, and policy makers. Although studies on entrepreneurial ecosystems continue to grow, their contributions are still disintegrated. Thus, the purpose of this paper it to present a systematic review of extant literature on entrepreneurial ecosystems and to develop a research agenda. The study deployed a systematic literature review of 51 articles obtained from three comprehensive databases of Web of Science, Google Scholar and Scopus. The analysis includes two phases. First, a descriptive account of research on entrepreneurial ecosystems and second a content analysis based on a thematic categorization of entrepreneurial ecosystems research. The findings show that the concept of entrepreneurial ecosystems is both undertheorized and it has been recently dominated by conceptual studies. The focus of empirical research is on technology-based industries in Western economies using cases studies as methodological approach. This review contributes to the body of knowledge on entrepreneurial ecosystems research by providing a systematic review following a thematic grouping of extant research into antecedents, outputs, and outcomes of entrepreneurial ecosystems. It reveals existing theoretical and empirical gaps in research as well as offering avenues of future research on entrepreneurial ecosystems.

Keywords: *Entrepreneurial Ecosystems, Entrepreneurs, Start-up, Antecedents, Outputs and Outcomes of Entrepreneurial Ecosystems.*

2. Introduction

Entrepreneurial activities and entrepreneurs do not emerge in isolation rather in a very integrated and complex systems with multiple actors (Cowell, Lyon-Hill, & Tate, 2018). Thus, the term entrepreneurial ecosystem has been used to express and explicate the frameworks on how entrepreneurs and start-ups interact with other actors. Isenberg (2010, p. 3) referred to entrepreneurial ecosystem as "a set of interconnected elements such as leadership, culture, capital, markets, human skills and support that foster entrepreneurial development." Well established entrepreneurial ecosystems have positive effects on the economy in terms of job creation, household incomes, and economic growth (Atiase, Mahmood, Wang, & Botchie, 2018).

The concept of entrepreneurial ecosystems has recently captured the attention of scholars, practitioners and policy makers although, there is a significant knowledge gaps in terms of the conceptual meaning, the theoretical foundation and the application (Acs, Stam, Audretsch, & O'Connor, 2017; Malecki, 2018). Extant scholarly work associates the concept of entrepreneurial ecosystem with related concepts such as industrial districts, clusters and regional innovation systems (Harper-Anderson, 2018; Sambo, 2018). Unfortunately, the relatedness of entrepreneurial ecosystems to other concepts may prevent a clear understanding of the phenomenon. These more traditional concepts focus on large systems of value chain creation dominated by large and international companies with little concern on entrepreneurs and startups (Kathrin Bischoff & Volkmann, 2018; Subrahmanya, 2017).

Unlike these traditional concepts, entrepreneurial ecosystems put more focus on entrepreneurs and startups which are considered as focal actors of the system and the role of other players in supporting the whole entrepreneurial process (Nicotra, Romano, Del Giudice, & Schillaci, 2018).Recent studies on entrepreneurial ecosystems are built on Isenberg`s (2010) framework and definition (Audretsch et al., 2019; Mack & Mayer, 2015; Stam, 2015). Vibrant entrepreneurial ecosystems and their effects on economic growth can be illustrated by successful entrepreneurial ecosystems such as in London, Tel Aviv, Singapore, Silicon Valley and Boston. These entrepreneurial ecosystems are characterized by having advanced financial service systems that facilitate access to venture capital, good infrastructures, technological innovation, investment in research and development activities through universities and serious government efforts to support entrepreneurial initiatives (Acs et al., 2017).

There has been an increasing number of studies on entrepreneurial ecosystem. However, less has been done in aggregating an integrating the findings of these studies. More recently, first reviews were published focusing on selected aspects of entrepreneurial ecosystems. For example, Maroufkhani et al. (2018) presented a descriptive analysis of entrepreneurial ecosystem studies documenting methodologies applied and publication outlets. Malecki (2017) provided a bibliometric study of the entrepreneurial ecosystem literature with a focus on the choice of scale and university-centred entrepreneurial ecosystems. In this paper, we intend to complement prior reviews and contribute to the existing body of knowledge by conducting an in-depth systematic content analysis to show how various aspects of entrepreneurial ecosystem have been researched and discussed over time. We intend to address the following questions: *(1) How has entrepreneurial ecosystem research evolved over time (2) What are its key theoretical and conceptual foundations? (3) What are emerging future research streams for entrepreneurial ecosystems?*

The reminder of this article is organized as follows: Section 2 provides a description of the methodology employed by detailing data collection and analysis. Section 3 and 4 present the descriptive results and the content analysis. We conclude by presenting avenues for future research which we derived from our review.

2.1. Methodology

We deployed a systematic literature review following the approach of Tranfield, et al. (2003) who provided criterion for ensuring transparency and replicability of the analysis when using literature sources. A systematic literature review enables researchers to map extant intellectual resources and direct their research questions towards further knowledge production and development (Cook, Mulrow, & Haynes, 1997; Tranfield, Denyer, & Smart, 2003). However the process demands exhaustive consistency for it to yield rigor results (Brereton, Kitchenham, Budgen, Turner, & Khalil, 2007).

2.1.1. Sampling and Data Collection

An essential task in undertaking a systematic literature review is to ensure the extraction of relevant sources (articles) that will guide the discussion of the phenomenon. We based our search on three comprehensive databases: Web of Science, Google Scholar and Scopus. We used the following key search terms; **ecosystem for entrepreneurship* or *entrepreneurial*

ecosystem or *entrepreneurship ecosystem** within topic; title, abstract and keywords (Matthews, Chalmers, & Fraser, 2018). Furthermore, to have robust and useful articles we limited our search to peer reviewed published articles (Matthews et al., 2018) up to early 2019. At that preliminary stage we obtained 173 articles from Web of Science, 124 articles from Scopus and 226 articles from Google Scholars. By removing overlapping articles from the three lists, we arrived at 86 common articles.

We reviewed the articles with a focus on entrepreneurial ecosystems including conceptual, theoretical and empirical work and proceeded by carefully reading abstracts and excluding all articles that did not focus on the concept of entrepreneurial ecosystems for example articles discussing ecological ecosystems, (Brown, Gregson, & Mason, 2016; Dedehayir, Makinen, & Ortt, 2018). We further excluded articles that referred to entrepreneurial ecosystems as pure regional clusters (e.g., Goswami, Mitchell, & Bhagavatula, 2018; Kabbaj, Hadi, Elamrani, & Lemtaoui, 2016; Qian, 2018) as the concept of entrepreneurial ecosystem takes on a wider perspective beyond geographical limitations (Acs et al., 2017; Audretsch et al., 2019; Isenberg, 2010). This reduced our sample by another 35 articles leading to a final sample of 51 relevant articles.

2.1.2. Analysis

Our analysis followed two phases. We started with a descriptive account of research on entrepreneurial ecosystems. This was followed by a thorough content analysis. All articles were initially organized by recoding key article information such as names of author(s), year of publication, research question(s) or objectives, study methodological approaches used, theories applied, industry or sector focus and country focus (see Table 2.1 and Appendix 2.1). We then performed a content analysis by firstly organizing thematic descriptions of common patterns of themes that arose from the reviewed articles. Initial thematic descriptions were aggregated to first order themes guided by the entrepreneurial ecosystem framework of Isenberg (2010). First order themes were then aggregated to final second order themes (Matthews et al., 2018) (see Table 2.2).

2.2. Descriptive Analysis

Table 2.1: Descriptive analysis of Entrepreneurial Ecosystem Research

Analysis	Number of Articles
Publication Trend	
Year: 2006 – 2009	1
Year: 2010 – 2014	2
Year: 2015 – 2019	48
Methodological Approach	
Conceptual	16
Qualitative Approach	6
Quantitative Approach	8
Case Study Approach	19
Mixed Method Approach	2
Theoretical Basis	
Institutional Theory	2
Social Network Theory	6
Social Capital Theory	2
Stakeholder Theory	1
Field Theory	1
Without specified theory	39
Sector Focus	
Research and Development and Education	12
Technology	6
Without specific sector focus (General)	33
Unit of Analysis	
Country level	4
Entrepreneurs and other stakeholders at individual level	7
Entrepreneurs at firm level (SMEs)	10
Research and Education Institutions (R&D organizations and Universities)	12
Support Service Providers (Studies on incubators only)	2
Without specified unit of analysis (conceptual)	16
Country Focus	
African Countries	4
European Countries	11
Asian Countries	5
USA	15
Without specified country focus (conceptual)	16

2.2.1. Publication Trend

The findings presented in Table 2.1 show that the concept of entrepreneurial ecosystems emerged in the mid-2000s and captured much scholarly attention from 2015 on. Most articles in our sample were published between 2015 and 2019. This demonstrates that the concept of entrepreneurial ecosystem is still young filed of inquiry which justifies calls for more research (Malecki, 2018; Maroufkhani et al., 2018).

2.2.2. Methodological Approaches

We analysed the methodological approaches deployed. The results shown in Table.1 reveal that most studies (19) on entrepreneurial ecosystems have deployed a case study approach. The second ranked (16 articles) approach is conceptual work, that is contributions without empirical data but not necessarily including an explicit theoretical basis. The remaining empirical articles apply quantitative, qualitative, and mixed method approaches. The dominance of conceptual work reveals lack of empirical studies on the phenomenon.

Furthermore, results show that most articles have no specific unit of analysis since most are conceptual papers. About 17 articles focused on entrepreneurs (7 at individual level and 10 at firm level-SMEs) as unit of analysis. However, quite a few articles (12) focus on investigating the role of education institutions as well as research and development institutions within entrepreneurial ecosystems. Only few articles (2) analyse the role of incubator companies within entrepreneurial ecosystems. This unit of analysis is relatively important in exploring entrepreneurial ecosystems, as the focus should be placed to the central actors of the system (entrepreneurs whether at individual or firm level) (Acs et al., 2017; Audretsch et al., 2019; Isenberg, 2010)

2.2.3. Industry/Sector and Country Focus

As the many conceptual contributions lack an empirical basis most of them have a general focus, i.e., are not targeting specific sectors. Recent empirical studies considered research and development and the education sector investigating the role played by universities in fuelling entrepreneurial activities within entrepreneurial ecosystems. Few studies were conducted in the technology sector. Furthermore, Table.1 shows that many of recent studies on entrepreneurial ecosystem have been conducted in the U.S and European countries. Entrepreneurial ecosystems perform heterogeneously from one sector to another and differently across countries. Thus,

there is still a need to conduct empirical studies on entrepreneurial ecosystems in other industries especially nontechnical industries but also in different country settings such as Africa and Asia.

2.2.4. Theoretical Foundation

Many of studies on entrepreneurial ecosystems lack an explicit theoretical foundation, i.e., 39 articles do not refer to any theory. A few studies apply macro level theories mainly social network/capital and institutional theories (Apa, Grandinetti, & Sedita, 2017; Atiase et al., 2018; Cowell et al., 2018; Di Fatta, Caputo, & Dominici, 2018; Neumeyer, Santos, & Morris, 2018). These theories have been used to explain relational dimensions and networks existing within certain components (for example among universities or among business incubators) of entrepreneurial ecosystems.

2.3. Content Analysis

2.3.1. Definitions of Entrepreneurial Ecosystems.

The concept of entrepreneurial ecosystems has been defined in different ways. Some scholars associate entrepreneurial ecosystems with regional clustering and innovation ecosystems that are confined by geographical boundaries. For example, Cohen (2006) referred to entrepreneurial ecosystem as interconnected group of actors in a *local geographic* community committed to sustainable development through the support and facilitation of new sustainable ventures. Similarly Spigel (2017) referred to the phenomenon as union of *localized* and interconnected elements such as cultural outlooks, social networks, investment capital, universities and active economic policies that support innovative ventures.

Other scholars have widened the scope of entrepreneurial ecosystems beyond geographical boundaries. They view entrepreneurial ecosystems as a *network* that is not necessarily locally confined. The more influential and widely applied meaning was coined by Isenberg (2010) who referred to entrepreneurial ecosystem as a set of interconnected elements (within a network) such as leadership, culture, capital, markets, human skills and support (Audretsch et al., 2019; Mack & Mayer, 2015; Stam, 2015).

Accordingly, it can be argued that an entrepreneurial ecosystem is an interconnected system with multiple players at both micro and macro level, entrepreneurial organizations such as

venture capital providers, business angels and banks; various institutions such as universities and public sector agencies; and entrepreneurs at large, that both formally or informally connect, mediate and govern entrepreneurial performance (Philip, 2017; Theodoraki et al., 2018). Isenberg (2010) postulated further that an entrepreneurial ecosystems' sustainability should not be viewed from geographical boundaries alone rather from an extended network point of view. Under the influence of globalization, entrepreneurial ecosystems may bring together participants that are not necessarily found within same geographical location, for example putting the role of crowdfunding (Velt et al., 2018) and crowdsourcing (Maroufkhani et al., 2018) into context.

2.3.2. Thematic Analytical categorization of Entrepreneurial Ecosystem

We conducted a content analysis of the papers in our sample. We started by organizing thematic descriptions of common patterns of themes which arose from the reviewed articles. Initial thematic descriptions were then aggregated to first order themes guided by the entrepreneurial ecosystem framework of Isenberg (2010). First order themes were then aggregated to second order themes (Matthews et al., 2018). The content analysis provides for the discussion on the roles played by different actors as well as resulted outputs and outcomes of entrepreneurial ecosystems.

2.3.2.1. Entrepreneurial Culture

The success of entrepreneurial ecosystems has been argued to relate to the "entrepreneurial spirit" embedded within societies (Acs et al., 2017; Apa et al., 2017). The centre of entrepreneurial ecosystems is entrepreneurial performance (Atiase et al., 2018). Thus, entrepreneurs are the focal point of the system. Audretsch and Belitski (2017) in their study on regional entrepreneurial ecosystems among European cities, posit that entrepreneurs within societies that embrace success and failure stories are likely to develop and grow faster compared to those within societies that consider failures as misfortune.

Brownson (2013) referred to the entrepreneurial culture as a society that promotes the exhibition of the attributes, values, beliefs and behaviours that foster entrepreneurial spirit among members of such society. K. Bischoff, Volkmann, and Audretsch (2018) further posit that sound entrepreneurial culture promotes actors' collaboration within an ecosystem by inculcating trust and safety among stakeholders. Corrupt and bureaucratic societies hinder

entrepreneurial development within an ecosystem due to lack of trust and safety (de Bruin, Shaw, & Lewis, 2017). In a comparative case study on determinants for successful entrepreneurial ecosystems between Estonia and South Korea, Kshetri (2014) found that there is a dramatic change in the entrepreneurial culture of the two nations. He showed that such changes in social norms and values related to entrepreneurship have significantly contributed to the growth of entrepreneurial ecosystems in these countries.

Table 2.2: Thematic Analytical categorization of Entrepreneurial Ecosystem

Descriptive Statement	First Order	Second Order
The society that embraces success and failure entrepreneurial stories Entrepreneurs' adaptability and ability to track results and reward performance working motivational orientations and attitude	*Entrepreneurial Culture*	*Antecedents of Entrepreneurial Ecosystem*
Focal point and drivers of within entrepreneurial ecosystem Initiators of entrepreneurial decisions such as investment, innovation, starting the business or expanding it	*Entrepreneurs*	
Infrastructures and amenities such as good working spaces and transportation and other physical infrastructures	*Entrepreneurial Infrastructures*	
Institutions and organizations that play an intermediary role eg Banks and Microfinances, R&D Institutions, Universities	*Entrepreneurial Institutions*	
Various entrepreneurial support services such as product and service, promotions and marketing, mentorship, information access, professional advisory experts such as law, accountings, taxes	*Entrepreneurial Support Services*	
Entrepreneurial Policy and regulatory frameworks Presence of vibrant leaders who are committed to foster entrepreneurial performance Government intervention and support	*Entrepreneurial Policies and Regulations*	
Efficient entrepreneurial processes and activities; birth rate of new innovative ventures; individual and high growth firms; Increased job creation opportunities and reduction of unemployment	*Increased and efficient Entrepreneurial Activities and process (Productive Entrepreneurship)*	*Entrepreneurial Ecosystem Outputs*
Aggregate value creation (Improved social welfare of people) Creation of capital wealth, prosperity, and value creation; Improved competitive advantages and capabilities	*Entrepreneurial Economic Outcomes*	*Entrepreneurial Ecosystem Outcomes*
Diffusion of technology among entrepreneurs that results to invention of innovative products and services	Entrepreneurial Technological Outcomes	
non-monetary outcomes among entrepreneurial ecosystem members through delivered new products and services	Entrepreneurial Social Outcomes	

Mack and Mayer (2015) found that a lack of supportive entrepreneurial culture was among the hindering factors towards the growth of an entrepreneurial ecosystem in Phoenix, Arizona. A supportive entrepreneurial culture exhibits four features:- Entrepreneur`s willingness to share success and failure lessons (openness) (Roundy, 2017; Sambo, 2018); entrepreneur`s commitment to control internal and external milieus through evaluations and researches (adaptability) (Subrahmanya, 2017; Tracy, Jill, & Marc, 2018) as well as the ability to track results (entrepreneurial outcomes and impacts) and rewarding positive behaviours (Kathrin Bischoff & Volkmann, 2018; Yang, Kher, & Lyons, 2018).

Entrepreneurial culture is not static but rather dynamic and keeps on changing depending on the nature of the social interaction between entrepreneurs and other players (Isenberg, 2010; Motoyama & Knowlton, 2017) such as private and public sectors actors, and non-profit organizations with interest in supporting innovative business ideas within an ecosystem (Mack & Mayer, 2015; Malecki, 2018). Successful entrepreneurs act as role models and influence others to follow their steps by providing useful information and skills on how to successfully manage their ventures (Acs, Estrin, Mickiewicz, & Szerb, 2018).

2.3.2.2. Entrepreneurs

Entrepreneurs are the focal point of entrepreneurial ecosystems (Van Weele et al., 2018). Sustainable entrepreneurial ecosystems exhibit a balanced portfolio of entrepreneurs as a mix of both market-oriented and social entrepreneurs (Park & Park, 2018; Philip, 2017). Entrepreneurs are expected to drive the entrepreneurial ecosystem by initiating entrepreneurial decisions such as investment, innovation, starting a business or expanding it (Cohen, 2006; Yang et al., 2018). Other players do accelerate the process by providing needful support to entrepreneurs (Wadee & Padayachee, 2017). This entrepreneur-centric view is supported by key three elements of entrepreneurial resources (entrepreneurs need both financial and nonfinancial resources); entrepreneurial vision (an entrepreneur possesses entrepreneurial ideas) and other stakeholders` willingness to support materialization of entrepreneurial visions possessed by entrepreneurs (Malecki, 2018; Spigel, 2017).

The idea of placing an entrepreneur at the core of the entrepreneurial ecosystem distinguish it from other concepts such as regional clustering. According to Isenberg (2010), this shifts the role of other players such as government from being a leader to a feeder by ensuring conducive socioeconomic environment for sustainable entrepreneurship activities. Successful and long

term committed entrepreneurs through their networks and capital act as mentors and advisors to potential new and growing entrepreneurs (Cohen, 2006; Harper-Anderson, 2018)

Based on Neumeyer et al. (2018) who developed the typology of entrepreneurial ventures, it can be argued that entrepreneurs assume four categories within entrepreneurial ecosystems: survival entrepreneurs, lifestyle entrepreneurs, managed growth entrepreneurs and aggressive growth entrepreneurs. Survival entrepreneurs have no physical location and usually operate from arcade or public markets. They are not formally employed and have a labor-intensive orientation. Lifestyle entrepreneurs aim at serving a specific niche within a market and are always limited to one or two geographical locations. Managed growth entrepreneurs have multiple locations of operations and extend from local market. Aggressive entrepreneurs have extensive knowledge-based resources such as patents and sophisticated technologies (Neumeyer et al., 2018).

According to Subrahmanya (2017), entrepreneurship within ecosystems exhibits three stages. During the initial stage (conception) the entrepreneur needs to be exposed to opportunities mainly market access and resources (labor, technology and finance). At the development phase, the entrepreneur further develops the business through testing new ideas and improvement of existing ones. At the maturity stage, an entrepreneur implants more strongly a business within the ecosystem while creating own competitive advantages (own well-established source of resources) (Galan-Muros, 2016).

2.3.2.3. Physical Infrastructures

Efficient infrastructures are another necessary component of sustainable entrepreneurial ecosystems (Acs et al., 2017; Atiase et al., 2018). Infrastructures and amenities such as adequate working spaces and transportation will foster an easier interaction among players. Audretsch and Belitski (2017) point out that good infrastructures promote interconnections and linkages that eventually promote opportunity recognition among actors within the ecosystem. Physical infrastructures, furthermore, enhance production factor (for example labor) mobility, information exchange as well as the establishment of new networks within a particular entrepreneurial ecosystem (Bruns, Bosma, Sanders, & Schramm, 2017; Cowell et al., 2018; Velt et al., 2018).

Stam (2015) argues further that developed infrastructures create a third space within entrepreneurial ecosystems. He referred to the third space creation as a situation where pro-

active entrepreneurs, researchers and scholars, support institutions and other players within an ecosystem are pooled and connected. The role of business incubators and accelerators yield best results in areas where there are well established and efficient infrastructures (Di Fatta et al., 2018). Unreliable, poorly connected and long-time commuting transports tend to hinder entrepreneurial activities by increasing cost to producers, suppliers and customers (Audretsch & Belitski, 2017).

Audretsch and Belitski (2017) did a comparative study on the role of physical infrastructures and amenities towards creating sustainable entrepreneurial ecosystems in 70 European cities. They concluded that good amenities and better physical infrastructure and connectivity tend to pool population, facilitate employee mobility, attract other intermediary services and create new market niches. All these factors are essentials for successful entrepreneurial ecosystem (Bruns et al., 2017; Kshetri, 2014; Malecki, 2018)

2.3.2.4. Entrepreneurial Institutions

There are several institutions that fuel entrepreneurial ecosystem sustainability by playing an intermediary role (Goswami et al., 2018; Harper-Anderson, 2018). An entrepreneur as focal point of the system needs to know and interact with several organizations that in one way or another provide either financial or non-financial support throughout entrepreneurial processes (Kubera, 2017; Mack & Mayer, 2015). These institutions can be grouped into three major categories based on their support functions, i) financial support institutions, for example banks and microfinance institutions; ii) research and development institutions and iii) educational institutions (Kathrin Bischoff & Volkmann, 2018; Wadee & Padayachee, 2017; Yi & Uyarra, 2018). A clear and well-organized institutional arrangement can stimulate entrepreneurial activities within entrepreneurial ecosystems.

Acs et al. (2018) in their analysis of the impact of national entrepreneurial ecosystem in economic growth, posited that easy access to financial institutions with affordable financial services promotes both individuals and firms to engage in entrepreneurial activities. Spigel (2017) further argued that financial institutions apart from providing financial services (mainly loans provisions) also create special programs that increase financial literacy of entrepreneurs and enable them to better manage their ventures (Cohen, 2006; Economidou, Grilli, Henrekson, & Sanders, 2018). Venture capitalists and angel investors have been identified to have great support within entrepreneurial ecosystems by bridging the capital gap (Cohen, 2006; Harper-

Anderson, 2018). As it may be difficult for entrepreneurs to access funding through more traditional ways such as bank loans, venture and angel capital play an important role in supporting entrepreneurial activities (Isenberg, 2010; Roundy, 2017).

Research and development as well as educational institutions play another important role within entrepreneurial ecosystems. Sambo (2018) found a significant role of universities and research hub-based companies toward creation of sustainable entrepreneurial ecosystems in South Africa. He found that these institutions possess a huge number of experts that offer technical advice to entrepreneurs and other players e.g., venture capitalists interested in business ideas and government as regulator. Mack and Mayer (2015) further found that these institutions offer effective platforms for startups ensuring conducive business atmosphere in Arizona.

Many studies that focus on this component of supporting institutions analyse the role played by research-based institutions and educational institutions (mainly higher education institutions) and only few focuses on financial institutions. This implies that entrepreneurial education plays a crucial role within entrepreneurial ecosystems by stimulating the creation of new business ventures and by promoting entrepreneurial skills and attitudes of entrepreneurs (K. Bischoff et al., 2018; Sambo, 2018; Schaeffer & Matt, 2016; Schillo, 2018). As argued by Economidou et al. (2018) the most important resources of an entrepreneur are essential skills and knowledge for generating and making sense of innovative entrepreneurial ideas.

2.3.2.5. Entrepreneurial Support Services

Entrepreneurs need various support services to advance within entrepreneurial ecosystems (Atiase et al., 2018). Non-profit organizations can help in building networks and linking entrepreneurs to those networks (Acs et al., 2017). Entrepreneurs need promotion services and mentorship for sustainable growth (Apa et al., 2017). To facilitate access to information, the role of media is important (Audretsch & Belitski, 2017). St-Pierre and Foleu (2015) found that poor access to information was among challenges in developing sustainable entrepreneurial ecosystems in Cameroon. Isenberg (2010) posited that entrepreneurial ecosystems also need venture-oriented professionals such as lawyers, accountants, business consultants who can provide technical knowhow to entrepreneurs.

Cohen (2016) in his study revealed that entrepreneurial tax and legal support are the most frequent professional services entrepreneurs seek from professional advisors. Prior studies

(Kathrin Bischoff & Volkmann, 2018; Yang et al., 2018; Yi & Uyarra, 2018) show that most entrepreneurs seek for professional advice during the inception of their ventures. Subrahmanya (2017) in a study of success factors for the Bangalore entrepreneurial ecosystem he posited further that it can be a hindrance to successful entrepreneurship if professional advisers are not aware of the challenges faced by entrepreneurs. In a comparative study on entrepreneurial ecosystems between small and large towns, Roundy (2017) discovered that higher costs associated to access to these professional services being another challenge for entrepreneurs. Professional services need to be affordable for a wide range of entrepreneurs within an ecosystem (Mack & Mayer, 2015; Roundy, 2017; Spigel, 2017).

Another prominent entrepreneurial support service for sustainable entrepreneurial ecosystems is entrepreneurial incubation (Apa et al., 2017). In their study on critical resources in African entrepreneurial development, Atiase et al. (2018) found that during the initial phases, entrepreneurs usually lack financial resources, have limited experience and are not well connected to other potential players such as large companies and fund providers. Audretsch and Belitski (2017) therefore argued that incubators can bridge such gaps and help entrepreneurs to have an early breakthrough by facilitating working spaces and meeting venues, providing technical infrastructures and advice.

Maroufkhani et al. (2018) extended Isenberg`s entrepreneurial ecosystems framework by suggesting another overlooked but important support service, crowdsourcing, which creates an information rich environment. Entrepreneurs need easy and fast access to information and knowledge for example on potential new markets and new technologies. In many cases players within an ecosystem rely on informal channels (such as informal meetings with friends) (Cowell et al., 2018) for information sharing which can be an insufficient and ineffective means of information sharing. Sustainable entrepreneurial ecosystems need information connectors who bring together people, idea and resources. Here, media plays a vital role (Audretsch & Belitski, 2017). Acs et al. (2017) further supported the argument by adding that effective information communication technological systems (ICT) support entrepreneurial ecosystems by speeding knowledge spill-over among players.

2.3.2.6. Entrepreneurial Policies and Regulations

Policy and regulatory frameworks that govern entrepreneurial ecosystems play a vital role. Isenberg (2010) posits that a vibrant entrepreneurial ecosystem consists of determined public

leaders that stand as advocates of entrepreneurs and promote entrepreneurial activities by opening doors for committed entrepreneurs. Colombo and Dagnino (2017) in their conceptual study in models of entrepreneurial ecosystems governance, argued that the government needs to establish and promote entrepreneurial institutions such as research institutions as well as platforms for public-private entrepreneurial debates and negotiations.

By investigating the state`s roles in German entrepreneurial ecosystems, Fuerlinger and Fandl (2015) found that entrepreneurs and other players such as incubators and accelerators of entrepreneurial activities face operational legal barriers. Audretsch and Belitski (2017) by analysing entrepreneurial ecosystems diversities of European cities, found that governments play a significant role in bridging the valley of entrepreneurial failure by removing entrepreneurial barriers such as difficult business registration regulations and weak legal enforcement strategies. Kubera (2017) in a study on the impact of regulatory policies on the development of entrepreneurial ecosystems in Poland, further argued that government needs to assume a feeder/supporter-oriented role acting as an overseer rather than playing a leadership role. However, strong leadership is required for entrepreneurs who in collaboration with other actors, such as incubators and accelerators, form a network that defines the entrepreneurial ecosystems` structure (Philip, 2017; Steinz, Van Rijnsoever, & Nauta, 2016).

Furthermore, Steinz et al. (2016) in their analysis of how to create sustainable entrepreneurial ecosystems development in China, identified regulative barriers to be among challenges for foreign entrepreneurs and facilitators. Governments need to create coordinated systems among its agents that directly engage with entrepreneurial ecosystems in one way or another (Pillai & Ahamat, 2018; Pittz & Hertz, 2018). Divergent and unharmonized governmental system open room for beauacracy and corruption which act as hammer for destroying the effectiveness of entrepreneurial activities within an ecosystem.

2.3.2.7. Outputs and Outcomes of Entrepreneurial Ecosystems

Government invention through policies and regulatory frameworks aims at solving specific market failure, i.e., when the market fails to achieve desirable results by its own (Fuerlinger & Fandl, 2015). The question of what entrepreneurial ecosystems intend to achieve is of importance when designing policies and regulations (Audretsch et al., 2019). Nicotra et al. (2018) in a conceptual study on the relationship between entrepreneurial ecosystems and

productive entrepreneurship posit that outputs and outcomes created by entrepreneurial ecosystem need to be well articulated in order to have effective interventions.

Measurement indicators of outputs and outcomes of entrepreneurial ecosystems remain as an aspect that still receives little attention in research. For example, one argument is whether governments need to focus their policies on the number of new entrepreneurial ventures created as one of indicator of entrepreneurial ecosystem output. However according to Bruns et al. (2017), this provides a limited measure of entrepreneurial ecosystem success as some new ventures fail to be sustainable and exhibit stagnant growth (Di Fatta et al., 2018). Furthermore, in some cases governments do not embrace high-growth entrepreneurs (Isenberg, 2010). According to Acs et al. (2018), a sustainable entrepreneurial ecosystem should stimulate economic growth through increased productivity.

