Elephants and Gazelles: The Role of Large Corporations in Entrepreneurial Ecosystems

A Case Study of the Impact of the Corporate Sector on Munich's Entrepreneurial Ecosystem

A dissertation submitted to the Adam Smith Business School of the University of Glasgow in partial fulfilment of the requirements for the degree of Master of Business Administration (MBA)

Sarah Herzog

Glasgow, September 2018

ACKNOWLEDGMENTS

"An individual's life is a startup that begins at birth. Every city was once a startup, as was every company, every institution, and every project. As humans we are wired to start things."

(Feld, 2012, p. 1)

The latest project I started was this research, an exploration of the setting in which people are most likely to follow their ambitions and start things. While I investigated the importance of such supportive environments, I experienced the importance myself.

It was especially the role of my mentor which I acknowledged throughout the project. For his continuous support, expert advice and exceptional patience, I would like to thank my supervisor, Professor Colin Mason.

A special note of thanks goes to the interviewees in Munich who introduced me to the thriving start-up scene and took off the time from their busy schedules to share their insights and observations with me.

It was the team of the MBA programme, which guided me throughout this year and equipped me with the tools to start this project and to follow my ambitions. With a special mention to Mrs Ramona Blanes and all the brainstorming sessions in the very early stage of the research.

While the research taught me that it is not a single factor or person, but the complexity of many which enable people to follow their ambitions, it is the same with all the array of people which enabled my project – those will be aware of my gratitude towards their continuous support.

ABSTRACT

The wide-spread assumption that technological advancements eradicated the importance of geographical distance and flattened the world does not apply to its driving force, entrepreneurial activity. Its increasing concentration in entrepreneurial communities provides evidence that location clearly matters and gave rise to the concept of entrepreneurial ecosystems. The systemic approach aims to explain the spatial development of entrepreneurship and gained wide-spread acceptance among scholars. While they proposed various components and actors which constitute successful entrepreneurial ecosystems, little understanding of their roles, relevance and interactions has been established. Though corporations were stated to be an imperative actor of entrepreneurial ecosystems, their role has widely been neglected in ecosystems literature. Hence, the conducted research explored their uninvestigated role within ecosystems through an illustrative case study placed in Munich, which combines an emerging ecosystem with a strong corporate sector. Whereas prior literature revealed numerous ways in which corporations foster the development of ecosystems, semi-structured interviews supported by secondary sources revealed that even though corporations have a significant impact on Munich's start-up scene adverse effects dominated. Most of these can be attributed to the traditional mind-sets of corporations which clashed with the disruptive attitude and agility of start-ups.

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LIST OF ABBREVIATIONS

AI	Artificial intelligence
ANDE	Aspen Network of Development Entrepreneurs
B2B	Business to business
B2C	Business to consumer
BMWi	German Federal Ministry for Economic Affairs and Energy
CEO	Chief executive officer
CSR	Corporate social responsibility
CVC	Corporate venture capital
EE	Entrepreneurial ecosystem
FinTech	Financial Technology
FLÜGGE	Förderprogramm zum leichteren Übergang in eine Gründerexistenz (literally: funding programme to able spin-off creation)
GVA	Gross value added
HGF	High-growth firms
ICT	Information and communication technologies
IoT	Internet of Things
IPO	Initial public offering
ISO	International Organization for Standardization
LMU	Ludwig-Maximilians University
M&A	Mergers & acquisitions
MBAN	Munich Business Angel Network
MNC	Multinational corporation
OECD	Organization for Economic Cooperation and Development
PwC	PriceWaterhouseCoopers LLC
R&D	Research & development
SME	Small and medium-sized enterprise
TUM	Technical University of Munich
VC	Venture capital
WEF	World Economic Forum

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Applicant's Name: Sarah Herzog

Project Title: The Role of Cooperation's in Entrepreneurial Ecosystems – An exploratory Study of Corporate Collaboration with Start-ups in Munich's Start-up Ecosystem

