UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

Master's Degree Project in Knowledge-based Entrepreneurship

Collaboration within a startup ecosystem

Enhancing entrepreneurial activities through collaboration
in the startup ecosystem of Sydney, Australia

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I. Abstract

Keywords: entrepreneurship, startups, ecosystem, stakeholders, university, industry, collaboration, activities, initiatives, embeddedness, culture, commercialization, knowledge transfer

Background and Problem Formulation: There has been a growth in the entrepreneurship ecosystem of Australia due to the increasing support that aims to enhance entrepreneurial activities. However, Australia still has to overcome challenges to improve entrepreneurial outcomes. A possible solution for this could be to enhance collaboration between stakeholders.

Purpose: This study aims to investigate the forms of collaboration within a startup ecosystem. More specifically, it looks at how the key stakeholders evaluate existing and potential collaboration that enhance entrepreneurial activities.

Limitations and Delimitations: This study focuses solely on the startup ecosystem of Sydney, Australia. It has only investigated the topic from a social capital and activity based perspective, not including financial or governmental incentives. Only 10 people were interviewed, making it less possible to consider all stakeholder needs in general.

Methodology: This is a multiple case study. Ten semi-structured interviews have been conducted with stakeholders from the ecosystem. Before conducting the interviews an interview guide was set up as a tool for the interviews to keep them within the given topic. The interviews were then transcribed and broken down using thematic analysis.

Results and Conclusion: This study provides an evaluation of the collaboration types in terms of the quality and quantity of the influenced entrepreneurial activities. There are preferred and desired collaboration forms, but also forms that are not considered beneficial or needed by the internal stakeholders.

II. Foreword

This thesis is a culmination of my study at MSc in Knowledge-based Entrepreneurship. Having always been interested in how many possible ways startup ecosystems can develop and thrive, the Australian approach has fed my curiosity as they are doing well, yet it is more common to talk about other regions regarding startups. The opportunity to research the collaboration forms within the startup ecosystem of Sydney meant a truly unique, exotic and valuable experience for me.

Nothing of this project would have been possible though without the help and support of some wonderful people and organizations in my surroundings.

I sincerely express my gratitude to the Sten A Olsson Foundation for the generous scholarship program that provided me the chance to research the startup ecosystem of Sydney locally.

I would also like to thank my previous supervisor Ryan Rumble and my current supervisor Ethan Gifford for their genuine interest and continuous support that have guided me through this journey.

I would like to take this opportunity to mention Handels as well, as the university contributed with two unforgettable years, and along with the amazing work of the Graduate Student Organization they made the student life exceptional.

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So thank you all for the unwavering support!

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III. Table of contents

IV. List of Tables and Figures

V. Terminology

Startup ecosystem: The network of interactions among people, organizations and the environment. It is formed by startups, entrepreneurs and organizations in a specific location as a system to foster new venture creation.

Collaboration: Mostly employed in the form of cooperation and partnership, interactions between actors. Requires resources, adaptability, support and commitment.

Embeddedness: National and regional culture, in which individuals are located, can influence the psychological characteristics of individuals, including values, motives, and beliefs.

Entrepreneurship education: Learning about managing business opportunities, innovation and growth. It includes contemporary methods as business simulation, case studies, guest speakers, commercialization, infrastructure, multi-level collaborative networks, knowledge transfer, internships, field education, contracted research, consulting, IP creation and testing.

Knowledge transfer and exchange: An interactive knowledge interchange between research producers and research users, aiming to influence policy and decision making and to help researchers to identify relevant problems.

Entrepreneurial recycling: Entrepreneurs staying in the cluster by re-investing their wealth and experience to start new ventures or fulfil new roles within the ecosystem.

1. Introduction and Problem Formulation

This chapter introduces the entrepreneurship ecosystems in general and with special focus on the Sydney startup ecosystem. Furthermore, it presents the problem formulation and the research question that provides the basis for the study.

1.1.Background

"Entrepreneurship has been increasingly recognized for its role in creating jobs and economic growth, and in increasing the competitiveness of a region, state or country" (Davey et al., 2016) However, a shift towards its impact on the macro economy has only recently been in focus, with the realization that small businesses create more jobs than the larger companies, thus enhancing growth. (Elaine et al., 2013) Entrepreneurship can be fostered by both public and private institutional structures. Bliemel et al. (2019) identify the key stakeholders that influence the Australian startup boom as follows: higher education institutions (HEI), federal/state/local governments, accelerator/incubator programs, chambers of commerce, hubs, coworking spaces, corporations, events, awards, pitching opportunities, hackathons, industry associations, media, training/support and all the other, surrounding ecosystems. Therefore, the entrepreneurial ecosystem with all its stakeholders forms a complex system, and in order to see the big picture and understand how well it functions and what might be the future directions, it is vital to analyse the stakeholders and their relations within the structure.

The creation of new ventures is not only dependent on the public institutions and external conditions (laws, regulations, policies, support organizations), but on private institutions and the individuals (culture, norm, beliefs, expectations) as well. (Belitski et al., 2017; Muffato et al., 2015) The entrepreneurial ecosystem (EES), "*which is a system, network or group of interconnected elements, formed by the interaction of an entrepreneurial community of stakeholders/ organisms with their environment"* (Maritz et al., 2015) is relying on the entrepreneurial behaviour of the individual, being affected by social, cultural, economic and political factors in which the entrepreneurs are situated. Hence, the three main barriers to entrepreneurship are usually identified as follows: social and cultural barriers, lack of education and lack of resources. (Elaine et al., 2013; Muffato et al., 2015) In the last years, there has been a significant growth in the entrepreneurship ecosystems due to the increasing

support mechanisms and higher education initiatives in order to break down these barriers and enhance entrepreneurship and its environment. (Bliemel et al., 2019)

Firstly, to break down the educational barrier, there has been a call for entrepreneurship education (EE), and universities have started to play a major role in knowledge, skill and intention creation. Entrepreneurial universities are valued because of their mechanisms for enhancing economic growth, commercializing research and innovation (outputs such as patents, licenses, and start-up firms), creating jobs, enabling institutional environment and engaging stakeholders within the ecosystem. (Alkan et al., 2015; Davey et al., 2016; Gertsen et al., 2017; Maritz et al., 2015) As Davey et al. (2016) conclude, entrepreneurship has been identified as a career opportunity, thus the clear goal of this type of education is providing entrepreneurship skills and knowledge, both crucial to employability or self-employment. (Audretsch et al., 2018; Davey et al., 2016)

Secondly, to break down the social and cultural barriers, it is vital to understand the local context. The cultural characteristics of a region *'may influence not just rates of entrepreneurship but the nature of an entrepreneurial ecosystem that develops'.* (Knowlton et al., 2016) For instance, some cultures are more open and supportive towards entrepreneurial activities, such as Australia. The characteristics of a national culture can influence the values, motives, beliefs of the individual and their willingness to become entrepreneur. The cultural dimensions of independence, creativity, risk-taking and uncertainty avoidance have a significant impact on the entrepreneurial activities of a region. (Shirokova et al., 2018)

Lastly, to break down the resources barrier, as a result of recognizing the value of entrepreneurship, the support for EE has been increasing at local, state and federal levels, and many higher education institutions (HEI) have research centres, departments, institutions and staff members dedicated to improve the university-based entrepreneurship ecosystem. (Audretsch et al., 2018; Hornsby et al., 2018) Additionally, studies argue that if an ecosystem is supportive with resources, such as financial incentives, it can result in more entrepreneurial activities, thus generating economic development, innovation, prosperity and wealth. (Audretsch et al., 2018) And providing the infrastructure to facilitate networking events and introducing policy-makers to the community enhance the knowledge exchange processes between the researchers and the established entrepreneurs. This is likely

improving the rate of commercialization, as well as the connections between university, industry and government. (Belitski et al., 2017)

1.2.The Startup Ecosystem of Sydney

Sydney takes the 23rd place on Global Startup Ecosystems Ranking in 2019. When it comes to the classification of characteristics, it is clear that connectedness is the strength of the ecosystem (located in the 2nd tier), while the rest of the evaluating factors such as performance, funding, market reach, talent, experience (with stronger startup and weaker scaling experience) and knowledge located in the 4th or 5th tier). This proves that the ecosystem is quite new, but it is worth to examine the existing connections to gain a deeper understanding about its successfulness. Sydney is one of the major startup hubs in the world thanks to its historically high performance. Even though the value of the ecosystem is not really high ($6.7bn, the global median is $5bn), the startup output and success stories are rather valuable. Both in global and local market reach Sydney counts as average (the local being a bit stronger), but according to the report, the level of the policy environment encouraging IP commercialization is on the top. Interestingly, the two main reasons why a startup should move to Sydney are both connected to good collaboration capabilities: immediate connections through several different networks and the good support infrastructure with accelerators, incubators and co-working spaces. (Global Startup Ecosystem Report, 2019)

According to Startup Muster Report, in 2018 there were around 1500 startups in Australia. Around 22% of the founders are under 30 years old and 55% under 50 years old, peaking between 35-40. The top 3 most attended educational institutions are located in New South Wales, and 20% of the future entrepreneurs are still studying. The two most common help benefited from since founding the startups are: mentoring (58.5%) and coworking (50%). Almost half of the Australian startups are located in Sydney and the second position is shared between Brisbane and Melbourne, each having around 13% of the startups. Half of the startups have applied for grants, and around one third has received a grant. The government grants most often received are: R&D tax incentive, MVP Grant and Accelerating Commercialization. Lastly, over half of the founders attend 2 or more events per month, which shows a dedication to the networking and knowledge sharing activities. (Startup Muster, 2018)

1.3.Problem formulation

Every ecosystem is unique due to their external environment, such as the public policies or the cultural characteristics, the relations of the stakeholders as well as the internal structure and opportunities. Therefore there is no 'one size fits all' approach when it comes to the development of an entrepreneurial ecosystem (EES), it should rather be customised to the local characteristics. Thus, the question emerges how to evaluate and improve an EES? (Brown et al., 2014)

A recent research highlights that the staff mobility and transferability of skills is high, resulting in an increase of EE initiatives at their new HEIs. Therefore, focusing on retention and constant support is crucial to become leaders in EE on a global scale. However, the student intake keeps increasing without an increase in staff, and universities are exposed to market forces relying on an internationally commercialized education system. These are part of the main challenges Australia is facing. (Bliemel et al., 2019; Lord et al., 2016)

A study published on the Australian startup scene reveals that only about 0.5% of the new ventures count as startups, and only 1-2% of the businesses are innovating. A concluding point was that Australia falls short in the quantity and quality of connections between entrepreneurs. (The Economist, 2016)

Another enormous challenge is related to research commercialization. The importance of the topic becomes very clear when analysing any kind of research related to the role of EE, but possible solutions are yet to be discovered. Some suggest that universities themselves should be more entrepreneurial to achieve commercialization and technology transfer (Elaine et al., 2013), other stakeholders demand a stronger link between research and commercialization (Belitski et al., 2017). Hence it is certain that research commercialization is a crucial missing pillar in EES. (Belitski et al., 2017) Furthermore, the so called technology transfer offices (TTO) at universities are sometimes even seen as barriers to these processes due to their restrictive IP protection and licensing terms. (Brown et al., 2014) In contrast, some papers argue that the increasing commercial focus threatens academic values, autonomy and independence. (Lord et al., 2016) The university-industry collaboration could also shift the focus of research away from the interest of the society towards business or individual interests. (Davey et al., 2016)

To sum up, the biggest challenge is to develop and maintain effective and fruitful collaboration within university and industry that meets both the academic needs for traditional research and the industry needs for innovation and quick problem-solving. Yet, *"for most universities, even those with cutting-edge research, partnering with industry does not come naturally"* (Lord et al., 2016) And to translate it to the level of the individual, the challenge is to *"ensure the fit of the entrepreneurial competencies and actions with the current market conditions, technologies, governmental policies, and other industry-specific factors"*. (Gianiodis et al., 2018)

Therefore these factors (the environment, the national culture and the possibilities for improvement) alongside with the data explained on the Sydney startup ecosystem would make a research certainly valuable for future implications not only in Sydney but for those who have similar economic situation and a desire to enhance entrepreneurial activities.