Outputs of entrepreneurial ecosystems have been discussed in an aggregated term as productive entrepreneurship (Acs et al., 2018). Productive entrepreneurship refers to increased entrepreneurial activities *(output)* where entrepreneurs see and cease entrepreneurial opportunities through innovation and eventually create aggregate value/welfare *(outcome)* to society (St-Pierre & Foleu, 2015; Theodoraki et al., 2018). Increased entrepreneurial activities can be measured by the number of innovative start-ups, high-growth start-ups and the number of new entrepreneurial employees (Philip, 2017; Pittz & Hertz, 2018). As an output of entrepreneurial ecosystems, productive entrepreneurship can be evidenced in terms of new job creations and the reduction of overall unemployment as a result of self-employment and job opportunities in new entrepreneurial ventures within an ecosystem (Nicotra et al., 2018).

Audretsch et al. (2019) categorized entrepreneurial ecosystem outcomes into three categories: economic, technological, and societal. Accordingly, economic outcomes represent capital wealth, prosperity and value creation from entrepreneurial activities. Philip (2017) in a conceptual study on economic implications of small-town entrepreneurial ecosystems argued that sustainable entrepreneurial ecosystems through attracting resource flows (human and financial capital and other supports), improve competitive advantages and capabilities of entrepreneurs which in turn improves productivity.

Technological outcomes can be traced through the role of training and educational institutions within entrepreneurial ecosystems that facilitate technological transfer among entrepreneurs (Schaeffer & Matt, 2016; Schillo, 2018). Diffused technology eventually leads to the invention

of innovative products and services that in turn improve the welfare of the society. Societal outcomes denote non-monetary outcomes among entrepreneurial ecosystem members through delivered new products and services (Szerb & Trumbull, 2018; Theodoraki et al., 2018).

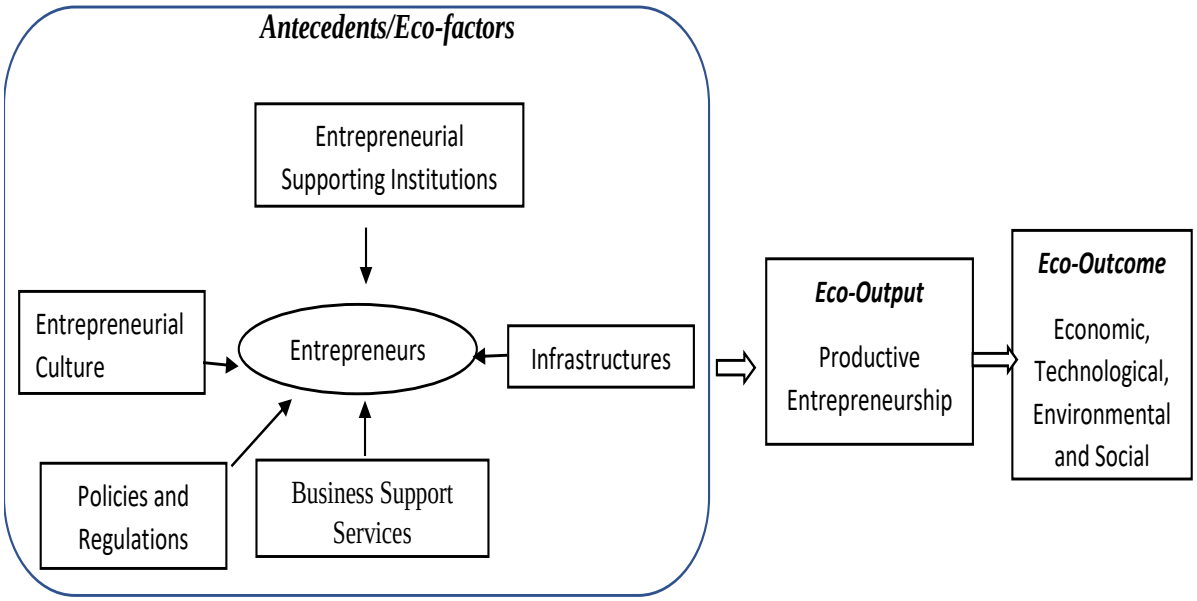


Figure 2.1: Entrepreneurial Ecosystem Framework

2.3.3. Theoretical and Empirical Gaps

Despite its popularity within entrepreneurship policies, practices and research, the concept of entrepreneurial ecosystems is still characterized not only by scarce empirical work but also by the absence of a sound theoretical foundation (Spigel & Harrison, 2018). A lack of conceptual rigor that it is theoretically driven has led to the formulation of less informed policies and practices aimed at fostering entrepreneurship development (Stam, 2015).

Most of the recent studies on entrepreneurial ecosystems apply macro level theories mainly social network/capital and institutional theories (Apa et al., 2017; Atiase et al., 2018; Cowell et al., 2018; Di Fatta et al., 2018; Neumeyer et al., 2018). These theories have been used to explain the relational dimensions and networks existing within certain components (for example among universities or among business incubators) of entrepreneurial ecosystems. However, there is a need for a more holistic theoretical foundation that describes and explains how entrepreneurial ecosystems evolve and function considering the entrepreneur-centric view.

Spigel and Harrison (2018) provided a considerable work attempting to close such theoretical gap. In their work, they conceptualized and proposed a process perspective of entrepreneurial ecosystems. They theorize that entrepreneurial ecosystems are ongoing processes of the development and flow of entrepreneurial resources. The emergence and transformation of entrepreneurial ecosystems can be better explained through the presence and circulation of these entrepreneurial resources among actors. Thus, Spigel and Harrison (2018) posited that the proposed process perspective provides a better understanding of the functioning and influence of entrepreneurial ecosystems on entrepreneurial processes that in turn enable effective policy interventions. Furthermore, they call for empirical work to test their proposed framework and propositions.

Furthermore, most of reviewed articles found to be conceptual-based studies that is contributions without empirical support (e.g., Cohen, 2006; Colombo & Dagnino, 2017; Roundy, 2017). The focus of the scarce empirical research is on technology-based industries in Western economies (e.g., Acs et al., 2018; Apa et al., 2017; Audretsch & Belitski, 2017).

2.3.4. Future Research Avenues

Our review has revealed that the phenomenon of entrepreneurial ecosystems is still undertheorized. Most contributions are conceptual providing an understanding of the different elements that form conducive entrepreneurial ecosystems. Therefore, we see a need for more empirical research, especially regarding potential causal relations between elements, context factors, outputs and outcomes of entrepreneurial ecosystems. The few empirical studies on entrepreneurial ecosystems have majorly applied case studies including qualitative methods. There is a need of deploying other methodological approaches for more rigor and generalizability purposes. For example, the use of large samples and quantitative methods for hypotheses-testing (Malecki, 2018; Nicotra et al., 2018).

Entrepreneurial ecosystems exhibit heterogenous features across industries and economies. Thus, it is relatively important that studies on entrepreneurial ecosystems being industrial and economies diverse. However, research on entrepreneurial ecosystems mostly focuses on technology-based industries in developed economies. This reveals a gap in entrepreneurial ecosystems research especially in other sectors which are economically and strategically important such as services (e.g. transportation and tourism) and primary sectors such as agriculture, fishing and natural resources. According to the World Bank Global Economic

Prospects, (2012), the service sector contributes up to 70 percent of the GDP in developed economies. The service sector is equally important even to developing economies, for example it contributes up to nearly 60 percent of Sub-Saharan Africa`s GDP. Thus promoting entrepreneurial ecosystems in this sector may contribute significantly to economic growth and development.

The agricultural sector is among the key economic sectors that drives economies in most of developing countries. It contributes to economic development through supply of food, raw materials for industries, source of foreign income through exports as well as wide pool of job creation (Emmanuel & Etim, 2012). Despite its vital role on economy, agricultural entrepreneurship still receives less attention in research (Dias, Rodrigues, & Ferreira, 2019). Thus, we propose further research on how agricultural entrepreneurial ecosystems can be fostered. It is equally important to study how ecosystems can mobilize resource allocations to promote agricultural entrepreneurships.

The natural resource endowment in any country comes with two major impacts on entrepreneurship. First, the primary sector offers new business entrepreneurial opportunities (through demand and supply of products and services along its value chain) to local people and firms. Second, it provides resource rents for governments which if spent efficiently can boost entrepreneurial development by financially supporting potential entrepreneurs that engage themselves in the sector (Adedeji, Sidique, Abd Rahman, & Law, 2016; Basco & Calabro, 2016; Majbouri, 2016). Natural resources, such as oil and gas, are non-renewable resources. Therefore, countries toned to spend their resource wealth wisely by diversifying obtained revenues to other non-resource sectors. Among the best and effective strategy is by promoting entrepreneurship development alongside the primary sector (Parlee, 2015). Thus, to have effective entrepreneurial development along the oil and gas industry it is necessary for countries to have a better understanding how different entrepreneurial actors and systems within the sector interact with each other.

2.4. Conclusion

In this review, we systematically scrutinized the literature on the emerging concept of entrepreneurial ecosystems. The concept has captured the attention of scholars and practitioners from 2000s with more publications between 2015 and 2019. The findings show that entrepreneurial ecosystems are still an under-researched phenomenon where conceptual

studies dominate recent research. There is a need for more empirical research on the phenomenon. Furthermore, we have noted that there is still a need for theorizing the concept of entrepreneurial ecosystems. A few studies have applied macro theories, but entrepreneurial ecosystem research is lacking a theoretical micro foundation. Future research on entrepreneurial ecosystems should expand its industry focus by including for example services and primary sectors and its regional scope in considering developing and emerging economies.

References

Acs, Z. J., Estrin, S., Mickiewicz, T., & Szerb, L. (2018). Entrepreneurship, institutional economics, and economic growth: an ecosystem perspective. *Small Business Economics, 51*(2), 501-514.

Acs, Z. J., Stam, E., Audretsch, D. B., & O'Connor, A. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics, 49*(1), 1-10.

Adedeji, A. N., Sidique, S. F., Abd Rahman, A., & Law, S. H. (2016). The role of local content policy in local value creation in Nigeria's oil industry: A structural equation modeling (SEM) approach. *Resources Policy, 49*, 61-73.

Apa, R., Grandinetti, R., & Sedita, S. R. (2017). The social and business dimensions of a networked business incubator: the case of H-Farm. *Journal of Small Business and Enterprise Development, 24*(2), 198-221.

Atiase, V. Y., Mahmood, S., Wang, Y., & Botchie, D. (2018). Developing entrepreneurship in Africa: investigating critical resource challenges. *Journal of Small Business and Enterprise Development, 25*(4), 644-666.

Audretsch, D. B., & Belitski, M. (2017). Entrepreneurial ecosystems in cities: establishing the framework conditions. *Journal of Technology Transfer, 42*(5), 1030-1051.

Audretsch, D. B., Cunningham, J. A., Kuratko, D. F., Lehmann, E. E., & Menter, M. (2019). Entrepreneurial ecosystems: economic, technological, and societal impacts. *Journal of Technology Transfer, 44*(2), 313-325.

Basco, R., & Calabro, A. (2016). Open innovation search strategies in family and non-family SMEs Evidence from a natural resource-based cluster in Chile. *Academia-Revista Latinoamericana De Administracion, 29*(3), 279-302.

Bischoff, K., Volkmann, C. K., & Audretsch, D. B. (2018). Stakeholder collaboration in entrepreneurship education: an analysis of the entrepreneurial ecosystems of European higher educational institutions. *Journal of Technology Transfer, 43*(1), 20-46.

Brereton, P., Kitchenham, B. A., Budgen, D., Turner, M., & Khalil, M. (2007). Lessons from applying the systematic literature review process within the software engineering domain. *Journal of Systems and Software, 80*(4), 571-583.

Brown, R., Gregson, G., & Mason, C. (2016). A Post-Mortem of Regional Innovation Policy Failure: Scotland's Intermediate Technology Initiative (ITI). *Regional Studies, 50*(7), 1260-1272.

Brownson, C. (2013). Fostering Entrepreneurial Culture: A Conceptualization. *European Journal of Business and Management, 5*(31), 146-156.

Bruns, K., Bosma, N., Sanders, M., & Schramm, M. (2017). Searching for the existence of entrepreneurial ecosystems: a regional cross-section growth regression approach. *Small Business Economics, 49*(1), 31-54.

Cohen, B. (2006). Sustainable valley entrepreneurial ecosystems. *Business Strategy and the Environment, 15*(1), 1-14.

Colombo, M. G., & Dagnino, G. B. (2017). The governance of entrepreneurial ecosystems. *Small Business Economics, 52*(2), 419-428.

Cook, D. J., Mulrow, C. D., & Haynes, R. B. (1997). Systematic reviews: Synthesis of best evidence for clinical decisions. *Annals of Internal Medicine, 126*(5), 376-380.

Cowell, M., Lyon-Hill, S., & Tate, S. (2018). It takes all kinds: understanding diverse entrepreneurial ecosystems. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(2), 178-198.

de Bruin, A., Shaw, E., & Lewis, K. V. (2017). The collaborative dynamic in social entrepreneurship. *Entrepreneurship and Regional Development, 29*(7-8), 575-585.

Dedehayir, O., Makinen, S. J., & Ortt, J. R. (2018). Roles during innovation ecosystem genesis: A literature review. *Technological Forecasting and Social Change, 136*, 18-29.

Di Fatta, D., Caputo, F., & Dominici, G. (2018). A relational view of start-up firms inside an incubator: the case of the ARCA consortium. *European Journal of Innovation Management, 21*(4), 601-619.

Dias, C. S. L., Rodrigues, R. G., & Ferreira, J. J. (2019). What's new in the research on agricultural entrepreneurship? *Journal of Rural Studies, 65*, 99-115.

Economidou, C., Grilli, L., Henrekson, M., & Sanders, M. (2018). Financial and Institutional Reforms for an Entrepreneurial Society. *Small Business Economics, 51*(2), 279-291.

Fuerlinger, G., & Fandl, U. (2015). The role of the state in the entrepreneurship ecosystem: insights from Germany. *Triple Helix, 2*(1), 4060401400159.

Galan-Muros, T. D. V. (2016). The importance of an entrepreneurial ecosystem for creating systemic entrepreneurship. *Entrepreneurship Ecosystem Research Network, Working Paper*, 1-5.

Goswami, K., Mitchell, J. R., & Bhagavatula, S. (2018). Accelerator expertise: Understanding the intermediary role of accelerators in the development of the Bangalore entrepreneurial ecosystem. *Strategic Entrepreneurship Journal, 12*(1), 117-150.

Harper-Anderson, E. (2018). Intersections of Partnership and Leadership in Entrepreneurial Ecosystems: Comparing Three US Regions. *Economic Development Quarterly, 32*(2), 119-134.

Isenberg, D. J. (2010). The Big Idea: How to Start an Entrepreneurial Revolution. *Havard Business Review, 88*(6), 40-50.

Kabbaj, M., Hadi, K. E. E., Elamrani, J., & Lemtaoui, M. (2016). A Study of the Social Entrepreneurship Ecosystem: The Case Of Morocco. *Journal of Developmental Entrepreneurship, 21*(4),1650021.

Kshetri, N. (2014). Developing successful entrepreneurial ecosystems Lessons from a comparison of an Asian tiger and a Baltic tiger. *Baltic Journal of Management, 9*(3), 330-356.

Kubera, P. (2017). Evaluating the Impact of Regulation and Regulatory Policy - Towards Better Entrepreneurial Ecosystem. The Case of Poland. *Problemy Zarzadzania-Management Issues, 15*(1), 237-253.

Mack, E., & Mayer, H. (2015). The evolutionary dynamics of entrepreneurial ecosystems. *Urban Studies, 53*(10), 2118-2133.

Majbouri, M. (2016). Oil and entrepreneurship. *Energy Policy, 94*, 10-15.

Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. *Geography Compass, 12*(3), 12359

Maroufkhani, P., Wagner, R., & Ismail, W. K. W. (2018). Entrepreneurial ecosystems: a systematic review. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(4), 545-564.

Matthews, R. S., Chalmers, D. M., & Fraser, S. S. (2018). The intersection of entrepreneurship and selling: An interdisciplinary review, framework, and future research agenda. *Journal of Business Venturing, 33*(6), 691-719.

Motoyama, Y., & Knowlton, K. (2017). Examining the Connections within the Startup Ecosystem: A Case Study of St. Louis. *Entrepreneurship Research Journal, 7*(1), 20160011.

Neumeyer, X., Santos, S. C., & Morris, M. H. (2018). Who is left out: exploring social boundaries in entrepreneurial ecosystems. *Journal of Technology Transfer, 44*(2), 462-484.

Nicotra, M., Romano, M., Del Giudice, M., & Schillaci, C. E. (2018). The causal relation between entrepreneurial ecosystem and productive entrepreneurship: a measurement framework. *Journal of Technology Transfer, 43*(3), 640-673.

Park, Y. J., & Park, Y. W. (2018). Spinoffs versus non-spinoff entrepreneurs Exploring post-bubble Japan's entrepreneurial ecosystem. *Asia Pacific Journal of Innovation and Entrepreneurship, 12*(2), 146-164.

Parlee, B. L. (2015). Avoiding the Resource Curse: Indigenous Communities and Canada's Oil Sands. *World Development, 74*, 425-436.

Pillai, T. R., & Ahamat, A. (2018). Social-cultural capital in youth entrepreneurship ecosystem: Southeast Asia. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(2), 232-255.

Pittz, T. G., & Hertz, G. (2018). A relational perspective on entrepreneurial ecosystems: The role and sustenance of the entrepreneurship center. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(2), 220-231.

Qian, H. F. (2018). Knowledge-Based Regional Economic Development: A Synthetic Review of Knowledge Spillovers, Entrepreneurship, and Entrepreneurial Ecosystems. *Economic Development Quarterly, 32*(2), 163-176.

Roundy, P. T. (2017). "Small town" entrepreneurial ecosystems Implications for developed and emerging economies. *Journal of Entrepreneurship in Emerging Economies, 9*(3), 238-262.

Sambo, W. (2018). A Conceptual Study of an Intrapreneurship Ecosystem at South African Universities. *Problemy Zarzadzania-Management Issues, 16*(1), 192-215.

Schaeffer, V., & Matt, M. (2016). Development of academic entrepreneurship in a non-mature context: the role of the university as a hub-organisation. *Entrepreneurship and Regional Development, 28*(9-10), 724-745.

Schillo, R. S. (2018). Research-based spin-offs as agents in the entrepreneurial ecosystem. *Journal of Technology Transfer, 43*(1), 222-239.

Spigel, B. (2017). The Relational Organization of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice, 41*(1), 49-72.

Spigel, B., & Harrison, R. (2018). Towards a Process Theory of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice, 41*, 49–72.

St-Pierre, J., & Foleu, L. (2015). SME Development Challenges in Cameroon: An Entrepreneurial Ecosystem Perspective. *Transnational Corporations Review, 7*(4), 441-462.

Stam, E. (2015). Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique. *European Planning Studies, 23*(9), 1759-1769.

Steinz, H. J., Van Rijnsoever, F. J., & Nauta, F. (2016). How to Green the red Dragon: A Start-ups' Little Helper for Sustainable Development in China. *Business Strategy and the Environment, 25*(8), 593-608.

Subrahmanya, M. B. (2017). How Did Bangalore Emerge As A Global Hub Of Tech Start-Ups In India? Entrepreneurial Ecosystem - Evolution, Structure And Role. *Journal of Developmental Entrepreneurship, 22*(1), 1084946717500066.

Szerb, L., & Trumbull, W. N. (2018). Entrepreneurship development in Russia: is Russia a normal country? An empirical analysis. *Journal of Small Business and Enterprise Development, 25*(6), 902-929.

Theodoraki, C., Messeghem, K., & Rice, M. P. (2018). A social capital approach to the development of sustainable entrepreneurial ecosystems: an explorative study. *Small Business Economics, 51*(1), 153-170.

Tracy, A. T., Jill, M. P., & Marc, J. V. (2018). How entrepreneurial ecosystems take form: Evidence from social impact initiatives in Seattle. *Strategic Entrepreneurship Journal, 12*, 96–116.

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management, 14*(3), 207-222.

Van Weele, M., van Rijnsoever, F. J., Eveleens, C. P., Steinz, H., van Stijn, N., & Groen, M. (2018). Start-EU-up! Lessons from international incubation practices to address the challenges faced by Western European start-ups. *Journal of Technology Transfer, 43*(5), 1161-1189.

Velt, H., Torkkeli, L., & Saarenketo, S. (2018). The entrepreneurial ecosystem and born globals: the Estonian context. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(2), 117-138.

Volkmann, K. B. C. K. (2018). Stakeholder support for sustainable entrepreneurship – a framework of sustainable entrepreneurial ecosystems. *International Journal of Entrepreneurial Venturing, 10*(2), 172-201.

Wadee, A. A., & Padayachee, A. (2017). Higher Education: Catalysts for the Development of an Entrepreneurial Ecosystem, or ... Are We the Weakest Link? *Science Technology and Society, 22*(2), 284-309.

Yang, S., Kher, R., & Lyons, T. S. (2018). Where Do Accelerators Fit in the Venture Creation Pipeline? Different Values Brought by Different Types of Accelerators. *Entrepreneurship Research Journal, 8*(4), 000442663700002

Yi, G. F., & Uyarra, E. (2018). Process Mechanisms for Academic Entrepreneurial Ecosystems: Insights from a Case Study in China. *Science Technology and Society, 23*(1), 85-106.

Appendices

Appendix 2.1: Sample Description

Author(s)	Year	Research Question(s)/Objectives	Methodological Approach	Theoretical Basis	Industry/Sector Focus	Country Focus
Audretsch, D. B. and M. Belitski (2017)	2017	Developing a model for explaining entrepreneurial activities variations	Quantitative Survey based		General	70 European Cities
Kshetri, N. (2014)	2014	What are the sources of entrepreneurial success of Estonia and South Korea?	Quantitative Case Study		General	Estonia and South Korea
Neumeyer, X., et al. (2018)	2018	Are there distinguishable social arreys in an entrepreneurial ecosystem, and if so, what are their characteristics?	Qualitative Case study	Social Network Theory	General	United States
Acs, Z. J., et al. (2017).	2017	Linking environment around entrepreneurs and entrepreneurship environments with an economy, and gauge its performance effects on the regional economy	Conceptualization		Technology	Global
Apa, R., et al. (2017).	2017	to provide insights on the relational dimension of a networked business incubator (NBI), by linking tenants among each other, with the incubator management and external actors.	Qualitative Case Study	Social Network Theory		Italy
Atiase, V. Y., et al. (2018)	2018	to investigate the quality of entrepreneurship and the depth of the supporting entrepreneurship ecosystem in Africa	Quantitative	Institutional Theory	General	African Countries
Bischoff, K., et al. (2018)	2018	To examine the collaboration of stakeholders from the entrepreneurial ecosystem in entrepreneurship education	Qualitative Case Study	Stakeholder Theory	Education	European higher educational institutions (HEIs)

Cowell, M., et al. (2018).	2018	to explore the dynamics of entrepreneurial ecosystems with both rural and urban features,	Mixed Method Case Study	Social Network Theory	General	Virginia
Di Fatta, D., et al. (2018).	2018	To investigate the relationships between start-up firms inside incubator	Qualitative Case Study	Social Network Theory	General	Spain
Economidou, C., et al. (2018).	2018	What are fundamental reforms necessary for entrepreneurial ecosystem improvements	Conceptualization		General	Europe
Eesley, C. E. and W. F. Miller (2018).	2018	Aimed at assessing the University`s economic impact towards developing entrepreneurial ecosystem	Quantitative Survey		Education	USA
Huang-Saad, A., et al. (2018).	2018	To describe the role of universities towards development of entrepreneurial ecosystems	Qualitative Case Study		Technology	USA
Kuratko, D. F., et al. (2017).	2017	To theorize on how entrepreneurs, establish their venture legitimacy within entrepreneurial ecosystem	Conceptualization		General	
Miller, D. J. and Z. J. Acs (2017)	2017	To understand how university campus can emerge as entrepreneurial ecosystem.	Case Study		Education	USA
Muldoon, J., et al. (2018)	2018	to examine the role of trust and distrust in social networks within the entrepreneurial ecosystem	Conceptualization	Social Network Theory	General	
Nicotra, M., et al. (2018).	2018	To design the framework for operationalizing causal effects of entrepreneurial ecosystems factors on productive entrepreneurship	Conceptualization		General	
Pillai, T. R. and A. Ahamat (2018).	2018	Investigating the role of social cultural capital in youth entrepreneurial ecosystem	Qualitative based case study	Social Capital and Social Network Theories	General	Malysia

Pittz, T. G. and G. Hertz (2018).	2018	To investigate the role of entrepreneurial center in entrepreneurial ecosystem	Qualitative Delphi based study		Education	US and Europe
Roundy, P. T. (2017).	2017	To develop the framework for contextualizing entrepreneurial ecosystem in small towns	Conceptualization		General	
Schaeffer, V. and M. Matt (2016).	2016	Explore the role played by universities as hub organization in stimulating non-matured entrepreneurial ecosystem	Qualitative based case study		Education	France
Schillo, R. S. (2018).	2018	To investigate the effects of research-based spin-off companies on entrepreneurial ecosystems.	Quantitative Survey based		R & D and Education	Canada
Steinz, H. J., et al. (2016).	2016	Studying barriers for foreign cleantech start-ups in penetrating Chinese Market and possible strategies for overcoming such barriers.	Qualitative based case study	Institutional Theory	Technology	China
St-Pierre, J., et al. (2015).	2015	Challenges facing SME development in Cameroon	Quantitative Survey based		General	Cameroon
Sussan, F. and Z. J. Acs (2017).	2017	To establish the interconnection between digital ecosystem and entrepreneurial ecosystem	Conceptualization		Information Technology	
Theodoraki, C., et al. (2018).	2018	To create an understanding on sustainable university-based entrepreneurial ecosystems	Qualitative based case study	Social Capital Theory	Education	France
Van Weele, M., et al. (2018).	2018	What are the main challenges faced by start-ups in Western Europe?	Qualitative based case study		Technology	Europe
Velt, H., et al. (2018).	2018	RQ1. Which systemic elements represent a healthy entrepreneurial ecosystem? RQ2. What is the role of the entrepreneurial ecosystem in launching and growing born global start-ups?	Quantitative survey based		General	Estonia

Debbage, K. G. and S. Bowen (2018).	2018	To investigate the impact of entrepreneurial support systems by looking on how well entrepreneurs are linked to those systems	Quantitive		General	USA
Ferrandiz, J., et al. (2018).	2018	the role of higher education programs for entrepreneurs within entrepreneurial ecosystem	Quantitative based case study		Education	Spain
Harper-Anderson, E. (2018).	2018	The interconnection between partnership and leadership within entrepreneurial supporting organizations	Qualitative Case Study		General	Chicago
Kubera, P. (2017).	2017	Analyzing the impact of regulation and Regulatory Policy on entrepreneurial ecosystem	Qualitative Case Study		General	Poland
Sambo, W. (2018).	2018	How entrepreneurial ecosystem work in South Africa by reflecting the role of universities	Mixed Method		Education	South Africa
Motoyama, Y. and K. Knowlton (2017).	2017	Examining how entrepreneurial ecosystem is structured	Exploratory-Qualitative based	Social Network Theory	General	USA
Spigel, B. and R. Harrison (2018).	2018	Examining the relationship between ecosystem and clusters and regional innovation systems	Conceptualization		General	
Subrahmanya, M. B. (2017)	2017	How Bangalore Tech Start-Ups entrepreneurial ecosystem functions	Qualitative		Technology	India
Thompson, T. A., et al. (2018).	2018	How entrepreneurial Ecosystems take form	Conceptualization		General	
Yi, G. F. and E. Uyarra (2018).	2018	How a research university develops its academic entrepreneurial ecosystem	Qualitative based case study		Education	China
Wadee, A. A. and A. Padayachee (2017)	2017	To study the role played by Higher education as a catalyst towards entrepreneurial ecosystem development	Qualitative based case study		Education	South Africa

Yang, S., et al. (2018).	2018	Analyze the impact of incubation mechanisms towards entrepreneurial ecosystem development	Conceptualization		General	
Goswami, K., et al. (2018)	2018	Analyzing the intermediary role played by accelerators within entrepreneurial ecosystems	Qualitative		General	India
Harrison, B. S. R. (2018)	2018	examines the relationships between ecosystems and other existing literatures such as clusters and regional innovation systems	Conceptualization		General	
Volkmann, K. B. C. K.(2018)	2018	How does stakeholder support influence entrepreneurial ecosystem	Conceptualization		General	
Ventresca, T. A. T. J. M. P. M. J.(2018)	2018	examine the cultural cognitive and material micro-dynamics of activities occurring in support of social impact entrepreneurs and businesses	Qualitative	Field Theory	General	USA
Stam, E. (2015).	2015	Examine Entrepreneurial Ecosystem Approach and related shortcomings	Conceptualization		General	
Spigel, B. (2017)	2017	How entrepreneurial ecosystem attributes relate	Qualitative based case study		General	Canada
Morris, M. H., et al. (2018)	2018	Distinguishing Types of Entrepreneurial Ventures	Quantitative		General	USA
Mack, E. and H. Mayer (2015)	2015	to develop an evolutionary framework of EE development	Qualitative based case study		General	USA
Isenberg, D. J. (2010)	2010	How to start an entrepreneurial revolution	Conceptualization		General	
Colombo, M. G., et al. (2017).	2017	How entrepreneurial ecosystems are governed	Conceptualization		General	
Cohen, B. (2006).	2006	examines the applicability of the entrepreneurial ecosystem	Qualitative based case study		General	UK
Audretsch, D. B., et al.(2019)	2019	critically reflect on the usage of the term 'ecosystem	Conceptualization		General	

This page is intentionally left blank

Kansheba, J. M.P. (2020). Small business and entrepreneurship in Africa: the nexus of entrepreneurial ecosystems and productive entrepreneurship. *Small Enterprise Research, 27 (2)*, 110-124, DOI: 10.1080/13215906.2020.1761869

Chapter Three

Small Business and Entrepreneurship in Africa: The Nexus of Entrepreneurial Ecosystems and Productive Entrepreneurship.

Abstract

The impact of entrepreneurship and small business activities in Africa has habitually been lower and receive less attention in research. This study aims at investigating the mediation role of innovations on the relationship between entrepreneurial ecosystem approach and productive entrepreneurship. Using panel dataset of 35 African countries, the study contributes to existing literature in twofold. First, the panel regression findings contribute to the theoretical debate and fill the empirical gap, recent research has been dominated by conceptual works. The findings reveal mixed (positive and negative) and weak insignificant direct influence of eco-factors such as finance, government support and programs, knowledge, market, and culture on productive entrepreneurship. However, their influence is more pronounce when innovations mediate the relationship. Second, it provides new insight to policymakers and practitioners in developing policies and programs that foster entrepreneurial ecosystems and improved innovation performance for better entrepreneurship development. It concludes with suggestions for future research.