Date Application Reviewed: 23/7/18

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1. INTRODUCTION

During the past decades, technological advancements made it "possible for more people than ever to collaborate and compete in real time with more other people on more other kinds of work from more different corners of the planet […]" (Friedman, 2006, p. 8) and eradicated the importance of geographical distance. Practitioners claim a rise of equal opportunities among global competitors which culminates in a metaphor debunking Columbus findings – increased connectivity has flattened the world. And while they state that "when you start to think of the world is flat, or at least in the process of flattening, a lot of things make sense in ways they did not before" (Friedman, 2006, p. 8), it does not apply to entrepreneurial activities. Even though they were the main driver of globalisation through technological advancements, entrepreneurs concentrate in close geographic proximities giving rise to entrepreneurial communities in places such as Silicon Valley, Boston or Tel Aviv. Thus, they provide evidence that "location is more important than ever" (Feld, 2012, p. 22).

The awareness of the spatial concentration of entrepreneurial activity led to increased efforts in understanding the key determinants of entrepreneurship-friendly environments. Within this context, the concept of entrepreneurial ecosystems was established, a systemic approach that takes account of the underlying social, cultural and economic factors and their causational relationships within the environments in which innovation-based ventures flourish (Mason & Brown, 2014). The systemic concept "established itself as one of the latest fads within entrepreneurial research" (Brown and Mason, 2017, p. 11) and due to its rapid adoption especially in politics and research, no widely accepted definition of the concept was established and many fundamental questions have not yet been answered (Stam and Spigel, 2016, Brown and Mason, 2017).

Research gap

On the one hand, most established definitions emphasise the importance of local, interdependent relationships between different elements, which are necessary for the entrepreneurial performance of an ecosystem and highlight the heterogeneous nature of their composition. On the other hand, most studies provide long lists of factors which document "the presence of system components, [with] little understanding of interdependencies between components" (Mack and Mayer, 2016, p. 21 18).

Hence, one of the most fundamental gaps in the research of the systematic concept is the missing understanding of the roles and the relevance of certain components as well as the interactions among them. Thus, it is not clear yet, how these components enhance entrepreneurship nor how they are tied to specific location-based histories (Stam and Spigel, 2016, Alvedalen et al., 2017).

Research question

Even though it was stated that "at the heart of an entrepreneurial ecosystem typically there is at least one, and usually several large businesses" (Mason and Brown, 2014, p. 9) and that "there are many ways that live corporate[s] can cultivate entrepreneurship ecosystems" (Isenberg, 2013), the role of large corporations was widely neglected in research of entrepreneurial ecosystems. Hence, this research aims to investigate the statement: "You simply cannot have a flourishing entrepreneurship ecosystem without large companies to cultivate it, intentionally or otherwise" (Isenberg, 2013). To probe into the stated "symbiotic necessity of large companies and entrepreneurial ventures living side by side" (Isenberg, 2013) within an entrepreneurial ecosystem, the research will be placed in Munich, Germany.

Munich makes for an interesting case study because it is the economic powerhouse of Germany, with 10 of the country's 30 major public companies (DAX 30) headquartered there. Even though its entrepreneurial ecosystem is still in its infancy, it recently attracted increasing attention and is predicted to gain further importance as an entrepreneurial "hotbed" (Mack and Mayer, 2016, p. 2130). Hence, the presence of a strong corporate sector in Munich offers a promising context to investigate Isenberg's statement and gain further insights into the dynamics of ecosystems by examining the impact of established corporations on the components of entrepreneurial ecosystems.

Structure of the study

Therefore, firstly a common understanding of supportive environments of entrepreneurship as well as its core components will be established. Afterwards, a literature review will summarise the current state of research of the role of corporations within such environments. Subsequently, an explanation of the research question and the research approach will be provided.

The central part of the research will consider the heterogeneous nature of ecosystems by discussing general research findings of Munich's entrepreneurial ecosystem and will thus establish an understanding of the location-specific

characteristics. Afterwards, research findings of the role of corporations within this specific context will be examined, and interdependencies and impacts on other relevant components of the ecosystem will be discussed.

The final section summarises the research contribution of the thesis, outlines its limitations and concludes with suggestions for future research possibilities.