1.4.Research Question

As discussed, Sydney is a relatively new ecosystem but expanding quickly and successfully. However, at this phase when framework is already settled, the way collaboration is established and pursued might need to be re-evaluated to include the necessities of different stakeholders in a balanced and equal manner. In order to understand the complexity of the results of the existing and potential collaboration in the startup ecosystem of Sydney, the following research question will be addressed:

How is collaboration evaluated within a growing startup ecosystem with regards to initiatives for enhancing entrepreneurial activities?

2. Theory

This chapter focuses on the theories investigated before the author has set up the interview guidelines to understand the challenges and collaboration structures in the startup ecosystem of Sydney. The theories considered for conducting the research are presented with regards to the theoretical background and theoretical framework.

2.1. Theoretical background

2.1.1. Systems theory

Entrepreneurial ecosystems (EES)

In order to understand how and why stakeholders within a SES collaborate, the author considered several theoretical perspectives that already exist in the literature with the aim of explaining collaboration. The chosen topic was investigated through three main theoretical lenses. The first two, systems theory and the theory of embeddedness are separate theories, whereas the third one, stakeholder theory, in an intersection of the prior two, bearing elements from both of them. These will be used as a basis for interpreting the collected empirical data.

Systems theory focuses on interconnectedness and interactions of actors within the entire system. The entrepreneurial ecosystem (EES) theory is based on systems theory and has drawn much attention in the past decade. Researchers suggest that the creation of a supportive and encouraging environment for entrepreneurial thinking and behaving is vital to the success of an EES. Furthermore, it is also related to cluster theory, emphasising the importance of the local and regional context of the entrepreneurial activities. (Audretsch et al., 2018)

There are several different models describing an EES. Some of them focus on a single case entity, such as the university-based model discussed in the following part, others, like the entrepreneurial personality model, analyse whether entrepreneurs do cause change (Schumpeterian ‘creative destruction’) or it is only the opportunities they identify that are changing. However, the common part in each of them is trying to determine the key players, their roles, expected activities and the connections between them. (Khattab et al., 2017)

Isenberg (2011) has developed what is known as ‘entrepreneurship ecosystem for economic

development', because no EES can be sustainably established without considering the external factors that are only locally specific and given by the regional context. (Khattab et al., 2017; Shirokova et al., 2018) The model identifies six pillars: culture, policies and leadership, finance, human capital, market demand and institutional structure. Each of these has its own ecosystem but they interact through networks, collaboration and leadership to support the EES. (Belitski et al., 2017; Khattab et al., 2017; Shirokova et al., 2018)

According to Brown et al. (2013), an EES can be described as a diverse set of potential or existing interdependent actors on the one hand, such as the entrepreneurial individuals, organizations (firms, VCs) and institutions (universities, public sector agencies, financial bodies), and entrepreneurial processes on the other, like business birth rate, high growth firms, serial entrepreneurs, sell-out mentality and entrepreneurial ambition. It evolves through a set of interdependent components which formally and informally interact to mediate and govern the performance within the local entrepreneurial environment, thus generating new venture creation over time. (Brown et al., 2014; Khattab et al., 2017)

2.1.2. Theory of embeddedness

As Shirokova et al. (2018) cites Beckert, embeddedness is considered as "the social structural, cultural, political, and cognitive structuration of decision situations in economic contexts" (p. 105). This theory thus supports the understanding on how involvement in different social groups and places influences and shapes actions and highlights the importance of contexts in shaping entrepreneurial behaviour. It is an important factor in opportunity recognition and resource distribution. Embeddedness also strengthen shared values (trust and solidarity for instance) that create local belonging. (Shirokova et al., 2018)

The SES context in which the entrepreneurial individual is situated is essential to understand. Based on the theory of embeddedness, *"entrepreneurs are embedded in particular places, communities, and networks which socially frame resources and opportunities."* (Shirokova et al., 2018) One of the most important factors affecting the succession of an SES is the local culture with its shared values in which entrepreneurs are socially embedded. National culture can influence the psychological characteristics of individuals, including values, motives, and beliefs. As Shirokova et al. (2018) examine, cultural values influence the degree to which entrepreneurial behaviours, such as independence, creativity, and

risk-taking, are considered to be desirable in a society. For instance in high uncertainty avoidance cultures entrepreneurial behaviour and idea creation are less likely, and the willingness to try something new is lower (high fear of failure, risk avoidance), even if people have the required knowledge or characteristics to become entrepreneurs. Thus, when it comes to EE, which often encourages actions that are risky, in an uncertainty avoidance country, it is less likely to achieve a behavioural impact on the students. On the contrary, in individualistic cultures entrepreneurial behaviour is supported by the society, because it takes confidence and courage to run an own business. Therefore, the background of the students has an impact on the tendency to engage in entrepreneurial activities. The article also differentiates between two different embeddedness: the already mentioned cultural embeddedness (social norms, attitudes, values and beliefs of a nation where students grew up) and the university embeddedness, which means the same but in the university setting where students are rooted.

However, it is not only the entrepreneurial individuals being embedded in a SES but also the ecosystem in a regional context. Startup ecosystems in similar environments but located in different parts of the world can end up having different activities and outcomes as their entrepreneurial culture and resources pool differ. Audretsch et al. (2018, p.25) state EES is located *"within a geographic region that influences the formation and eventual trajectory of the entire group of actors and potentially the economy as a whole*".

2.1.3. Stakeholder theory

Stakeholder theory includes elements of systems theory (interconnectedness, interaction and collaboration between actors) by stating that stakeholders are embedded in their environment, thus it is impossible to examine them separately. It emphasizes the importance of collaboration and partnership, and the engagement in the process of organizational decision making. A sustainable and stable stakeholder collaboration requires resources, adaptability, support and commitment in order to be able to influence their own startup ecosystem. (Audretsch et al., 2017)

Stakeholders can be both internal and external. From a university perspective for instance, the internal stakeholders are the students, educators, researchers and the leadership. Whereas the external stakeholders are the entrepreneurs, companies, alumni, other universities, incubators and accelerators, science and technology parks, governmental institutions as primary external stakeholders and financial

institutions, support service providers, student organizations and other organization as secondary external stakeholders. (Audretsch et al., 2017; Maritz et al., 2015)

2.2. Theoretical Framework

2.2.1. SES and UEES

Entrepreneurship in general can be very diverse as it includes a broad variety of businesses run by the individual. Therefore, within systems theory a segment of EES has gained popularity, focusing on the very early-stage entrepreneurship (rather than the rapid scalability of existing companies for instance). (Knowlton et al., 2017) This segment is the startup ecosystem (SES), defined by the network of interactions among people, organizations and the environment. It is formed by startups, entrepreneurs (angel investors, mentors, advisors as well) and organizations (universities, funding and support organizations as accelerators and coworking spaces, service providers and large corporations) in a specific location, interacting as a system to foster new venture creation. There are both external (financial climate, market disruption and corporate company transitions) and internal factors (availability of resources, succession) controlling the SES. People within the SES are linked together through shared events, activities, locations and interactions, and these play a key role in the movement of resources (skills, capital), thus eventually influencing the quantity and quality of the startups established.

The environment within a university can also become a form of entrepreneurial ecosystem. (Shirokova et al., 2018) A university-based entrepreneurship ecosystem (UEES) is a *"dynamic, institutionally embedded interaction between university and entrepreneurs characterized by entrepreneurial attitudes, abilities and aspirations, which drive the allocation of resources through the creation of new business (spin-offs) or new technology (university-industry partnership)".* (Belitski et al., 2017) Therefore through an ecosystem perspective universities that engage in entrepreneurship education (EE) could be seen as incubators of ideas and systems. By supporting entrepreneurship development initiatives and promoting networking within and even beyond university borders, it contributes to creating an entrepreneurial regional culture, and plays a role in attainment of socio-economic goals because it can address contemporary challenges. (Audretsch et al., 2018; Belitski et al., 2017; Best et al., 2018; Khattab et al., 2017; Maritz et al., 2015)

UEESs are appearing globally not only to educate the new twenty-first century workforce but to create a platform for students where they can be creative, innovative and entrepreneurial. It has the aims of creating human capital (enhancing the quantity and quality of entrepreneurs, developing entrepreneurial behaviour), legitimating self-employment as a career path and driving entrepreneurial outcomes (how to bring ideas to market to scope new venture creation). (Maritz et al., 2015; Muffato et al., 2015; Nemati et al., 2016) Holley et al. (2017) summarize the literature on academic entrepreneurship in two categories: institutional activities (such as grants, industry consulting, research contracts, IP managements, joint ventures, spin-offs, mobility, training and technology parks), and the role of the academic individual.

The UEES aims to establish a common structure for both the classical business school management education and the contemporary, opportunity exploitation and technology commercialization education methods. Therefore, an efficient UEES not only fulfils its role in traditional teaching (improving knowledge, skills and attributes needed to create a new venture, hazards involved in running a new venture), but shifts towards delivering a more practice-based, experiential, strategic 'learning-by-doing' approach. This latter one is designed to help manage business opportunities, innovation and growth, including for instance business simulation, case studies, guest speakers, commercialization, infrastructure, multi-level collaborative networks, knowledge transfer, internships, field education, contracted research, consulting, IP creation and testing. Thus, the role of EE can be summarized into four categories: sensibilization for entrepreneurship (awareness, motivation, opportunity for career path), EE (competencies, behaviour, hard and soft skills), education 'for' entrepreneurship (assistance, training, informal platforms) and education 'in' entrepreneurship (business education for those already in business). (Belitski et al., 2017; Best et al., 2018; Davey et al., 2016; Gertsen et al., 2017; Kallaste et al., 2014; Muffato et al., 2015; Jones, 2018)

Finally, in terms of Australia, the higher education system consists of 38 public and 3 private universities, the 8 larger forming a group called G8. (Maritz et al., 2015) Generally two forms of enterprise education are distinguished: business education and entrepreneurship education (EE). The prior one aims to develop skills, knowledge and attributes in running a business, whereas the latter one focusing on business opportunity recognition, innovation and growth. (O'Connor et al., 2012) EE is usually taught in business faculties, but courses, modules and other possibilities for entrepreneurial activities have started to emerge across faculties. (Maritz et al., 2015) The EE system with its

hierarchical and modular course structure is quite unique, thus students can take part in EE at three different levels (primary, intermediate and advanced). (Lu et al., 2017) To have an overall picture, a list of all the universities across Australia ranked by their entrepreneurial initiatives can be seen in Appendix A.

2.2.2. Initiatives originating from different levels

Bearing the theory of embeddedness in mind, it is important to be cautious when replicating successful ecosystems that are embedded in differing cultures from an entrepreneurial perspective. It is crucial to identify the long-term cultural influences that can encourage or discourage entrepreneurial activities if analysing an ecosystem. However, Knowlton et al. (2016) provide a possible way to adjust the cultural aspects. They argue that it is difficult to change a general culture in a top-down approach, but meso-level organizations may be able to have an impact on the micro-level interactions between people, that will influence the higher-level culture in a bottom-up manner. Therefore, the framework should include an identification of the dynamics (different origins and directions) of collaboration.

2.2.3. Triple Helix Model

In order to understand the interconnectedness within the Sydney startup ecosystem, the existing and potential/missing collaborations should be examined. The Triple Helix (TH) model is an analytical construct that showcases the key features of the university-industry-government interactions. According to the previously mentioned systems theory these key institutional actors mean a set of components, relationships and functions. To define these actors, three distinctions are made within the TH model: *"between R&D and non-R&D innovators; between 'single-sphere' and 'multi-sphere' (hybrid) institutions; and between individuals and institutions. The relationships between components are synthesized into five main types: technology transfer, collaboration and conflict moderation, collaborative leadership, substitution and networking."* (Etkowitcz et al., 2013, p.254)

Etkowitcz et al. (2013) also state that universities are becoming more important and the hybridization of elements mean a potential for development as they establish new ways of producing, transferring and applying knowledge. Thus, creative destruction is not the only way to innovate as 'creative renewal' arises in these spheres as well as at their intersections. Furthermore, by identifying the existing barriers and gaps between these spheres, a new development model could be implemented by

the regulators to facilitate a more radical innovative system with new markets, growth opportunities, jobs and skills.