Keywords: *Entrepreneurial ecosystems, Productive entrepreneurship, Innovation, Entrepreneurs, Start-up*

3. Introduction

Entrepreneurship has been considered a vital organ that drive economic growth of many countries (Audretsch & Belitski, 2017). Fostering entrepreneurial ecosystems comes as a strategy to nurture country economy by promoting entrepreneurial processes and activities that ultimately support growth of small businesses. Isenberg (2010, p. 3) referred to entrepreneurial ecosystem as a set of interconnected entrepreneurial support elements such as leadership, culture, capital, markets, human skills and support. These elements in turn create a platform for smooth entrepreneurship development that promote economic growth and social welfare (Acs et al., 2018).

Extant studies on entrepreneurial ecosystems focus on distinguishing relevant eco-factors that create vibrant and sustainable entrepreneurial ecosystems (Audretsch et al., 2019; Malecki et al., 2018). However less has been done to study the causal relationships between eco-factors and productive entrepreneurship as an eco-output (Nicotra et al., 2018). Baumol (1990) and Acs et al., (2018) refer to productive entrepreneurship as any productive entrepreneurial activities that contribute directly or indirectly to economic growth and finally increases total welfare through production of additional output.

As the response to that inquiry gap Nicotra et al., (2018) develop a measurement framework for testing the causal effects between eco-factors, output and outcome of entrepreneurial ecosystems. These eco-factors are accumulative forms of capital such as financial, institutional, knowledge and social capitals within an ecosystem that enhance productive entrepreneurship (an eco-output) (Mack & Mayer, 2015). As the result of their work Nicotra et al., (2018) concluded by calling for empirical validation of their proposed framework.

Thus, this study contributes to existing literature in two ways. First by addressing the calls for empirical studies on entrepreneurial ecosystems research (Isenberg, 2010; Malecki, 2018). Research on entrepreneurial ecosystems has been dominated by conceptual studies while few empirical studies being done in developed countries (Corrente et al., 2019). This provides room for empirical studies in other settings with research potentials especially in developing economies. In this research, African countries have been used as a context. The study extends and tests the Isenberg`s theoretical framework by arguing that the effect of entrepreneurial ecosystems on productive entrepreneurship is mediated by innovations. Conducive entrepreneurial ecosystems supply necessary resources that promote innovations among

entrepreneurs (Del Giudice et al., 2014) and bring about innovative and productive startups. Secondly, the study provides insights for policymakers and practitioners on the direction and the focus of designed policies and programs in support of entrepreneurial environments and entrepreneurship development in general.

Based on evidence drawn from Global Entrepreneurship Monitor panel data from 2014 to 2018 of 35 African countries, the findings reveal that the influence of eco-factors of entrepreneurial ecosystems on productive entrepreneurship is completely mediated by innovation in terms of product and process innovations. The rest of the article proceeds as follows. Section 2 presents for review of literature and hypothesis development. Section 3 discusses the methods. Section 4 presents empirical findings, discussion, and implications. Section 5 provides for conclusion, limitations, and suggestions for future research.

3.1. Literature Review and Hypotheses Development

3.1.1. Entrepreneurial Dynamics and Development in Africa.

African entrepreneurial dynamics evolve around economic, social, political, and technological circumstances (George et al., 2016). Even though African continent has been recognized to have a promising economic trend over the past years, the living standards of her people cannot reflect such economic prosperity. Entrepreneurship comes as a solution for addressing such income gap among African indigenous (Kimhi, 2010). Economies of many African countries compose of small number of large companies but many small and medium enterprises (Dana et al., 2018). Thus, the presence of supportive entrepreneurial ecosystems will ensure not only vibrant but also productive entrepreneurship which ultimately stimulate persistent economic growth and improved welfare of people (Ratten & Jones, 2018).

Abubakar, (2015) stresses about the role played by entrepreneurs and their related startups and the need to be placed as a special focus for entrepreneurship initiatives in Africa. Robson et al., (2009) point out that small enterprises account for about 70 percent of job creation and contribute about 60 percent of GDPs in many African economies. For instance, Adom et al., (2018) pose that Ghanaian business is dominated by small and medium enterprises that account up to 92 percent while create about 85 percent of all manufacturing jobs. Similar significant contribution has been found in other parties of the region (Galperin & Melyoki, 2018).

However, these startups are still faced with number of challenges due to inherent risky environment and political instabilities. Some of critical identified entrepreneurial challenges being unreliable entrepreneurial assets such as finance, managerial skills and infrastructures (Junne, 2018). Other challenges being poor business support related services such as un-customized governmental programs, lack of enough incubators, inadequate and unaffordable professional services and un-supportive culture (Madichie & Ayasi, 2018). These challenges hinder entrepreneurial performance and growth in many African countries.

3.1.2. The influence of entrepreneurial Ecosystems on productive entrepreneurship.

The concept of entrepreneurial ecosystems has been associated with the territorial capacity to create a system of interconnected heterogeneous elements that enhance formation and development of innovative business ventures (Audretsch & Belitski, 2017). Isenberg, (2010) referred to entrepreneurial ecosystems as a set of interrelated and coordinated factors that enables entrepreneurship. These factors include finance, knowledge, culture, infrastructures, institutions, legal and regulatory environments. Presence of these eco-factors create conducive and quality entrepreneurial ecosystems that foster productive entrepreneurship (Nicotra et al., 2018). Audretsch et al. (2019) referred to productive entrepreneurship as productive entrepreneurial activity that contributes directly or indirectly to the net output of the economy or to the capacity to produce additional output and increase total welfare.

Finance is necessary resource to entrepreneurs both at startup and scale-up phases. Financial capital is related to funds sourced from different internal (e.g. retained earnings) and external (lenders and investors) sources. Kelly & Kim (2016) provide the set of indicators of reliable financial capital in a certain ecosystem: availability of venture and angel capitals, reliable financial systems with entrepreneur-friendly debt finance (Roundy, 2017).

Institutional capital comprises of government rules, regulations and supporting structures. Legal and regulatory frameworks act as rules of the game and can be incentives or disincentives to productive entrepreneurs. Cohen (2006) identified some of these rules and regulations being easy to do business, tax incentives and business-friendly policies. Additionally, Nicotra et al., (2018) referred to support structures as public or private organizations that support the formation and growth of entrepreneurial ventures via provision of necessary resources and services such as working spaces, infrastructures, coaching and mentorship, professional

services, and networking. Studies further support that quality of supporting institutions can explain entrepreneurial disparities among countries and regions (Mack & Mayer, 2015).

Another form of capital relevant to entrepreneurs is knowledge capital. This is necessary capital which is associated with human capital availability and development in an entrepreneurial ecosystem (Del Giudice, 2014). Nicotra et al. (2018) considered knowledge capital as accumulative stock of knowledge, skills and abilities that can be transferred through entrepreneurial education, trainings, experience and research and development activities (Chen & Wu, 2014). Presence of research institutions and universities facilitates competence and knowledge spill over within a territory (Scuotto et al.,2018). Additionally, knowledge capital comes as a fundamental resource for innovation which in turn stimulates entrepreneurial initiatives (Sussan & Acs, 2017).

Adler and Kwon (2002) considered social capital as set of individual and organizational relationships that enable course of actions and value creation within a society. Tsai (2001) views social capital as shared resource in form of networks, rules, norms, values, obligations, and opportunities among people. Cultural support and networking determine and shape entrepreneurial decisions of entrepreneurs (Vahid et al., 2019). Social interactions create platforms for entrepreneurial opportunities such as access to information, skills, resources and potential markets. Culture that embrace entrepreneurial success and failure stories develops entrepreneurial aspirations among its members and enable entrepreneurs in gaining legitimacy of their activities (Spigel & Harrison, 2018).

Market accessibility with reliable revenue paying customers is another contributing factor for productive entrepreneurship (Isenberg, 2010). However, a well entrepreneurial supporting market needs to be with less barriers for easy market entry and exit especially by new firms (Kuratko et al., 2017). A supportive market needs to be large with variety of demand and dynamic enough to stimulate new startups (Nicotra et al., 2018).

3.1.3. The link between Entrepreneurial Ecosystems, Innovations and Productive entrepreneurship

The study postulates that the influence of eco-factors on productive entrepreneurship is more pronounce when innovations mediate the relationship. Innovations drive entrepreneurial process (Kuratko et al., 2017). Innovations through invention of new products and processes

positively impact entrepreneurial performance and socio-economic development (Scuotto et al., 2019). Carayannis and Grigoroudis (2012) add that innovations enable entrepreneurs to continuously identify and explore new ideas and markets that eventually improves customers` satisfaction. Innovative and proactive entrepreneurs are opportunity creators (Del Giudice et al., 2014) and successfully engage in productive entrepreneurial activities more than less innovative entrepreneurs who are associated with low survival rate and stagnant growth (Antony et al., 2017).

Given the over-changing economic and business-related environments entrepreneurs and their related startups need to innovate in order to remain competitive (Scuotto et al., 2017). Vibrant entrepreneurial ecosystems are the habitat of such innovative entrepreneurs (Herman, 2018). Economies with quality and conducive entrepreneurial ecosystems have higher innovation performance than economies with poor entrepreneurial ecosystems (Acs et al., 2018). Entrepreneurial ecosystems provide necessary inputs (both intangible eg., human and technological know-how and tangible eg., infrastructures) for innovation performance (Carayannis et al., 2017).

For entrepreneurs to fully capitalize from innovation the role of knowledge management cannot be ignored (Colin, 1999; Darroch, 2005). Entrepreneurial ecosystems with good network of entrepreneurial oriented universities and research and development institutions tend to have more research-based spin offs companies as a result of knowledge creation and transfer (Papa et al., 2018; Scuotto et al., 2019). Healthy collaborations within entrepreneurial ecosystems enable entrepreneurs to acquire internal and external knowledge that improve their open innovation (Santoro et al., 2018) and thus effect their performance through cost reduction (Giampaoli et al., 2017). Following the theoretical background and evidence from extant literature, this study argues a potential link between eco-factors of entrepreneurial ecosystems, innovations and productive entrepreneurship. Therefore, it seeks to test the following hypotheses:

Hypothesis 1: *Eco-factors of entrepreneurial ecosystem positively influence productive entrepreneurship (an eco-output).*

Hypothesis 2: *The influence of eco-factors of entrepreneurial ecosystems on productive entrepreneurship is mediated by innovations in terms of product and process innovations.*

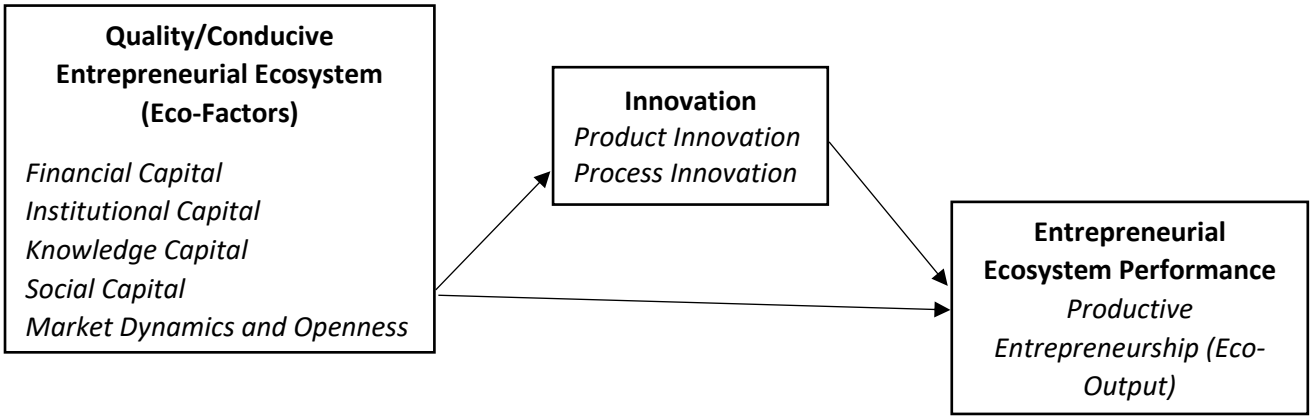


Figure 3.1. The conceptual framework: The Link between eco-factors of entrepreneurial ecosystems, innovations, and productive entrepreneurship.

3.2. Methods

3.2.1. Data and Variable Measurement

The panel data from 2014 to 2018 of 35 African economies was organized. Table.1 presents nature of the data deployed and its respective sources. Data was organized from three global databases which are World Bank, United Nations Development Program (UNDP) and Global Entrepreneurship and Development Institute (GEDI). GEDI provides annual reports that assess the quality and depth of entrepreneurial ecosystems of different countries globally based on Global Entrepreneurship Monitor (GEM) survey.

Dependent Variable: The study focuses on productive entrepreneurship as an eco-output of entrepreneurial ecosystem (Acs et al., 2017). Nicotra et al. (2018) in their measurement framework of entrepreneurial ecosystems suggested different indicators for productive entrepreneurship. Corrente et al. (2019) used number of high-growth startups when comparing entrepreneurial ecosystems in European countries. However, given data accessibility limitations (as it is difficult to find similar data for Africa), this study chose total early-stage entrepreneurial activity (TEA) as another suggested indicator for performance-based productive entrepreneurship (Herman & Szabo, 2014).

Independent Variable: The study deployed eco-factors of entrepreneurial ecosystem as suggested by Nicotra et al., (2018). These eco-factors are financial capital; institutional capital; knowledge capital; social capital and market dynamics and openness. Indices from GEM

database were organized for these variables. Descriptions for these variables are provided in Table 3.1.

Mediating Variable: This study hypothesized that the relationship between eco-factors of entrepreneurial ecosystems on productive entrepreneurship is mediated by the innovation. Innovation index is split into two. First, new product innovation which captures country`s entrepreneurs` potentials to develop new products and services or improve existing products and services. Second, process innovation which captures country`s entrepreneurs` potentials to apply or introduce new technology that enhance competitiveness and ability to satisfy customer demands (Acs et al., 2018).

Control Variables: For robust results, the study introduced population (Anyanwu, 2013), education (Atiase et al., 2018), gross domestic product growth rate (Audretsch & Belitski, 2017) and foreign direct investment (Anwar & Sun, 2015) as control variables.

Table 3.1. Summary of Variable Description and Related Data Source.

Variable	Data Source
Productive Entrepreneurship	GEDI
Total early-stage entrepreneurial activities as a performance-based indicator	
Financial Capital	GEDI
i). The availability of financial resource for SMEs (including grants and subsidies)	
Institutional Capital	
ii). Government focuses Entrepreneurship as a relevant economic agenda.	
iii). Government`s taxes or regulations are either size-neutral or encourage new and existing SMEs	GEDI
iv). Government set quality programs directly assisting SMEs at all levels of government (national, regional, municipal)	
v). Ease access to physical infrastructure (e.g. water, transport, electricity, telecommunication, land, space at affordable prices	
vi). Support Structure e.g. availability of mentors/advisors, incubators/accelerators	
Knowledge Capital	
vii). The extent to which training in creating or managing SMEs is incorporated within the education and training system at primary and secondary levels	GEDI
viii). Post school entrepreneurial education and training	
ix). Research and Development transfer: The extent to which national research and development will lead to new commercial opportunities and is available to SMEs	
Market Dynamics and Openness	
x). The level of change in markets from year to year	GEDI
xi). The extent to which new firms are free to enter existing markets	
Social Capital	
xii). Supporting Culture: The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income	GEDI

Innovation *xiii). Product Innovation capturing entrepreneurs` potentials to develop new products and to adopt or imitate existing products.* *xiv). Process innovation capturing entrepreneurs` potentials to utilize gained knowledge to apply or create new technology*	GEDI
Population: *pop aged 15-64 as % of total population*	World Bank
Education Development Index: *Level of education as proxied based of four goals of Education for All (EFA)- universal primary education, adulty literacy, quality of education and gender***.**	UNDP
GDP growth rate: *Growth domestic product growth rate*	World Bank
Foreign Direct Investment: *Flow as % of net GDP*	World Bank

3.2.2. Model Estimation

The study aimed at examining the mediation role of innovation on relationship between eco-factors of entrepreneurial ecosystems and productive entrepreneurship as an eco-output. Panel data modelling was employed where the model was specified as follows:

$$PEjt=\beta_0+\beta_1 FCjt+\beta_2 ICjt+\beta_3 KCjt+\beta_4 SCjt+\beta_5 MDOjt+\beta_6 INNOjt+\gamma Mjt+c_j+\varepsilon jt \quad (1)$$

Where PEjt represents productive entrepreneurship measured as total early stage entrepreneurial activity (TEA) of country *j* at time *t*. FCjt stands for financial capital for country j at time t. ICjt stands for institutional capital for country j at time t. KCjt stands for knowledge capital for country j at time t. SCjt stands for social capital for country j at time t. MDOjt stands for market dynamics and openness for country j at time t. Mjt is a vector for control variables, c_j accounts for unobserved fixed effects while εjt is an idiosyncratic error term.

Furthermore, the presence of multicollinearity problem was tested by using variance inflation factor (VIF). Multicollinearity is the situation when there is very high intercorrelations among independent variables which results to unreliable model results. The VIF results (see VIF results in Appendix 3.1) for both explanatory and control variables were less than the cut-off point of 5, which indicates absence of serious multicollinearity problem (Joseph, Willium, Barry, & Rolph, 2014). This was further confirmed by correlation results among variables (see results in Appendix 3.1), where none of correlation values were above the threshold of 0.90 (Lensink et al., 2017).

The model specification problem was performed by using the linktest for model specification with null hypothesis that the model is correctly specified. The results show insignificant p-value of 0.866 (being greater than the cut-off point of 0.05), meaning that the model is correctly

specified (see Linktest results in Appendix 3.2). Statistically significant Wald`s chi-squared furthermore confirm that the model is correctly specified where the regressors explain up to 33 percent (R-squared within) of the variance of the outcome variable.

Given the nature of the data (longitudinal) the choice of analytical method followed the panel regression model selection between random effects and fixed effects estimators where the Hausman test was performed. The Hausman test follows the null hypothesis that the random effects (RE) estimator is appropriate (Hausman & Taylor, 1981). The Hausman test results show the p-value of (0.99) being greater than 0.05 led to acceptance of the null hypothesis that random effects estimator is consistent and appropriate. The findings of this study are consistent and similar (with slight difference) with the study of Corrente et al., (2019) who used different analytical methods (Stochastic multicriteria acceptability analysis (SMAA) and SMAA for strategic management analytics and assessment (SMAA-S)) to evaluate and compare entrepreneurial ecosystems of European countries. Thus, this confirms further that obtained results are robust.

3.3. Results

3.3.1. Descriptive Statistics

Table 3.2 presents descriptive statistics results. The average index for the productive entrepreneurship in terms of total early-stage entrepreneurial activity has been observed to be 21.7 percent. This entails that, entrepreneurial ecosystems in emerging economies especially in Africa still has less outputs in terms of productive entrepreneurship. Such argument is further supported by lower scores of eco-factors which denote the quality and extent of entrepreneurial ecosystems. On average eco-factors score between 22 percent and 43 percent. Product and process innovations on average found to be 27.7 percent and 23.7 percent respectively. For control variables, population has an average score of 56 percent while education development has an average 44.4 percent. Average gross domestic product growth rate has been observed to be 1.2 percent, where the foreign direct investment as net flow percent of gross domestic product being 55 percent.

Table 3.2. Descriptive Statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
Productive Entrep (TEA)	175	21.73	6.89	8.77	42.44
Financial Capital					
Availability of Finance	175	28.58	5.45	14.00	41.22
Institutional Capital					
Gvt-Entrep as Econ Agenda	175	28.61	6.34	14.00	42.11
Gvt-Tax&Bu`cracy	175	26.60	6.43	14.22	46.44
Gvt-Entrep Programs	175	29.36	6.13	14.89	41.67
Physical Infrastructures	175	42.47	5.40	24.89	53.33
Support Services	175	32.73	4.30	14.00	41.00
Knowledge Capital					
Basic Sch Entrep Edu&Train	175	21.58	5.14	12.67	40.78
Post Sch Entrep Edu&Train	175	31.57	4.90	16.67	43.89
Research and Development	175	26.20	4.93	13.00	38.56
Social Capital					
Entrep Supporting Culture	175	32.03	6.24	19.11	47.78
Internal Market					
Inter Mrkt Dynamics	175	33.71	6.11	19.78	47.89
Inter Mrkt Openness	175	28.24	4.50	14.33	41.44
Innovations					
Product Innovation	175	27.74	16.13	4.00	83.00
Process Innovation	175	23.75	14.78	2.32	67.00
Controls					
Pop	175	56.32	5.24	49.31	68.92
Edu	175	0.44	0.12	0.22	0.70
GDP	175	1.18	4.38	-24.50	24.97
FDI	175	0.55	1.26	-3.59	10.67

3.3.2. *The Link between Entrepreneurial ecosystems, productive entrepreneurship and mediation effect of innovations: Random Effects (RE)*

Table 3.3 presents RE estimates of the effects of eco-factors of entrepreneurial ecosystem on productive entrepreneurship and the mediation effects of product and process innovations. Model (1) examined the effects of control variables on dependent variable. The results show that population and education development have positive and statistically significant influence on productive entrepreneurship. GDP growth and foreign direct investment are statistically insignificant suggesting that they have no influence on productive entrepreneurship.

Model (2) results provides for the influence of independent variables (eco-factors of entrepreneurial ecosystems) on productive entrepreneurship without the mediating variable.

Hypothesis 1 provides that eco-factors of entrepreneurial ecosystems have positive influence on productive entrepreneurship. The findings show that financial capital, institutional capital, knowledge capital and internal market dynamics and openness are statistically insignificant meaning that they have no influence on productive entrepreneurship. However social capital (supporting culture) found to have negative and statistically significant influence on productive entrepreneurship.

The findings in model (3) and (4) show the influence of independent variables (eco-factors of entrepreneurial ecosystems) on mediating variable-innovations (product and process innovations). The results show institutional capital through government entrepreneurial programs and physical infrastructures has positive and statistically significant influence on product innovations. Furthermore, knowledge capital through research and development transfer has positive and statistically significant influence on product innovations.

Table 3.3. The link between Entrepreneurial Ecosystem, Innovation and Productive Entrepreneurship: Random Effects.

	(1) *Productv Entrep.*	**(2)** *Productv Entrep.*	**(3)** *Product Innovation*	**(4)** *Process Innovation*	**(5)** *Productv Entrep*	**(6)** *Productv Entrep*
Variables	**Coef**	**Coef**	**Coef**	**Coef**	**Coef**	**Coef**
Pop	0.442***	0.409***	0.011***	0.009*	0.163	0.124
	(0.1162)	(0.1279)	(0.0030)	(0.0056)	(0.1410)	(0.1467)
Edu	13.259***	12.790***	-0.108	-0.076	14.284***	14.495***
	(4.6071)	(4.7215)	(0.1501)	(0.2051)	(4.8397)	(4.9232)
GDP growth rate	-0.103	-0.140*	-0.004***	-0.003	-0.0324	-0.0448
	(0.0823)	(0.0773)	(0.0013)	(0.0020)	(0.0520)	(0.0595)
FDI	-0.446	-0.397	-0.014*	0.001	-0.420	-0.332
	(0.3942)	(0.4039)	(0.0084)	(0.0069)	(0.3543)	(0.3778)
Product Innovation					8.453***	9.364***
					(3.2627)	(3.6078)
Process Innovation					18.131***	18.218***
					(3.4552)	(3.6739)
Finance		0.388	0.029	-0.022		0.507
		(1.5870)	(0.0394)	(0.0252)		(1.3864)
Gvt (Entrep EconAgenda)		-0.614	-0.026	-0.017		-0.171
		(1.5099)	(0.0228)	(0.0251)		(1.2321)
Gvt (Tax& Bu`cracy)		-0.181	0.004	0.001		-0.288
		(1.2846)	(0.0438)	(0.0245)		(1.1336)
Gvt (Entrep Programs)		0.259	0.063**	0.025		-0.599
		(1.7189)	(0.0305)	(0.0289)		(1.3965)

Physical Infrastructures		-0.018 (1.2706)	0.039* (0.0235)	0.024 (0.0212)		-0.695 (1.2874)
EntrepSupport Services		-0.992 (1.6224)	-0.019 (0.0394)	-0.0375 (0.0324)		-0.307 (1.2365)
KnowCapital (BSEET)		-0.722 (1.6534)	0.021 (0.0364)	-0.003 (0.0352)		-0.448 (1.2041)
KnowCapital (PSEET)		0.205 (1.4703)	-0.052 (0.0329)	-0.019 (0.0277)		0.896 (1.2742)
KnowCapital (R&D)		-0.278 (1.9666)	0.069* (0.0396)	-0.019 (0.0389)		0.747 (1.4178)
InternalMakert Dynamics		0.339 (0.8551)	0.040* (0.0219)	0.037* (0.0202)		-0.711 (0.7628)
InternalMakert Openness		1.865 (1.823)	0.033 (0.0572)	0.047 (0.0404)		0.351 (1.6019)
Entrep.Culture		-1.728* (0.9884)	-0.030 (0.0297)	-0.027 (0.0207)		-1.109 (0.8216)
Constant	-8.667 (6.1939)	-2.603 (8.4996)	-0.397* (0.2144)	-0.259 (0.2457)	-0.194 (6.6762)	7.619 (8.4958)
R-squared (within)	0.001	0.03	0.10	0.09	0.30	0.33
Wald Chi2	49.8***	160.45***	104.41***	61.29***	163.70***	325.08***
Hausman Test (p-value) 0.99						
Obs. 175						
Countries 35						

Model (5) reports the findings on the influence of product and process innovations on productive entrepreneurship. The findings show that product and process innovations have positive and statistically significant influence on productive entrepreneurship. The results in model (6) provides support for the hypothesis that the influence of eco-factors of entrepreneurial ecosystems on productive entrepreneurship is mediated by innovations (product and process innovations). Combined results (model 6) show that eco-factors of entrepreneurial ecosystems are statistically insignificant while the product and process innovations as mediators are positive and statistically significant.

3.4. Discussion

The findings in model (2) reveal a weak and mixing direct effect of eco-factors on productive entrepreneurship without the mediation role of innovation. The findings show that almost half

of eco-factors have positive or negative but insignificant influence on productive entrepreneurship. However, entrepreneurial culture found to have significant but negative effect on productive entrepreneurship. Despite its importance in explaining disparities in entrepreneurship development among nations, entrepreneurial supporting culture still receives less attention among members of societies in many of developing countries (Brownson, 2013). Unlike in developed economies (Mindaugas & Rasa, 2013), most of societal norms and values in developing economies do not embrace entrepreneurial behaviours and entrepreneurial success and failure stories (Castillo et al., 2017). These findings come in line with findings from the study of Corrente et al., (2019) who by using different analytical methods (SMAA and SMAA-S) analysed the correlation coefficients using Kendall tau test between the eco-factors and the eco-output (number of high-growth startups) of European countries. Similarly, they found mixed effects (half of eco-factors found to have positive correlation with eco-output while others found to have negative correlation) while entrepreneurial culture, government programs and internal market dynamics being most relevant factors.

Furthermore, the findings provide supporting evidence that the influence of eco-factors on productive entrepreneurship is mediated by innovations. The findings in model (6) show that product and process innovations have positive and statistically significant influence on productive entrepreneurship. This provides supporting evidence that entrepreneurial ecosystems foster productive entrepreneurship through innovations (Hullova et al., 2019). As argued by Scuotto et al. (2019) and Sussan &Acs (2017) vibrant entrepreneurial ecosystems are houses for innovative startup firms. The findings suggest that African entrepreneurial ecosystems promote innovation performance mainly through entrepreneurial oriented government programmes, infrastructures, knowledge capital through research and development activities, as well internal market dynamics. Improved innovations (in terms of product and service innovations) in turn foster productive entrepreneurship. The increased magnitudes of coefficients of product and process innovations reveal the presence of complete mediation effects of innovations on the causal effect relationship between eco-factors of entrepreneurial ecosystems and productive entrepreneurship.

3.5. Conclusion

This article aims at examining the potential mediation effects of innovations on the causal relationship between eco-factors of entrepreneurial ecosystems and productive entrepreneurship. Several extant studies on entrepreneurial ecosystem research focus on

identifying relevant supporting elements for successful and vibrant entrepreneurial ecosystems. However, less has been done to provide empirical evidence of the causal relationship between eco-factors and eco-output of entrepreneurial ecosystems.

The panel regression (random effects) results provide less support evidence for direct influence of eco-factors of entrepreneurial ecosystems on productive entrepreneurship in developing economies. Financial capital, institutional capital, knowledge capital and internal market dynamics and openness found to have no direct influence on productive entrepreneurship. Social capital through entrepreneurial supporting culture found to have negative and significant direct influence on productive entrepreneurship. This is because societal norms and values in most of developing countries are still reluctant in embracing entrepreneurial behaviours (Adler & Kwon, 2002; Castillo et al., 2017). However, this article finds complete mediation effects of product and process innovations on the causal relationship between eco-factors and eco-output of entrepreneurial ecosystems. Conducive and quality entrepreneurial ecosystems provide necessary inputs that foster innovations which in turn promotes productive entrepreneurship (Scuotto et al., 2019; Sussan & Acs, 2017).

3.5.1. Theoretical and practical Implications

The study contributes towards the theoretical and empirical gap and extend the existing conceptual model on eco-factors and eco-output of entrepreneurial ecosystem by providing statistical evidence on the mediating role played by innovations. The findings reveal that entrepreneurial ecosystems can foster innovation performance by providing entrepreneurs with necessary resources such as government supports (eg., customized entrepreneurial programmes and infrastructures); knowledge capital in terms of research and development activities as well internal market dynamics which in turn improves their entrepreneurial performance. In addition, the findings inform the policy makers and practitioners that designed policies and programs fostering quality of entrepreneurial environments (ecosystems) and entrepreneurship must be more customized focusing on improving innovative capacity of entrepreneurs and their related startups.