2. THEORETICAL BACKGROUND

2.1. Mice, gazelles and elephants

The research provided aims to explore the role of corporations within entrepreneurial ecosystems. To enable the analysis, its prefix – entrepreneurship – needs clarification as against "the conventional wisdom is that start-ups are good per se" (Vivarelli, 2004, p. 48), ecosystems aim to enable ambitious entrepreneurship (Baumol, 1990, Stam and Spigel, 2016): Therefore, mice, gazelles and elephants will be introduced within the ecological analogy of entrepreneurial activity.

Mice, which can be found in almost every region, represent people in self-employment or small business owners such as the basket waver, the "mom-and-pop shops and lifestyle consultants" (Motoyama and Knowlton, 2017, p. 7). While mice stay small, it has been recognised that in the entrepreneurial context they "do not create businesses that [….] create jobs, reduce unemployment, make markets more competitive, and enhance economic growth'' (Shane, 2008, p. 163). Hence, the ecosystem which builds the focus of this research does not aim to produce large quantities of mice (Stangler and Bell-Masterson, 2015, Isenberg, 2011); instead, it seeks to build conducive environments for start-ups that grow quickly, are rare in number and tricky to spot – gazelles.

Gazelles are distinguished by aspiration and a high risk-taking mentality, continuously trying to create economic value through growth (Isenberg, 2011). Moreover, gazelles were identified as drivers of productivity growth (Mason et al., 2008), employment (Anyadike-Danes et al., 2009) as well as innovation (Coad, 2009, Mason et al., 2009) and as promoters of business internationalisation (Mason and Brown, 2010), investors in human capital (OECD, 2013) and employers of disadvantaged people (Coad et al., 2014). Even further, they are Schumpeterian stimuli within economies by increasing competition and thereby increasing the efficient allocation of resources as well as by having beneficial spill-over effects to firms within the same locality (Mason and Brown, 2014). Therefore, they increasingly concentrate in geographical proximity and shifted attention towards places where an increasing number of gazelles is interacting with the large and heavy incumbents – the elephants – such as Silicon Valley, Boston and Munich.

2.2. Entrepreneurial ecosystems

2.2.1. From a biological metaphor to a definition of entrepreneurial ecosystems

The fundamental ideas behind the entrepreneurial ecosystem concept date back in the 1980s and 1990s as part of spatial concentration of economic activity (Myrdal and Sitohang, 1957, Krugman, 1991, Fujita et al., 1999, Scott, 2006, Marshall, 2013) and first systemic views on entrepreneurship (Dubini, 1989, Van De Ven, 1993), followed by the concept of innovation systems (Cooke et al., 1997, Asheim et al., 2011) and Porter's "cluster concept" (Porter, 2000). While all of these concepts touched on the notion of entrepreneurship by treating it as a peripheral factor, they did not explore the structure, the network nor the composition of local systems of entrepreneurship (Motoyama and Watkins, 2014).

The novelty about the entrepreneurial ecosystem concept is its biological metaphor – the ecosystem.

Ecosystems

First coined by James Moore (1993) stating that "business ecosystems condense out of the swirl of capital, customer interest, and talent generated by a new innovation, just as successful species spring from the natural resources of sunlight, water, and soil nutrients" (p. 76), he highlights the importance of viewing the holistic environment in which firms operate rather than their internal characteristics and operations. As he emphasises specific types of environments which foster firm growth, it has led to a stronger focus of "localised" determinants and ultimately a "spatial turn" of entrepreneurship (Mason and Brown, 2014).

Since Cohen ultimately brought together the two concepts and coined the term "entrepreneurial ecosystems" in 2006 various scholars provided alternative definitions (Neck et al., 2004, Mason and Brown, 2013, Ács et al., 2014, Stam, 2015) and investigated the meaning of the ecosystem part of entrepreneurial ecosystems (Napier and Hansen, 2011, Mason and Brown, 2014, Auerswald, 2015, Auerswald and Dani, 2017). Although a wide range of diverse definitions has been proposed, the fundamental idea that entrepreneurship evolves in an environment which is shaped by a complex set of individuals and their interrelationships is consistent (Valdez, 1988).