The theory behind the TH model can be applied on the networking within the SES. Previous literature shows there is a demand for closer interaction between institutions and organizations to strengthen knowledge transfer. (Davey et al., 2016) It also appears in research papers that entrepreneurs that reach out to a wider network to validate their assumptions on their ideas and gain feedback are relatively more successful in creating new ventures. Networking makes it possible for startups and entrepreneurs to access and exploit external resources in order to increase the chance of survival and the growth rate, as well as minimizing the liability of newness. (Jones, 2018)

3. Methodology

This chapter focuses on the approach the author has taken to understand the challenges and collaboration structures in the Sydney Startup Ecosystem. The methodology of the research is presented with regards to its strategy, design, as well as data collection and analysis.

3.1. Research Strategy

This study is using a qualitative research strategy in order to gain deeper understanding of the collaboration within the startup ecosystem of Sydney. This decision was based on several factors. First of all, the collaboration between stakeholders can be a highly complex phenomenon thus capturing it from a certain point of perspective might be insufficient. A qualitative research strategy enables the researchers to investigate the elements that influence the willingness to collaborate and the possible needs in an exploratory manner.

Secondly, the value of collaboration with regards to entrepreneurial outcomes is a relatively understudied field. The goal of this study is to fill this gap in the literature by providing an overview of the perceived role of collaboration. A qualitative research strategy is more suitable for a broader but also deeper description of the ecosystem.

Lastly, there has been no qualitative studies investigating the perception of collaboration to the best knowledge of the author. Most papers focus on a specific partnership, or examining the connection from one stakeholder's point of view. Therefore this study can provide a unique overview of the potential needs for collaboration that were not fully covered in previous papers.

Since the aim of the research is to establish new, in-depth concepts that were not presented in previous literature, an inductive research approach is used by the author. Inductive reasoning moves from single observations toward generalizing the findings to the population. (Bell et al., 2011) It is more suitable for a qualitative research strategy as the number of observations are limited.

3.2. Research Design

In order to fully understand the complexity of the research topic a multiple-case study design was chosen as a research design. There are two main reasons behind this decision. On the one hand, when focusing on a contemporary phenomenon in a real-life, contextual setting and the research questions include ‘why’ or ‘how’, case study designs are preferred. And on the other hand, the qualitative research strategy requires a design that allows researchers to obtain broad data on the examined phenomenon, the more cases that serve the purpose of exploration, the better the understanding. (Yin, 2014)

Collaboration is a diverse phenomenon including many actors and features. In order to understand it, it would be inadequate to analyze one single case as there might be a great variation between prior experience, perceptions and demands. Therefore, to seek a reliable and more generalizable answer for the formulated research question, a multiple-case study design is the most favored research design as it enables the researcher to examine in contrast the data collected from each case. (Bell et al., 2011)

Each of the interviewees selected for the study have a comprehensive experience (Figure 1.) within the startup ecosystem, thus their insights are invaluable. They are also in line with the compliance requirements regarding the context of the research as they all represent the SES in Sydney, Australia.

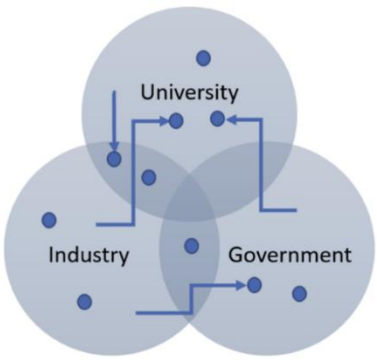

Figure 1. This figure displays the background of the interviewees based on the Triple Helix model. Dots show their current position, whereas arrows indicate the prior experience.

3.3. Research Method

To collect the empirical data, the research method of the study consisted of semi-structured interviews. In order to keep the interviews within the examined topic an interview guide has been set up as a tool. However, this guide was designed to responsively adapt to possible answers, thus the order of the questions was less relevant than covering all the examined areas. Additionally, since the collaboration in the SES of Sydney is a very specific and unexplored research field, the interviewer did not want to have any influence on the topics that arose during the discussions and the interviewees had a great amount of freedom in their answers. The main goal with the interviews was to the get different perspectives on how the stakeholders perceive each other as partners in collaboration and how valuable these connections are or might be.

The interview questions followed four main topics: the startup ecosystem as a whole, the perceived role of education, the cultural characteristics and the role of collaboration. The questions aimed to cover several levels of the SES in order to address the research question. These levels are for instance: how is the individual situated within a system and a system within a larger system (UEES in SES, SES in a national/regional culture). They also addressed the different kinds of support mechanisms that can enhance the collaboration.

As Appendix 1 shows, the research includes ten interviews, between 24m and 50m, with the average of 34 minutes. They were all conducted in person in Sydney, Australia. The interviewees were found based on personal networking and recommendations before and upon arrival via emails and startup related events attended. All of them agreed to being recorded and they were promised full anonymity. The meetings took place in the university facilities (offices, cafés, common spaces), in the building of the Sydney Startup Hub and in several cafés. The interviewees include directors at universities responsible for entrepreneurship education, CEOs and former CEOs of startups and accelerators, students involved in entrepreneurial activities and people working for innovation and entrepreneurship based government agencies. Due to the uniqueness of the author's background - taking part in an entrepreneurship program in a successful startup country far away – the people were very open about their experience and opinion.

Interview	Date, Time and Place	Duration
1	26.03.2019 10:30 University Building	0h 26min
2	27.03.2019 11:15 Sydney Startup Hub Office	0h 24min
3	27.03.2019 15:00 Sydney Startup Hub Office	0h 44min
4	28.03.2019 11:15 Café	0h 50min
5	02.04.2019 15:00 University Building	0h 27min
6	04.04.2019 09:00 Café	0h 30min
7	05.04.2019 13:00 University Building	0h 40min
8	05.04.2019 15:30 University Building	0h 28min
9	08.04.2019 10:30 Café	0 h 38 min
10	09.04.2019 13:00 Sydney Startup Hub Office	0 h 31 min

Table 1. The interviews conducted by date, location and duration

3.4. Data Analysis

The theoretical framework for the research was set up prior to the author's arrival at Sydney. The semi-structured interviews were recorded and later transcribed by the author. With the help of thematic analysis themes and patterns were identified and coded. The themes within the collected data allowed the author to categorize the topics and establish a framework for the thematic ideas. Thus, the themes could be subsequently analysed.

3.5. Quality of the Study

Several measures were taken to ensure the validity and reliability of the study to strengthen credibility. Even though it is a qualitative study, therefore the meaning of these highly depend on the researcher's criteria rather on the methods used, the author had to safeguard that the quality of the work follows high standards.

First of all, each interview was digitally recorded and transcribed to ensure accuracy for analysis. Interviewees were not compensated for their participation.

Secondly, the interview guide was used throughout all interviews in order to assure that the discussions follow the desired path and cover all topics that are fundamental and relevant to the study. Moreover, using the guide makes sure that the same topics are covered with the similar aspects thus the collected data will be comparable.

By taking these two steps, validity and reliability of the study were maximized.

3.6. Limitations and Delimitations

There are several factors limiting this research.

Firstly, the number of interviews conducted is the greatest limitation, as ten is certainly a sufficient amount for a justifiable qualitative research but more people would have been needed to make the results more generalizable.

Secondly, the research took place solely in Sydney, meaning that it is potentially generalizable for Australia but not for startup ecosystems in other regions. Moreover, even within Australia, the

findings are influenced by the unique characteristics of one particular city (Sydney), therefore there can be aspects that are irrelevant for the less developed ecosystems or hubs in other parts of Australia.

Lastly, the interviewees were representing their own sectors as well as sharing their previous experience that might be from a different sector. However, no distinction has been made regards the background of the interviewees. It would be valuable to examine their movements within the SES as that is a form of collaboration as well, thus it might be of a great influence on their opinion when evaluating collaboration within the SES.

4. Analysis and Discussion

This chapter focuses on the data collected through the ten semi-structured interviews. The chapter consists of the patterns found during the thematic analysis; then the pattern arising from the themes are subsequently discussed in the chapter.

4.1.Thematic Analysis

Thematic analysis is central to understanding the collected data and drawing conclusions from it. The process of thematic analysis included the following steps. First of all, after conducting and transcribing the interviews the author went through the transcribes several times to become familiar with them and to see common points or more significant themes. These were included on a mind map and to validate them, the transcribes were again read through with high focus and precision. This made sure that nothing is left out and the collected data would remain reliable. Lastly, the themes were named, establishing the result for the thematic analysis.

The first part of the analysis displays four tables with the four main topics covered during the interviews (Appendix B). The tables include the patterns that were emerging in the interviews and these serve as a basis for the themes that are discussed in the following part of the study.

4.1.1. System level factors for collaboration

Interview 1	Better resourced; Implementation of idea is rough; Value in the intersection between sectors; Changing; Commercialization; Government support
Interview 2	Changing; Incubators; Accelerators; Networking; Connections, Startup Hub
Interview 3	Lack of success; Accelerators; Incubators; Support mechanisms; Lack of tech based startups
Interview 4	Growing; Accelerators; Incubators; Global network, Startup Hub; Need for deeper engagement; Need for support; Finance; Government support; Support for new ventures
Interview 5	Investment; Infrastructure and support by government; Increase in appetite; Startup Hub; Support from federal level; Accelerators; Incubators; University-industry engagement; In early stage; Finance; Commercialization
Interview 6	In early stage; Connections; Networks; Finance; Support with tax incentive
Interview 7	Academic obsession; Too much government support towards academia; Great successes; Exporting innovators but not innovations; Commercialization
Interview 8	Growing; Startup Hub; Government support; Strong and important connections between university and ecosystem; Accelerators; Incubators; In early stage; Support through events
Interview 9	Social entrepreneurship; Building connections; Support mechanisms
Interview 10	International engagement; Accelerators; Incubators; Small but strong; Commercialization; Government role; Support

Table 2. This table shows the pattern of answers regarding the characteristics of the Australian entrepreneurial ecosystem with the focus on the Sydney startup ecosystem.

The first part of each conducted interview focussed on the Australian entrepreneurial ecosystem (EES) as a whole and the special features of the Sydney startup ecosystem (SSES). All interviewees shared the same view that even though the system is growing and producing success stories, there is plenty of room for improvement. The existing connections, networks and engagement, as well as the support mechanisms should be deepened even more between the stakeholders, and the EES seems to lack commercialization capabilities.

4.1.2. Cultural aspects in collaboration

Interview 1	Has become a more established path, not afraid of failure.
Interview 2	Risk in a stable economy; Make it happen for yourself.
Interview 3	Natural career path, entrepreneurship is for rebellious, unsuccessful people. Need for younger entrepreneurs.
Interview 4	Misconception of age; Genuine openness.
Interview 5	Appetite for entrepreneurialism; Career path.
Interview 6	Adjacent or interwoven with a traditional career path; Entrepreneurship as a career path option.
Interview 7	Entrepreneurs going abroad; Great ideas but to commercialization skills.
Interview 8	Passionate; Above average curious; Not following the standard career path; Dedication, motivation, commitment.
Interview 9	Openness; Support.
Interview 10	Role models are needed; Maybe not from day one.

Table 3. This table shows how the entrepreneurial individual within the SES is perceived.

The second part of each conducted interview focussed on the cultural aspects of entrepreneurship in Australia, reflected on an individual level. This part was bringing up the topics of the entrepreneurial mentality and the societal characteristics of the ecosystem. It is essential to understand the context in which entrepreneurs are embedded to be able to analyse the collaboration within the actors.

4.1.3. UEES in collaboration, role of education

Interview 1	Universities are commercial products, producing only academic IP.
Interview 2	No need to study business to be an entrepreneur. Helps with connection and knowledge.
Interview 3	Exposing people to entrepreneurial experience; Showing the possibility.
Interview 4	Formal or informal education through activities; Knowledge exchange; Opportunity recognition.
Interview 5	Entrepreneurial experience for students; Demand; Different options; Surrounded by the whole ecosystem
Interview 6	Delivering entrepreneurial skills is not enough; driving entrepreneurship as an end goal
Interview 7	Asymmetry between supply and demand; Universities are dislocated from the industry; Theoretical knowledge.
Interview 8	To drive entrepreneurship; Programs; Support and connections; Platform for partnerships; Reach everyone.
Interview 9	Low touch support in the form of connections
Interview 10	Platform; Support; No commercialization capabilities.