3.5.2. Limitations and Area for further research

This study encounters some limitations. The analysis is based on Global Entrepreneurship Monitor database which is compiled based on views of some selected country representatives

on the quality and depth of entrepreneurial ecosystems at national level. This may suffer from implicitly biasness due to subjectivity among those experts. Thus, the future research can focus on micro-level data analysis, as suggested by Malecki (2018) that the local perspective provide rich information about entrepreneurial ecosystems. Entrepreneurial ecosystems are good habitat for innovative entrepreneurs, future research could also explore challenges these entrepreneurs encounter in acquiring, utilizing, and managing internal and external knowledge during designing and implementing innovative products and services. Future research could further explore how collaborations among different industries within the entrepreneurial ecosystem can moderate the effect of innovations on productive entrepreneurship.

References

Abubakar, H. A. (2015). Entrepreneurship development and financial literacy in Africa. *World Journal of Entrepreneurship Management and Sustainable Development 11(4),* 281-294.

Acs, Z. J., Estrin, S., Mickiewicz, T., & Szerb, L. (2018). Entrepreneurship, institutional economics, and economic growth: an ecosystem perspective. *Small Business Economics, 51*(2), 501-514.

Acs, Z. J., Stam, E., Audretsch, D. B., & O'Connor, A. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics, 49*(1), 1-10.

Ács, Z. J., Szerb, L., & Lloyd, A. (2018). Global Entrepreneurship Index. *The Global Entrepreneurship and Development Institute*, 1-89.

Adom, K., Chiri, N., & Quaye, D. (2018). An Assessment of Entrepreneurial Disposition and Culture in Sub-Saharan Africa: Some Lessons from Ghana. *Journal of Developmental Entrepreneurship*, 23(1).

Adler, P. S., & Kwon, S.-W. (2002). Social Capital: Prospects for a New Concept. *Academy of Management Review, 27*(1), 17-40.

Anwar, S., & Sun, S. Z. (2015). Foreign direct investment in R&D and domestic entrepreneurship in China's manufacturing industries. *Applied Economics, 47*(16), 1633-1651.

Anyanwu, J. C. (2013). Characteristics and Macroeconomic Determinants of Youth Employment in Africa. *African Development Review-Revue Africaine De Developpement, 25*(2), 107-129.

Audretsch, D. B., & Belitski, M. (2017). Entrepreneurial ecosystems in cities: establishing the framework conditions. *Journal of Technology Transfer, 42*(5), 1030-1051.

Audretsch, D. B., Cunningham, J. A., Kuratko, D. F., Lehmann, E. E., & Menter, M. (2019). Entrepreneurial ecosystems: economic, technological, and societal impacts. *Journal of Technology Transfer, 44*(2), 313-325.

Carayannis, E., & Grigoroudis, E. (2012). Linking innovation, productivity, and competitiveness: implications for policy and practice. *Journal of Technology Transfer, 39*(2), 199-218.

Carayannis, E. G., Grigoroudis, E., Del Giudice, M., Della Peruta, M. R., & Sindakis, S. (2017). An exploration of contemporary organizational artifacts and routines in a sustainable excellence context. *Journal of Knowledge Management, 21*(1), 35-56.

Castillo, M., Bastista, R., & Zuniga, A. (2017). The Relationship between Culture and Entrepreneurship: From Cultural Dimensions of GLOBE Project. *Revista Espacios, 38*(34), 12-27.

Chen, J.-L. and I.-L. Wu (2014). Knowledge management driven firm performance: the roles of business process capabilities and organizational learning. *Journal of Knowledge Management 18(6)*, 1141-1164.

Colin, A. (1999). Knowledge management and process performance. *Journal of Knowledge Management, 3*(2), 143-154.

Corrente, S., Greco, S., Nicotra, M., Romano, M., & Schillaci, C. E. (2019). Evaluating and comparing entrepreneurial ecosystems using SMAA and SMAA-S. *Journal of Technology Transfer, 44*(2), 485-519.

Dana, L., Ratten, V., & Honyenuga, B. Q. (2018). Introduction to African Entrepreneurship. *African Entrepreneurship: Challenges and Opportunities for Doing Business*, 1-8.

Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of Knowledge Management, 9*(3), 101-115.

Del Giudice, M., Manlio Del Giudice, P., Vincenzo Maggioni, P., & Maggioni, V. (2014). Managerial practices and operative directions of knowledge management within inter-firm networks: a global view. *Journal of Knowledge Management, 18*(5), 841-846.

Galperin, B. L., & Melyoki, L. L. (2018). Tanzania as an Emerging Entrepreneurial Ecosystem: Prospect and Challenges. *African Entrepreneurship: Challenges and Opportunities for Doing Business*, 29-58.

George, G., Corbishley, C., Khayesi, J., Haas, M. R., & Tihanyi, L. (2016). Bringing Africa in: Promising direction for management research. *Academy of Management Journal, 39*(2), 377–393.

Giampaoli, D., Ciambotti, M., & Bontis, N. (2017). Knowledge management, problem solving and performance in top Italian firms. *Journal of Knowledge Management, 21*(2), 355-375.

Hausman, J., & Taylor, W. (1981). Panel Data and Unobservable Individual Effects. *Econometrica, 49*(6), 1377-1398.

Herman, E. (2018). Innovation and entrepreneurship for competitiveness in the EU: an empirical analysis. *Proceedings of the International Conference on Business Excellence, 12*(1), 425-435.

Hullova, D., Simms, C. D., Trott, P., & Laczko, P. (2019). Critical capabilities for effective management of complementarity between product and process innovation: Cases from the food and drink industry. *Research Policy, 48*(1), 339-354.

Isenberg, D. J. (2010). The Big Idea: How to Start an Entrepreneurial Revolution. *Havard Business Review, 88*(6), 40-50.

Joseph, H., Willium, B., Barry, B., & Rolph, A. (2014). *Multivariate Data Analysis* (7 ed.): Pearson Education Limited.

Junne, G. (2018). African Entrepreneurship: Constraints and Improvements. *African Entrepreneurship: Challenges and Opportunities for Doing Business*, 117-130.

Kimhi, A. (2010). Entrepreneurship and income inequality in southern Ethiopia. *Small Business Economics,* 34(1), 81–91.

Kuratko, D. F., Fisher, G., Bloodgood, J. M., & Hornsby, J. S. (2017). The paradox of new venture legitimation within an entrepreneurial ecosystem. *Small Business Economics, 49*(1), 119-140.

Lensink, R., Mersland, R., Vu, N. T. H., & Zamore, S. (2017). Do microfinance institutions benefit from integrating financial and nonfinancial services? *Applied Economics, 50*(21), 2386-2401.

Mack, E., & Mayer, H. (2015). The evolutionary dynamics of entrepreneurial ecosystems. *Urban Studies, 53*(10), 2118-2133.

Madichie, N. O., & Ayasi, K. (2018). Entrepreneurial Opportunities and Challenges for Retired Senior Military Officers in Nigeria. *African Entrepreneurship: Challenges and Opportunities for Doing Business*, 131-152.

Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. *Geography Compass, 12*(3).

Mindaugas, L., & Rasa, M. (2013). The Role of Culture on Entrepreneurship in Lithuania. *Socialiniai tyrimai / Social Research., 2*(31), 55-69.

Nicotra, M., Romano, M., Del Giudice, M., & Schillaci, C. E. (2018). The causal relation between entrepreneurial ecosystem and productive entrepreneurship: a measurement framework. *Journal of Technology Transfer*, *43*(3), 640-673.

Papa, A., Dezi, L., Gregori, G. L., Mueller, J., & Miglietta, N. (2018). Improving innovation performance through knowledge acquisition: the moderating role of employee retention and human resource management practices. *Journal of Knowledge Management*. doi:10.1108/jkm-09-2017-0391.

Ratten, V., & Jones, P. (2018). Bringing Africa into Entrepreneurship Research. *African Entrepreneurship: Challenges and Opportunities for Doing Business*, 9-29.

Robson, J.P., Haugh, M.H. and Obeng, A.B. (2009). Entrepreneurship and innovation in Ghana: Enterprising Africa. Small Business Economics, 32 (3): 331-350.

Roundy, P. T. (2017). "Small town" entrepreneurial ecosystems Implications for developed and emerging economies. *Journal of Entrepreneurship in Emerging Economies, 9*(3), 238-262.

Ronen H., Dafna S., & Dan K. (2019) Small businesses are promoting innovation!! Do we know this?, Small Enterprise Research, 26:1, 18-35.

Santoro, G., Bresciani, S., & Papa, A. (2018). Collaborative modes with Cultural and Creative Industries and innovation performance: The moderating role of heterogeneous sources of knowledge and absorptive capacity. *Technovation*. doi:10.1016/j.technovation.2018.06.003

Scuotto, V., Del Giudice, M., Garcia-Perez, A., Orlando, B., & Ciampi, F. (2019). A spill over effect of entrepreneurial orientation on technological innovativeness: an outlook of universities and research based spin offs. *Journal of Technology Transfer*, 1-23.

Scuotto, V., Del Giudice, M., Bresciani, S., & Meissner, D. (2017). Knowledge-driven preferences in informal inbound open innovation modes. An explorative view on small to medium enterprises. *Journal of Knowledge Management, 21*(3), 640-655.

Sussan, F., & Acs, Z. J. (2017). The digital entrepreneurial ecosystem. *Small Business Economics, 49*(1), 55-73.

Tsai, W. (2001). Knowledge Transfer in Intraorganizational Networks: Effects of Network Position and Absorptive Capacity on Business Unit Innovation and Performance. *The Academy of Management Journal, 44*(5), 996-1004.

Vahid A., Pouria A., Saeed G., & Mousa A. (2019). Components of sustainability of entrepreneurial ecosystems in knowledge-intensive enterprises: the application of fuzzy analytic hierarchy process, *Small Enterprise Research, 26(3)*, 288-306.

Appendices

Appendix 1. Variance Inflation Factor (VIF) Results for Multicollinearity Test.

Variable	VIF	1/VIF
Finance	2.87	0.348
Gvt Entrep as (Econ Agenda)	3.56	0.281
Gvt (Tax and Bureaucracy)	2.54	0.393
Gvt (Entrep Programs)	4.43	0.225
Know Capital (BSEEDT)	2.91	0.344
Know Capital (PSEEDT)	2.36	0.424
Know Capital (R&D)	4.27	0.234
Entre Support Services	2.37	0.423
Internal Market Dynamics	1.87	0.534
Internal Market Openness	3.51	0.285
Physical Infrastructures	1.63	0.615
Entrepreneurial Culture	1.81	0.553
Product Innovation	1.35	0.739
Process Innovation	1.31	0.762
Pop	2.59	0.387
Edu	2.32	0.431
GDP growth rate	1.12	0.897
FDI	1.1	0.905
Mean VIF	**2.44**	

Appendix 2. Linktest results for Model specification test.

Productive Entrep	**Coef.**	**Std. Err.**	**t**	**P>t**	**[95% Conf. Interval]**	
_hat	1.088	0.524	2.07	0.040	0.053	2.123
_hatsq	-0.002	0.011	-0.17	0.866	-0.023	0.020
_cons	-0.987	6.071	-0.16	0.871	-12.970	10.995
Obs	175					
F(2, 172)	91.61					
Prob > F	0.000					
R-squared	0.516					
Adj R-squared	0.51					

This page is intentionally left blank

Kansheba, J. M., & Wald, A. E. (2021). Entrepreneurial ecosystems quality and productive entrepreneurship: entrepreneurial attitude as a mediator in early-stage and high-growth activities. *Journal of Small Business and Enterprise Development.* DOI 10.1108/JSBED-05-2021-0209

Chapter 4

Entrepreneurial ecosystems quality and productive entrepreneurship: entrepreneurial attitude as a mediator in early-stage and high-growth activities

Abstract

This study examines the mediation effects of entrepreneurial attitudes (EA) on the nexus of the entrepreneurial ecosystem (EE) quality and productive entrepreneurship for early-stage and high-growth entrepreneurial activities. The study employs global entrepreneurship monitor (GEM) panel data of 137 economies from 2014 to 2018. Random effect panel regressions and relative effect size estimations were used for data analysis. Our findings show complementary mediation effects suggesting that EE quality steers entrepreneurial activities via the EA. However, such mediation is much more vivid towards high growth than early-stage activities. Vibrant EEs provide necessary resources that boost the attitude of potential and nascent entrepreneurs to engage in early stage and high-growth entrepreneurial activities. The study utilizes GEM data to explain the EEs and EA dynamics and their related effects on entrepreneurship at the macro level. Future research may study the phenomena by using micro level data. The paper explores a less empirically researched question on how EEs steer entrepreneurship growth and development. It reveals a need for new perspectives/logics (e.g., mediation/moderation) for improving the explanations on the extant EEs framework. It further informs policymakers and practitioners to design entrepreneur-centred EE policies and programs.

Keywords: *entrepreneurial ecosystems, entrepreneurial attitude, high-growth start-ups, early-stage start-ups, effect size*

4. Introduction

The dramatic increase of entrepreneurs and new ventures globally has triggered various initiatives, strategies, and policies as an attempt to support entrepreneurial growth and sustainability (Audretsch & Belitski, 2017; Hunt, 2015). The initiatives to establish conducive environments for new ventures have led to the birth of the concept of entrepreneurial ecosystems which is referred to a set of interconnected elements such as leadership, culture, capital, markets, human skills, and support that holistically foster entrepreneurship development and consequently promote economic growth and social welfare (Isenberg, 2010; Tracy et al., 2018). While the concept has increasingly captured the attention of scholars, practitioners, and policymakers, the extant body of knowledge on its theorizing is dominated by conceptual works which suffer from insufficient empirical validation (Malecki, 2018).

Moreover, while some studies conceptualize the direct relationship between eco factors that define the EE quality and productive entrepreneurship as an eco-output (Nicotra et al., 2018), few recent empirical studies reveal contradictory findings that open room for further inquiry. For instance, Corrente et al. (2019) document a direct relationship between eco-factors and eco-output in European countries (developed economies) whereas Kansheba (2020) shows that such relationship in the context of developing countries using Sub-Saharan African economies is an indirect one and more pronounced when mediated by innovations. Inadequate conclusive evidence on the direct causal relationship between eco-factors and eco-outputs of the EEs calls upon a need for further inquiry to explore other logics that have the potentials of improving the current theorizing on the existing EE framework.

This study builds on the entrepreneur-centric view of the EEs to fill the above gap by postulating the mediating role of entrepreneurial attitude on the relationship between EE quality and successful entrepreneurial activities. Entrepreneurs and start-ups are focal and key drivers of the ecosystems (Acs et al., 2018). These are the ones that initiate entrepreneurial decisions about what, where, and when to invest, innovate, when to start, or expand the venture (Isenberg, 2010). Supports from other EEs actors such as financial providers, training and education institutions, business incubators and accelerators, community, government need to be strategically directed towards enhancing efficient and effective entrepreneurial participations, processes, and performance among entrepreneurs and their startups (Audretsch & Belitski, 2017). The idea is that the stronger the EE vibrance (quality) characterized by abundance of actors and their variant supporting activities, the higher the entrepreneurial

attitude and morale by entrepreneurs, and ultimately the higher the birth rate of early-stage and high-growth entrepreneurial activities (Atiese et al., 2018). Vibrant EEs are habitats that provide necessary tangible (e.g., financial capital and supporting infrastructures) and intangible resources (e.g., appropriate knowledge and skills, motivation, and networking) which increase one`s entrepreneurial morale (Hunt, 2015). We consider whether entrepreneurial attitude can improve the explanation about how vibrant EEs foster entrepreneurial processes and development.

Despite the growing recognition of EE research, there is a limited understanding of the concept at both the micro (local) level and the macro (country) level (Kansheba and Wald, 2020). Micro and macro level insights on EEs are important for informing theorizing as well as policy making (Nicotra et al., 2018; Isenberg, 2010). The present paper aims at filling the later gap by employing the Global Entrepreneurship Monitor (GEM) panel data of 137 economies over the period of 2014 to 2018 to test the postulated relationships. Moreover, we add to the few empirical contributions on EE at the national level such as Acs et al. (2018), Corrente et al. (2019), and Kansheba (2020). Our findings suggest a positive (complementary) mediation effect indicating that the influence of EE quality in steering entrepreneurial activities is more pronounced when mediated by the entrepreneurial attitude. Vibrant EEs provide necessary resources that boost the attitude of potential and nascent entrepreneurs to engage in early-stage and high-growth entrepreneurial activities.

The article proceeds as follows. Section 2 presents a literature review on the concepts of productive entrepreneurship and the role of the EEs. It further discusses the mediation role of entrepreneurial attitude. Section 3 introduces the data and methods. Section 4 presents empirical findings and discussion. Section 5 concludes the paper by summarizing the implications of the study and developing suggestions for future research.

4.1. Literature Review and Hypotheses Development

4.1.1 Productive entrepreneurship: early-stage and high-growth entrepreneurial activities

Baumol (1990) and Acs et al. (2017) refer to productive entrepreneurship as any productive entrepreneurial activity that contributes directly or indirectly to the net output of the economy or capacity to produce additional output and ultimately increase total welfare. Nicotra et. al

(2018) further added that the total value creation by productive entrepreneurship should exceed the sum of the value created by individual entrepreneurs. Targeting and stirring productive entrepreneurship promote innovation, competition, and market efficiency that finally increase people`s welfare (Audretsch & Belitski 2017). Customers get access to a wide variety of goods and services due to the presence of quality and differentiated products from new entrants and incumbents. Nicotra et al. (2018) classify productive entrepreneurial activities into two as early-stage and high-growth entrepreneurial activities.

Early-stage entrepreneurial activities are comprised of both potential and nascent entrepreneurs; people who are engaged in the process of creating new ventures (Herrington et al., 2015). Additionally, Acs et al. (2018) in their GEM report refer to (total) early-stage entrepreneurial activity (TEA rate) as the percentage of an economy's 18–64-year-old population who are either a nascent entrepreneur actively planning to start a new business or owner-manager of a new business within the first 42 months of starting. TEA rates are commonly used as a benchmark to understand the quality and nature of early-stage entrepreneurship and their economic effects among economies (Atiase et al., 2018). The economies ranked lower in terms of TEA have more necessity-driven entrepreneurs (those that join entrepreneurial processes because they had no other options for job) while economies with higher TEA rate, such as e.g., Sweden, have more of opportunity-driven entrepreneurs who always join entrepreneurial processes as an avenue to explore business opportunities (Draghici et al., 2014). To that end, high rates of early-stage entrepreneurial activities, particularly those that are opportunity-driven, entails that the entrepreneurial atmosphere in a certain economy is dynamic and vibrant (Shinnar & Zamantılı nayır, 2019), and that the formal employment sector is sufficiently strong to provide work for those who would rather not become entrepreneurs (Acs et al., 2018).

On the other hand, high growth entrepreneurial activities are regarded as generators of positive outcomes to an economy (Yang and Li, 2008). These are ventures that exhibit great ambition for growth and have a potential strategy for realizing this ambition (Tracy et al., 2018). However, high growth start-ups are normally rare, take time to be formed, technology demanding, and therefore few entrepreneurs can sustain their business to that level (Peci et al., 2012). Despite being few, high growth start-ups provide substantial contribution to economic growth and development. Thus, Autio (2009) concluded that government support and initiatives should not be confined towards emphasizing the establishment of entrepreneurial

ventures per se, but also towards encouraging innovations that accelerate scale up and high growth of those established ventures (Isenberg, 2010).

4.1.2. Entrepreneurial ecosystem and its role in fostering productive entrepreneurship

The concept of entrepreneurial ecosystems has been used to express, explicate, and convey views and frameworks on how businesses interact with their environments (Colombo & Dagnino, 2017). Firms within entrepreneurial ecosystems have additional benefits other than their resources and capabilities (Acs et al., 2017). These additional benefits are derived from a wide network of different players, shared resources, knowledge accumulation, and knowledge transfer within and from outside the ecosystem (Castillo et al., 2017). Recent research on entrepreneurial ecosystems is dominated by conceptual work and case studies (Kansheba & Wald, 2020), and often based on the framework coined by Isenberg (2010).

The term entrepreneurial ecosystem has been defined by various scholars and in different ways. While some scholars have associated the concept with geographical boundaries, others have viewed the concept beyond the geographical limitations as a network that is not locally confined (Kansheba and Wald, 2020). For instance, Cohen (2006) and Spingel (2017) refer to an EE as a union of localized or interconnected elements and actors such as cultural outlooks, social networks, investment capital, universities and active economic policies that support and facilitate creation of innovative ventures. Furthermore, Malecki (2018) points out the effects of globalisation in fostering entrepreneurial environments. Through technological advancement and globalisation, members of the certain EE can fetch necessary resources even beyond their existing EE through new means of entrepreneurial financing such as crowdfunding and crowdsourcing (Maroufkhani et al., 2018). Accordingly, Philip (2017) and Theodoraki et al. (2018) document that an entrepreneurial ecosystem is an interconnected system with multiple players at both micro- and macro-level, entrepreneurial organizations such as venture capital providers, business angels and banks; various institutions such as universities and public sector agencies; and companies (both as start-ups and large), that formally or informally connect, mediate and foster entrepreneurship development which in turn promotes economic growth and social welfare (Katharina, 2020).

Extant studies have focused on categorizing success eco-factors that improve the quality of entrepreneurial ecosystems (Malecki, 2018) with very few studies analysing the causal

relationships between EEs and entrepreneurial performance and development (Audretsch & Belitski, 2017). The impact of EEs differs from one country to another due to contextual characteristics that distinguish them. For instance, unlike developing economies, developed economies have better infrastructures and complementary between formal and informal institutions that foster entrepreneurial activities (Williums & Vorley, 2017). Furthermore, some economic regions are attractive for international businesses, for instance Europe (Corrente et al., 2019) and parts of the Middle East, due to their good networks which promote the vibrance of entrepreneurial ecosystems than in other regions.

Moreover, the dynamics of both early-stage and high-growth entrepreneurial activities depend on the quality of the EE the startups are operating in. However, according to Sánchez (2013), such dynamics are attributed with the presence of strategic policies and programs focused towards improving entrepreneurial environments. For instance, several developing countries are still characterized by poor entrepreneurial environments (Bretones & Radrigan, 2018). As a result, communities in these economies have low entrepreneurial morale due to a low support of entrepreneurial initiatives that finally hinder one`s ability to discover and materialize new entrepreneurial potentials (Fitzsimmons & Douglas, 2005). Atiese et al. (2018) document that African countries need broad financial inclusion, strong, efficient, and effective state institutions to support entrepreneurship development. Besides, Kansheba (2020) concludes that to close the gap of poor entrepreneurial growth, entrepreneurial ecosystems in developing economies need to provide innovation-focused entrepreneurial supports to new start-ups. Thus, by supplying necessary entrepreneurial resources, EEs act as habitats for productive entrepreneurs with innovative ideas.

Nicotra et al. (2018) categorized eco-factors that define the EE quality into five forms of capital: financial, institutional, knowledge, social, and market capital (Ashenafi et al., 2021). They further propose the existence of the direct effect of eco-factors on productive entrepreneurship as an eco-output. The few recent studies that tested their propositions reveal different findings. For instance, Corrente et al. (2019) find a direct relationship between eco-factors and eco-output in European countries where cultural and social norms, government programs, and internal market dynamics being identified as most relevant eco-factors. However, Kansheba (2020) finds that the influence of eco-factors on eco-output in Sub-Saharan Africa becomes more pronounced when mediated by innovations. Such a variation in

findings and insufficient empirical conclusion open doors for further inquiry. We thus, hypothesize that:

H1a: EE quality positively influences early-stage entrepreneurial activities.

H1b: EE quality positively influences high-growth entrepreneurial activities.

4.1.3. The mediating role of entrepreneurial attitude in the nexus of entrepreneurial ecosystem and productive entrepreneurship

Carsrud and Brännback (2011) acknowledge that entrepreneurial attitudes is amongst critical and important but largely ignored topics in entrepreneurship research. Fayole and Gailly (2015) argue further that due to conventional tendency of entrepreneurship research to borrow from other disciplines, it tends to deccelerate potential knowledge growth in some productive line of research lines. For instance, Carsrud and Brännback (2011) comment that prior researchers abandoned the entrepreneurial trait as a research line due to failure in demostrating personality traits that would uniquely describe an entrepreneur. Similar attempts were noted in management science where scolars tried to discriminate managerial traits from entreprenerial traits for both organisational and entrepreneurial success (Angulo-Guerrero et al., 2017). Evenutally this led to research focus shift towards the embedded interelatedness between entrepreneurial traits and entrepreneurial processes and activities (Carsrud and Brännback, 2011).

Avlonitis and Salavou (2007) refer to entrepreneurial attitude as one of the individual entrepreneurial traits that encompass one`s feelings, thoughts, and conation towards entrepreneurship (Çolakoğlua and Gözükara, 2016). Moreover, Thomas and Muller (2000) regard entrepreneurial attitude as an essential personality trait that involves the need for achievement and growth, innovativeness, risk-taking as well as ambiguity tolerance that all together motivate an individual to undertake entrepreneurial actions and participate in entrepreneurial activities (Acs et al., 2018). It is also the perceptions toward the value, benefit, and favourability of entrepreneurship which affect (positively or negatively) entrepreneurs' intentions to step into new venture creation (Ajzen, 2002). Bosma and Schutjens (2011) posit further that entrepreneurial attitude is composed of fear of failure in starting business, perceptions on startup opportunities and self-assessment of personal capabilities to start a business.

Entrepreneurial traits, such as attitude, are believed to be prerequisite characteristics in fostering entrepreneurial activities (Schillo et al., 2016). Entrepreneurial attitude has been proven to be an essential predictor of entrepreneurial processes including the intention to start-up (join), and scale-up entrepreneurial activities (venture creation and growth) (Jason and Evan, 2005). For instance, Draghici et al. (2014) document that the failure of the "Lisbon strategy" for making the EU the world`s most competitive and dynamic knowledge-based economy, capable of sustainable economic growth with more and better jobs and greater social cohesion was due to incapacity in stimulating entrepreneurial attitude which resulted in a relatively poor impact on economic growth. To that end, encouraging and strengthening the entrepreneurial attitude is crucial and necessary for successful entrepreneurial (both early-stage and high growth) activities.

Entrepreneurial attitudes at either (psychological/individual) micro level (Colakoğlua, & Gözükarab, 2016; Amidzic, 2019) or (sociological/country) macro level (Draghici et al., 2014; Nitu-Antonie, 2017) are largely influenced by the EEs in which they operate in. It is reported that apart from internal motivations that influence the entrepreneurs there are also external motivations such as resources and opportunities (Mueller, 2006). Vibrant EEs provide for tangible resources (financial capital and infrastructures) and intangible resources (knowledge, skills, and networks) that develop and increase the entrepreneurial attitude of both potential and nascent entrepreneurs (Roundy, 2017). However, EEs are evolutionary in terms of their configurations and elements (Liguori et al., 2019). With that regard, entrepreneurial attitudes become dynamic given the changes in the quality of a particular EE (Mack & Mayer, 2015).

Thus, people with high entrepreneurial attitudes are more likely to engage in entrepreneurial activities and maximize their utilities than those with lower entrepreneurial attitude (Jason & Evan, 2005). Fitzsimons & Douglas, (2005) further posit that entrepreneurial attitude involves an individual`s ability to identify and utilize potential lucrative entrepreneurial opportunities and how culture supports and embraces entrepreneurial behaviours. People with higher entrepreneurial attitudes are more likely to participate in entrepreneurial activities and processes than those with lower attitudes (Ács et al., 2018). Moreover, entrepreneurs can benefit from social networks by developing social relationships through trust rather than opportunism (Frese, 2009).

Potential entrepreneurs have the chance to learn from experienced entrepreneurs and capitalize on their experiences or access start-up capital (Kwon & Arenius, 2010). Social backgrounds

that embrace entrepreneurial success and failure stories inculcate into people the entrepreneurial spirit to engage in entrepreneurial activities (Jason & Evan, 2005). Vibrant entrepreneurial ecosystems are habitats that nurture entrepreneurial attitudes and innovative ideas by supplying key and necessary resources required by potential and nascent entrepreneurs and start-ups for their growth (Shirokova et al., 2018). We thus hypothesize that:-

H2a: The entrepreneurial attitude mediates the association between the entrepreneurial ecosystem quality and early-stage entrepreneurial activities.

H2b: The entrepreneurial attitude mediates the association between the entrepreneurial ecosystem quality and high-growth entrepreneurial activities.

H3: The mediating effect of entrepreneurial attitude on the association between entrepreneurial ecosystem quality is stronger for high-growth entrepreneurial activities than for early-stage entrepreneurial activities.

Figure 4.1 integrates the hypotheses in a research model.

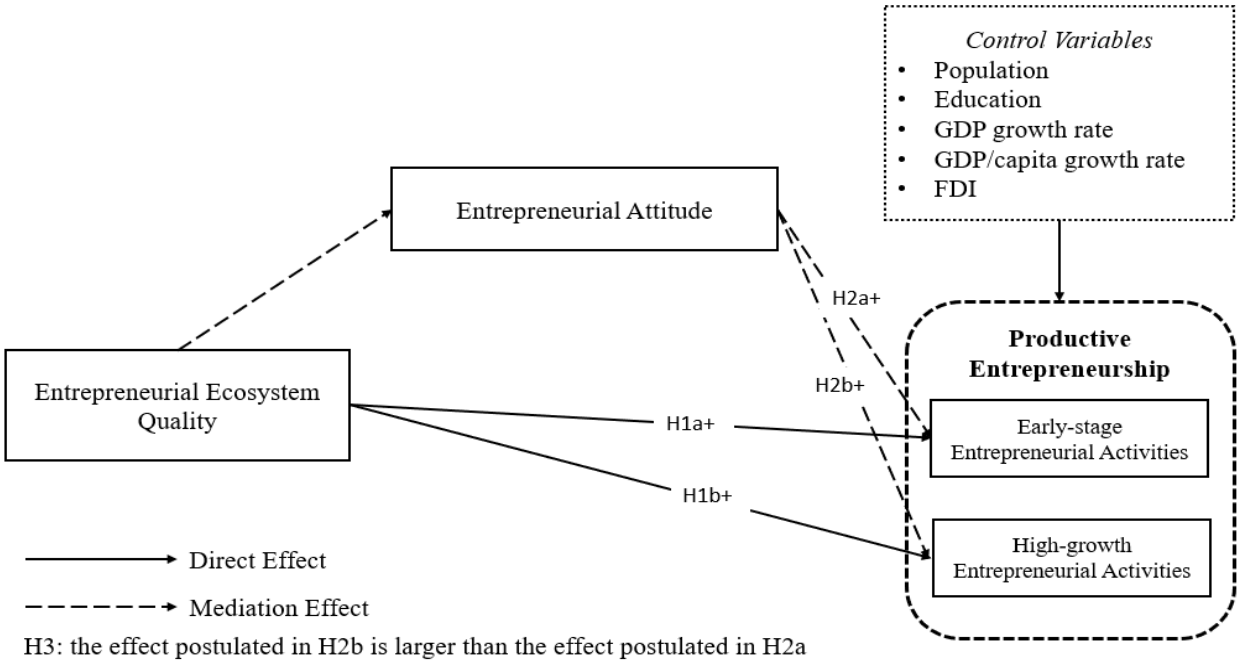


Figure 4.1: The research model

4.2. Data and Methods

4.2.1. Data

As posed by Corrente et al. (2019) among of the challenges encompassing EE empirical research is deciding on suitable constructs, data sources, and level of analysis. However, Nicotra et al. (2018) proposed the prevalent and widely used comprehensive panel data sets that can aid empirical validations of EE studies at different level of analysis including institutional and country level. Thus, following their study, we gathered data from the global entrepreneurship monitor (GEM) on 137 economies from 2014 to 2018. The GEM dataset is compiled from the annually administered national expert survey (NES) on experts from economies of different geographic areas and levels of economic development. The GEM dataset is preferable and used in this study as it harmonized, globally comparable data that presents entrepreneurial perception (at a country level) regarding the quality and depth of entrepreneurial ecosystems, attitude, and activities of different economies. We also gathered data (for the control variables) from other global databases including the World Bank and United Nations Development Program (UNDP). Appendix. 4.1 provides a summary of the variables, measurements, and data sources.