Definition EE

Mason and Brown have synthesized recent definitions from contemporary literature into a comprehensive definition: "a set of interconnected entrepreneurial

actors (both potential and existing), entrepreneurial organisations (e.g. firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies) and entrepreneurial processes (e.g. business birth rate, numbers of high growth firms, levels of "blockbuster entrepreneurship", number of serial entrepreneurs, degree of sell-out mentality within firms and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment" (Mason and Brown, 2014, p. 5).

The research will follow the above-mentioned definition as it confines entrepreneurial ecosystems to geographically restricted areas, which consistent with the research's objective of examining the ecosystem of a locally bounded place.

2.2.2. A look inside the concept of entrepreneurial ecosystems

Economic gardening

The biological metaphor of the entrepreneurial ecosystem concept links to the "economic gardening", a metaphor for an approach to local development (SBA, 2006). It focuses on specific environments in which mice, but especially gazelles have better opportunities to grow and hence to create employment and positively impact economic growth and wealth of the society (Isenberg, 2010, Mack and Qian, 2016, Brown and Mason, 2017, Cunningham et al., 2017). Therefore, ecosystems gained increasing importance, especially from a policy perspective (Isenberg, 2011, Foster et al., 2013) and from popular business literature (Napier and Hansen, 2011, Feld, 2012, Hwang and Horowitt, 2012, Koltai, 2016), both offering a rather practical perspective (Napier and Hansen, 2011, Kantis and Federico, 2012).

Geographic scope

Moreover, ecosystems have been studied at national level (Stam, 2014, Kshetri, 2014) and in various cities such as Silicon Valley (Saxenian, 1994, Kenney and Patton, 2005), Calgary (Stam, 2015), Oxford (UK) (Lawton Smith and Ho, 2006) and Edinburgh (Spigel, 2016) and hence, "are geographically bounded but not confined to a specific geographical scale […] neither related to particular sizes of city" (Mason and Brown, 2014, p. 5).

Fertile Soil – EE Emergence

Even though entrepreneurial ecosystems were explored with respect to their social, cultural, behavioural, institutional and biological determinants, little is known about how entrepreneurial ecosystems arise and evolve. However, it was stated

that flourishing economic gardens of entrepreneurial activity need “fertile soil”(Mason and Brown, 2014, p. 13).

Entrepreneurship literature discusses different forms of fertile soil through which entrepreneurial ecosystems arise (Regalado, 2013, Mason and Brown, 2014). Entrepreneurial ecosystems generally emerge “in locations that have place-specific-assets” (Mason and Brown, 2014, p. 9), such as cultural attractions or an environmental setting which provides opportunities for outdoor activities. Florida (2005) states that the “creative class” consisting of various individuals who create “meaningful new forms” (Florida, 2003, p. 8), wants to live in nice places and enjoy a culture with tolerance for new ideas and weirdness. This results in a virtuous cycle of attracting more and more creative individuals, which ultimately gives the region a competitive advantage. Another model proposes that ecosystems could arise along with a rapidly growing firm in the region (Napier and Hansen, 2011, Feldman, 2014). Regalado (2013) explains that ecosystems could arise and grow as governments and municipalities set up innovation centres and technology parks. Another widely discussed concept describes the development of entrepreneurial ecosystems through complex causal and partly simultaneous processes, impacted by various determinants and actions stating that new start-ups arise “[…] by a constant recombination of ideas, talent, and capital, embedded in a supportive culture […]” (Fuerlinger et al., 2015, p. 7) and a number of successful and serial entrepreneurs who engage and reinvest in the local ecosystem (Stam, 2014).

However, while each ecosystem evolves under a unique set of conditions and consists of a unique combination of elements, identifying generic root causes of entrepreneurial ecosystems has been stated to be of limited practical value (Isenberg, 2011). Though, research identified certain, common elements which support the growth and development of an entrepreneurial ecosystem.