Table 4. This table shows the pattern of answers regarding the perceived role of the entrepreneurship education.

The third part of each conducted interview asked the interviewees to share their views on the role of entrepreneurship education (EE) in Australia. Some patterns that emerged are that universities should concentrate on providing entrepreneurial experience to everyone. The most important value universities seem to offer is the networking and connections. On the contrary, a lot of criticism arose with regards to the legitimacy, outcomes and the necessity of EE. Lastly, education does not only happen within an UEES but it is an ongoing process throughout the whole entrepreneurial journey in the form of knowledge transfer and exchange.

4.1.4. Other collaboration within the startup ecosystem

Interview 1	Value creation happens in the hybrid sectors. Industries open up when they are not doing so well.
Interview 2	Building connections is really hard; Incubators and accelerators break down barriers; Domino effect in connections; Events for networking; Mentality barrier
Interview 3	Connections to programs, investors, customers, researchers, to each other; External engagement; System for tracking partnerships
Interview 4	Engagement within a smaller microcosm; Academic, industry, legal and public partners; Global network
Interview 5	Government initiatives; Collaboration between universities and industry
Interview 6	Coworking spaces; Internships; Events; Everyone is connected; Mentors
Interview 7	Universities dislocated from industry; Mentors

Interview 8	University platforms for connections; Mentorships; Workshops; Formal partnership between university and coworking space; Internships; Connectedness in the ecosystem.
Interview 9	Collaboration; Projects; Mentors; Meetups
Interview 10	Intersection with government; International engagement; Cross combination between students; Strategic about who to work with

Table 5. This table shows the pattern of answers regarding the types of existing and potential connections and collaborations within the SES

The final part of each conducted interview focussed on the collaboration within the startup ecosystem. The patterns that emerged are related to role models and mentorship, coworking spaces, events that create the opportunity for networking and more formal partnerships. Engagement and interactions within the EES are keys to success. These patterns emphasize the role and the value of collaboration within the Sydney SES.

4.2. Themes

The thematic analysis and the identified patterns shown above have been outlined in six different themes. These themes represent the main concepts revealed by the interviewees.

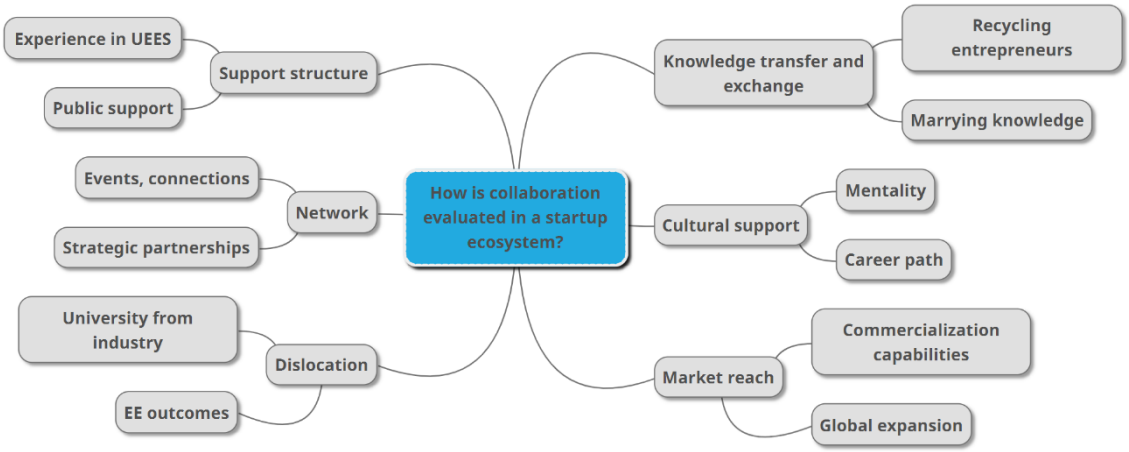

Figure 2. This figure displays the 6 main themes and the sub-themes discovered during the thematic analysis

Support structure: This theme includes the support for entrepreneurial activities.

Network: This theme includes the platforms for connection and interaction.

Dislocation: This theme explains how dislocated the university is from the industry.

Market reach: This theme shows the challenges of commercialization and global outreach.

Cultural support: This theme includes the factors of becoming an entrepreneur.

Knowledge transfer and exchange: This theme shows the importance of experience.

These themes provide the core for discussing the collected data and the conclusive theoretical framework and model on how collaboration is evaluated within the SES of Sydney will be built on this knowledge.

4.3. Support structure

4.3.1. Public support

The interviewees argue that the SES is still at the early stages but is on the right path. An effective SES a mixture of 'top-down' and 'bottom-up' approaches, meaning that the initiatives that might improve the system have to come from both the federal/governmental level and the level of the individual. Ideally, these two approaches should go hand in hand when it comes to the success of a SES.

'…much more about that practical how to get each startup done whereas the government would be looking at a more strategic objectives.' (Interviewee 10)

Firstly, the top-down initiatives mean that the barriers in legislation and taxation should be removed through policies and incentives introduced by the federal and local governments and entrepreneurship should be better resourced. This would inject some enthusiasm into the SES. This top-down method can result in an increased appetite for investment, therefore the amount of capital startups can get would be higher.

'The startup community became better resourced. It has drawn more interest.' (Interviewee 1)

Secondly, the bottom-up approach mean that the demand and suggestions to enhance the environment should come from the possibility seeking entrepreneur too. The public sector is not necessarily able to merge organizations and simplify the landscape efficiently. As Knowlton et al. (2016) argue, the EES is rather a self-regulating system, where identifying the needed support and then adding it to the ecosystem will adjust other elements through their interactions, founding a healthy and sustainable EES. This approach also mean that a success story can become a best practice case and drive the higher level decision making outcomes.

'It could be that we have had one startup doing really well. When you have success like that […] the government will want to learn from them.' (Interviewee 1)

Therefore, in order to evaluate and enhance the collaboration within a SES it is crucial to understand the established infrastructure in terms public support, startup needs and the institutions where these meet. As Markley et al (2015) discussed, a sustainable EES depends on the quality of place investment that will motivate entrepreneurial activities. The resources should concentrate into communities where entrepreneurs can cluster and benefit from. The social and political capital in a committed and structured community can attract

entrepreneurialism and facilitate more startups. This has a significant impact on the EES. The most well-known startup community location is undoubtedly in the Silicon Valley in the USA but Australia tries to offer a more affordable alternative location for new ventures with its several startup hubs.

'Most startup tech companies are present in Sydney, because Sydney is much cheaper than Silicon Valley and the quality now actually is pretty good.' (Interviewee 1)

'There's a lot of activity and you can see startup hubs popping up in every state. The government got really well behind it.' (Interviewee 8)

In Australia, as many of the interviewees pointed out, the growth of the ecosystem can be directly associated with the phenomenon of startup hubs. These hubs are not only supported by the government but also reflect on two needs of all startups: the need for affordable spaces and the need for a platform where connections can be easily made. These mean that both the top-down and the bottom-up approaches are met in an institution which is considered to be a key factor to success.

'It was quite hard to find location that was affordable in the city. And so that's why the Sydney Startup Hub was designed and formed.' (Interviewee 5)

'It really has a very positive effect on people working in the same building. There's a lot of interaction between the different startups. Meeting each other, getting new ideas, learning from each other.' (Interviewee 8)

So using the people around you is powerful but when it comes to actual businesses and startup connections I think in the Startup Hub is what is central to them. (Interviewee 2)

4.3.2. Driving entrepreneurship in UEES via experience

The higher education industry in general has never seen so many people deciding to pursue education, there has never been access as high as now. Australia attracted a very few international students historically but higher education has become the fourth largest export industry and accounts for the third of Australia's service export. (Best et al 2018) The institutional structure is getting well established, almost all universities having an UEES. There is a strong support coming from the top level.

Interviewees agreed that the resources and the infrastructure is provided and from this point on entrepreneurship has to be promoted on an individual level.

For achieving a change on the individual level, universities started exposing a large amount of students to experience entrepreneurialism and even though it is too early to evaluate any outcomes, it already seems to have created a demand from the students' side as well. This is crucial for driving entrepreneurship in a SES. This is in line with the conclusion of Shirokova et al (2018) that if policy makers try to foster entrepreneurial activity then investing in EE can make a difference, especially if it includes experiential elements.

'All of them are focused on entrepreneurial experiences for their students.' (Interviewee 5)

'I think it is too early to provide an assessment of which program works and why it works. I think they've reacted to demand from students, which is great and it's really good to see.' (Interviewee 5)

'Data shows that there's been an increase in appetite for entrepreneurism, all the universities across NSW are focused on entrepreneurial experiences for the students and the reason they are doing that is a reaction on the demand from students.' (Interviewee 5)

The importance of exposing students to entrepreneurial experiences seems essential in the Australian approach. Almost all interviewees emphasized that understanding the opportunities and the possibilities that entrepreneurship bears means that even those people will consider it as an option who did not initially think of it and this could drive the number of people having a go.

'*The opportunity that universities really present is to take all the people that are not entrepreneurial and expose them and prepare them for what they could be doing that they otherwise wouldn't.' (Interviewee 9)*

'Engaging with every student whether or not they're entrepreneurial and inspiring them to start something which may or may not be the perfect thing.' (Interviewee 6)

'A lot of inspirational work so making entrepreneurship seem normal, desirable, and achievable. ... As long as they're doing something that might become entrepreneurship, that's what [universities are] driving. The focus is on getting people started.' (Interviewee 3)

'[University] made them at least give it a try and once they gave it a try then they realized that it was for them. So I definitely think that when it comes to opening the doors for people who aren't sure, [universities] play a big role in helping them.' (Interviewee 2)

4.4. Network

Collaboration between different actors within the SES can be facilitated through different events and networking possibilities, as well as through more strategic partnerships.

4.4.1. Events, connections

To understand the collaboration in depth it is essential to map the connection types established and the activities that lead to the growth of entrepreneurialism. The amount of startup activities has been increasing and the number of events is higher than ever.

'*I could see the startup ecosystem growing from the time that I would go to events and there would have been a few hundred people, now there are a few thousand. So there's so much activity happening now.' (Interviewee 4)*

Entrepreneurial activities can be fruitful from the social capital perspective. Engagement can be promoted through activities such as consultancy, advisory boards, joint researches and executive education (Lord et al 2016) In addition, programs like workshops, boot camps, speaker series, hackathons and joint events bring all segments of the SES closer to each other and make it even easier to connect with each other. Some of these are only one-time events, some take place on a weekly or monthly basis and others are for a fixed period of time until the initial goal is fulfilled.

'I think what's changing is that […] programs make [networking] a lot easier. They break down barriers and when you see similar faces in one space throughout the week it makes it easier to make those connections.' (Interviewee 6)

'*We have a weekly speaker series every Wednesday, it's a free to attend and that reaches out to our larger community as well.' (Interviewee 4)*

'We had two really successful hackathons in the last two months.' (Interviewee 10)

'Workshops for the teams to be investment ready but also to get sales. They help them a lot to have strategies on how to get customers.' (Interviewee 8)

'Two day boot camps and a lot of events where they can learn things and the outcome is actually a lot of people across the university being interested and coming up with ideas.' (Interviewee 8)

Furthermore, HEIs often offer co-curricular activities which enable students to connect to the university's own collaboration circles. This is more of a low touch support where they have to proactively seek for the opportunities, connections or anything else they might need. This support has a significant effect on the UEES as it forms and develops smaller groups of entrepreneurial people with similar goals and they might mould into bigger communities that provide the social core for this ecosystem. This is in line with the article of Shirokova et al (2018), suggesting that those UEESs that enable social contacts and introduction to social networks effect positively the number of entrepreneurial activities undertaken by students. The crucial role of the social capital as a resource was emphasised by Jones (2018) as well, concluding that know-who can provide entrepreneurs with the means to better access know-what and know-how to accelerate growth in their new ventures.

'Instead of high touch support we provide relatively low touch support in the form of connections to other accelerator programs, to investors, customers, researchers, whatever they need, and most importantly, connections to each other as well to build out a community.' (Interviewee 3)

'We have access to a lot of very high profile networking events where we invite students along and take them with us if they are ready for it, if they have startups that are at a certain stage that could benefit from certain connections.' (Interviewee 8)

This is applicable not only on the UEES but on the SES as a whole. One of the most important value the different programs and support mechanisms (such as a startup hub or accelerators and incubators) can provide is the accessible social capital through sharing the existing connections.