Dependent variables: The study uses the total early-stage entrepreneurial activity (TEA) and high-growth start-up rates as the indicators of the productive entrepreneurship. TEA represents the proportion of the working-age population that has an intention to start an entrepreneurial activity and/or has started one within the last three and a half years (Acs, et al., 2017). The high growth start-up rate represents the proportion of companies with business models that are designed to be repeatable and scalable (Nicotra et al., 2018). These indicators are suggested by Nicotra et al., (2018) and have been widely used in research (Herman & Szabo, 2014; Kansheba, 2020; Corrente et al., 2019).

Independent variable: The study employs 12 attributes (eco-factors) to represent the quality of entrepreneurial ecosystems (Nicotra et al., 2018; Corrente et al., 2019). These include i) access to finance, ii) governmental entrepreneurial support and policies, iii) taxes and bureaucracy, iv) governmental programs, v) physical infrastructures, vi) commercial and professional infrastructures, vii) post-school entrepreneurial education and training, viii) basic-school entrepreneurial education and training, ix) research and development transfer, x)

entrepreneurial supporting cultural social norms, xi) internal market dynamics, xii) internal market openness.

Mediating variable: Five items measure the mediating variable, the entrepreneurial attitude (Acs et al., 2018). These include i) entrepreneurial opportunity perception, ii) startup skills, and iii) risk acceptance. Exploitation of economic opportunities by entrepreneurs and/or entrepreneurial firms during the creation of new ventures or scale-up is attributed to their cognitive perceptions and risk-taking processes (Nitu-Antonie et al., 2017). Additionally, Nitu-Antonie at al. (2017) argued that enhancing entrepreneurial behaviours induces new and nascent entrepreneurs and start-ups to join entrepreneurial activities which in turn may explain market competitions and dynamics at the macro level.

To obtain aggregate indices for the entrepreneurial ecosystem quality and entrepreneurial attitude, we apply the normalization and arithmetic mean procedures (Corrente et al., 2019). The Eq. (1) shows how normalized value for each indicator was obtained while Eq. (2) and Eq. (3) show how normalized values were aggregated for each country (Draghici et al., 2014). The *NI* stands for normalized indicator, the I_{ijc} stands for the value of the indicator *i* for the period *j* for the country *c*, the $I_i^{\ min}$ stands for the minimum value indicating lower (poor) entrepreneurial ecosystem quality or entrepreneurial attitude, the $I_i^{\ max}$ stands for the maximum value indicating higher(better) entrepreneurial ecosystem quality or entrepreneurial attitude, the *AEEQ* stands for aggregated entrepreneurial ecosystem quality index, and *AATT* stands for aggregated entrepreneurial attitude index.

$$NI = (I_{ijc} - I_i^{\ min})/(I_i^{\ max} - I_i^{min}) \quad (1)$$

$$AEEQ = (\text{Sum of NI for EEQ for period j for particular country})/12 \quad (2)$$

$$AATT = (\text{Sum of NI for ATT for period j for particular country})/3 \quad (3)$$

Control Variables: The study used control variables that may also influence the level of productive entrepreneurship in a country. These control variables are the size of the population, the education development level, the gross domestic product (GDP) growth rate, the GDP per capita growth rate, and foreign direct investment (FDI). Controlling for the impacts of these variables on productive entrepreneurship is crucial for a robust analysis (Atiese et al., 2018).

4.2.2. Model goodness-of-fit and estimation

We hypothesize that entrepreneurial attitude mediates the role of EE quality on productive entrepreneurship in terms of early-stage and high-growth entrepreneurial activities. We therefore employed panel regression model to examine the stated relationships where random effects (RE) estimator was selected over fixed effects (FE) estimator (Lensink et al., 2017). Additionally, we performed effect size estimations to examine the relative mediation effect size of the entrepreneurial attitude. To ensure model goodness-of-fit several regression assumptions were tested prior analysis (see Appendix 4.3). The Breusch-Pagan test results show the p-value of 0.247 above the benchmark of 0.05 indicating the absence of heteroskedasticity (Hausman & Taylor, 1981). The Pearson-wise correlation matrix (see Appendix 4.2) shows that all variables have the value below the benchmark of 7, suggesting the absence of serious multicollinearity problem (Kansheba, 2020). This is also supported by the variance inflation factor-VIF results where all explanatory variables are less than the cut off points of 5. The Shapiro-Wilk W normality test results show the p-value of 0.022 which is greater than 0.01 suggesting that residuals are normally distributed (Hair et al., 2010). The link test for model specification results shows the p-value of 0.085 is greater than 0.05 suggesting that the model is correctly specified (Lensink et al., 2017). Statistically significant F-statistics further confirms the goodness of fit of the model. Both the explanatory and mediating variables explain about 50 percent (R-squared-Overall) of the variation in the outcome variables.

4.3. Results

4.3.1. Descriptive Statistics

Table 4.1 reports the descriptive results of the studied variables. The productive entrepreneurship has the mean value of about 13 percent in terms of early-stage entrepreneurial activity and about 32 percent in terms of high-growth entrepreneurial activities. Furthermore, EE quality has the mean value of about 37 percent while entrepreneurial attitude has about 36 percent. Regarding to control variables, the mean value of population is 64 percent while that of education development being about 62 percent. The GDP growth rate has the mean value of about 3 percent while the GDP/capita growth has the mean value of about 0.02 percent. The foreign direct investment has the mean value of about 2 percent.

Table 4.1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Early-stage Entrepreneurial Activities	609	12.57	7.86	2.44	41.46
High-growth Entrepreneurial Activities	700	31.58	28.99	0.00	100.00
Entrepreneurial Ecosystem Quality	656	36.50	17.82	8.77	86.20
Entrepreneurial Attitude	656	35.83	18.17	4.10	84.40
Population	675	64.29	6.54	49.31	85.32
Education	696	61.83	19.79	0.00	92.65
GDP growth rate	670	3.21	3.29	-24.00	26.68
GDP/capita growth rate	700	0.02	0.03	-0.245	0.25
Foreign Direct Investment	590	2.30	9.15	-51.47	88.35
No. Countries	137				

4.3.2. The panel regression results: Random Effect (RE)- estimates

Tables 4.2 and 4.3 provide for the RE results on the mediation role of entrepreneurial attitude on the relationship between the EE quality and productive entrepreneurship in terms of early-stage and high growth entrepreneurial activities. Table 4.2 consists of model 1 to model 5 results. Model 1 presents the baseline model where the output variable, early-stage entrepreneurial activities is regressed with control variables only. At this stage only GDP growth and GDP/capita growth found to have statistically but mixed (positive and negative) significant influence on early-stage entrepreneurial activities. We postulated in H1a that the EE quality positively influences the early-stage entrepreneurial activities.

Thus, in models 2, the independent variable (EE quality), is added to the baseline. The results suggest the statistically significant and positive direct influence of the entrepreneurial ecosystem quality on the early-stage entrepreneurial activities (model 2). Models 4 and 5 present the results of the mediation role of entrepreneurial attitude on the role of the EE quality towards early-stage entrepreneurial activities. The results support H2a by indicating the full (indirect-only) positive mediation effect. The direct effect of the quality of entrepreneurial

ecosystem on early-stage entrepreneurial activities vanishes when entrepreneurial attitude mediates the relationship.

Table 4.2: The influence of the entrepreneurial ecosystem quality and entrepreneurial attitude on productive (early-stage) entrepreneurial activities: RE estimate

	Early-stage Entrepreneurial Activities		*Entrepreneurial Attitude*	*Early-stage Entrepreneurial Activities*	
	(1) Coef	**(2) Coef**	**(3) Coef**	**(4) Coef**	**(5) Coef**
Population	-0.016 (0.039)	-0.013 (0.040)	0.072** (0.035)	-0.038 (0.048)	-0.043 (0.046)
Education	-0.003 (0.025)	0.005 (0.027)	0.035* (0.019)	-0.004 (0.031)	0.003 (0.030)
GDP growth	0.955** (0.351)	0.928** (0.353)	0.513* (0.264)	0.937** (0.368)	0.883** (0.362)
GDP/Cap growth	-0.989** (0.357)	-0.963** (0.359)	-0.579** (0.269)	-0.933** (0.374)	-0.882** (0.367)
FDI	-0.002 (0.038)	0.002 (0.039)	-0.022 (0.024)	-0.006 (0.040)	0.003 (0.040)
Entrepreneurial Ecosystem Quality		0.21* (0.109)	0.881*** (0.018)		0.108 (0.063)
Entrepreneurial Attitude				0.067** (0.338)	0.113** (0.046)
_cons	0.109*** (0.025)	0.110*** (0.025)	-0.037* (0.022)	0.121*** (0.031)	0.128*** (0.030)
R-Squared (Overall)	0.039	0.043	0.89	0.493	0.497
Chi-Squared	8.67**	9.31**	26.43***	8.45**	12.49*
Observations	696	696	696	652	652
No. Countries	137	137	137	137	137

We further hypothesized that the EE quality positively influences the high-growth entrepreneurial activities (H1b). The results in model 7 in Table 4.3 support H1b by establishing that there is positive and statistically significant relationship between EE quality and high-growth activities. Moreover, results in Table 3 in model 9 also suggest the full

(indirect-only) positive mediation effects of the entrepreneurial attitude on the EE quality-High growth entrepreneurial activities relationship, thus supporting H2b.

Table 4.3: The influence of the entrepreneurial ecosystem quality and entrepreneurial attitude on productive (high growth) entrepreneurial activities: RE estimate

	High-growth Entrepreneurial Activities			
	(6) **Coef**	**(7)** **Coef**	**(8)** **Coef**	**(9)** **Coef**
Population	0.165 (0.119)	0.053 (0.087)	0.041 (0.127)	0.136 (0.1004)
Education	0.328*** (0.079)	-0.003 (0.068)	0.180 (0.089)	0.051 (0.074)
GDP growth	-1.220 (1.093)	0.109 (0.845)	-0.808 (1.049)	0.458 (0.862)
GDP/Cap growth	1.459 (1.110)	0.184 (0.854)	1.059 (1.057)	-0.364 (0.866)
FDI	0.184 (0.131)	0.008 (0.116)	0.116 (0.129)	-0.050 (0.116)
Entrepreneurial Ecosystem Quality		0.832*** (0.065)		0.811* (0.415)
Entrepreneurial Attitude			0.042** (0.021)	0.235** (0.097)
_cons	0.019 (0.075)	-0.007 (0.055)	0.053 (0.083)	-0.058 (0.066)
R-Squared (Overall)	0.116	0.319	0.471	0.483
Chi-Squared	38.29***	24.76***	25.95***	28.91***
Observations	696	696	652	652
No. Countries	137	137	137	137

The findings shown in Table 4.4 indicate that the mediating role of entrepreneurial attitude is much higher for high growth than for early-stage entrepreneurial activities. The intraclass correlation coefficient (ICC) suggests that the mediating effect of entrepreneurial attitude on high-growth entrepreneurial activities is twice the mediating effect on early-stage entrepreneurial activities.

Table 4.4: Mediation effect size between early-stage and high-growth entrepreneurial activities

	Early-stage Entrep. Activities		*High-growth Entrep. Activities*	
	Eta-Squared	**df**	**Eta-Squared**	**df**
Model	0.078	2	0.296	2
Entrepreneurial Ecosystem Quality	0.043	1	0.057	1
Entrepreneurial Attitude	0.067	1	0.167	1
F-Statistics	27.69*** (2, 653)		137.58*** (2, 653)	
Observations	656		656	
R-squared (Between)	0.46		0.61	
R-squared (Within)	0.13		0.38	
R-squared (Overall)	0.497		0.483	
Intraclass Correlation Coef (ICC)	1.39		2.65	

4.4. Discussion

Entrepreneurial ecosystems play a vital role in fostering entrepreneurship and economic development of a country. Established entrepreneurial ecosystems substantially contribute towards the creation of wealth, jobs, and improved competitiveness (Colombo & Dagnino, 2017). While there are many players within an entrepreneurial ecosystem, entrepreneurs and their respective start-up companies are central (Tracy et al., 2018). Therefore, efforts to foster entrepreneurial activities should concentrate on these players (Isenberg, 2010; Audretsch & Belitski, 2017). Accordingly, this study sought to examine direct effect of EE quality on the early-stage and high-growth entrepreneurial activities. The study further argues for the new perspective on the extant EE framework by postulating the potential mediation role of entrepreneurial attitude.

Our findings show that there is a positive relationship between EE quality and productive entrepreneurship in terms of early-stage and high growth entrepreneurial activities. Moreover,

the findings indicate that this relationship is positively (indirect only but complementary) mediated by the entrepreneurial attitude. This suggests that the influence of entrepreneurial ecosystem quality on fostering entrepreneurship at both early-stage and during scale up is more apparent through the mediation effect (Zhao & Chen, 2019). More specifically, the findings reveal that the magnitude of the mediation effect is more pronounced to high growth than early-stage entrepreneurial activities. The current findings provide for the possible reason on the conclusion drawn by Draghici et al. (2014) that developed economies experience more high growth start-ups than developing ones. Our findings also explain the assertion by Jose et al. (2019) that despite the presence of many new start-ups joining early-stage entrepreneurial activities in developing economies, these start-ups fail to attain substantial growth due to low entrepreneurial attitude of their owners.

As suggested by Isenberg (2011), research and policy focus should be towards emphasizing opportunity-driven (productive) entrepreneurial activities that are characterized by economic value addition and growth aspiration by new entrepreneurial entrants. The assumption behind this emphasis is that opportunity driven- and high-growth start-ups yield more outcomes (economic impact) than necessity-driven start-ups whose target is limited to merely joining the entrepreneurial activities with less growth aspiration (Nicotra et al., 2018). As pointed out by Acs et al. (2017), both early-stage and high-growth entrepreneurial activities do not take place in a vacuum, but they are influenced by the environments (ecosystems) in which entrepreneurs and their related start-ups operate in (Nitu-Antonie, 2017). Moreover, such ecosystems are characterised by a generic and specific set of economic and social frameworks that mirror the ability of a country to foster entrepreneurship (Isenberg, 2010) through enhancing entrepreneurial behaviours.

Additionally, Isenberg (2010) posits that vibrant entrepreneurial ecosystem transform behaviour through success and failure stories from experienced entrepreneurs which enrich the entrepreneurial understanding and knowledge of potential and nascent entrepreneurs. However, on the other hand, low entrepreneurial attitude has been associated with unsupportive entrepreneurial ecosystems. For instance, Atiese et al. (2018) document that poor EEs that are apparent in most of developing economies are attributed to poor technological advancement and un-supporting entrepreneurial culture. Supplementary, Sussan and Acs (2017) argue that in places where the level of information technology is still low, entrepreneurial networking is hampered which results in stagnant venture growth. Castillo et al. (2017) conclude further that,

unlike societies with non-supportive cultural norms and values towards entrepreneurial behaviours, societies that embrace entrepreneurial behaviour in their culture foster entrepreneurial creativity, innovation, and investment.

4.5. Conclusion

Although entrepreneurial ecosystems include a diverse set of elements and actors (Isenberg, 2010), key players within entrepreneurial ecosystems are the entrepreneurs and their respective start-up firms. While there is a growing body of literature on identifying key elements for successful entrepreneurial ecosystems, the field is still accompanied by limited, contradictory and inconclusive empirical findings. This study builds upon the entrepreneur-centred perspective of entrepreneurial ecosystems and examines the mediating role of entrepreneurial attitude on the linkage between EE quality and productive entrepreneurship in terms of early-stage and high growth entrepreneurial activities of 137 economies from 2014 to 2018. The findings establish the positive (indirect only but complementary) mediating effect of entrepreneurial attitude where such effect being more pronounced towards high growth than on early-stage entrepreneurial activities.

4.5.1. Theoretical implications

Our study contributes to the EE research through filling the theoretical and empirical gap by extending the existing conceptual frameworks on entrepreneurial ecosystems (Nicotra et al., 2018). Extant studies have focused on identifying key EE elements (eco-factors and eco-outputs) with limited empirical validation on their causal relationship. Few recent studies (e.g., Corrente et al., 2019 and Kansheba, 2020) that tested the existing EE framework provide conflicting conclusions which call for more inquiry on other logics that improve the explanation of the role of EEs in fostering entrepreneurship growth and development. To that end, current study argues for and provides empirical support for the indirect-only positive mediating role of entrepreneurial attitude on the relationship between EE quality and productive entrepreneurship in terms of early-stage and high growth activities. Vivacious entrepreneurial ecosystems boost entrepreneurial morale by providing key and necessary entrepreneurial tangible and intangible resources (Audretsch & Belitski, 2017) which in turn increase the rate of entrepreneurial activity engagement and high growth of potential and nascent entrepreneurs.

4.5.2. Practical implications

Our study informs policymakers that policies and programs targeted towards fostering EEs need to be entrepreneur (startup)-centred so that inculcate entrepreneurial traits to join and scale-up entrepreneurial activities. Our study also sheds light to nascent entrepreneurs (business owners) and managers of entrepreneurial ventures to leverage on the resource richness of their EEs in shaping their entrepreneurial behaviours and initiatives which ultimately results in gaining competitive advantage and improved performance. As argued by Audretsch and Belitski (2017) EEs supply key tangible (e.g., finance and infrastructure) and intangible (e.g., social network support) entrepreneurial resources necessary for venture creation and growth. For instance, social networks influence the speed at which the information and resources flow through the ecosystem as well as the interactions among participants (Roundy, 2017). Moreover, the significant influence of EE quality on entrepreneurial attitude implies a need for entrepreneurship education and training decision makers to appreciate the role of EEs in shaping entrepreneurial personality traits. EEs dynamics and how they affect entrepreneurial traits such as attitude can be taught and strengthened.

4.5.3. Limitations and area for further research

In this study we employed GEM dataset which presents a macro (country) overview of the quality and depth of entrepreneurial ecosystems. While national level insights of the EEs are important for the theorizing and policy making, we still acknowledge the need for micro level insights towards this objective. Thus, future research could enrich further our understanding of the current studied phenomenon by employing micro (individual, firm, or meta-organisation) level data. Future research may also explore other aspects/logics (e.g., mediation/moderation) that have potential to improve the explanations on the extant EEs framework. For instance, Sub-Saharan Africa despite being a resource-rich region and potential for entrepreneurial opportunities, the region is characterized by poor EE quality and low entrepreneurial activities. Future research could explore the hindering factors and possible mechanisms to revamp the quality of entrepreneurial ecosystems in this region.

References

Acs, Z. J., Stam, E., Audretsch, D. B., & O'Connor, A. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics,* 49(1), 1-10.

Amidzic, R. (2019). A Set of Factors Related to the Opportunity Motivation: Analysis of Early-stage Entrepreneurs from SEE. *Strategic Management,* 24(2), 45-57.

Angulo-Guerrero, M. J., Perez-Moreno, S., & Abad-Guerrero, I. M. (2017). Disparities in Entrepreneurial activity and attitude across EU countries. *European Planning Studies,* 25 (4), 680-702.

Ashenafi, B., David, G., & Pia, A. (2021). Unhelpful help: The state of support programmes and the dynamics of entrepreneurship ecosystems in Ethiopia. *Entrepreneurship & Regional Development,* 30 (1-2), 108-130.

Atiase, V. Y., Mahmood, S., Wang, Y., & Botchie, D. (2018). Developing entrepreneurship in Africa: investigating critical resource challenges. *Journal of Small Business and Enterprise Development*, 25(4), 644-666.

Audretsch, D. B., & Belitski, M. (2017). Entrepreneurial ecosystems in cities: establishing the framework conditions. *Journal of Technology Transfer,* 42(5), 1030-1051.

Bartz, W., & Winkler, A. (2016). Flexible or fragile? The growth performance of small and young businesses during the global financial crisis - Evidence from Germany. *Journal of Business Venturing,* 31(2), 196-215.

Baumol, W. J. (1990). Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy*, 98(5), 893-921.

Bell, A., Fairbrother, M., & Jones, K. (2019). Fixed and random effects models: making an informed choice. *Quality & Quantity*, 53, 1051-1074.

Bosma, N., Content, J., Sanders, M., & Stam, E. (2018). Institutions, entrepreneurship, and economic growth in Europe. *Small Business Economics,* 51(2), 483-499.

Bretones, F. D., & Radrigan, M. (2018). Attitudes to entrepreneurship: The case of Chilean and Spanish university students. *Ciriec-Espana Revista De Economia Publica Social Y Cooperativa,* 94, 11-30.

Carsrud, A., & Brännback, M. (2011). Entrepreneurial Motivations: What Do We Still Need to Know? *Journal of Small Businss Management, 49 (1),* 9-26.

Castillo, M., Bastista, R., & Zuniga, A. (2017). The Relationship between Culture and Entrepreneurship: From Cultural Dimensions of GLOBE Project. *Revista Espacios,* 38(34), 12-27.

Colakoğlua, N., & İzlem Gözükarab, I. (2016). A comparison study on personality traits based on the attitudes of university students toward entrepreneurship. *Procedia-Social and Behavioral Sciences,* 229, 133-140.

Colombo, M. G., & Dagnino, G. B. (2017). The governance of entrepreneurial ecosystems. *Small Business Economics,* 52(2), 419-428.

Corrente, S., Greco, S., Nicotra, M., Romano, M., & Schillaci, C. E. (2019). Evaluating and comparing entrepreneurial ecosystems using SMAA and SMAA-S. *Journal of Technology Transfer,* 44(2), 485-519.

Draghici, A., Albulescu, C. T., & Tamasila, M. (2014). Entrepreneurial attitude as knowledge asset: its impact on the entrepreneurial activity in Europe. *Procedia-Social and Behavioral Sciences,* 109, 205-209.

Fayolle, A., & Gailly, B. (2015). The Impact of Entrepreneurship Education on Entrepreneurial Attitudes and Intention: Hysteresis and Persistence. *Journal of Small Business Management,* 53 (1), 75-93.

Fitzsimmons, J.R., & Douglas, E.J. (2005). Entrepreneurial Attitudes and Entrepreneurial Intentions: A Cross-Cultural Study of Potential Entrepreneurs In India, China, Thailand And Australia. *Babson-Kauffman Entrepreneurial Research Conference,* Wellesley, MA.

Frese, M. (2009). Towards a Psychology of Entrepreneurship: An Action Theory Perspective. *Foundations and Trends in Entrepreneurship,* 5(6), 437-496.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis (7th ed.). Upper Saddle River, New Jersey: Pearson Education.

Hausman, J., & Taylor, W. (1981). Panel Data and Unobservable Individual Effects. *Econometrica,* 49(6), 1377-1398.

Hayton, J. C., Gerard, G., & Zahra, S. A. (2002). National Culture and Entrepreneurship: A Review of Behavioral Research. *Entrepreneurship: Theory & Practice,* 26(4), 33-52.

Herman, E., & Szabo, Z. K. (2014). Considerations on Romania's Entrepreneurial Profile: Barriers to Productive Entrepreneurship. *Procedia Economics and Finance, (15),* 1740-1740.

Hunt, R. A. (2015). Contagion Entrepreneurship: Institutional Support, Strategic Incoherence, and the Social Costs of Over-Entry. *Journal of Small Business Management,* 53(S1), 5-29.

Isenberg, D. J. (2010). The Big Idea: How to Start an Entrepreneurial Revolution. *Havard Business Review,* 88(6), 40-50.

Isenberg, D. J. (2011). The entrepreneurship ecosystem strategy as a new paradigm for economy policy: Principles for cultivating entrepreneurship-Babson entrepreneurship ecosystem project. Babson Park, MA: Babson College.

Jason, F., & Evan, D. (2005). Entrepreneurial Attitudes And Entrepreneurial Intentions: A Cross-Cultural Study of Potential Entrepreneurs in India, China,Thailand and Australia. *Babson-Kauffman Entrepreneurial Research Conference,* 1-20.

José, F., Juan, A. M., & Isidoro, R. (2019). The entrepreneur in the regional innovation system. A comparative study for high and low-income regions. *Entrepreneurship & Regional Development,* 31(5-6), 337-356.

Kansheba, J. M. P. (2020). Small business and entrepreneurship in Africa: the nexus of entrepreneurial ecosystems and productive entrepreneurship. *Small Enterprise Research*, 27(2), 110-124.

Kansheba, J. M. P., & Wald, A. (2020) Entrepreneurial Ecosystems: A Systematic Literature Review and Research Agenda. *Journal of Small Business and Enterprise Development*, 27(6), 943-964.

Katharina, S. (2020). Degrees of integration: how a fragmented entrepreneurial ecosystem promotes different types of entrepreneurs. *Entrepreneurship & Regional Development,* 33(1-2), 54-79.

Kwon, S. W., & Arenius, P. (2010). Nations of entrepreneurs: A social capital perspective. *Journal of Business Venturing,* 25(3), 315-330.

Lensink, R., Mersland, R., Vu, N. T. H., & Zamore, S. (2017). Do microfinance institutions benefit from integrating financial and nonfinancial services? *Applied Economics,* 50(21), 2386-2401.

Levie, J., & Autio, E. (2008). A theoretical grounding and test of the GEM model. *Small Business Economics,* 31(3), 235-263.

Liguori, E., Bendickson, J., Solomon, S., & McDowell, W. C. (2019). Development of a multi-dimensional measure for assessing entrepreneurial ecosystems. *Entrepreneurship & Regional Development,* 31 (1-2), 7-21.

Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. *Geography Compass,* 12(3), 3.12359.

Nicotra, M., Romano, M., Del Giudice, M., & Schillaci, C. E. (2018). The causal relation between entrepreneurial ecosystem and productive entrepreneurship: a measurement framework. *Journal of Technology Transfer*, 43(3), 640-673.

Nitu-Antonie, R. D., Feder, E., & Munteanu, V. P. (2017). Macroeconomic Effects of Entrepreneurship from an International Perspective. Sustainability, 9, 1159.

Peci, F., E. Kutllovci, Q. Tmava, and V. Shala. (2012). Small and Medium Enterprises Facing Institutional Barriers in Kosovo. *International Journal of Marketing Studies,* 4(1), 95–107.

Philip, R. (2017). "'Small town' entrepreneurial ecosystems". *Journal of Entrepreneurship in Emerging Economies,* 9 (3), 238-262.

Roundy, P. T. (2017). "Small town" entrepreneurial ecosystems Implications for developed and emerging economies. *Journal of Entrepreneurship in Emerging Economies,* 9(3), 238-262.

Sánchez, J. C. (2013). The Impact of an Entrepreneurship Education Program on Entrepreneurial Competencies and Intention. *Journal of Small Business Management,* 51(3), 447-465, doi: 10.1111/jsbm.12025

Schillo, R. S., Persaud, A., & Jin, M. (2016). Entrepreneurial readiness in the context of national systems of entrepreneurship. *Small Business Economics,* 46(4), 619-637.

Shinnar, R. S., & Dilek Zamantılı nayır (2019). Immigrant Entrepreneurship in an Emerging Economy: The Case of Turkey. *Journal of Small Business Management,* 57(2), 559-575,

Shirokova, G., Tsukanova, T., & Morris, M. H. (2018). The Moderating Role of National Culture in the Relationship Between University Entrepreneurship Offerings and Student Start-Up Activity: An Embeddedness Perspective. *Journal of Small Business Management,* 56(1), 103-130.

Sussan, F., & Acs, Z. J. (2017). The digital entrepreneurial ecosystem. *Small Business Economics,* 49(1), 55-73.

Theodoraki, C., Messeghem, K., & Rice, M. P. (2018). A social capital approach to the development of sustainable entrepreneurial ecosystems: an explorative study. *Small Business Economics,* 51 (1), 153-170.

Thomas, A. S., & Mueller, S. L. (2000). A case for comparative entrepreneurship: assessing the relevance of culture. *Journal of International Business Studies*, 31(2), 287-301.

Tracy, A. T., Jill, M. P., & Marc, J. V. (2018). How entrepreneurial ecosystems take form: Evidence from social impact initiatives in Seattle. *Strategic Entrepreneurship Journal,* 12(1), 96–116.

Williums, N., & Vorley, T. (2017). Fostering productive entrepreneurship in post-conflict economies: the importance of institutional alignment. *Entrepreneurship & Regional Development*, 29(5-6), 444-466.

Yang, J, Y., & Li, J. (2008). The development of entrepreneurship in China, Asia Pacific Journal of Management, 25(2), 335-359.

Zhao, X., Lynch, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis. *Journal of Consumer Research*, 37(2), 197-206.

Appendices

Appendix 1. Summary of variable description and related data source.