2.2.3. Components of entrepreneurial ecosystems

Analogue to the array of established definitions, numerous models of ecosystems have been proposed by numerous scholars and practitioners (Neck et al., 2004, Suresh and Ramraj, 2012, Foster et al., 2013, Motoyama and Watkins, 2014, Fuerlinger et al., 2015, Spigel, 2017). Each takes a unique perspective of describing the elements and their relationships which constitute flourishing ecosystems in which mice and gazelles face conducive conditions to achieve their ambitions.

Isenbergs EE domains

One particularly influential approach is Isenberg's model which takes a practical perspective rather than a purely theoretical one on the factors that comprise the entrepreneurship ecosystem (Kantis and Federico, 2012, Isenberg, 2011, Napier and Hansen, 2011). His "novel and cost-effective strategy for stimulating economic prosperity" (Mason and Brown, 2014, p. 5) reveals that an entire entrepreneurial ecosystem in which self-sustaining entrepreneurship is prevalent, consists of six domains as shown in Figure 1: a supportive culture, enabling policies and leadership, availability of finance, quality human capital, venture friendly markets for products and a range of institutional supports (Mason and Brown, 2014).

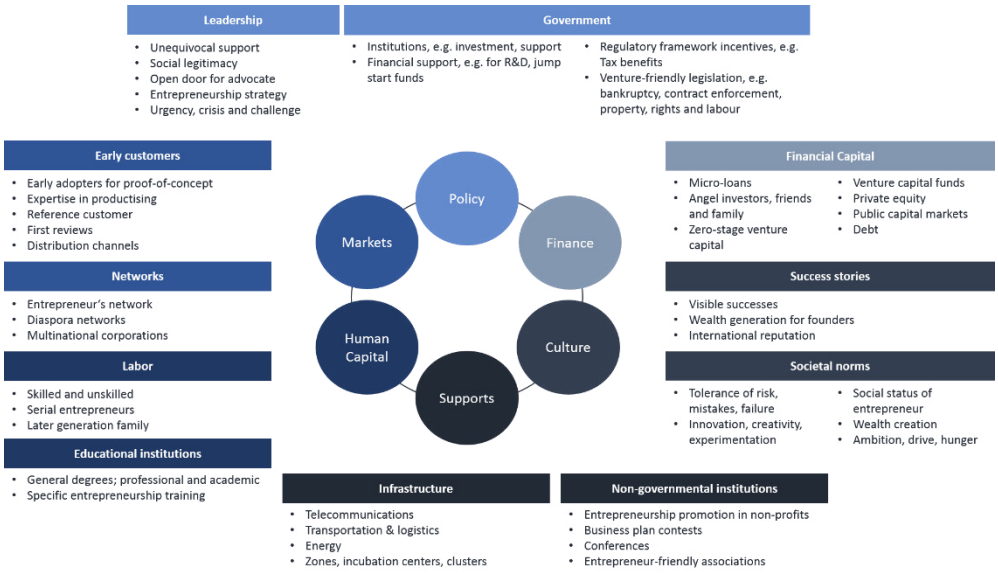


Figure 1: Isenberg's six domains of entrepreneurial ecosystems (Isenberg, 2011).

The following paragraphs will synthesise Isenberg's domains with the most commonly cited domains, models and features proposed by other researchers which tend to be intersecting and have a significant influence on each other.

EE's heart – Entrepreneurs

At the heart of each ecosystem are the entrepreneurs themselves, the most valuable resource due to their ability of identifying and realising ideas (Ardichvili and Cardozo, 2000, Hansemark, 2003, Shane, 2003, Segal et al., 2005, Cassar, 2007) and as a central players in building and maintaining a flourishing garden of entrepreneurial liveliness (Feldman, 2014). This is due to the numerous roles entrepreneurs take across a span of entrepreneurial ecosystem's domains which mostly stem from the spill-over effects that successful entrepreneurs bring along with their exits. Isenberg (2011) describes this process of "entrepreneurial recycling" (Mason and Harrison, 2006) and its effects as follows: "Entrepreneurship,

[…] when successful becomes like a hobby or sport which entrepreneurs pursue for a mix of motives […]. It becomes a positive addiction, one in which […] "entrepreneurship addicts" become angel investors, or advisors, or venture capitalists, or board members, and likely a combination, feeding back their experience and wealth to generate more entrepreneurship. […]. In sufficient quantities, these activities leave a region indelibly imprinted" (p. 5).