'We are here to support the startups as they grow, as they develop, as they beta launch, as they pivot, as they try to find the meaning with what they're doing. And they can only do that through engagement with all the different partners and sponsors because these partners and sponsors are actually like a co-microcosm of a larger economic ecosystem.' (Interviewee 4)

Knowlton et al (2016) stated, the programs, events and resources structured by the support organizations shape the development of connections among entrepreneurs, thus establishing the

processes and networks that give the framework for a local culture of a SES. This paper also analysed the interconnections between and among entrepreneurs and entrepreneurship support organizations. The found that entrepreneurs on an individual level interact and form relationships the same way as the support organizations interact and as the structure the support was offered to them. This individual level interaction lead to support, learning and growth. Therefore, looking at the types of connection forms supported on a higher level could mean that the individual will more likely follow these structures. Thus, an active ecosystem should enhance proactivity on the individual level and collaboration will be desired by the entrepreneur.

4.4.2. Strategic partnerships

Once the connections are made, they have to be maintained to be able to utilize them in the future. One example for harvesting the network is a system where these connections are collected and stored and doing follow ups casually to show curiosity, reliability, interest and presence. This is a great tool that comes in handy when it comes to the time when a connection is actually needed. The resources needed to help for instance a new venture to enter the market are more realistic in terms of time and energy, because the first few steps (which can also be the hardest) were already conducted. Lastly, it can also set a direction for future connections in forms of more strategic partnerships.

'*We've got a system we use for tracking all [our connections]. […] And we have someone to sit with them and do check-ins. So it is effectively harvesting the well-connected network.' (Interviewee 3)*

'We're building a global network with other incubators and accelerators and organizations internationally. So we know startups that want to go into a certain market and we can parachute them into an already established community.' (Interviewee 4)

Interviewees agreed that it is not enough to casually collaborate with other actors and run joint events or meetups but these have to be brought on a higher level. Many of the existing partnerships were mentioned, both within the SES and within the smaller communities inside the SES. The connections have to be stronger, more strategic and taken seriously. In the end this is the key to a healthy and sustainable partnership.

‘Industry partners, business partners, legal partners then we've got government.’ (Interviewee 4)

‘We connect very strongly with the Sydney startup ecosystem. We know most of the key players there. We have a formal partnership with the biggest coworking community in Australia.’ (Interviewee 8)

‘It’s really important to have those partnerships and to do them properly and seriously.’ (Interviewee 10)

‘We have to be more strategic about who we work with. […] Those people will help you find out whatever might be a healthy partnership, they will think of the right ways as well.’ (Interviewee 10)

The partnership can be a formally established connection but also a program, on what both partners can rely on. Two examples of the formal programs are the scholarships and the internships.

‘Other programs are more structured so they might be scholarship programs, we are about to announce three scholarships with regular education.’ (Interviewee 4)

‘We run startup internship programs. We have a lot of different partners in the ecosystem to place students to intern with their startups.’ (Interviewee 8)

‘I think for a startup it's quite helpful because a lot of times they don’t know what they need in the next part but that's the nature of the game. [So if they have a] project that needs to be done very quickly, we can provide the right students to help with that project.’ (Interviewee 10)

4.5. Market reach

Two factors could be identified during the interviews that are essential for a sufficient market reach in Australia. Firstly, the commercialization capabilities are undeveloped, creative ideas exist but very few can actually take them to the realization phase. And secondly, the focus of the approachable market tends to be too domestic as Australia has unique physical attributes in terms of location and isolation. Both of these though could and should be improved through deeper collaboration.

4.5.1. Commercialization capabilities

A UEES with a contemporary EE structure and strategy is often seen as a driver of economic development in certain regions while the academia, the government and the industry demand a stronger link between research and commercialization. (Belitski et al 2017) Even though the IP commercialization is highly encouraged on the government level in Australia as it was mentioned in the introduction, it rarely happens. All interviewees agreed that Australia has high quality research capabilities, therefore the need is more about finding a way to develop the ideas all the way to the phase where it actually is ready to enter the market. Different initiatives have emerged to create a sustainable flow for this, such as the activities previously discussed.

'Our staff do very well and produce excellent research, excellent innovations.' (Interviewee 10)

'Australia in general has this incredible research [but not] many success stories on how to commercialize. [There is a] lot of support and a lot of crossover but where we probably struggle is the commercialisation stage.' (Interviewee 10)

'Australia is traditionally very good at coming up with ideas. Very good at the research stage but not so good at commercialising.' (Interviewee 5)

'Probably the thing that lets us down is commercialisation. You'll find a lot of accelerator programs, a lot of incubators starting up to try to address that problem at the moment.' (Interviewee 10)

Moreover, HEIs in particular are perceived strong in their teaching role but they fall short in commercialization. Students require a more targeted and specific support regarding both concept and business development to be able to set up their own venture. If universities do not aim for commercialization, they can easily get stuck with traditional EE and not produce any result in driving entrepreneurship, which questions their legitimacy.

'Focusing on all the ideas, and commercialization comes after everything else.' (Interviewee 1)

'They're talking about innovation but not creating a commercialization process. So it's about finding a good solution […] but not about then turning that solution into a remarkable startup.' (Interviewee 10)

'I'm starting to wrap my head around what people start saying: 'Okay, we need more

entrepreneurship. Let's try and build the educational experience to drive that'. And they then end up with entrepreneurial skills, and they then build things around that, then expose people to those skills. And then it becomes more about delivering the skills than about the original goal of driving entrepreneurship. And I think it's really important to keep the end goal in mind and to not be scared of it.' (Interviewee 3)

'Most importantly, if people go to entrepreneurship school and it doesn't produce a unicorn, then why should it exist?' (Interviewee 1)

4.5.2. Global expansion

The interviewees believe that the Australian SES has significantly improved in the past few years, however, there is still plenty of room for improvement in addressing the global market. However, they are in a good position for opening up globally, because domestically the ecosystem is rather supportive, therefore competition is only experienced on the international markets.

'For the first time in human history you can address every customer in the world, service every customer in the world from an iPad. We are not, and that's not okay. I think we need to be more kind of pointy in saying we want entrepreneurship.' (Interviewee 3)

'I've got say Australia needs to be a lot more successful. It's such a backwater of the world, we are 25 million people. And one and a half thousand tech startups […], that's not many. We need a lot more.' (Interviewee 3)

'We're really lucky because we are a small country we do try and look at global expansion. There's not so much competition, […] the scene here is small so everyone knows each other and supports each other. But then the markets internationally are very large. So we can get a sense of a competitive nature.' (Interviewee 10)

The main challenge is the physical location and thus being isolated from other regional markets, therefore the focus tends to stay domestic. A startup however, by definition should aim for the global market. Moreover, the domestic market might not be profitable enough for a new venture.

'Sometimes the scene can be very domestically focused which isn't good and I think there is an argument to be made for if you have a startup and you want to just have of domestic market. I

feel like if you're just looking at the Australian market, you're not looking at it seriously enough.' (Interviewee 10)

'The reality is with our best companies or startups, if they just focus on the domestic market they're not going to make all that much money.' (Interviewee 6)

One realistic option for the near future is to strengthen the ties with Asia. It could provide a relatively big market, thus it seems logical to establish deeper and more strategic connection with the Asian market.

'We're really well placed in Australia to engage better with Asian markets, for our geographic positioning, and the kind of historical ties we've had with Asia.' (Interviewee 9)

To sum up, the Australian SES is rather collaborative when it comes to global expansion, thus startups could and also need to utilize each other's experience, knowledge and even the reputation to go global.

4.6. Dislocation

4.6.1. Universities dislocated from the industry

A strong criticism towards HEIs arose during the interviews not only because of their commercialization capabilities but because they are dislocated from the industry. The main argument has been about HEIs being purely business oriented, selling education as a product to a massive amount of people.

'In Australia, our universities for a very long time have been only for teaching as many students as possible because that's the funding model.' (Interviewee 1)

Thus, universities produce talent regardless considering the amount the industry actually needs or is capable of taking in.

'There's an oversupply in academics.' (Interviewee 6)

'So you have this asymmetry between supply and demand. There is no correlation between education and the industry needs. [Some] students will never work in the industry.' (Interviewee 9)

'Universities are quite dislocated from the industry. […] The industry cannot just say that 'yes, I'm going to have 25 interns', it doesn't work like that. It is an oversupplied market with people. They can maybe take one, if they are worth the effort. So there's a real challenge here.' (Interviewee 7)

'The scholars they're bringing about aren't necessarily fit for the workplace. Universities are not talking to industry, because this is not what the industry wants.' (Interviewee 7)

Without knowing what challenges an industry faces, the solutions the academia can come up with may be inapplicable. In a healthy SES the IP produced by the academia and by the industry should be in line to make sure that entrepreneurs head towards the same directions and reflect on the same challenges. Belitski et al (2017) also mentions that if specialized businesses locate themselves in a designated science park at the university campus but collaboration still does not take place, knowledge transfer cannot happen and knowledge remains uncommercialized. In order to solve the dislocation, collaboration and communication between the academia and the industry is critical.

'Academics produce academic IP, industry produces industry IP.' (Interviewee 1)

'That is something [organizations] should focus on: increasing that connection between industry with their problems and university with their solutions. … Hopefully there is a bridge there.' (Interviewee 5)

4.6.2. EE and entrepreneurial outcomes

A debate came to the surface about the real role of EE within an SES. A shared view is that EE is not necessary for becoming an entrepreneur, and the attended education plays a minor role in the entrepreneurial journey.

'I don't think education matters too much, you don't have to go to university to be an entrepreneur. […] it might make it easier in terms of the connections and broaden your knowledge, but isn't necessary.' (Interviewee 2)

'At the end of the day I don't think you have for example to study business to want to be an entrepreneur, you don't have to study design to be an entrepreneur. I think what you study in your education is only a very small part into the entrepreneurship journey.' (Interviewee 6)

Furthermore, the gained theoretical knowledge is not necessarily in line with the practical know-how requirements of starting and running a venture. Even though the contemporary EE focusses on a more complex experience rather than just teaching and also provides the much needed social capital, the question still remains whether it is possible to short-circuit market forces without having to earn the resources while operating in the market. Some argue that removing unnecessary obstacles to entrepreneurial opportunity is valuable and handing these resources to future entrepreneurs might create higher level of initial entrepreneurial activities (more and better businesses) but these new ventures will lack persistence and sustainability as they were not tested by the market forces such as the organic processes of competition or creative destruction. (Hornsby et al, 2018) Furthermore, EE might be unable to teach the entrepreneur how to cope with the speed of change, dynamism, unpredictability, uniqueness, complexity and technological advancement. (Jones, 2018)

'You can't have only theoretical knowledge. […] Because if I taught you how to fly an airplane for the next 3 years and suddenly you would have to do it, you wouldn't be able to fly. You need to go step by step. You need to sit in an airplane and do something simple, then do more. So that's a hands on education.' (Interviewee 7)

'It's not because of the education, but because of a certain skills and attitudes, like management and communication skills. You can't just open some of the textbooks and learn these, how to become this kind of person.' (Interviewee 7)

The main challenge is to set up a clear instructional structure for how to introduce the contemporary methods (competitions, incubators and other curricular entrepreneurial activities) without becoming an ad hoc, build-as-you-go program (Gianiodis et al., 2018) There are six major trajectories for EE summarized by Hornsby et al (2018) that must be followed in order not to lose the legitimacy of the academic entrepreneurship programs. These are: having a clear purpose, developing a core curriculum, teaching experimentally, acceptable structure that fosters development, identify key metrics to justify the resources, leaders should have an academic statue and a clear vision and ability. Even though there is a growing demand and supply for EE, it is still hard to determine the theoretical, pedagogical, and empirical justification for these promising but resource-intensive initiatives. (Elaine et al., 2013) To what extend education influences entrepreneurial behaviour and outcomes is an ongoing debate.