Variable	Data Source
Productive Entrepreneurship	
Total early-stage entrepreneurial activities	GEDI
High growth startups rate	
Quality of Entrepreneurial Ecosystem	
i). *Access to finance*: The availability of financial resource for SMEs (including grants and subsidies)	
ii). *Governmental entrepreneurial support and policies*: Government focuses Entrepreneurship as a relevant economic agenda.	
iii). *Taxes and bureaucracy:* Government`s taxes or regulations are either size-neutral or encourage new and existing SMEs	
iv). *Governmental programs*: Government set quality programs directly assisting SMEs at all levels of government (national, regional, municipal)	GEDI
v). *Physical infrastructures*: Ease access to physical infrastructure (e.g. water, transport, electricity, telecommunication, land, space at affordable prices	
vi). *Commercial and professional infrastructures:* Support Structure e.g. availability of mentors/advisors, incubators/accelerators	
vii). *Post school entrepreneurial education and training:* The extent to which training in creating or managing SMEs is incorporated within the education and training system at higher learning institutions.	
viii). *Basic-school entrepreneurial education and training*: The extent to which training in creating or managing SMEs is incorporated within the education and training system at primary and secondary levels	
ix). *Research and Development transfer*: The extent to which national research and development will lead to new commercial opportunities and is available to SMEs	
x). *Entrepreneurial supporting cultural social norms*: The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income	
xi). *Internal market dynamics:* The level of change in markets from year to year	
xii). *Internal market openness:* The extent to which new firms are free to enter existing markets	
Population: *pop aged 15-64 as % of total population*	World Bank

Education Development: *Level of education as proxied based of four goals of Education for All (EFA)- universal primary education, adulty literacy, quality of education and gender***.**	UNDP
GDP/capita growth: *Growth domestic product per capita growth rate*	World Bank
GDP growth: *Growth domestic product growth rate*	World Bank
Foreign Direct Investment: *Flow as % of net GDP*	World Bank

Appendix 2: Correlation and Variance Inflation Factor (VIF) results

Variable	VIF	1	2	3	4	5	6	7	8	9
1		1								
2	1.34	0.1235*	1							
3	1.1	-0.051	0.4634*	1						
4	2.44	-0.1146*	0.5587*	0.5455*	1					
5	1.12	-0.0302	0.1760*	0.2967*	0.2720*	1				
6	2.17	-0.0913*	0.3283*	0.5597*	0.5681*	0.4150*	1			
7	1.06	-0.0764*	0.0324	-0.0351	0.0007	0.0649	-0.0083	1		
8	2.36	0.0021	-0.0213	-0.1220*	-0.0998*	0.056	-0.1279*	0.6168*	1	
9	1.54	-0.0467	0.1219*	0.1632*	0.2076*	0.1084*	0.1419*	0.0914*	0.0781*	1
Mean	**1.46**									

Note: 1=Early-stage entrepreneurial activities, 2= High-growth entrepreneurial activities, 3= Entrepreneurial attitude, 4= Entrepreneurial ecosystem quality, 5= Population, 6= Education, 7= GDP/capita growth, 8= GDP growth, 9= Foreign direct investment (FDI).

Appendix 3: Regression model assumptions

S/N	Regression Assumptions	Test(s)	We seek values
		Breusch-Pagan hettest	
1	No heteroskedasticity problem	Chi2(1): 1.341 p-value: 0.247	> 0.05
2	No multicollinearity problem	*VIF (See Appendix 2)*	< 5.00
		Shapiro-Wilk W normality test	
3	Residuals are normally distributed	z: 2.013 p-value: 0.022	> 0.01
		Linktest	
4	No specification problem	t: 1.724 p-value: 0.085	> 0.05
		Test for appropriate functional form	
5	No functional form problem	F(3,46):27.842 p-value: 0.0630	>0.05
6	No influential observations	*Cook's distance* no distance is above the cut-off	< 1.00

This page is intentionally left blank

Kansheba, J. M., Marobhe, M. I., & Wald, A. E. (*under review*). Cushioning the Covid-19 Economic Consequences on Entrepreneurial Ecosystems: The Role of Stakeholders` Engagement, Collaboration, and Support. *Journal of African Business.* Minor revision was received on 12th October 2021. The revised manuscript was resubmitted on 25th October 2021 and as of 15th November under review.

Chapter Five

Cushioning the Covid-19 Economic Consequences on Entrepreneurial Ecosystems: The Role of Stakeholders` Engagement, Collaboration, and Support.

Abstract

The Covid-19 (corona virus) disruptions have necessitated a new way of thinking about how entrepreneurship and its environments (ecosystems) function in times of heightened uncertainty. Based on a sample of 237 entrepreneurial ecosystem (EE) stakeholders in Tanzania - an emerging economy, we examine the pandemic economic consequences steered by government countermeasures on the EE- perceived quality and performance. We further examined the role played by EE stakeholders` engagement, collaboration, and support during the crisis. Our structural equation model results suggest that strictness of government counter measures for containment of the current pandemic predicament has a bearing on EE- perceived quality and performance by fuelling EE vulnerability via amplifying the magnitude of the negative effects. We further find that stakeholders` engagement and collaboration play a significant role in improving the EE-perceived quality and slowing down EE-vulnerability. We conclude by providing the implications and avenues for future research.

Keywords: *Entrepreneurial ecosystems, Coronavirus pandemic, Stakeholder theory, Vulnerability, Entrepreneurship*

5. Introduction

Covid-19 has not only been a health catastrophe, but also it has caused other socio-economic disruptions across the globe following various imposed countermeasures such as lockdowns,

social distancing, travel restrictions and cancellation of large events (Belitski et al., 2021). These countermeasures have resulted into worldwide permanent or temporary shutdown of small and growing businesses (SGBs) especially in the second quarter of 2020 (Fairlie and Fossen, 2021). This can be attributed to drastic drop in demand which has resulted into cash flow shortages and inability to cover operational costs (Fairlie 2020). As pointed out by Ratten (2020), the current pandemic disruptions have necessitated a new way of thinking about how entrepreneurship and its enabling environments (ecosystems) function in times of heightened uncertainty. While large businesses may have the financial muscle to navigate through the pandemic, SGB often lack resources and the technical knowhow leading to suspension or permanent cessation of operations (Rebmann et al. 2013; Schrank et al. 2013). Thus, the ability of start-ups to develop, survive and recover after crises is contingent upon the health of the underlying entrepreneurial ecosystems-EEs (Spigel, 2017).

The global attention on the current pandemic and its economic consequences to various sectors such as entrepreneurship, triggers a need for creation of more conducive entrepreneurial environments "ecosystems" that support the birth and growth of innovative ventures capable of surviving in the new reality (Ratten 2020).Isenberg (2010) coined a widely and generally accepted definition of entrepreneurial ecosystem as the interconnected and coordinated system comprised of different entrepreneurial actors(such as startups and other entrepreneurial supporting actors), infrastructures, and processes that formally and informally connect, mediate, and govern the entrepreneurial performance and development (Acs et al. 2017).

Vibrant EEs provide necessary resources such as finances, human capital, infrastructures, and act as a platform for social networks (Jha, 2018). Thus, there exists a strong need for creation of more fertile EEs that support development of innovative businesses capable of withstanding major crises such as Covid-19 (Ratten 2020). However, the severity of current pandemic socioeconomic shocks has not been felt by entrepreneurs alone, but also other different EE actors have experienced this adversity (Mason and Hruskova, 2021). Firstly, support organizations such as incubators, accelerators have been forced to close their operations due to financial difficulties faced by their clients. Secondly, finance providers have grown reluctant to finance start-ups, rather they focus their resources on already established ventures. Thirdly, social networks between EE actors that allow entrepreneurs to learn, and grow have been undermined by the pandemic courtesy of the counter measures (Kansheba and Wald, 2021).

To build a vibrant and healthy EE, there should be interconnectedness between stakeholders whose engagement, collaboration and support actively build, mould, and redefine such system (Bischoff and Volkmann 2018). The interactions between these stakeholders in the forms of engagement, collaboration and support are vital for venture formation and growth (Onyeje et al. 2020). Stakeholder engagement entails considering and balancing stakeholders' interests by involving them in business decision making processes while stakeholder support and collaboration intend to reap the stakeholder benefits and minimize potential harm to the firm (Bischoff et al. 2017). During crisis (e.g., in the current Covid-19), stakeholder involvement facilitates mutual crisis management approaches (Ndlela, 2019). However, government countermeasures to contain the spread of Covid-19 and its related economic consequences have left entrepreneurial ecosystems and their stakeholders more vulnerable to the extent of endangering their quality and performance.

Extant literature on how entrepreneurship behave during disruptive moments has by large extent covered the management of crises such as financial crisis, natural disasters, and other pandemics (Doern et al. 2019) with regional effects that solely exhibit features far different from the new global pandemic with its peculiarity regarding the severity of social-economic impacts. The unprecedented scope and scale of government measures on the ongoing Covid-19 pandemic provide an opportunity for research to find answers to the question of how EEs and their stakeholders can develop resilience to survive the current and potential future crisis (Kuckertz et al. 2020; Ligouri and Winkler 2020).

The research on Covid-19 economic impacts on EEs has been largely dominated by conceptual studies focusing on developed world (Ratten 2020; Kuckertz et al. 2020; Maritz et al. 2020) while on developing and emerging world being under-researched. For instance, Ratten (2020) conceptually shed light on the effects of Covid-19 travel and labour mobility restrictions on international businesses focusing on how the pandemic has affected various EE entities in terms of stakeholder engagement. Basing on the identified research gap and extending the conceptual work by Ratten (2020), this study intends to empirically examine the extent to which the government pandemic countermeasures have affected the perceived quality and performance of entrepreneurial ecosystems and the role played by stakeholders` support, engagement, and collaboration in repelling the pandemic's negative economic consequences in developing economies using Tanzania as a context. We thereby seek to answer the following research:

(1) *How do the government countermeasures in reaction to the Covid-19 pandemic affect the perceived quality and performance of entrepreneurial ecosystems?*

(2) Can *entrepreneurial ecosystems` stakeholders` engagement, collaboration, and support curb down the Covid-19 economic consequences on EEs perceived quality and performance?*

Our article contributes to three (3) folds. Firstly, we extend the discussion on how entrepreneurship behaves during crises. Extant studies have largely focused on the effects of the crises on start-ups` performance (Doern et al. 2019). However, we argue that start-ups` performance and survival during crises can be well understood by studying how their underlying EEs have been as well affected by the crisis (pandemic) (Mason and Hruskova, 2021). Secondly, as EEs are contextual specific (Mujahid et al., 2019), we fill the empirical gap on Covid-19 pandemic impacts on EEs in developing world using Tanzanian entrepreneurial ecosystem as our context. Thirdly, we borrow from the stakeholder theory (Moore, 1993; Freeman et al., 2010) to examine the role played by EE stakeholders' engagement, collaboration, and support (Bischoff and Volkmann 2018) in protecting EEs during Covid-19.

The rest of the paper flows as follows. Section 2 provides the review of extant literature on entrepreneurship during disruptive times, the concept of entrepreneurial ecosystem, the effects of government Covid-19 countermeasures and EE-vulnerability to Covid-19 economic consequences, and the role played by EEs stakeholders. The review culminates in a set of hypotheses. Section 3 presents the employed research methods while section 4 presents the findings of the study followed by a discussion of the main findings in Section 5. The article ends with Section 6 that presents conclusions, implications, limitations as well as suggestions of the areas for further research.

5.1. Literature review and Hypotheses development

5.1.1. Entrepreneurship during disruptive times

The occurrence of disruptive events has always been associated with unbridled opportunities and challenges to entrepreneurs (Isenberg and Schultz 2020). Though some events may be firm specific, for instance product failure, litigations, utilities loss (Herbane 2010), other events such as pandemics and financial crisis can interrupt the normal functioning of most entrepreneurs (Williams et al. 2017). The repercussions of these events are serious to entrepreneurs and start-

ups as they are associated with the enormous challenge of customer loss (Doern et al., 2019). Resilience can help ensure continuity during disruptive times as it enables entrepreneurs to bounce back from hardships by adapting to the new environment (Davoudi 2012). This involves the ability to react spontaneously and quickly to disruptions by devising unconventional strategies of dealing with them (Linneluecke 2017). Central to this is crisis management strategy which involves altering business practices such as changing sales, distribution, marketing as well as staffing strategies to cushion against shocks caused by disruptive events (Doern et al. 2019). Firms that utilize crisis management recover twice as quickly as opposed to those which do not (Williams et al. 2017). However, resource constraints and weak markets often impede small businesses to effectively employ crisis management strategies leading to discontinuity (Corey and Deitch 2011).

The role of entrepreneurial ecosystem to promote business continuity during disruptive events cannot be ignored (Maritz et al. 2020). However, this depends on the quality of the ecosystem reflected by the presence of conducive culture, facilitating policies and leadership, availability of dedicated finance, infrastructures and relevant human capital, venture-friendly market for products and institutional and infrastructural support (Isenberg 2011). Well-functioning and performing EE are evidenced by the presence of large number of new start-ups joining early-stage entrepreneurial activities (Kansheba and Wald 2020), and innovative and high growth start-ups with longer survival rate (Nicotra et al. 2018).

5.1.2 The effects of the government Covid-19 countermeasures on the entrepreneurial ecosystems

There has been increasing attention from the public, private, and civil society actors on entrepreneurial activities that has resulted into popularity of the EE concept. Isenberg (2010) referred to this concept as a combination of social, political, economic, and cultural elements that holistically support the development and growth of innovative start-ups. It involves collaboration between different elements, sectors and actors working together to create a supportive environment for entrepreneurial development. This environment can manifest in different levels including national, regional, or local (Kansheba and Wald, 2020).

Highly disruptive events, such as the outbreak of the Covid-19 pandemic, have brought unprecedented levels of uncertainty in the market thus distorting the environment in which entrepreneurs operate. Mason and Hruskova (2021) identified four (4) potential ways in which

Covid-19 counter measures could affect different EE elements. Firstly, skyrocketing business failures due to lockdowns has significantly reduced entrepreneurial intention by discouraging risk taking behaviour. Secondly, the support organizations such as universities, accelerators, incubators, and technical service providers have suffered losses resulting to permanent or temporary cessation of operations. Thirdly, finance providers such as venture capitalists, angel investors have grown reluctant to invest in start-ups instead they opt to support established business ventures. Fourthly, restrictions on social gatherings have put a strain on the magnitude of social networking activities between EE actors such as entrepreneurs and business leaders or mentors thus hindering knowledge transfer. Adding to the fact that strictness of Covid-19 counter measures has been unparallel around the world, we thus hypothesize that:

H1a: The stricter the government`s countermeasures on Covid-19 are, the lesser the EE-perceived quality.

H1b: The stricter the government`s countermeasures on Covid-19 are, the more the EE-perceived vulnerability to Covid-19 economic consequences.

Furthermore, EEs exposure (vulnerability) to Covid-19 economic consequences can affect their quality by impeding the proper functioning of individual eco-factors. Access to finance and support e.g. physical infrastructure are among crucial eco-factors to sustainable EE (Isenberg, 2010) however their quality has been impaired during Covid-19. An example can be sourced from the Australian EE which has been vulnerable to economic consequences of the current pandemic (Maritz et al., 2020). Investors have become reluctant to invest in or lend to start ups, market conditions have worsened due to drastic drop in demand while access to physical infrastructure has been very limited. Additionally, access to entrepreneurial education and technical services in the country has been limited due to closure or scaling down of incubators', universities', and professional & technical services operations (Donthu and Gustafsson, 2020). These problems have therefore adversely affected the birth and growth of start-ups which define the quality of a particular EE (Nicotra et al. 2018). We thus hypothesize that;

H1c: The more the EE-perceived vulnerability to Covid-19 economic consequences, the lesser the EE-perceived quality.

H1d: The more the EE-perceived vulnerability to Covid-19 economic consequences, the lesser the EE-perceived performance.

5.1.3 The nexus between stakeholder theory dimensions and the EE quality and performance

The functioning of EEs can be well understood through the interconnectedness between entrepreneurial stakeholders and their importance in fostering entrepreneurial development (Isenberg, 2010). The stakeholder theory defines stakeholders as all individuals who can either affect or be affected by the business endeavours (Freeman et al., 2010). The theory operates on the assumption that the interests, needs and opinions of different stakeholder groups are unparallel. These disparities in stakeholders' needs pose a tremendous challenge to firms in balancing them and satisfying each group. Thus, alternatively firms are urged to pay very close attention to each stakeholder group to continue reaping the benefits of their resources (Choi and Shepherd, 2005).

This is even more important during crisis as crisis management calls for constant identification, management, and communication of risks to key stakeholders (Ndlela, 2019). However, the level of stakeholders' involvement relies significantly on the risks identified as well as the extent at which the proposed solutions affect them. Bischoff and Volkmann (2018) identify three (3) ways in which EE stakeholders are interconnected to foster EE functioning namely; stakeholders engagement, collaboration and support.

5.1.3.1 EE stakeholder engagement

Startups need to engage their stakeholders if they are to successfully create and sustain value (Freeman et al. 2010). Stakeholder engagement refers to "practices that the organization undertakes to involve stakeholders in a positive manner in organizational activities" (Greenwood,2007, pg. 315). It pertains to involvement of internal and external stakeholders by creating networks for knowledge and resources sharing with entrepreneurs which eventually allow them to put into action innovative business strategies (Shams et al. 2019). Stakeholder engagement entails involving key stakeholders in firm's decision making by establishing constructive dialogue and productive communication with them to balance their interests and ultimately foster business performance (Chandler and Werther 2014). Stakeholder engagement is vital during disruptive times as they are usually dynamic depending on the prevailing conditions. Thus, engaging various entrepreneurial stakeholders results into decisions aimed at meeting their distinct interests (Jardine, 2008).We opine that not only stakeholder engagement can improve the EE-quality but also it is paramount during disruptive times as it enables sharing

and exchanging key resources and information that can help in designing and carrying out effective collective crisis management strategies. We therefore postulate that:

H2a: The more the EE stakeholders` engagement, the higher the EE-perceived quality.

H2b: The more the EE stakeholders` engagement, the lesser the EE-perceived vulnerability to Covid-19 economic consequences.

5.1.3.2 EE stakeholder collaboration

Stakeholder collaboration is a practice of creating new observers and new possible actions together, in a mood of commitment to take care of the concerns of all stakeholders as best as possible (Denning and Dunham 2010). It entails communicating, teaming up and partnering with various stakeholder groups in the EE which helps create shared values and collective understanding which fuel entrepreneurial development (Bischoff and Volkmann 2018). These collaborations foster the flow of tangible resources as well as the exchange of knowledge which leads to collective proactive decisions amid difficulties (Bianchi and Noci, 1998). Sloan (2009) postulates that when engagement involves collaboration with stakeholders rather than controlling them, more chances for innovation, learning and business transformation are created. Successful crisis management process is contingent upon firm's ability to timely and appropriately communicate and work with their stakeholders during different phases of crisis (Ndlela 2018). We postulate that strong stakeholder collaboration during disruptive times may blanket EE from the adversity caused by COVID-19 countermeasure making it less vulnerable. We thus hypothesize that:

H3a: The more the EE stakeholders` engagement, the more the EE-stakeholder collaboration.

H3b: The more the EE stakeholders` collaboration, the higher the EE-perceived quality.

H3c: The more the EE stakeholders` collaboration, the lesser the EE-perceived vulnerability to Covid-19 countermeasures' economic consequences.

5.1.3.3 EE stakeholder support

Stakeholder theory posits that without the support of key stakeholder groups the firm has no chance of survival (Freeman et al., 2010). Different stakeholders provide different types of support that contribute to entrepreneurial success (Bischoff and Volkmann 2018). Stakeholder support is crucial for a healthy EE by building trust among actors which facilitates flow of resources that are mutually beneficial to all of them (Theodoraki et al., 2017). Support can be sought from governments whose role is to monitor and guide entrepreneurs by providing crucial information such as technical, market as well as setting regulations, standards and taxation systems that promote entrepreneurial development (Tehseen et al. 2019). On the other hand, financial institutions support entrepreneurs by providing them with credit to curb cash flow problem which is rampant among small entrepreneurs that helps them acquire fixed assets and boost working capital (Al-Shammari et al. 2018). When disruptive events such as Covid-19 become severe, entrepreneurial stakeholders (enablers) are stretched thin in terms of their support capabilities which eventually impair the quality of EE and make it more vulnerable to such disruptive events. We therefore opine that:

H4a: The more the EE stakeholders` engagement, the more the EE stakeholders` support.

H4b: The more the EE stakeholders` collaboration, the more the EE stakeholders` support.

H4c: The more the EE stakeholders` support, the higher the EE-perceived quality.

H4d: The more the EE stakeholders` support, the lesser the EE-perceived vulnerability to Covid-19 economic consequences.

5.2. Methods

5.2.1. Research setting

The hypotheses are tested using the sample of 237 stakeholders from the Tanzanian EE including both entrepreneurs and non-entrepreneurs. The latter provide supporting entrepreneurial activities and include employees, customers, suppliers, financial institutions, government agencies, learning institutions, incubators, accelerators, professional consultants, family members, and friends. Tanzania is well-suited as the research context for two main reasons. Firstly, for the past five years, the country has attained a remarkable economic growth of 6.4% geared by sound industrialization initiatives directed towards creating conducive environment for business and investment (The World Bank 2020). Entrepreneurship is very

important to the country's economy and accounts to one third of the country's GDP and employing 20 percent of the labour force (Galperin and Melyoki, 2018). Secondly, just like other countries in the region, Tanzania also has had a fair share of challenges since the Covid-19 pandemic reached the country's shores in March 2020.

Consequently, the government started implementing counter measures from March 2020 which began with international air travel restrictions. These were followed by cancellation of public events, and closure of schools and colleges. At the end of June, schools and colleges started opening with mandatory social distancing measures in place which were followed by lifting of air travel restrictions. However, unlike neighbouring countries such as Kenya and Uganda, Tanzania adopted a no-lockdown strategy which may have helped cushion EE against adversity caused by Covid-19 government counter measures. Choices of crisis management strategies by EE actors during disruptive moments have subsequent implications on the functioning of the ecosystem.

5.2.2 Sample and data collection

For the Tanzanian economy, about 76% of the workforce not engaged in agriculture works in the informal sector (Galperin and Melyoki, 2018). This makes it extremely difficult to establish the exact population of EE stakeholders particularly start-ups as most are not officially registered. Thus, the use of random sampling technique using databases of registered companies was not possible. Therefore, we employed a convenient sampling approach. Data from 237 different EE stakeholders were collected between September and November 2020.To ensure our sample is representative enough the data collection covered major four municipals of the Dar Es Salaam which is a metropolitan city and main business hub in Tanzania (Liguori et al. 2019; Mensah et al. 2019). To encourage a high response rate, respondents were given crucial insights about the study and nature of the information needed from them. This was done by revealing the purpose of the study, risk, and benefits of participation as well as the fact that information given will be treated with high confidentiality and for scholarly purpose only.

Following Mensah et al. (2019), we administer the survey for data collection in two stages. The first stage (September-2020) of data collection intended to solicit information regarding the stakeholders` perception on the quality of entrepreneurial ecosystem (EE), EE stakeholder engagement, collaboration, and support during the Covid-19 pandemic. Total of 450 questionnaires were distributed to different EE stakeholders whereby 384 (85.3%)

questionnaires were retrieved. After preliminary data cleaning, 41 questionnaires (respondents) were eliminated due to incompleteness (unfilled or partially filled questionnaires) and straight-lining problem where respondents provide similar answers to ten or more consecutive items including items from other different multiple-item constructs (Shneor and Munim 2019). Thus, the second phase (November-2020) of data collection involved only those respondents who fully cooperated and adequately responded to our survey in the first phase. Accordingly, 343 questionnaires were administered soliciting information regarding the effects of government countermeasures, EE vulnerability to the Covid-19 economic consequences, and the EE performance during the pandemic. In this stage 292 of them were retrieved after a month. We further performed data sorting and cleaning processes, and only 237 questionnaires (52.7%) were retained for subsequent data analyses.

5.2.3. Constructs` measurement development and assessment

The latent constructs have been measured with multiple measurement items developed from prior studies (Nicotra et al. 2018; Liguori et al. 2019; Ratten 2020) and slightly conceptually adjusted to fit the studied context. Different 5-point likert scale measures were used as they are deemed most suitable in capturing respondents` perception (Campbell et al. 2004). Original data was first subjected to the exploratory factor analysis (EFA) that led to elimination of some of items that did not load sufficiently to respective constructs. The retained items had significant factor loadings of 0.7 (or closely to 0.7) and above (Podsakoff et al. 2003). However, to avoid extreme data reduction two items with factor loading below 0.7 were retained for practical purposes as they hover above 0.5 cut-off (Hair et al. 2006).

Perceived entrepreneurial ecosystem performance during Covid-19 pandemic

Nicotra et al. (2018) refers to eco-outputs as performance indicators of a vibrant entrepreneurial ecosystem. Moreover, Kansheba (2020) posit further that a well performing entrepreneurial ecosystem is that which foster productive entrepreneurship. Thus, we used 5 measurement items (e.g. *the rate of new startups joining early-stage entrepreneurial activities*, *the rate of high-growth startups*) in a 5 points likert scale (1= very low to 5=very high) to measure EE stakeholders` perceptions regarding the extent of EE performance during the pandemic. Other items are presented in Table 1.

Perceived entrepreneurial ecosystem quality during Covid-19 pandemic

We followed Isenberg (2010) EE framework to measure the quality of the EE. We customized the elements (eco-factors) provided within the framework (e.g. *access to finance, market availability*) to measure the extent of EE quality during the pandemic in 5 points (1=very low to 5= very high) likert scale (Ratten, 2020). The full list of items is shown in Table 1.

Government Covid-19 measures effect on entrepreneurial ecosystem

We followed Maritz et al. (2020) to measure the effect of government pandemic containment measures on the quality and functioning of the EE. Thus, we used two measurement items (containment measures) namely *travel restrictions and social distancing and closure of social events* (Ratten, 2020) in 5 points (1=very low to 5= very high) likert scale. As pointed early, these were mainly countermeasures applied in Tanzania.

Entrepreneurial ecosystem vulnerability to Covid-19 economic consequences.

EE became vulnerable ever since the Covid-19 outbreak. Thus, in 5 points (1=very low to 5= very high), we used two statements to capture stakeholders' perceptions on the extent that the pandemic has affected *the functioning* (Kuckertz, 2020) and *quality* (Ligouri and Winkler, 2020) of the EE.

EE stakeholders` engagement, collaboration, and support during Covid-19 pandemic

We adapted Bischoff and Volkamann (2018) framework for stakeholders` role in enhancing EE sustainability. They argue that EE (actors`) stakeholders` engagement, collaboration, and support play a crucial role in ensuring the effective functioning of the ecosystem. Thus, we used 5 points (1=very low to 5=very high) likert scale to measure the three constructs in the pandemic context. Three items were used for stakeholders` collaboration (e.g information sharing, interaction, and networking) (Denning and Dunham, 2010). Five items were used for stakeholders` support (e.g support from financial providers, customers, employees) (Tehseen, 2019; Al-Shammari et al. 2018). Five items were also used for stakeholders` engagement (e.g. extent that entrepreneurs and startups involve and work with financial providers, business partners, government agents) (Shams, 2019). Table 5.1 provides for constructs` measurement items, their reliability, and sources.

Table 5.1: Summary of construct measurement (operationalization) and reliability results

Constructs and Measurement Items		Loadings	Remarks
Entrepreneurial Ecosystems Performance (EEP) during COVID-19 pandemic			
(Nicotra et al. 2018; Kansheba 2020)			
CA= 0.906 CR= 0.88 AVE= 0.606			
EEP1	The rate of new startups joining early-stage entrepreneurial activities	0.85***	
EEP2	The rate of high growth startups	0.83***	
EEP3	The rate of innovation of startups	0.70***	
EEP4	The survival rate of startups	0.80***	
EEP5	The level of productive entrepreneurship	0.70***	
Entrepreneurial Ecosystem Quality (EEQ) during COVID-19 pandemic			
(Isenberg 2010; Ratten, 2020; Maritz et al. 2020)			
CA= 0.728 CR= 0.74 AVE= 0.490			
EEQ1	Access to financial resources	0.68*	
EEQ2	Presence of entrepreneurship supporting culture	0.72***	
EEQ3	Availability of Market	0.69***	
EEQ4	Government support eg good policies and programs	0.43	Removed
EEQ5	The level of knowledge creation and transfer eg availability of universities and R & D centres	0.4	Removed
Entrepreneurial Ecosystem Stakeholder Collaboration (EESC) during COVID-19 pandemic			
(Denning & Dunham 2010; Ndlela, 2018;Bischoff&Volkamann, 2018; Maritz et al. 2020)			
CA= 0.931 CR= 0.93 AVE= 0.82			
EESC1	The extent of key information sharing among EE stakeholders	0.86***	
EESC2	The extent of interaction and networking among EE stakeholders	0.94***	

EESC3	The extent of partnering among EE stakeholders	0.92***	

Entrepreneurial Ecosystem Stakeholder Support (EESS) during COVID-19 pandemic

(Tehseen, 2019; Al-Shammari et al. 2018; Bischoff et al. 2017)

CA= 0.761 CR= 0.76 AVE= 0.518

EESS1	Support from financial providers eg. Good financial terms	0.70***	
EESS2	Support from customers and other business partners	0.75***	
EESS3	support from other EE stakeholders eg universities, government agents, and accelerators	0.46	Removed
EESS4	Support from the community eg. family members and friends	0.71***	
EESS5	Support from talented and innovative employees (human capital)	0.39	Removed

Entrepreneurial Ecosystem Stakeholder Engagement (EESE) during COVID-19 pandemic

(Shams, 2019; Chandler & Werther, 2014; Bischoff & Volkmann, 2018)

CA= 0.726 CR= 0.77 AVE= 0.524

EESE1	The extent that entrepreneurs and startups involve and work with financial providers in daily operations	0.73***	
EESE2	The extent that entrepreneurs and startups involve and work with their business partners such as customers and suppliers in their daily operations	0.74***	
EESE3	The extent that entrepreneurs and startups involve and work with government agents in their daily operations	0.44	Removed
EESE4	The extent that entrepreneurs and startups involve and work with other entrepreneurial enablers such as incubators, accelerators, large companies, professionals	0.37	Removed
EESE5	The extent that entrepreneurs and startups involve and work with community in daily operations	0.70***	

The effect of Government COVID-19 measures on EE (GCM)

(Ratten, 2020; Maritz et al. 2020)

CA= 0.70 CR= 0.73 AVE= 0.579

GCM1	The effect of travel restrictions on the quality and functioning of EE	0.59*	The item is retained for practical purpose as it hovers around .5 cut-off (Hair et al., 2006)
GCM2	The effect of social distancing and closure of social events on the quality and functioning of EE	0.90**	
Entrepreneurial Ecosystem Vulnerability to COVID-19economic consequences			
(Kuckertz et al. 2020; Ligouri and Winkler 2020; Ratten, 2020)			
CA= 0.70 CR= 0.76 AVE= 0.631			
EEVC1	The extent that COVID-19 has affected the functioning of the EE	0.53*	The item is retained for practical purpose as it hovers around .5 cut-off (Hair et al., 2006)
EEVC2	The Extent that COVID-19 has weakened the quality of the EE	0.99***	

CFA Model fit indices: Chi-square= 289.74, df= 168, CFI= 0.925, TLI= 0.907, RMSEA= 0.057, SRMR= 0.071. CA stands for Cronbach Alpha, CR stands for Composite Reliability, and AVE stands for Average Variance Extracted. In parentheses are standard errors. *, **, and *** = Statistical Significance at 10%, 5%, and 1% respectively.

5.2.4. Non-response and common method biases check

Data collection through surveys is normally accompanied with non-response bias problem. Thus, we checked for such a problem by performing a wave analysis following Shneor and Munim (2019). To perform this analysis, we divided our sample into two sub-samples of the first 118 respondents and last 118 respondents. Thereafter, mean differences of selected demographic variables were tested and no statistically significant mean difference among the sub-samples was reported as shown in Table 5.2. This confirms the absence of severe non-response bias in our studied sample.

Table 5.2: Non-response bias test: Mean comparison between two (first 119 responses and last 118 responses) sub-samples

Variable	Test value	df	p-value
Gender	Chi= 2.256	1	0.133
Age	F= 0.413	1	0.521
Education	F= 0.283	1	0.595
EE stakeholders` type	F= 0.027	1	0.641
Experience	F= 0.215	1	0.526
Sector	F= 0.034	1	0.854

We further checked for common method bias by using Herman`s single factor and common latent factor tests and their recommended cut-off points (Conway and Lance`s 2010). The created single factor explains about 13% of the variation being clearly below the threshold of 50%. Additionally, a common latent factor was performed for further confirmation. This was done by adding a common latent factor in the original confirmatory factor analysis model. The common latent factor was found to be uncorrelated with other latent factors and fixed equal factor loading of all measurement items of the common factor. The value of equal factor loading (0.003) suggests that the common factor explained about 0.0009% of the variance which is below the recommended threshold of 50%, thus confirms the absence of common method bias problem (Riecardo et al. 2019).

5.2.5. Convergent and discriminant validity check

The data also met the convergent and discriminant validity criteria. Convergent validity was evidenced by all constructs having reliability (Cronbach alpha and composite reliabilities) values of 0.7 and above and the average variance extracted (AVE) for most constructs exceeded the cut-off point of 0.5 (Hu and Bentler 1999) except for one construct which had the AVE of 0.49 close to 0.5(Conway and Lance`s 2010). The AVE were greater that the squared correlation between the latent constructs that confirms the discriminant validity (Hair et al. 2010). We further performed the confirmatory factor analysis (CFA) suggested that revealed factors match with our prior conceptualization. Table 5.3 provides for the discriminant validity results.

Table 3: Discriminant Validity results

	EP	EEQ	EESC	EESS	EESE	GCM	EEVC
EEP	1						
EEQ	0.002	1					
EESC	0.018	0.052	1				
EESS	0.06	0.101	0.013	1			
EESE	0.136	0.321	0.095	0.198	1		
GCM	0.054	0.058	0.017	0.327	0.059	1	
EEVC	0.000	0.000	0.002	0.083	0.012	0.011	1
AVE	**0.606**	**0.490**	**0.823**	**0.518**	**0.524**	**0.579**	**0.631**

5.2.6. Model goodness-of-fit check

We further examined and confirmed the model goodness-of-fit using commonly and widely accepted fit indices from Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM). The ratio of chi-square (289.74) and degree of freedom (168) of 1.72 are less than the recommended cut-off of 3 (Rosseel, 2012). Also, the other model goodness-of-fit indices met the recommended thresholds. The Comparative Fit Index (CFI) of 0.925 and Tucker-Lewis Index (TLI) of 0.907 are all close to cut-off point of 1.0 (Hair et al. 2010). The Root Mean Square Error of Approximation index (RMSEA) of 0.057 and the Standardized Root Mean Square Residual index (SRMR) of 0.071 are all below the threshold of 0.08(Shneor and Munim 2019). Furthermore, the results from the main SEM, show that the R-square of the latent outcome constructs explains 49% of the variation of EE-performance, 13% of the variation of EE-quality and EE vulnerability to Covid-19 countermeasures respectively, 24% of the variation of EE-stakeholder support, and 18% of the variation of EE-stakeholder collaboration.

5.2.7. Descriptive statistics and correlation results

Table 5.4 presents the descriptive statistics for the sample of 237 responses. The sample comprised of 52% of females and 48% of males. In terms of age, most of respondents had the age below 31 years (43%) followed by those with age ranging between 31 years to 45 years (42%) where few had the age of 46 years and above (15%). The majority had basic education level (61%) where 39% had higher education. In terms of experience with entrepreneurial activities majority had an experience between 6 years to 10 years (68%). In terms of type of stakeholder, about 48% were entrepreneurs (start-ups) and 52% were stakeholders other than entrepreneurs. The other stakeholders are those that support entrepreneurial processes and activities including employees, customers, suppliers, financial institutions, government agents, learning institutions, incubators, accelerators, professional consultants, and community.

Table 5.4: Descriptive statistics

Variables	Obs	% of total Obs	Mean	SD	Min	Max
General characteristics of the respondents						
Gender						
Female	123	0.52	0.481	0.501	0	1
Male	114	0.48				
Age						
Below 31 yrs	102	0.43				
31yrs-45yrs	100	0.42	1.717	0.707	1	3
46yrs and above	35	0.15				
Education						
Basic Education	144	0.61	0.392	0.489	0	1
Higher Education	93	0.39				
Experience						
Below 6 yrs	34	0.14				
6yrs-10yrs	161	0.68	2.422	0.943	1	4
10yrs and above	42	0.18				
Entrepreneurial Ecosystem Stakeholders						
Entrepreneurs	113	0.48	0.477	0.501	0	1
Other stakeholders	124	0.52				
Sectors						
Local and retail trade	31	0.42				
International trade	14	0.19	2.236	0.984	1	4
Services	48	0.24				
Manufacturing	20	0.15				
Constructs						
Entrepreneurial Ecosystem Performance (EEP)	237		2.763	1.493	1	4
Entrepreneurial Ecosystem Quality (EEQ)	237		3.318	2.174	1	5
EE Stakeholder Collaboration	237		3.273	1.979	1	4
EE Stakeholder Support	237		2.127	1.255	1	5
EE Stakeholder Engagement	237		3.034	1.977	1	5
EE Vulnerability to COVID-19 (COVID-19 Impact to EEQ) (EEVC)	237		4.450	2.539	1	5
Government COVID-19 Measures (GCM)	237		4.154	2.054	1	5

Regarding to measured constructs, the results from Table 5.4 further show that during corona pandemic there was an average EE- performance, EE- quality, EE-stakeholder collaboration, and EE-stakeholder engagement, respectively while EE-stakeholder support reported to be low. Furthermore, the findings show that the corona pandemic and subsequent government measures have high negative impact on entrepreneurial ecosystem. Results in Table 5.5 confirm lack of serious multicollinearity problem (correlations being below 0.7) among studied constructs (Hair et al. 2010; Kansheba 2020).

Table 5.5. Correlation results among constructs

	EEP	EEQ	EESC	EESS	EESE	GCM	EEVC
EEP	1						
EEQ	0.05	1					
EESC	-0.133	-0.229	1				
EESS	0.246	0.318	-0.114	1			
EESE	0.368	0.567	-0.308	0.445	1		
GCM	0.233	0.24	-0.132	0.572	0.243	1	
EEVC	-0.006	-0.016	0.046	0.288	0.11	0.106	1

5.3. Results

5.3.1. Model estimations

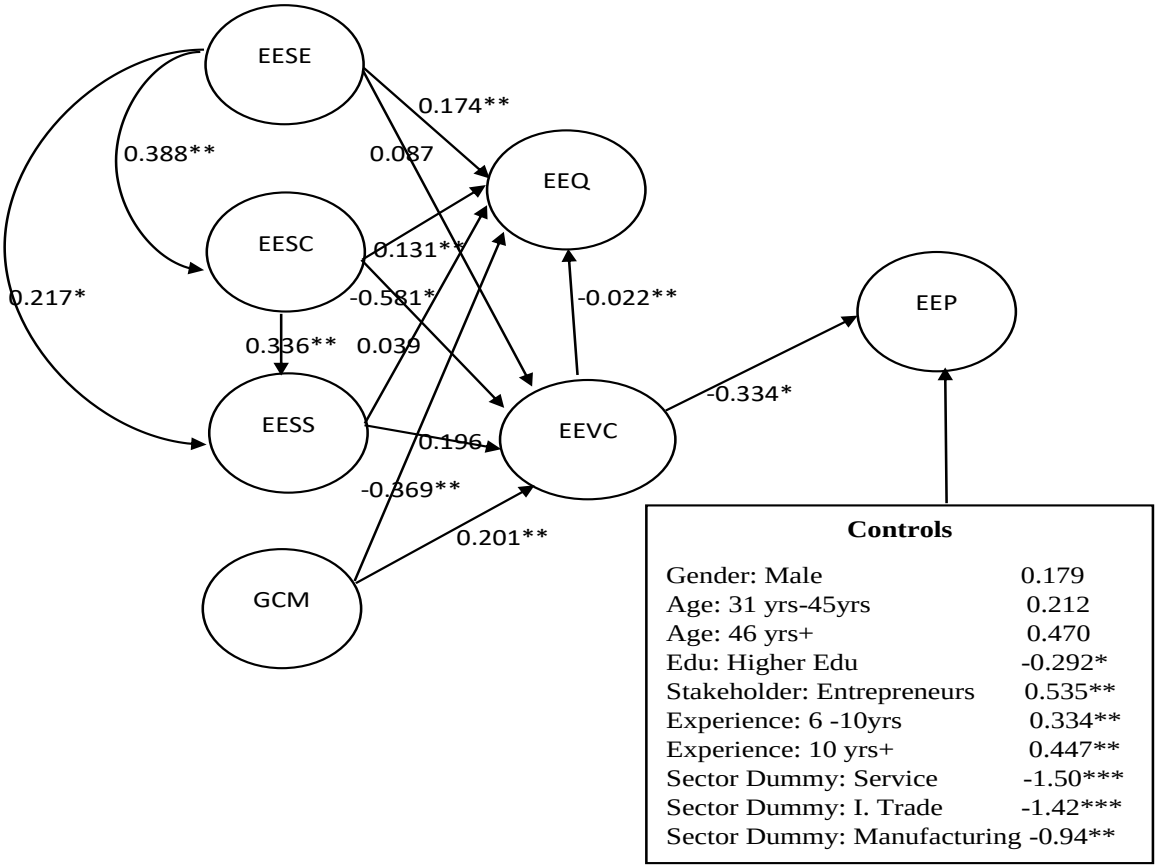
Table 5.6 presents structural equation modelling estimation results for the tested four hypotheses. Our findings support the H1a and H1b ($p<0.05$) which postulated that the perceived effects of the government countermeasures (GCM) negatively associate with the EE-perceived quality(H1a) and positively associates with the EE-perceived vulnerability to Covid-19 economic consequences (H1b). We further find support for H1c ($p<0.05$) which hypothesized that the EE-perceived vulnerability to Covid-19 economic consequences negatively associates with the EE-perceived quality. The results also support H1d ($p<0.1$) which postulated that the EE-perceived vulnerability to Covid-19 economic consequences negatively associates with the EE-perceived performance. We further postulated that EE-stakeholder engagement is positively associated with the EE-perceived quality (H2a) and negatively associated with the EE-perceived vulnerability to Covid-19 economic consequences (H2b). The findings supportH2a ($p<0.05$) and do not support H2b.

Table 5.6: SEM estimation results

	EEQ	**EEVC**	**EESS**	**EESC**	**EEP**
	Estimate	*Estimate*	*Estimate*	*Estimate*	*Estimate*
EEQ					0.463**
					(0.191)
EEVC	-0.1504*				-0.107
	(0.077)				(0.158)
EESE	0.174**	0.087	0.217*	0.388**	
	(0.067)	(0.163)	(0.126)	(0.139)	
EESC	0.131**	-0.0581*	0.336**		
	0.026)	(0.032)	(0.152)		
EESS	0.039	0.196			
	(0.077)	(0.28)			
GCM	-0.369**	0.201**			
	(0.097)	(0.043)			
Gender Dummy: Male					0.089
					(0.078)
Age Dummy 1: 31 yrs to 45 yrs					0.211
					(0.222)
Age Dummy 2: 46 yrs and above					0.47
					(0.332)
Education Dummy: Higher Education					-0.292*
					(0.158)
Stakeholder Dummy: Entrepreneurs (startups)					0.535**
					(0.269)
Experience Dummy 1: 6 yrs to 10 yrs					0.334**
					(0.157)
Experience Dummy 2: Above 10 yrs					0.447**
					(0.224)
Sector Dummy 1: Service					-1.5***
					(0.212)
Sector Dummy 2: International trade					-1.42***
					(0.169)
Sector Dummy 3: Manufacturing					-0.939**
					(0.292)

Model fit: Chi-square = 638.034, df = 355, CFI= 0.896, TLI= 0.871, RMSEA= 0.08, SRMR= 0.79. Observations= 237. In parentheses are standard errors. *, **, and *** = Statistical Significance at 10%, 5%, and 1% respectively

The results further support H3a and H3b ($p<0.05$) positing that EE stakeholder collaboration is positively associated with EE stakeholder engagement (H3a) and the EE-perceived quality (H3b) respectively. Moreover, we find support for H3c ($p<0.1$) regarding the negative association between EE stakeholder collaboration and the EE-perceived vulnerability to Covid-19 economic consequences. We posited in H4 that EE stakeholder support is positively associated with stakeholder engagement (H4a), stakeholder collaboration (H4b) and the EE-perceived quality (H4c) while negatively associated with the EE-perceived vulnerability to Covid-19 economic consequences (H4d). The results in Table 5.6 support H4a ($p<0.1$) and H4b ($p<0.05$). Figure 5.1 below summarizes the SEM estimation results.



Model fit: Chi-square = 638.034, df = 355, CFI= 0.896, TLI= 0.871, RMSEA= 0.08, SRMR= 0.79. Observations= 237. In parentheses are standard errors. *, **, and *** = Statistical Significance at 10%, 5%, and 1% respectively.

Figure 5.1: SEM model results

5.4. Discussion

The current Covid-19 pandemic has led to new sets of challenges (and opportunities) for entrepreneurship. The pandemic predicaments have forced both entrepreneurs (startups) and other entrepreneurial stakeholders to halt their operations (Fairlie 2020) permanently or temporarily. Our study examines the economic adversity caused by Covid-19 government countermeasures on the EE-perceived quality, performance as well as the protective role of stakeholder engagement, support, and collaboration. Our findings indicate that pandemic shocks caused by the strictness of countermeasures makes the EE become more vulnerable and adversely affects its quality and performance. The more government countermeasures get stricter, the more EE-functioning gets impeded which consequently led to a negative spill-over effect to entire entrepreneurial processes (Ratten, 2020).

Though our findings are based in an emerging economy, they can also be exemplified by the ongoing situation in developed economies where the Covid-19 countermeasures have been immensely applied. For instance, Australia experienced severe disruptions in EEs activities following imposition of lockdowns and social distancing measures in its major cities (Maritz et al., 2020). This involved scaling down and permanent or temporary closure of EE actors` operations all of which act as support structures for sustainable EE (Brown et al. 2020). Furthermore, the spill-over effects from deteriorating EE quality leads to a significant reduction in the provision of both tangible and intangible resources to entrepreneurs and their related startups which hinder their growth (Maritz et al., 2020). Similar effects could be observed in Germany whose strict lockdown rules caused limited access to physical infrastructure, technical services and finance, closure of universities and incubators which severely affected start-ups' operations (Kuckertz et al., 2020)

We consider the role of stakeholder collaboration, engagement, and support (Bischoff and Volkmann, 2018) in protecting EEs during Covid-19 to be the main finding of this study. In alignment with crisis management concept that advocates for stakeholders' involvement (Ndlela, 2019), our findings show that higher magnitude of stakeholder engagement and collaboration improves EE quality which makes EEs less vulnerable to shocks from pandemic counter measures. However, we did not find much statistical evidence for the role of stakeholders` support as previously postulated. This is associated with the fact that stakeholders' supports have been largely undermined by pandemic's containment measures such as social distancing measures that prohibit face-to-face activities as well as financial difficulties faced by stakeholders (Köpsel et al., 2021).

We further show that stakeholder engagement significantly influences stakeholder collaboration which supports Sloan (2009) who stresses the relevancy of stakeholder engagement and collaboration in fostering innovation and business development. Our results stress the profundity of adopting a stakeholder-based approach during crises to efficiently contain adversity to EEs consistent with stakeholder theory and crisis management concept (Alpaslan et al. 2009). During crisis it is vital for entrepreneurial firms to seek support, collaborate and engage their key stakeholder in a search of coherent and mutual solutions (Raupp, 2011).

5.5. Conclusion, implications, and future research

5.5.1. Conclusion

The current Covid-19 pandemic has brought unprecedented levels of uncertainties to the environment that supports entrepreneurial activities. This has been attributed to the government counter measures imposed to contain the spread of the virus which include lock downs, social distancing, travel bans and cancellation of public events. Start-ups as well as other EE stakeholders have suffered immensely from the adversity brought by these counter measures. Our study sheds light on the current Covid-19 pandemic and its consequences on EE functioning. So far, there are very few (predominately conceptual) studies that have examined how this phenomenon has impacted EE. Our study adds to previous literature by empirically examining the economic consequences caused by government countermeasures on the perceived quality, performance, and vulnerability of EEs. We further document the protective role of stakeholders' engagement, collaboration, and support during the crisis.

5.5.2. Theoretical implications

The current study firstly extends the EE literature particularly by documenting how EEs behave during crisis. Moreover, our study contributes to stakeholder theory and crisis management literature (Freeman et al., 2010) by examining the enormity of stakeholders' involvement in EE functioning in the context of the current Covid-19 pandemic. Dwelling on Bischoff and Volkmann (2018) conceptualization, we show how stakeholders` engagement, collaboration, and support can protect EEs during major crises and yield to their sustainability. During crisis entrepreneurs and their related start-ups need easy and fast access to critical resources. This can be largely facilitated by vibrant EEs characterised by healthy engagement, collaboration, and support from variety of actors/stakeholders (Ratten, 2020).

5.5.3. Practical implications

Policymakers at the national level need to acknowledge that the government countermeasures adversely affect EE functioning and concurrently increase its vulnerability. Upon deciding on countermeasures, governments should also consider mechanisms to blanket EEs from this adversity. Governments have to step in and give direction by devising recovery plans for entrepreneurs and other stakeholders. These plans should not only be focused on providing short-term relief to entrepreneurs but also there should be long term-oriented plans to ensure

growth (Kuckertz et al. 2020). Moreover, policies for protecting EE from adversity brought by disruptive events can be developed focusing on stakeholders' engagement, collaboration, and support, which are the cornerstones of EE functioning (Bischoff et al. 2017).

Our results show that stakeholders' support is undermined during Covid-19. This calls for initiatives and efforts towards improving stakeholders' support during major health crises by emphasizing the incorporation of technology such as online meetings that can stand as a substitute for face-to-face interactions between stakeholders. Government support schemes such as stimulus packages should strongly consider the multiplicity of EE actors rather than targeting entrepreneurs and their related startups only. Policies and assistances that largely target businesses (and less of other supporting actors) may be futile as start-ups' survival is highly dependent on resources supplied by EE stakeholders.

5.5.4. Limitation and future research

Our study examined the Covid-19 economic consequences on the EE by exploring stakeholders` perceptions from a single ecosystem. Future research (for more nuance generalization purpose) may benefit by exploring the phenomenon from multiple ecosystems. Moreover, further studies may explore how different stakeholders' roles e.g., government's ability to provide stimulus packages such as relaxed tax rules, lending and repayment rules affect EE quality and performance during the crisis.

References

Alpaslan, C., Green, S., & Mitroff, I. (2009). Corporate Governance in the Context of Crises: Towards a Stakeholder Theory of Crisis Management. *Journal of Contingencies and Crisis Management, 17(1),* 38-49.

Al-Shammari, M. (2015). Corporate social responsibility and firm performance: the moderating role of reputation and institutional investors. *International Journal of Business and Management*, 10(6), 45-53.

Belitski, M., Guenther, C., Kritikos, S., & Thurik, R. (2021). Economic effects of the COVID-19 pandemic on entrepreneurship and small businesses. *Small Business Economics*. DOI:10.1007/s11187-021-00544-y.

Bianchi, R., & Noci, G. (1998). "Greening" SMEs' competitiveness. *Small Business Economics*, 11(3), 269–281.

Bischoff, K., & Volkmann, C. (2018). Stakeholder support for sustainable entrepreneurship - a framework of sustainable entrepreneurial ecosystems. *International Journal of Entrepreneurial Venturing*, 10, 2-9. DOI-10.1504/IJEV.2018.092714.

Bischoff, K., Volkmann, C., & Audretsch, D. (2017). Stakeholder collaboration in entrepreneurship education: an analysis of the entrepreneurial ecosystems of European higher educational institutions. *The Journal of Technology Transfer, 43*(3), 12-20. DOI: 10.1007/s10961-017-9581-0.

Bischoff, K. (2019). A Study on the perceived strength of sustainable entrepreneurial ecosystems on the dimensions of stakeholder theory and culture. *Small Business Economics,* DOI: 10.1007/s11187-019-00257-3.

Campbell, W. K., Bonacci, A. M., Shelton, J., Exline, J. J., & Bushman, B. J. (2004). Psychological entitlement: Interpersonal consequences and validation of a self-report measure. *Journal of Personality Assessment, 83*(1), 29–45. https://doi.org/10.1207/s15327752jpa8301_04.

Chandler, D., & Werther, W. (2013). Strategic corporate social responsibility. *SAGE Publications*, 617, 85-92.

Choi, R., & Shepherd, D. (2005). Stakeholder perceptions of age and other dimensions of newness. *Journal of Management*, 31(4), 573–596.

Colombo, M., Lehmann, E., Dagnino, G., &Salmador, M. (2019). The Governance of the Entrepreneurial Ecosystem. *Small Business Economics*, *52*(3), 1-12.

Conway, J. M., & Lance, C. E. (2010). What reviewers should expect from authors regarding common method bias in organizational research. *Journal of Business and Psychology, 25*(3), 325-334. https://doi.org/10.1007/s10869-010-9181-6.

Corey, C., & Deitch, E. (2011). Factors affecting business recovery immediately after hurricane Katrina. *Journal of Contingencies and Crisis Management*, *19*(3), 12-23. DOI: 10.1111/j.1468-5973.2011.00642.x

Davoudi, S. (2012). Resilience: a bridging concept or a dead end? *Planning Theory & Practice, 13*, 299-307. DOI: 10.1080/14649357.2012.677124.

Denning, P., & Dunham, R. (2010). The innovator's way: essential practices for successful innovation. Cambridge: MIT Press, 2010, 315. DOI:10.1080/10848770.2013.773504

Doern, R., Williams, N., &Vorley, T. (2019). Special issue on entrepreneurship and crises: business as usual? An introduction and review of the literature. *Entrepreneurship &. Regional Development, 31*, 400–412. DOI:10.1080/08985626.2018.1541590.

Donthu, N., & Gustafsson, A. (2020). Effects of COVID-19 on business and research, *Journal of Business Research. 117*, 284–289.DOI: 10.1016/j.jbusres.2020.06.008

Fairlie, R. (2020). The impact of COVID-19 on small business owners: evidence of early-stage losses from the April 2020 current population survey. *Working Paper 27309*, National Bureau of Economic Research.

Fairlie, R., &Fossen, F. (2021). The early impacts of the COVID-19 pandemic on business sales. *Small Business Economics*. https://doi.org/10.1007/s11187-021-00479-4.

Freeman, E., Parmar, Bhttps://www.researchgate.net/profile/R_Freeman., Harrison, J & Purnell, A. (2010). Stakeholder theory: the state of the art. *The Academy of Management Annals*, *3*(1), 403-445. DOI: 10.1080/19416520.2010.495581.

Galperin, B. L., & Melyoki, L. L. (2018). Tanzania as an emerging entrepreneurial ecosystem: Prospect and challenges. African Entrepreneurship: Challenges and Opportunities for Doing Business, 29–58. https://doi.org/10.1007/978-3-319-73700-33.

Greenwood, M. (2007). Stakeholder Engagement: Beyond the Myth of Corporate Responsibility. Journal of Business Ethics, 74(4), 315-327.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E., &Tatham, R. L. (2006). Multivariate Data Analysis. Vol. 6. Upper Saddle River, NJ: Pearson Prentice Hall.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis (7th ed.). Upper Saddle River, New Jersey: Pearson Education.

Herbane, B. (2010). Small business research: time for a crisis-based view. *International Small Business Journal*, *28*(1), 43-64.DOI:10.1177/0266242609350804.

Hu, L. t., & Bentler, P. M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural equation modelling: a multidisciplinary journal, 6(1), 1-55.

Isenberg, D. (2010). The big idea: how to start an entrepreneurial revolution. *Harvard Business Review*.*88*(6), 40-50.

Isenberg, D., & Schultz, E. (2020). Opportunities for entrepreneurs in the pandemic and beyond. Accessed from https://medium.com/@disen2/opportunities-for-entrepreneurs-in-the-pandemic-and-beyond-f92f5fa1997b on 17th November 2020).

Jardine, C. (2008). Stakeholder participation in risk management decision making. In E. L. Melnick & B. S. Everitt (Eds.), *Encyclopedia of Quantitative Risk Analysis and Assessment*. https://doi.org/10.1002/9780470061596.risk0012.

Jha, K. (2018). Entrepreneurial ecosystem in India: taking stock and looking ahead. IIMB *Management Review*, 30(2), 179-188.

Kansheba, J. (2020). Small business and entrepreneurship in Africa: the nexus of entrepreneurial ecosystems and productive entrepreneurship. *Small Enterprise Research*. DOI: 10.1080/13215906.2020.1761869.

Kansheba, J. M. P., & Wald, A. (2020) Entrepreneurial Ecosystems: A Systematic Literature Review and Research Agenda. *Journal of Small Business and Enterprise Development*, doi: 10.1108/JSBED-11-2019-0364.

Kansheba, J., & Wald, A. E. (2021). Entrepreneurial ecosystems quality and productive entrepreneurship: entrepreneurial attitude as a mediator in early stage and high-growth activities. *Journal of Small Business and Enterprise Development.* Doi: 0.1108/JSBED-05-2021-0209.

Köpsel, V., de Moura Kiipper, G. & Peck, M. (2021). Stakeholder engagement vs. social distancing—how does the COVID-19 pandemic affect participatory research in EU marine science projects? *Maritime Studies* 20, 189–205. DOI:10.1007/s40152-021-00223-4

Kuckertz, A., Brandle, L., Gaudig, A., &Hinderer, S. (2020). Startups in times of crisis-a rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*. DOI: 10.1016/j.jbvi.2020.e00169.

Ligouri, E.,& Winkler, C. (2020). From offline to online: challenges and opportunities for entrepreneurship education following the COVID-19pandemic. *Entrepreneurship Education and Pedagogy*, *3(*4), 346–351.

Maritz, A., Perenyi, A., Waal, G., & Buck, C. (2020). Entrepreneurship as the unsung hero during the current COVID-19 Economic Crisis: Australian perspectives. *Sustainability, 4*(5), 2-9. DOI:10.3390/su12114612.

Mason, C., & Brown, R. (2014). Entrepreneurial ecosystems and growth-oriented entrepreneurship. *Final Report to OECD Paris*, *30*(1), 77–102.

Mason, C., & Hruskova, M. (2021). The impact of COVID-19 on entrepreneurial ecosystems, *Economics 2021*.https://doi.org/10.4337/9781800374607.00011.

Mensah, H, K., Agyapong, A., & Zamore, S. (2019). Strategy and performance: Does environmental dynamism matter? *Journal of African Business*. doi:10.1080/15228916.2019.1641304.

Meyskens, M., &Carsrud, A. (2013). Nascent green technology ventures: a study assessing the role of partnership diversity in firm success. *Small Business Economics*, *40*(3), 739–759. DOI: 10.1007/s11187-011-9400-1.

Mujahid, S., Mubarik, S., &Naghavi, N. (2019). Prioritizing dimensions of entrepreneurial ecosystem: a proposed framework. *Journal of Global Entrepreneurship Research,* 9(51), 105-119. https://doi.org/10.1186/s40497-019-0176-0.

Ndlela, M. (2019) A Stakeholder Approach to Risk Management. In: Crisis Communication. *Palgrave Pivot, Cham*. https://doi.org/10.1007/978-3-319-97256-5_4.

Ndlela, M. (2019). Stakeholder approaches in crisis management. *Crisis Communication*, 15-18.DOI: 10.1007/978-3-319-97256-5-2.

Nicotra, M., Romano, M., Del Giudice, M., & Schillaci, C. (2018). The causal relation between entrepreneurial ecosystem and productive entrepreneurship: a measurement framework. *Journal of Technology Transfer*, *43*(3), 640-673.

Onyeje, S. A., Court, T. O., & Emmanuel Kalu Agbaeze, E. K. (2020). National Enterprise Policy Dimensions and Sustainability of Micro, Small and Medium Enterprises (MSMEs). Journal of African Business. Doi: 10.1080/15228916.2020.1838838.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879.

Ratten, V. (2020). Coronavirus and international business: an entrepreneurial ecosystem perspective. *Thunderbird International Business Review*, 1-6. DOI: 10.1002/tie.22161.

Riecardo, R., Zolloa, L., Alberto, F., & Illan, A. (2019). Big data analytics capabilities and performance: Evidence from a moderated multi-mediation model. *Technological Forecasting & Social Change, (149),* https://doi.org/10.1016/j.techfore.2019.119781.

Roundy, P. & Bayer, M. (2019). To bridge or buffer? A resource dependence theory of nascent entrepreneurial ecosystems. *Journal of Entrepreneurship in Emerging Economies*, forthcoming. https://doi.org/10.1108/JEEE-06-2018-0064.

Shams, R.,& Khojastehpour, M. (2019). Addressing the complexity of stakeholder management in international ecological setting: A CSR approach. *Journal of Business Research, 119*. DOI: 10.1016/j.jbusres.2019.05.012.