‘[EE is] equipping people with experience and skills that are relevant to what they're going to be doing, and it's hard to make an argument that it won't be useful once they have already started.” (Interviewee 3)

‘Education is useful in ways that are not directly applicable to being an entrepreneur or knowing whether or not to be entrepreneur.” (Interviewee 3)

4.7. Cultural support

4.7.1. Mentality

As discussed in a previous chapter, national culture along with the theory of embeddedness plays a fundamental role in the nature of a SES and how people perceive entrepreneurialism. The context in which a SES exists is directly affecting the amount of activities as well as the outcomes. The way stakeholders and different actors situate themselves towards each other and the willingness for collaboration both are influenced by national characteristics. During the interviews, three main elements could be identified.

Firstly, there is a general openness towards ideas, people have a genuine curiosity. This also means that building up a network and connections come easier in a supportive culture like the Australian.

‘There's a genuine openness. It's about the exchange of ideas and everyone's wanting to really grow the ecosystem.’ (Interviewee 4)

‘People are genuinely interested in what's happening in terms of startups scenes across countries.’ (Interviewee 4)

‘Generally people are open to help you. You just really have to put yourself out there to make it happen. And I think everyone is open to new ideas.’ (Interviewee 2)

‘There's a lot of power in Australia when it comes to connections, it's almost a domino effect being in a startup, like there is three people we've met that's introduced us to another three people and without that happening we wouldn't be where we are today.’ (Interviewee 6)

However, two mentality barriers were also identified, namely that and industry is not willing to introduce innovative solutions until they are successful enough with the existing strategy, as

well as cooperation rarely happens between incumbent and new firms. A change is expected to take place in this cooperation though.

'The lazier the sector, the more protective it is. Less interested in challenge. If you are doing so well, why would you change? So when a sector or industry is fainting, it actually starts to think about changing.' (Interviewee 1)

'There seems to be a mentality barrier in the higher echelons of the industry, the CEOs and the directors of the bigger companies. […] the older regime seems to think the 'big companies only work in big companies' type of thing. And because that's the only value, it's hard to find a big company CEO that is willing to talk to startups or university students. But I do think it is changing and I think within the next five to 10 years we'll see a big change in Australia.' (Interviewee 6)

Secondly, a unique entrepreneurial characteristic is the attitude to failure. Entrepreneurs are not afraid of failing, they can find jobs at other similar companies that usually take them quite easily, become advisors or start the venture creation process again, so get back to the ecosystem quickly. Some scholars argue that people are even willing to fail if it happens quickly. (Brown et al., 2013) In Australia, the mentality is positive towards entrepreneurship, and being able to take risk is part of the mindset. It also means that the need for a mental health support system to deal with failure is recognized. In a well-functioning startup community reallocating the entrepreneurial human capital should be a smooth process.

'In a startup, you're trying to make something happen. You pivot along the way, you've got to see opportunities, take them, hustle, make things happen and do deals.' (Interviewee 4)

'A few startups do right. As an entrepreneur it doesn't worry me, but non-entrepreneurs are afraid of business failure, it's a disaster for them. It's a risk.' (Interviewee 1)

'You can expect a high failure rate and you can design communities and support to deal with that. But if your company doesn't work out you should be surrounded by other companies where you might be able to go and work for them. And mental health support and other things that do make it an ordinary thing for things not to work out rather than being left on your own.' (Interviewee 3)

Lastly, passion and motivation for being an entrepreneur is the main force driving these entrepreneurial activities in the SES.

'How strong and how big is your motivation to actually believe in your idea and work through this phase where you don't earn any money until you may get to the point where you can make money or eventually make a lot of money.' (Interviewee 8)

'Passion about wanting to solve a particular problem that you identified is very important to keep you going.' (Interviewee 8)

4.7.2. Career path

A strong pattern that emerged from the conducted interviews was the shift in the perception of aiming for an entrepreneurial career path. As discussed in the previous part, risk taking attitude and failure management are central to an entrepreneurial mindset. Yet, in stable economies it is harder to challenge people to be willing to leave their steady options behind, and choosing the entrepreneurial path can still be considered as an extraordinary decision.

'There's a very natural career path where you go to high school […] and if you've got a good score you don't want to waste it. So you go and study medicine or law or something else and entrepreneurship is relegated to the kind of rebellious or unsuccessful people.' (Interviewee 3)

'In Australia I think you have to take a lot of risk to start something with yourself because we have such a stable economy. It is an easy option to just go get a great job. So to start something yourself you got to take a lot of risk and you've got to have that kind of character.' (Interviewee 2)

'Usually it's mostly the students that are above average curious and interested in exploring new things and not following the standard career path and also people that are passionate about a particular problem that they want to solve.' (Interviewee 8)

Furthermore, there would be a huge potential in exposing and involving young adults in the SES because they might not have as much commitment to risk and therefore can face challenges with a more flexible approach. In Australia right now the average age of entrepreneurs is higher than one would expect, and one reason for this could be that people with deep industry knowledge and experience actively seek new opportunities to exploit these in new ways.

'There's a misconception that it's all young people, the general age [is closer to] the forties, with a really deep industry knowledge. They've already had a successful career and are seeking an opportunity to take that knowledge and create a startup around it.' (Interviewee 4)

'If we look at age of startup founders in Australia, 18 percent are under 30 years old, and I think that's a missed opportunity. It's an age when you can actually afford to take the risk, when you're not too beaten down for a certain career and stuck in the ways of thinking. Young entrepreneurs are able to think in ways that all other entrepreneurs are not. They don't have mortgages, they don't have kids and they don't have a career put on hold. They should be entrepreneurs but I don't think our system is set up to encourage entrepreneurialism.' (Interviewee 3)

'You look at the number of people in Australia that could be entrepreneurs, are able to be entrepreneurs. That's a huge amount of people. But the number that actually wants to be or financially able to take that step is much smaller. And I think that the 'I want to be' bucket is the biggest opportunity for improvement. If we get young people exposed, make it seem normal, desirable, achievable and something that is not a replacement to a career but might be adjacent to a career or interwoven with one.' (Interviewee 3)

Despite the risk of pursuing an entrepreneurial career and the fact that it is mostly not the young adults taking part in the activities, as a result of the existing support mechanisms (discussed in separate themes), entrepreneurship has still managed to become a more common and desirable option. On the one hand both nascent and mature entrepreneurs intentionally seek to pursue an entrepreneurial career. On the other hand, it has been better recognized and accepted by the broader population.

'I've seen the characteristics of startup people change. ... Startups have become a more established path. ... The people are here more deliberately rather than by accident.' (Interviewee 1)

Additionally to the exposure to entrepreneurship on different platforms which increase the quantity of people in the SES, there was a need identified for promoting entrepreneurship at an even younger age in order to make it seem normal and by the time people start their career they are aware of this as an option.

'I think that entrepreneurship needs to be promoted more from a younger age.' (Interviewee 2)

'It should just be promoted that anyone can do it from a young age. It's an option. And then I feel like by the time students are getting to university they would have a very different mindset.

… If we promoted it from an early age, then there'd be more people entering things like [student incubator programs] as soon as they get to university.' (Interviewee 2)

4.8. Knowledge transfer and exchange

Another theme that was discussed in depth is the knowledge transfer and exchange (KTE). Based on the article of Adair et al (2007) it is an interactive knowledge interchange between research producers and research users, aiming to influence policy and decision making and to help researchers to identify relevant problems. The paper highlights that the quality of interaction between a few individuals might be more important and beneficial than the mass barrage of information to many, and entrepreneurs learn an immense amount from each other's experiential knowledge originating from interactions and idea testing. Knowledge transfer is seen to be a one-was process, utilized in the academic sphere, whereas knowledge exchange is a multi-way process that takes place between industry stakeholders. The value of KTE in a SES is undeniable.

'The ecosystem between us and [scientific institute with] excellent research: we are trying to work on teaching them how to speak to startups, but it's a two way exchange practice, they are giving us the knowledge. You're going to do startups, all about fast growth [and] they are teaching us about regulatory environments and that kind of more careful approach. So there is a lot that we have to learn. (Interviewee 10)

Entrepreneurs need knowledge and skills, and education happens not only in a UEES but continues throughout the whole entrepreneurial journey formally or informally. Education is beneficial and needed, thus it is an ongoing process.

'The education is ongoing, it's absolutely embedded in everything we do. … Whether it's formal or informal, it continues very much throughout every activity.' (Interviewee 4)

'It's not something you can just say tick, I've done that.' (Interviewee 6)

4.8.1. Recycling entrepreneurs

One strong aspect of KTE in Australia lies in the inclusion of mentors and role models. Entrepreneurship educators should not only teach students and provide opportunities but serve as role models, having a unique mindset that is capable of innovative approaches (such as a contemporary teaching style) to boost activities. They make sure that the resources are allocated via a sustainable funding model and can be catalysts to plan and deliver an effective program,

to foster collaboration and to motivate and inspire students. (Bliemel et al 2019; Hornsby et al 2018) Not only educators but mature entrepreneurs can also serve as role models and be advisors or mentors the future generation.

'Trying to get academics to think about how they can come in and present in a way that's engaging for some young startup minded students. ... All of them have their own personal interests and so you can't just come in and do a traditional lecture to that group or audience.' (Interviewee 10)

'It's really common to go to research, to work with knowledge exchange but not many think 'I can actually be my own boss and with my research I can create something incredible'. ... Our academics and our researchers are there, but they need to see role models that allow for them to see how the path goes.' (Interviewee 10)

'Australia is great in exporting innovators, but not innovations. We have the right thinking people with the right talents and they go overseas to work for other companies. They are not very good at doing their own businesses.' (Interviewee 7)

An UEES should include mentors, guest speakers and judges curated and coordinated by the educators. In Australia, it seems to be a rather easy to include mentors, as universities have a good reputation and the mentality is supportive and open.

'We do a lot of work on our mentorship ecosystem. ... You're really surprised when you're basically asking people to dedicate their time and they are running some 50 million dollar business a year and then they're like 'yes, sure, I'm coming in to give my time to students on a weekend'. That's pretty awesome.' (Interviewee 10)

'We're really lucky that the university has got a pretty good reputation. So often when we do approach mentors and they will have maybe studied here already, they've got interest and then you just meet people and I feel like once you meet one good person they introduce ten other amazing people.' (Interviewee 10)

Entrepreneurial recycling is beneficial for the whole SES because it means that entrepreneurs stay in the cluster by re-investing their wealth (own capital invested through funding, such as angel investment or venture capital funds) and experience (for instance taking a position on the board of directors), and put energy into starting new ventures after selling or leaving the prior one (thus becoming serial entrepreneurs). Moreover, some can get involved in organizations

and activities that support the entrepreneurial environment, for instance by lobbying government. (Knowlton et al 2016) Therefore, it is definitely an important element to consider in terms of evaluating collaboration.

'In the US the university professors actually leave the university, take that knowledge, start a startup and then come back into the university. There's a cycle which is really healthy and it would be great if we could do more of that as well.' (Interviewee 4)

'We have an expert in residence who is located in here. Our startups can book time with him every week to have a deep conversation about the business model or whatever they're doing.' (Interviewee 4)

4.8.2. Marrying knowledge

Collaboration within the SES can happen through marrying knowledge. It differs from knowledge exchange as in this case the purpose is not to learn from each other's experience in order to broaden the understanding and be more capable. Instead, actors wish to combine their knowledge and work together to fulfil, cover and complete all needs for bringing an idea to realization. Bringing knowledge together can create value on its own in a SES, therefore new implementations or research are not necessarily needed. First of all, marrying knowledge can happen throughout the meeting and interaction of sectors within an established structure.

'It's not perfect and this is our first project with this kind of style of themed incubation. But I think it's going to be really impactful because it really does honestly grow together two types of knowledge and marries them in a way that should be successful.' (Interviewee 10)

EE is not limited to the traditional business school teaching anymore as HEIs try to expose as many students to entrepreneurial experience as possible. The different programs and co-curricular activities often result in mixing these backgrounds thus creating added value for any project. Additionally, according to Brown et al (2013) the most important contribution HEIs make to a SES is that the students increase the intellectual capacity with their new ideas within the ecosystem.

'We had two really successful hackathons in the last two months and one was in conjunction with the law faculty and it was on education technology. … And it what was so great because you're putting a different population in that mindset from day one.' (Interviewee 10)

This is in line with the paper of Nemati et al (2016), arguing that EE should emphasize the power of different backgrounds students have instead of trying to mould them into a common end product. Mostly it is still business students coming across being interested, but the number of other types of students, such as engineers, is growing as well.