Shneor, R., &Munim, Z. H. (2019). Reward crowdfunding contribution as planned behavior: An extended. *Journal of Business Research,*103 (2019), 56-70.

Simatupang, T. M., Schwab, A., & Lantu, D. C. (2015). Building sustainable entrepreneurship ecosystems. *International Journal of Entrepreneurship and Small Business, 26(4),* 389–398.

Sloan, P. (2009). Redefining stakeholder engagement. *Journal of Corporate Citizenship, 36,* 12-18. DOI: 10.9774/GLEAF.4700.2009.wi.00005.

Spigel, B. (2017). The relational organization of entrepreneurial ecosystems. *Entrepreneurship Theory and Practice,* 41, 49–72.

Stam, E., van de Ven, A. (2021). Entrepreneurial ecosystem elements. *Small Business Economics,* 56, 809–832. https://doi.org/10.1007/s11187-019-00270-6.

Tehseen, S., Rmayah, T., Ahmed, F & Qureshi, Z. (2019). Entrepreneurial Competencies and SMEs' Growth: the Mediating Role of Network Competence. *Asia-Pacific Journal of Business Administration* 11(1). DOI: 10.1108/APJBA-05-2018-0084.

Theodoraki, C., Messeghem, K., & Rice, M. P. (2017). A social capital approach to the development of sustainable entrepreneurial ecosystems: an explorative study. Small Business Economics, 1–18.

The World Bank (2020). **Error! Hyperlink reference not valid.**/en/country/tanzania/overview on 12th December 2020.

UNCTAD. (2020). Impact of theCOVID-19pandemic on trade and development: Transitioning to a new normal, ISBN: 978-92-

Williams, T., Gruber, K., Sutcliffe, D., Shepherd, K.,& Zhao, E. (2017). Organizational Response to Adversity: Fusing Crisis Management and Resilience Research Streams. *Academy of Management Annals 11*(2), 733-769. DOI:10.5465/annals.2015.0134.

World Health Organization (2020). Coronavirus disease (COVID-19) situation Report–189. Second Global Research Forum. 1-2 July 2020. Accessed from https://www.who.int/docs/default source/corona virus/situation-reports/20200727on 28th July 2020.

Appendices

Appendix 1: Summary of tested hypotheses

Hypothesis	Relationship	Remarks
H1a	EEQ ~ GCM	Confirmed
H1b	EEVC ~ GCM	Confirmed
H1c	EEQ ~ EEVC	Confirmed
H1d	EEP ~ EEVC	Confirmed
H2a	EEQ ~ EESE	Confirmed
H2b	EEVC ~ EESE	Rejected
H3a	EESC ~ EESE	Confirmed
H3b	EEQ ~ EESC	Confirmed
H3c	EEVC ~ EESC	Confirmed
H4a	EESS ~ EESE	Confirmed
H4b	EESS ~ EESC	Confirmed
H4c	EEQ ~ EESS	Rejected
H4d	EEVC ~ EESS	Rejected

Chapter Six

Conclusion

The goal of this dissertation was to contribute to the elucidation of the four outlined research objectives to expand current understanding about the entrepreneurial ecosystem (EE) phenomenon. Research paper 1 adds to the fragmented EE literature by offering a comprehensive and systematic literature review that connects current knowledge and identifies prospective and novel directions for future research. The paper provides a synthesis of theoretical and conceptual foundations of the EE concept. Moreover, it revisits the fundamental definition and the application of the concept and extends the extant conceptual framework of the phenomenon. It is worth mentioning that the findings from the research paper 1 opened empirical gaps for subsequent research papers contained in this dissertation.

Research papers 2 and 3 sought to fill the empirical gap spotted in research paper 1. One among the key findings in paper 1 is that the extant EE theorizing and conceptualization still suffer insufficient empirical validations. To that end second and third papers aimed at empirically testing the applicability of the EE measurement framework developed by Nicotra et al. (2018). The Nicotra et al. (2018) framework suggests a direct causal relationship between eco-factors and eco-outputs of the entrepreneurial ecosystems. Therefore, these papers extended the current EE framework by arguing and testing for the mediation role of innovations (paper 2) and entrepreneurial attitude (paper 3). The findings from two studies show that vibrant EEs are good habitats for innovative entrepreneurs and nurture entrepreneurial attitudes by supplying necessary tangible (e.g. financial capital and supporting infrastructures) and intangible resources (e.g. appropriate knowledge and skills, motivation, and networking). Improved (product and service) innovations and entrepreneurial attitude in turn yield to EE outputs (productive entrepreneurship) in terms of early-stage and high-growth activities.

The research paper 4 sought to explore how the current Covid-19 pandemic affects the EE functioning in terms of its quality and performance. Furthermore, the stakeholder theory perspective was employed to explore how EE stakeholders` engagement, collaboration, and support protect EE quality and performance during the pandemic. The paper argues that the government pandemic containment countermeasures made EE more vulnerable to negative economic consequences which in turn hamper the EE in term of quality and performance.

6.1. Implications for research

This doctoral thesis contributes to the body of knowledge by initially synthesizing extant literature on EE research. According to Isenberg (2010) the EE concept is still in its infancy stage which calls upon a need for extant literature integration for a wider and granular understanding of the phenomenon. Thus, in the research paper 1, the definition and the extant EE framework were rethought and extended. For instance, while prior studies (e.g., Cohen, 2006; Spingel, 2017) viewed the EEs in terms local (geographical) boundaries, research paper 1 argue for the diminishing role of local/geographical boundaries in defining the EEs. This is attributed to the role playing by the globalization in overall entrepreneurial processes, for example putting the role of crowdfunding (Velt et al., 2018) and crowdsourcing (Maroufkhani et al., 2018) into context. Moreover, the research paper 1 lays foundation for future research by identifying various avenues with research potentials.

Thus, the proceeding studies sought to not only extend the theoretical debate on EE research but also fill the empirical gaps. To that end, the research paper 2 aims at examining the potential mediation effects of innovations on the causal relationship between eco-factors of entrepreneurial ecosystems and productive entrepreneurship. Several extant studies (e.g., Maroufkhani et al., 2018; Mack & Mayer, 2015; Isenberg, 2010) on entrepreneurial ecosystem research focus on identifying relevant supporting elements for successful and vibrant entrepreneurial ecosystems. However, less has been done to provide empirical evidence of the causal relationship between eco-factors and eco-output of entrepreneurial ecosystems. Therefore, research paper 2 fills the theoretical and empirical gap by extending the existing conceptual model on eco-factors and eco-output of entrepreneurial ecosystem proposed by Nicotra et al. (2018) by providing statistical evidence on the mediating role played by innovations.

Moreover, few recent studies (e.g., Corrente et al., 2019 and Kansheba, 2020) that tested the existing EE framework provide conflicting conclusions which call for more inquiry on other logics that improve the explanation of the role of EEs in fostering entrepreneurship growth and development. To that end, research paper 3 argues for and provides empirical support for the mediating role of entrepreneurial attitude on the relationship between EE quality and productive entrepreneurship in terms of early-stage and high growth activities. As provided by Audretsch et al. (2019), vivacious entrepreneurial ecosystems provide key and necessary entrepreneurial tangible and intangible resources. These resources are crucial in building the

entrepreneurial attitude and morale of nascent entrepreneurs not only during entry point in entrepreneurial activities but also during scale up (Kansheba & Wald, 2021).

Finally, the research paper 4 extends the EE literature particularly by documenting how EEs behave during crisis. Moreover, the study contributes to stakeholder theory and crisis management literature (Freeman et al., 2010) by examining the enormity of stakeholders' involvement in EE functioning in the context of the current Covid-19 pandemic. Dwelling on Bischoff and Volkmann (2018) conceptualization, the study shows how stakeholders` engagement, collaboration, and support can protect EEs during major crises and yield to their sustainability. During crisis entrepreneurs and their related start-ups need easy and fast access to critical resources. This can be largely facilitated by vibrant EEs characterised by healthy engagement, collaboration, and support from variety of actors/stakeholders (Ratten, 2020).

6.2 Practical implications

The importance of the research for practice should also be highlighted. As a result, in addition to the theoretical/research implications outlined above, the findings at hand can yield a plethora of practical consequences that can provide significant insights for policymakers and practitioners (EE actors/players). These are summarized below.

Research paper 1 presents a systematically refined framework in which various actors, eco-factors, eco-outputs, and eco-outcomes of the EE are discussed. This is crucial particularly when designing different policies and programs aimed at fostering EE functioning. The paper discusses the roles and the interplay of various EE elements and actors that holistically brings about EE vibrance. As pointed out by Maroufkhani et al. (2018), these collaboration and interaction interfaces amongst the EE`s stakeholders and other elements are paramount for policymakers and local decision-makers during designing of the EEs. Moreover, the research paper 1 stress on the entrepreneurs/startups centric view which should be also considered during designing of the policies and programs that aim at steering entrepreneurial processes.

Research paper 2 informs about the role played by the entrepreneurial ecosystems and what they can offer to their players especially entrepreneurs and their related ventures. The findings imply that entrepreneurs (startups) can garner various necessary resources within their EEs to support their innovations and performance. These resources such as government supports (e.g. customized entrepreneurial programmes and infrastructures); knowledge capital in terms of research and development activities as well internal market dynamics. In addition, the findings

inform the policymakers and practitioners that designed policies and programmes fostering quality of entrepreneurial environments (ecosystems) and entrepreneurship must be more customized focusing on improving the innovative capacity of entrepreneurs and their related startups.

Research paper 3 informs policymakers that policies and programs targeted towards fostering EEs need to inculcate entrepreneurial traits to join and scale-up entrepreneurial activities. It also sheds light to nascent entrepreneurs (business owners) and managers of entrepreneurial ventures to leverage on the resource richness of their EEs in shaping their entrepreneurial behaviours and initiatives which ultimately results in gaining competitive advantage and improved performance. Moreover, the significant influence of EE quality on entrepreneurial attitude implies a need for entrepreneurship education and training decision makers to appreciate the role of EEs in shaping entrepreneurial personality traits. EEs dynamics and how they affect entrepreneurial traits such as attitude can be taught and strengthened.

Research paper 4 calls for a need to policymakers to acknowledge that the government countermeasures adversely affect EE functioning and concurrently increase its vulnerability. Upon deciding on countermeasures, governments should also consider mechanisms to blanket EEs from this adversity. Governments have to step in and give direction by devising recovery plans for entrepreneurs and other stakeholders. These plans should not only be focused on providing short-term relief to entrepreneurs but also there should be long term-oriented plans to ensure growth. Moreover, policies for protecting EE from adversity brought by disruptive events can be developed focusing on stakeholders' engagement, collaboration, and support, which are the cornerstones of EE functioning.

6.3 Future research

As pointed out in research paper 2, entrepreneurial ecosystems are good habitat for innovative entrepreneurs, future research could explore challenges these entrepreneurs encounter in acquiring, utilizing, and managing internal and external knowledge during designing and implementing innovative products and services. Future research could further explore how collaborations among different industries within the entrepreneurial ecosystem can moderate the effect of innovations on productive entrepreneurship.

Furthermore, in both studies (paper 2 and 3) the GEM dataset was employed, which presents a macro (country) overview of the quality and depth of entrepreneurial ecosystems. While

national level insights of the EEs are important for the theorizing and policy making, it is important to acknowledge the need for micro level insights towards this objective. Thus, future research could enrich further the understanding on the EE phenomenon by employing micro (individual, firm, or meta-organisation) level data. Future research may also explore other aspects/logics (e.g., mediation/moderation) that have potential to improve the explanations on the extant EEs framework.

Moreover, the research paper 4 examined the Covid-19 economic consequences on the EE by exploring stakeholders` perceptions from a single ecosystem. Future research (for more nuance generalization purpose) may benefit by exploring the phenomenon from multiple ecosystems. Moreover, further studies may explore how different stakeholders' roles e.g., government's ability to provide stimulus packages such as relaxed tax rules, lending and repayment rules affect EE quality and performance during the crisis.

References

Acs, Z. J., Estrin, S., Mickiewicz, T., & Szerb, L. (2018). Entrepreneurship, institutional economics, and economic growth: an ecosystem perspective. *Small Business Economics, 51*(2), 501-514. doi:10.1007/s11187-018-0013-9

Acs, Z. J., Stam, E., Audretsch, D. B., & O'Connor, A. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics, 49*(1), 1-10. doi:10.1007/s11187-017-9864-8

Adedeji, A. N., Sidique, S. F., Abd Rahman, A., & Law, S. H. (2016). The role of local content policy in local value creation in Nigeria's oil industry: A structural equation modeling (SEM) approach. *Resources Policy, 49*, 61-73. doi:10.1016/j.resourpol.2016.04.006

Adler, P. S., & Kwon, S.-W. (2002). Social Capital: Prospects for a New Concept. *Academy of Management Review, 27*(1), 17-40. doi:10.5465/amr.2002.5922314

Anwar, S., & Sun, S. Z. (2015). Foreign direct investment in R&D and domestic entrepreneurship in China's manufacturing industries. *Applied Economics, 47*(16), 1633-1651. doi:10.1080/00036846.2014.1000527

Anyanwu, J. C. (2013). Characteristics and Macroeconomic Determinants of Youth Employment in Africa. *African Development Review-Revue Africaine De Developpement, 25*(2), 107-129. doi:10.1111/j.1467-8268.2013.12019.x

Apa, R., Grandinetti, R., & Sedita, S. R. (2017). The social and business dimensions of a networked business incubator: the case of H-Farm. *Journal of Small Business and Enterprise Development, 24*(2), 198-221. doi:10.1108/jsbed-07-2016-0103

Atiase, V. Y., Mahmood, S., Wang, Y., & Botchie, D. (2018). Developing entrepreneurship in Africa: investigating critical resource challenges. *Journal of Small Business and Enterprise Development, 25*(4), 644-666. doi:10.1108/jsbed-03-2017-0084

Audretsch, D. B., & Belitski, M. (2017). Entrepreneurial ecosystems in cities: establishing the framework conditions. *Journal of Technology Transfer, 42*(5), 1030-1051. doi:10.1007/s10961-016-9473-8

Audretsch, D. B., Cunningham, J. A., Kuratko, D. F., Lehmann, E. E., & Menter, M. (2019). Entrepreneurial ecosystems: economic, technological, and societal impacts. *J Technol Transf, 44*(2), 313-325. doi:10.1007/s10961-018-9690-4

Basco, R., & Calabro, A. (2016). Open innovation search strategies in family and non-family SMEs Evidence from a natural resource-based cluster in Chile. *Academia-Revista Latinoamericana De Administracion, 29*(3), 279-302. doi:10.1108/arla-07-2015-0188

Baumol, W. J. (1990). Entrepreneurship: Productive, Unproductive, and Destructive. *Journal of Political Economy, Vol. 98*(5), 893-921.

Bischoff, K., & Volkmann, C. K. (2018). Stakeholder support for sustainable entrepreneurship – a framework of sustainable entrepreneurial ecosystems. *Int. J. Entrepreneurial Venturing,, 10*(2), 172-201.

Bischoff, K., Volkmann, C. K., & Audretsch, D. B. (2018). Stakeholder collaboration in entrepreneurship education: an analysis of the entrepreneurial ecosystems of European higher educational institutions. *Journal of Technology Transfer, 43*(1), 20-46. doi:10.1007/s10961-017-9581-0

Brereton, P., Kitchenham, B. A., Budgen, D., Turner, M., & Khalil, M. (2007). Lessons from applying the systematic literature review process within the software engineering domain. *Journal of Systems and Software, 80*(4), 571-583. doi:10.1016/j.jss.2006.07.009

Brown, R., Gregson, G., & Mason, C. (2016). A Post-Mortem of Regional Innovation Policy Failure: Scotland's Intermediate Technology Initiative (ITI). *Regional Studies, 50*(7), 1260-1272. doi:10.1080/00343404.2014.985644

Brownson, C. (2013). Fostering Entrepreneurial Culture: A Conceptualization. *European Journal of Business and Management, 5*(31), 146-156.

Bruns, K., Bosma, N., Sanders, M., & Schramm, M. (2017). Searching for the existence of entrepreneurial ecosystems: a regional cross-section growth regression approach. *Small Business Economics, 49*(1), 31-54. doi:10.1007/s11187-017-9866-6

Carayannis, E., & Grigoroudis, E. (2012). Linking innovation, productivity, and competitiveness: implications for policy and practice. *The Journal of Technology Transfer, 39*(2), 199-218. doi:10.1007/s10961-012-9295-2

Cohen, B. (2006). Sustainable valley entrepreneurial ecosystems. *Business Strategy and the Environment, 15*(1), 1-14. doi:10.1002/bse.428

Colombo, M. G., & Dagnino, G. B. (2017). The governance of entrepreneurial ecosystems. *Small Business Economics, 52*(2), 419-428. doi:10.1007/s11187-017-9952-9

Cook, D. J., Mulrow, C. D., & Haynes, R. B. (1997). Systematic reviews: Synthesis of best evidence for clinical decisions. *Annals of Internal Medicine, 126*(5), 376-380. doi:10.7326/0003-4819-126-5-199703010-00006

Cowell, M., Lyon-Hill, S., & Tate, S. (2018). It takes all kinds: understanding diverse entrepreneurial ecosystems. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(2), 178-198. doi:10.1108/jec-08-2017-0064

De Bruin, A., Shaw, E., & Lewis, K. V. (2017). The collaborative dynamic in social entrepreneurship. *Entrepreneurship and Regional Development, 29*(7-8), 575-585. doi:10.1080/08985626.2017.1328902

Dedehayir, O., Makinen, S. J., & Ortt, J. R. (2018). Roles during innovation ecosystem genesis: A literature review. *Technological Forecasting and Social Change, 136*, 18-29. doi:10.1016/j.techfore.2016.11.028

Di Fatta, D., Caputo, F., & Dominici, G. (2018). A relational view of start-up firms inside an incubator: the case of the ARCA consortium. *European Journal of Innovation Management, 21*(4), 601-619. doi:10.1108/ejim-08-2017-0110

Dias, C. S. L., Rodrigues, R. G., & Ferreira, J. J. (2019). What's new in the research on agricultural entrepreneurship? *Journal of Rural Studies, 65*, 99-115. doi:10.1016/j.jrurstud.2018.11.003

Economidou, C., Grilli, L., Henrekson, M., & Sanders, M. (2018). Financial and Institutional Reforms for an Entrepreneurial Society. *Small Business Economics, 51*(2), 279-291. doi:10.1007/s11187-018-0001-0

Fuerlinger, G., & Fandl, U. (2015). The role of the state in the entrepreneurship ecosystem: insights from Germany. *Triple Helix, 2*(1). doi:10.1186/s40604-014-0015-9

Galan-Muros, T. D. V. (2016). The importance of an entrepreneurial ecosystem for creating systemic entrepreneurship. *Entrepreneurship Ecosystem Research Network, Working Paper*, 1-5. doi:10.13140/RG.2.2.12641.92001

Goswami, K., Mitchell, J. R., & Bhagavatula, S. (2018). Accelerator expertise: Understanding the intermediary role of accelerators in the development of the Bangalore entrepreneurial ecosystem. *Strategic Entrepreneurship Journal*, *12*(1), 117-150. doi:10.1002/sej.1281

Harper-Anderson, E. (2018). Intersections of Partnership and Leadership in Entrepreneurial Ecosystems: Comparing Three US Regions. *Economic Development Quarterly*, *32*(2), 119-134. doi:10.1177/0891242418763727

Hausman, J., & Taylor, W. (1981). Panel Data and Unobservable Individual Effects. *Econometrica, 49*(6), 1377-1398.

Isenberg, D. J. (2010). THE BIG IDEA: How to Start an Entrepreneurial Revolution. *Havard Business Review, 88*(6), 40-50.

Joseph, H., Willium, B., Barry, B., & Rolph, A. (2014). *Multivariate Data Analysis* (7 ed.): Pearson Education Limited

Kabbaj, M., Hadi, K. E. E., Elamrani, J., & Lemtaoui, M. (2016). A Study Of The Social Entrepreneurship Ecosystem: The Case Of Morocco. *Journal of Developmental Entrepreneurship, 21*(4). doi:10.1142/s1084946716500217

Kshetri, N. (2014). Developing successful entrepreneurial ecosystems Lessons from a comparison of an Asian tiger and a Baltic tiger. *Baltic Journal of Management, 9*(3), 330-356. doi:10.1108/bjm-09-2013-0146

Kubera, P. (2017). Evaluating the Impact of Regulation and Regulatory Policy - Towards Better Entrepreneurial Ecosystem. The Case of Poland. *Problemy Zarzadzania-Management Issues, 15*(1), 237-253. doi:10.7172/1644-9584.65.15

Mack, E., & Mayer, H. (2015). The evolutionary dynamics of entrepreneurial ecosystems. *Urban Studies, 53*(10), 2118-2133. doi:10.1177/0042098015586547

Majbouri, M. (2016). Oil and entrepreneurship. *Energy Policy, 94*, 10-15. doi:10.1016/j.enpol.2016.03.027

Malecki, E. J. (2018). Entrepreneurship and entrepreneurial ecosystems. *Geography Compass, 12*(3). doi:10.1111/gec3.12359

Maroufkhani, P., Wagner, R., & Ismail, W. K. W. (2018). Entrepreneurial ecosystems: a systematic review. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(4), 545-564. doi:10.1108/jec-03-2017-0025

Matthews, R. S., Chalmers, D. M., & Fraser, S. S. (2018). The intersection of entrepreneurship and selling: An interdisciplinary review, framework, and future research agenda. *Journal of Business Venturing, 33*(6), 691-719. doi:10.1016/j.jbusvent.2018.04.008

Mindaugas, L., & Rasa, M. (2013). The Role of Culture on Entrepreneurship in Lithuania. *Socialiniai tyrimai / Social Research., 2*(31), 55-69.

Motoyama, Y., & Knowlton, K. (2017). Examining the Connections within the Startup Ecosystem: A Case Study of St. Louis. *Entrepreneurship Research Journal, 7*(1). doi:10.1515/erj-2016-0011

Neumeyer, X., Santos, S. C., & Morris, M. H. (2018). Who is left out: exploring social boundaries in entrepreneurial ecosystems. *The Journal of Technology Transfer, 44*(2), 462-484. doi:10.1007/s10961-018-9694-0

Nicotra, M., Romano, M., Del Giudice, M., & Schillaci, C. E. (2018). The causal relation between entrepreneurial ecosystem and productive entrepreneurship: a measurement framework. *Journal of Technology Transfer, 43*(3), 640-673. doi:10.1007/s10961-017-9628-2

Park, Y. J., & Park, Y. W. (2018). Spinoffs versus non-spinoff entrepreneurs Exploring post-bubble Japan's entrepreneurial ecosystem. *Asia Pacific Journal of Innovation and Entrepreneurship, 12*(2), 146-164. doi:10.1108/apjie-04-2018-0020

Parlee, B. L. (2015). Avoiding the Resource Curse: Indigenous Communities and Canada's Oil Sands. *World Development, 74*, 425-436. doi:10.1016/j.worlddev.2015.03.004

Philip, R. (2017). “Small town” entrepreneurial ecosystems. *Journal of Entrepreneurship in Emerging Economies, 9*(3), 238-262. doi:10.1108/jeee-09-2016-0040

Pillai, T. R., & Ahamat, A. (2018). Social-cultural capital in youth entrepreneurship ecosystem: Southeast Asia. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(2), 232-255. doi:10.1108/jec-08-2017-0063

Pittz, T. G., & Hertz, G. (2018). A relational perspective on entrepreneurial ecosystems: The role and sustenance of the entrepreneurship center. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(2), 220-231. doi:10.1108/jec-10-2017-0081

Qian, H. F. (2018). Knowledge-Based Regional Economic Development: A Synthetic Review of Knowledge Spillovers, Entrepreneurship, and Entrepreneurial Ecosystems. *Economic Development Quarterly, 32*(2), 163-176. doi:10.1177/0891242418760981

Roundy, P. T. (2017). "Small town" entrepreneurial ecosystems Implications for developed and emerging economies. *Journal of Entrepreneurship in Emerging Economies, 9*(3), 238-262. doi:10.1108/jeee-09-2016-0040

Sambo, W. (2018). A Conceptual Study of an Intrapreneurship Ecosystem at South African Universities. *Problemy Zarzadzania-Management Issues, 16*(1), 192-215. doi:10.7172/1644-9584.73.12

Schaeffer, V., & Matt, M. (2016). Development of academic entrepreneurship in a non-mature context: the role of the university as a hub-organisation. *Entrepreneurship and Regional Development, 28*(9-10), 724-745. doi:10.1080/08985626.2016.1247915

Schillo, R. S. (2018). Research-based spin-offs as agents in the entrepreneurial ecosystem. *Journal of Technology Transfer, 43*(1), 222-239. doi:10.1007/s10961-016-9484-5

Spigel, B. (2017). The Relational Organization of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice, 41*(1), 49-72. doi:10.1111/etap.12167

Spigel, B., & Harrison, R. (2018). Towards a Process Theory of Entrepreneurial Ecosystems. *Entrepreneurship Theory and Practice, 41*, 49–72. doi:10.1111/sej.1268

St-Pierre, J., & Foleu, L. (2015). SME Development Challenges in Cameroon: An Entrepreneurial Ecosystem Perspective. *Transnational Corporations Review, 7*(4), 441-462. doi:10.5148/tncr.2015.7405

Stam, E. (2015). Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique. *European Planning Studies, 23*(9), 1759-1769. doi:10.1080/09654313.2015.1061484

Steinz, H. J., Van Rijnsoever, F. J., & Nauta, F. (2016). How to Green the red Dragon: A Start-ups' Little Helper for Sustainable Development in China. *Business Strategy and the Environment, 25*(8), 593-608. doi:10.1002/bse.1899

Subrahmanya, M. B. (2017). How Did Bangalore Emerge as a Global Hub of Tech Start-Ups In India? Entrepreneurial Ecosystem - Evolution, Structure and Role. *Journal of Developmental Entrepreneurship, 22*(1). doi:10.1142/s1084946717500066

Sussan, F., & Acs, Z. J. (2017). The digital entrepreneurial ecosystem. *Small Business Economics, 49*(1), 55-73. doi:10.1007/s11187-017-9867-5

Szerb, L., & Trumbull, W. N. (2018). Entrepreneurship development in Russia: is Russia a normal country? An empirical analysis. *Journal of Small Business and Enterprise Development, 25*(6), 902-929. doi:10.1108/jsbed-01-2018-0033

Theodoraki, C., Messeghem, K., & Rice, M. P. (2018). A social capital approach to the development of sustainable entrepreneurial ecosystems: an explorative study. *Small Business Economics, 51*(1), 153-170. doi:10.1007/s11187-017-9924-0

Tracy, A. T., Jill, M. P., & Marc, J. V. (2018). How entrepreneurial ecosystems take form: Evidence from social impact initiatives in Seattle. *Strategic Entrepreneurship Journal, 12*, 96–116. doi:10.1002/sej.1285

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management, 14*(3), 207-222. doi:10.1111/1467-8551.00375

Tsai, W. (2001). Knowledge Transfer in Intraorganizational Networks: Effects of Network Position and Absorptive Capacity on Business Unit Innovation and Performance. *The Academy of Management Journal, 44*(5), 996-1004.

Van Weele, M., van Rijnsoever, F. J., Eveleens, C. P., Steinz, H., van Stijn, N., & Groen, M. (2018). Start-EU-up! Lessons from international incubation practices to address the challenges faced by Western European start-ups. *Journal of Technology Transfer, 43*(5), 1161-1189. doi:10.1007/s10961-016-9538-8

Velt, H., Torkkeli, L., & Saarenketo, S. (2018). The entrepreneurial ecosystem and born globals: the Estonian context. *Journal of Enterprising Communities-People and Places in the Global Economy, 12*(2), 117-138. doi:10.1108/jec-08-2017-0056

Wadee, A. A., & Padayachee, A. (2017). Higher Education: Catalysts for the Development of an Entrepreneurial Ecosystem, or ... Are We the Weakest Link? *Science Technology and Society, 22*(2), 284-309. doi:10.1177/0971721817702290

Yang, S., Kher, R., & Lyons, T. S. (2018). Where Do Accelerators Fit in the Venture Creation Pipeline? Different Values Brought by Different Types of Accelerators. *Entrepreneurship Research Journal, 8*(4). doi:10.1515/erj-2017-0140

Yi, G. F., & Uyarra, E. (2018). Process Mechanisms for Academic Entrepreneurial Ecosystems: Insights from a Case Study in China. *Science Technology and Society, 23*(1), 85-106. doi:10.1177/0971721817744446

Babbie, E. R. (2010). The Practice of Social Research. 12th ed. Belmont, CA: Wadsworth Cengage.

Muijs, D. (2010). Doing Quantitative Research in Education with SPSS. 2nd edition. London: SAGE Publications.

Bryman, A. (2008) Social Research Methods (3rd. Ed.) Oxford: Oxford University Press.

Creswell, J. W. (2013). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.

Crotty, M. (2003): The Foundations of Social Research: Meaning and Perspectives in the Research Process, London: Sage Publications, 3rd edition, 10.

Dieronitou, I. (2014). The Ontological and Epistemological Foundations of Qualitative and Quantitative Approaches to Research: With a Particular Reference to Content and Discourse Analysis of Textbooks. *International Journal of Economics, Commerce, and Management, 2(10),* 1-17.

Guba, E. E., & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions, and emerging confluences. In N. Denzin, & Y. Lincoln (Eds.), *The SAGE handbook of qualitative research* (3rd ed., pp. 191-216). Thousand Oaks, CA: Sage.

Levers, M. D. (2013). Philosophical Paradigms, Grounded Theory, and Perspectives on Emergence. SAGE Open, 1-6. DOI: 10.1177/2158244013517243.

Letourneau, N., & Allen, M. (2006). Post-positivistic critical multiplism: A beginning dialogue. In W. K. Cody (Ed.), *Philosophical and theoretical perspectives for advanced nursing practice* (pp. 221-231). Boston, MA: Jones and Bartlett Publishers.

McCann, T. V., & Clark, E. (2003). Grounded theory in nursing research: Part 1—Methodology. *Nurse Researcher, 11*(2), 7- 18.

Soini, H., Kronqvist, E., & Huber, G. L. (2011). Epistemologies for Qualitative Research. *Qualitative Psychology Nexus (8).* Center for Qualitative Psychology. Tübingen, Germany.

Žukauskas, P., Vveinhardt, J., & Andriukaitienė, R. (2018). Philosophy and Paradigm of Scientific Research. doi.org/10.5772/intechopen.70628.