'We track the data on what faculties [entrepreneurial students] come from and usually get a good mix. The strongest, but those are also the largest faculties: Business, Engineering and IT.' (Interviewee 8)

'Business makes sense because they're looking into how to start, run or manage businesses. But … we do get a lot of engineers come in and want to sell their own products but some of them have maybe not thought about it from day one. … Maybe they stumble across that as a pathway as opposed to thinking about it from day one.' (Interviewee 10)

4.9. Major factors of evaluation

This analysis shows two major factors of consideration when the academia and the industry evaluates their collaboration. Firstly, all inspirational initiatives are gaining the SES in forms of enhanced number of entrepreneurs, entrepreneurial activities and outcomes. These may result in institutional initiatives once the value is justified and it gets a more formalized structure. Secondly, institutional initiatives are a result of either the inspirational factors, the market needs or the strategic visions of the government. These main areas are displayed in the map below (Figure 3). Networking is the only theme that could be a result in the improvement of both the quality and quantity of entrepreneurial activities directly and indirectly as well, as it is a complex and multi-level theme.

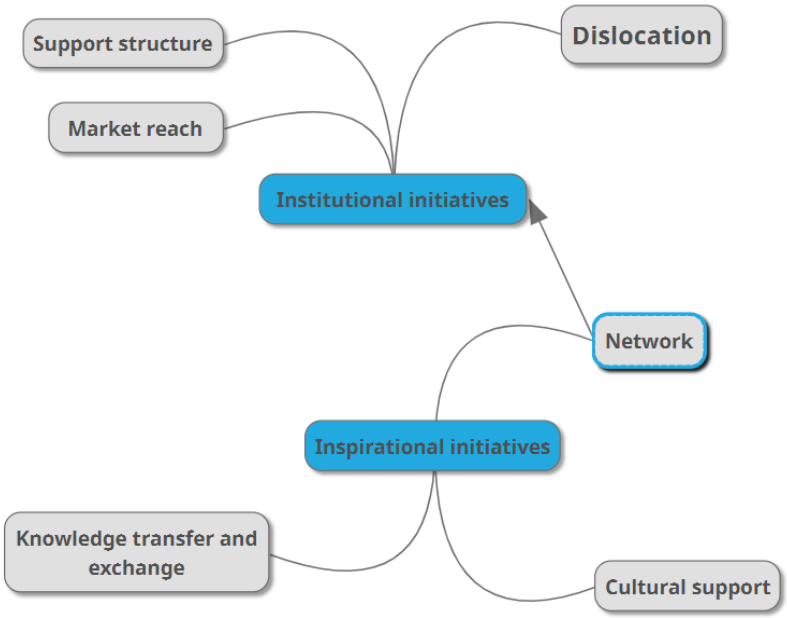

Figure 3. This figure displays the result of the analysis: the two major factors of evaluation (institutional and inspirational initiatives) with their relation to the 6 main themes.

Institutional and inspirational initiatives are the major factors of evaluation provided by the analysis, thus the results and conclusion chapter will build on these as a structure for understanding collaboration within the SES.

5. Results and conclusion

5.1. Typology

This chapter is building on the major factors of evaluation provided by the analysis: institutional and inspirational initiatives. Based on these, a typology will be established, leading into a typology model.

5.1.1. **Institutional initiatives**

The empirical findings in this study show that the most significant factors affecting collaboration are the support mechanisms, resources, structure of the SES, methods and processes that are introduced for a better and deeper engagement.

'At a federal level, there was a system set up ... that encouraged a lot of startup activity, so we've seen a huge ramp up in startups, because there are programmatic systems that they can get involved in, to get support during their early stages of forming a company.' (Interviewee 5)

'*Almost every university across Australia is working to drive entrepreneurship […] They have the resources to apply, have a captive audience, they have all these academics and the ability to do things that other organizations can't, and they're doing it.' (Interviewee 3)*

These factors are supposed to understand, justify and reinforce the needs of both the university and the industry and try to reduce any form of asymmetry or dislocation. Transparency, efficiency, overlapping sectors and clustered knowledge can be valuable results of these institutional initiatives.

'There's so much more we can do. Building this global network, bringing on bigger partners and sponsors, deeper engagement.' (Interviewee 4)

'Knowledge exchange happens every day in here which is why there's such a value to be within a space like this where you do have people clustered together.' (Interviewee 4)

'All the new value come out of the intersection of different sectors. Not incrementally additions to established sectors. In the hybrid, that's where all the excitement happens.' (Interviewee 1)

Furthermore, these initiatives try to focus on international collaboration and global expansion. Entering not only the domestic market but a regional or international one can be a real challenge (in this case due to the physical location, but it could also be on a political level for instance).

Startups by definition are supposed to address not only the domestic market, therefore enhancing the collaboration internationally (outside the SES or EES) plays a crucial role in scaling up and thriving.

5.1.2. **Inspirational initiatives**

The secondary major factor of evaluation is the inspirational level of initiatives. These aim for motivating more people to be involved in the SES, building profitable networks and connections, choosing entrepreneurship as a career path, commercializing more ideas, having people as role models, funding the right mindset, supporting each other and trying to learn from each other.

Firstly, even if the institutional initiatives exist, it can be challenging to find people with the right talent and mindset that are already willing to be involved in entrepreneurial activities.

'I think there's a wealth of support around the world, I don't think entrepreneurial support is what's lacking, I think what's lacking is people who decided to be entrepreneurial. And that's where the focus counts.' (Interviewee 3)

Thus, exposing people to entrepreneurship and motivating them to choose it as a career path can result in the inclusion of a more diverse set of individuals that will ultimately lead to better and more complex ideas and solutions. If people with a certain knowledge or interest become aware of their possibilities and eventually consider entrepreneurship as a career option, a new type of collaboration would emerge while reaching out for any type of support they wish to get.

'To let them know what opportunities exist, so that they can decide themselves if they want to take part.' (Interviewee 8)

'I think people are getting to see this as an opportunity for themselves with their careers.' (Interviewee 5)

Moreover, knowledge transfer and exchange also belong to the inspirational aspect of collaboration. Establishing collaboration between mature entrepreneurs to learn from each other's experience and insights is extremely favourable for a successful SES. In addition, the collaboration between nascent and mature entrepreneurs is also something to look for in a SES as firstly, this is how the younger generation can learn from the former experiences and secondly, role models can be motivational.

5.2. Typology model

To illustrate the results of the analysis of the interviews a typological model has been set up. The empirical findings have shown that if the institutional structure and mechanisms are not set up properly to provide support and a platform, it is really hard to create a fruitful and sustainable collaboration in a more formal and well established manner, even if the inspiration and motivation is there and people are open towards collaboration. Therefore, the institutional initiatives will be put on the X-axis of the model.

However, exposing as many people to entrepreneurship as possible while also providing resources (mostly social capital) and increasing knowledge exchange is of utmost importance. If a SES wants to have more and higher quality collaboration, people have to understand the value of entrepreneurship on an individual level. Therefore, inspirational initiatives provide the Y-axis of the typology model below.

Industry focuses much more on commercialization capabilities of institutions and the actual experience of future entrepreneurs than they are interested in theoretical knowledge. However, if universities provide programs that consider industry needs, or the academia is willing to invite people from the industry to collaborate, it is considered beneficial. Therefore, things such as mentors, networking events and knowledge transfer are valued once the institutional background is provided.

These are illustrated in the model with four separate typological categories distinguishing how collaboration is evaluated. However, the lines in reality are not as sharp between these categories, and it can easily happen that a collaboration is perceived in a different manner in other researches.

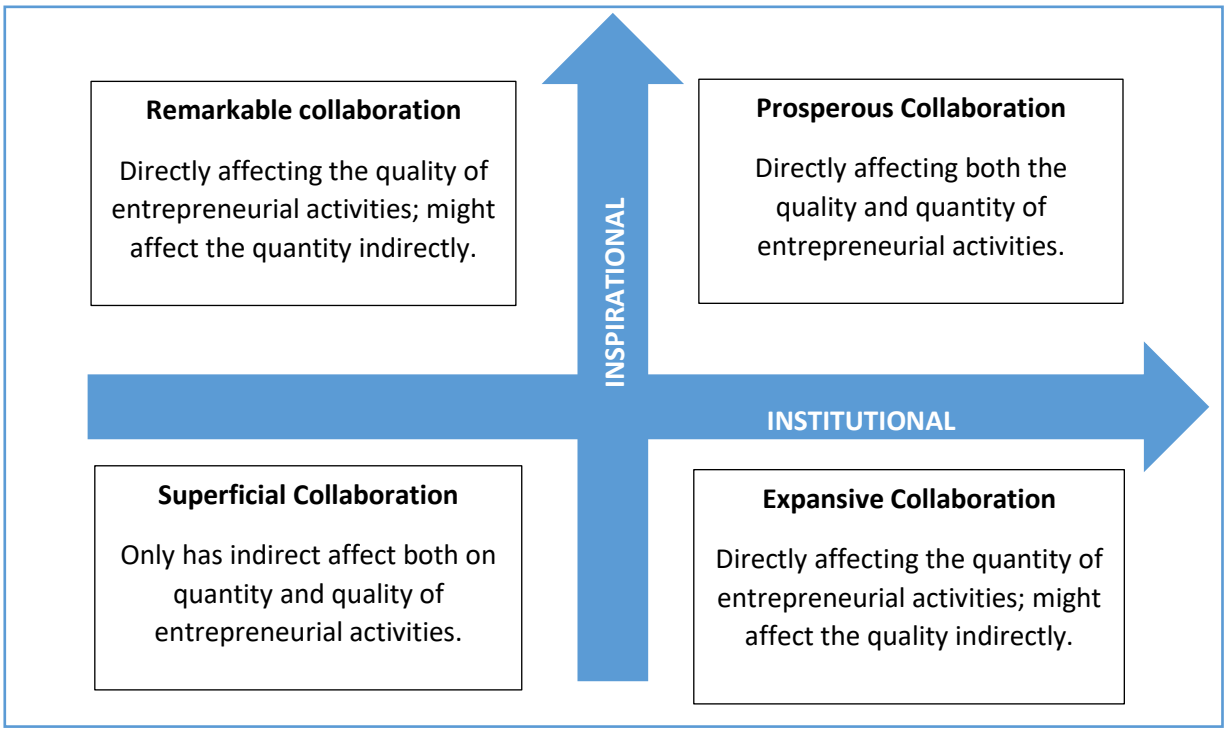

Figure 4. The model shows the four types of collaboration categories. The X-axis of the model represents the institutional initiatives, whereas the Y-axis represent the inspirational initiatives.

5.2.1. **Prosperous**

Prosperous collaboration is the most desired form of collaboration. It affects growth directly both in terms of quantity (entrepreneurial outcomes) and quality (strategic partnerships and knowledge exchange), thus improving the nature and successfulness of the whole startup ecosystem.

There are several attributes characterizing a prosperous collaboration within a SES. Firstly, the main element of this collaboration is the tendency to exchange, transfer and marry knowledge. These can take place on different levels, between sectors, smaller actors or the individuals. If industry specific knowledge meets academic knowledge with research and technology in order to create something entrepreneurial (for instance a new venture, an accelerator or a network), there is a high chance that this collaboration will contribute to the growth in a healthy and committed manner.

Secondly, prosperous collaboration can arise through entrepreneurial recycling. This concept has elements from knowledge transfer, such as fulfilling new roles where prior experience can be exploited and utilized. The role can be in a new sector (movement across industries, or between industry-academia-government) but also within the same field, yet with new challenges (creating a new startup and becoming serial entrepreneurs). Additionally, it also has elements that are not related to knowledge but to re-investing their wealth and resources. In terms of collaboration these can be capital investments through funding (such as angel investments) or providing access to their social capital for networking.

Lastly, well established strategic partnerships also count as a mean of prosperous collaboration. This is due to two reasons. On the one hand, these have been set up by the actors with a clear goal, vision, mission and structure to satisfy a clear need that was recognized prior by them. Therefore their purpose is justified and vital to the partners. On the other hand, since these partnerships are formal, the parties involved can count on each other for future implications as well. Thus it is a reliable collaboration based on a real demand.

5.2.2. **Remarkable**

Remarkable collaboration has a significant effect on the quality and nature of a SES in general. This type, however, do not necessarily bring on new collaboration as a direct outcome but rather focusses on the enhancement of the existing forms, thus indirectly affecting the relationship between actors. It might result in quantitative outcomes but the impact cannot be directly measured.

The true value of this collaboration lies in the motivational attributes as it is inspiring people to take a more active spot in entrepreneurial ecosystem. There are three key aspects, as follows.

First of all, remarkable collaboration should be present in order to brace entrepreneurs and prepare them for possible risks and failures. Even in traditionally low risk taking ecosystems (usually stable economies), if failure management exists, people will feel more secure about giving their ideas a try. Moreover, if there are visible and available reallocation possibilities, entrepreneurs will not fear taking the risk as if their idea does not work out, they can still stick with a similar career path and work for another venture. This is in connection with a prepared mental health support system that can present failure as an acceptable and quite possible outcome of a certain part of the entrepreneurial journey. There has to be this kind of collaboration within a SES to make it a more secure environment where people are not afraid to run a test for their projects and actually start a new venture.

Secondly, being entrepreneurial minded is something that can be developed, therefore people should know that there is value in having for instance a pure engineering knowledge and interest because they can recognize problems that can be solved only with their experience (opposed to the people who have only business knowledge for instance). Therefore, exposing as many people as possible to entrepreneurial experiences mean that the level of opportunity recognition with their own careers will be higher. Making entrepreneurship desirable by a broader circle of people can bring new perspectives to a SES as they apply reasoning and solutions that might be unfamiliar for the existing community. Thus, collaboration can mean inspiring, influencing and motivating people to aim for more entrepreneurial approaches.

Lastly, there is pure cultural aspect to remarkable collaboration, namely that if openness and supportive mentality are characteristics of the region where the SES is embedded, inspirational collaboration is more likely to happen. People in cultures like this are more into connecting

with other stakeholders and they also tend to have a passion for putting themselves out there to be visible and reachable for the others.

5.2.3. **Expansive**

Expansive collaboration directly influences the quantity of the entrepreneurial activities in a SES, however, it does not create higher quality or deeper connections. It is a result of institutional initiatives originating from the stakeholders of the ecosystem and is seen as a huge potential when it comes to driving entrepreneurship in a certain region as it has an instant direct impact on the outcomes.

There are four main components that create expansive collaboration: the provided public support, the networking activities, commercialization capabilities and the aim for a greater market reach.

Public support regarding collaboration means that the possible barriers (such as legal and financial) are removed, policies and incentives are introduced to foster entrepreneurialism, an appetite for investment is formed and there is a top-down approach for purposely forming startup hubs.

Networking is a quite obvious part of collaboration in general. However, when it is mentioned with regards to expansive collaboration, it mostly covers the areas of interconnectedness (more opportunities to meet, thus everyone gets to know everyone briefly) and networking framework (for instance reoccurring events or fixed-term programs as accelerators). All of these are gaining the number of connections, yet they might not be beneficial when the entrepreneurs reach the point of needing to exploit their social capital as most of these connections are really shallow.

Ideally, if the expansive collaboration functions well then research would result in a commercialized product. This should be one of the main objective of collaboration. Yet, if the researchers are not collaborating with the industry, there is a danger that the ideas and solutions provided are not in line with the actual problems, therefore the intellectual property (IP) created by different stakeholders will be contradictory. Moreover, if the academia IP reflects on inexistent problems, ideas will remain uncommercialized. Commercialization capabilities therefore are dependent on expansive collaboration forms.

Lastly, greater market reach means aiming for a global expansion. This is an institutional initiative as well that focusses on the amount of entrepreneurial activities rather than the quality.

Startups should always have a global vision (instead of being satisfied with a domestic market), and expansive collaboration can help them to reach out to potential external partners for future implications.

5.2.4. **Superficial**

Superficial collaboration is the least favourite type as it merely exists to satisfy needs that were created based on theoretical assumptions, without listening to the academia or the industry. Yet, it is supposed to enhance the ecosystem in ways that are desired by policy makers. Stakeholders (other than the ones that create these initiatives) usually do not accredit much value to this form of collaboration as there are no direct effects neither on the inspirational nor on the institutional initiatives. Two types of collaboration can be listed as superficial.

Firstly, HEIs have introduced EE as a result of demand by the students and other stakeholders. The programs they offer are perceived positively, the contemporary methods usually include a lot of cooperative work. HEIs often invite entrepreneurs to serve as mentors and role models, which is again seen very positively. However, universities are for profit, and they sell education as a product, therefore the amount of people attending a program will never be in line with the industry needs, as there is no consultancy about it. There is an oversupply of academics for this reason. Universities thus are quite dislocated from industry.

Secondly, EE plays a minor part in the entrepreneurial journey and the theoretical and limited practical knowledge it provides is not sufficient for ‘short-circuiting’ the market. New ventures would lack persistence and sustainability. It is hard to tell the justification of EE, yet the collaboration is perceived superficial.

5.3. Conclusion

This study aimed to investigate *How is collaboration evaluated with regards to initiatives addressing entrepreneurial activities within a growing startup ecosystem?* The findings contribute to the limited literature on how the internal stakeholders perceive collaboration and what needs they have that improved collaboration would be able to cover. Previous research has shown that entrepreneurs and also the smaller communities are embedded in bigger ecosystems and thus influenced by the available resources, support mechanisms and the overall interactions between the actors. However, this study provided an evaluation of the collaboration in terms of the influence it has on the quality and quantity of the entrepreneurial activities, showing that there are preferred and desired collaboration forms, but also forms that are not seen beneficial or needed. This questions the resources allocated towards establishing less necessary collaboration forms. Therefore, the study suggests that both institutional and inspirational initiatives should be taken into consideration when looking for a suitable potential collaboration, as relevant knowledge and connections are of the utmost importance in the development of a startup ecosystem. Lastly, this paper concludes that a startup ecosystem can foster via stakeholder collaboration, and entrepreneurial activities can generate economic development and innovation in a certain region.

5.3.1. **Future research**

Based on the results future research should focus on investigating how external stakeholders can affect collaboration, as well as the regional and global context in which the EES is situated. This study left out all the financial aspects of collaboration as it would be an enormous topic to cover. Therefore the author suggests to investigate the financial incentives for collaboration within a SES. Additionally, due to the limitations of this paper, there was no possibility to differentiate between the backgrounds of different stakeholders. It would be beneficial to include prior experience as a filter and perspective for future research on collaboration. Lastly, only the SES of Sydney has been explored as it is one of the major hubs in Australia. Thus, it would be interesting to understand how the startup ecosystems relate towards each other, especially because they share the same cultural characteristics.

5.3.2. **Managerial implications**

As this study has been exploratory, it is not easy to tell the direct implications that could be implemented in order to boost a startup ecosystem. However, the author hopes that this research advices startup communities with growing ecosystems on how to establish new or re-evaluate existing collaboration forms, depending on whether the ecosystem needs to develop the quality or quantity (or both) entrepreneurial activities and outcomes.

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7. Appendix

Appendix A

			Full program (6)	Program with major specialisation (4)	Program with minor specialisation (2)	Subject about or core (2)	Subject related (1)	Online (additional or solely) (2/1)	Chair (3)	Entrepreneur in residence (2)	Professor of Practice (2)	Incubator/ accelerator program (2)	Ecosystem (2)	Strategic intent Leximancer (0-3)	Total
2019	2015	HEI													
1	2	Adelaide	12	0	2	66	4	8	3	2	0	2	2	3	104
2	9	UTS	12	4	4	44	24	0	3	0	0	2	2	2	95
3	4	QLD	6	8	2	46	5	5	3	2	2	2	2	2	85
4	21	La Trobe	0	12	6	22	10	14	3	2	2	2	2	3	78
5	18	Flinders	6	4	0	40	8	1	0	2	0	2	2	3	68
6	1	Swinburne	6	4	0	34	2	8	3	2	0	2	2	2	65
7	5	Melbourne	6	0	0	36	6	0	3	2	0	2	2	3	60
8	7	RMIT	0	8	2	33	4	2	3	0	0	2	2	2	58
9	19	Canberra	0	8	0	14	2	23	3	2	0	2	1	3	58
10	8	Unisa	0	4	2	24	2	13	0	2	0	2	1	2	52
11	22	QUT	0	0	0	4	28	1	3	2	0	2	2	3	45
12	12	Sunshine Coast	0	0	4	3	24	1	0	0	0	2	2	1	37
13	11	Tasmania	6	0	0	26	0	0	0	0	0	2	1	2	37
14	13	Maqauarie	0	8	2	20	0	0	0	0	0	2	2	2	36
15	14	Newcastle	0	4	2	14	3	6	0	0	0	2	2	1	34
16	17	Bond	0	0	0	26	1	2	0	0	0	2	1	2	34
17	34	Deakin	0	4	2	13	2	4	0	0	0	2	1	1	29
18	n/a	Torrens	0	4	0	15	0	8	0	0	0	0	0	0	27
19	33	Murdoch	0	4	0	14	4	0	0	0	0	2	2	1	27
20	28	Griffith	0	4	0	11	0	5	3	0	0	2	2	2	27
21	3	Sydney	0	0	0	18	1	0	3	0	0	0	2	2	24
22	23	ANU	0	4	2	12	5	0	0	0	0	0	0	1	24
23	6	UNSW	0	4	0	10	1	0	0	2	0	2	2	2	23
24	10	UWA	0	0	2	10	1	0	0	2	0	2	2	1	20
25	20	Woolongong	0	0	2	8	3	0	0	2	0	2	2	1	20
26	15	WSydney	0	0	0	16	0	0	0	0	0	2	0	1	19
27	37	CQU	0	0	2	10	2	0	0	0	0	0	0	0	14
28	27	Curtin	0	0	2	8	0	0	0	2	0	2	0	0	14
29	16	Federation	0	0	2	10	1	0	0	0	0	0	0	1	14
30	26	Victoria	0	0	0	6	2	0	3	2	0	0	0	1	14
31	32	Charles Sturt	0	0	1	4	1	0	3	0	0	2	1	1	13
32	31	Monash	0	0	0	4	1	0	3	0	0	2	1	1	12
33	36	Charles Darwin	0	0	0	0	1	1	0	2	0	2	1	0	7
34	25	Southern Cross	0	0	0	4	0	1	0	0	0	2	0	0	7
35	29	James Cook	0	0	0	4	1	2	0	0	0	0	0	0	7
36	24	Edith Cowan	0	0	1	4	0	0	0	0	0	0	0	0	5
37	38	UNE	0	0	2	2	0	0	0	0	0	0	0	0	4
38	30	USQ	0	0	0	2	0	0	0	0	0	0	0	0	2
39	35	ACU	0	0	0	0	2	0	0	0	0	0	0	0	2
40	39	Notre Dame	0	0	0	2	0	0	0	0	0	0	0	0	2
		TOTAL POINTS	54	88	46	639	151	105	39	30	4	54	42	52	1,298
	Total Count		9	22	23	319.5	143	189	13	15	2	27	21	1.3 AVE	32.4 AVE

Entrepreneurship education initiatives at Australian HEIs (source: Bliemel et al., 2019, p.744)

Appendix B

I. System level factors for collaboration

1. How has the SES developed? What directions is it following?
2. What are the main factors that influence entrepreneurial activities?
3. What are the main challenges to overcome?

II. Cultural aspects in collaboration

1. How can the entrepreneurial individual and their behaviour be described?
2. How do the cultural characteristics affect collaboration?
3. What can be relevant to evaluating collaboration in terms of mentality?

III. UEES in collaboration, role of education

1. How could you describe the development of EE in Australia? How well is it integrated to the SES?
2. What are the main values of education? Does it result in entrepreneurial outcomes?
3. How is EE affecting collaboration within the whole SES? What platforms does it create for collaboration?

IV. Other collaboration within the SES

1. How deep is the collaboration between the stakeholders within the startup ecosystem?
2. What are the obvious forms of collaboration? Which of them are perceived essential?
3. What are the platforms and channels?
4. What is the main challenge identified? Future improvements?