Hence, a critical mass of successful entrepreneurs can impact the entrepreneurial ecosystem, both on the inside as well on the outside. On the inside, they can act as role models (Bosma et al., 2011), embrace newcomers and encourage other members of the community by sharing knowledge, experiences, and innovative ideas (Wenger and Snyder, 2000, Davidsson and Honig, 2003, Herrmann et al., 2015), which is essential to the emergence of a self-sustaining entrepreneurial ecosystem (Napier and Hansen, 2011). Even further, Isenberg's (2010) "law of small numbers" states that it only takes a few exceptionally successful entrepreneurs frequently referred to as "entrepreneurial blockbusters" (Napier and Hansen, 2011) to realise spill-over effects . Due to the spill-over effects of success stories on various domains of an entrepreneurial ecosystem, it has been recommended that successful exits and high-growth ventures should be "over-celebrated" in the media and public speeches of governmental authorities (Isenberg, 2010). Outside the ecosystem, this can lead to an increased awareness of the place among investors, qualified workforces, entrepreneurs and other people who may then move to and thus enrich the system (Feld, 2012).

However, not all new ventures turn out to be success stories as they are mostly unproven ideas and hence might fail during their development (Blank and Dorf, 2012). Therefore, the attitude of people towards failure is crucial in entrepreneurial ecosystems. In an environment, in which failure is seen as a crucial element of learning (Isenberg, 2011) and entrepreneurship is respected as a worthy occupation, risk-taking and dealing with uncertainty is legitimised and consequently, new venture creation is fostered (Feldman, 2001, Kibler et al., 2014).

Further, a supportive culture for entrepreneurship is also coined by porous boundaries within ecosystems (Saxenian, 1996) as it implies sharing of strategies, relationships, ideas and resources. Further, a "give-before-you-get-mentality" with which people encounter each other and an acceptance of employees moving from one company leads thriving entrepreneurial activity (Feld, 2012). Especially,

"bridging assets", such as "liaison-animators" (Sweeney, 1987) and "deal-makers" (Napier and Hansen, 2011) are critical in building information-rich and well-connected ecosystems. While the latter are usually well-connected and experienced business people connecting resources and people to young companies, the former consist of individuals whose mission is to connect.

Human Capital

Apart from connected and visible entrepreneurs and bridging-assets at the heart of the ecosystem, also a pool of talent encompassing a broad range of sectors and areas of expertise willing to work at start-ups is essential for the sustained growth for young ventures (Stam, 2015). Whereas on the one hand, people from outside will be attracted to move into the system once a place has diverse jobs to offer (Chen and Rosenthal, 2008), on the other hand, local resources are crucial, especially when an entrepreneurial ecosystem comes is in its early stages. Hence, universities and business schools, fostering entrepreneurial mindsets in students and encouraging them either to start new ventures or work in them, act as sources of additional human capital (Nelles et al., 2005, Isenberg, 2011). While their role as a spin-off organisation is controversially discussed mainly due to their "absurd licensing terms and overreaching, restrictive IP protection" (Feld, 2012, p. 39), their most important contribution to a start-up community is "it's students who bring new ideas and increase the intellectual capacity of the community" (Mason and Brown, 2014). Hence these institutions should be well-connected to the community (Stam and Spigel, 2016).

Finance

Next to human capital, financial capital is crucial (Cassar, 2007, Lerner, 2010, Lee et al., 2015), which can be provided by family and friends, banks, venture capital firms, business angels, and alternative sources such as peer-to-peer lending and crowdfunding, which are gaining increasing importance (Malecki, 2011, Mason and Brown, 2014). While the importance of venture capital as a critical financial resource is questioned, a critical amount of early investors such as business accelerators and business angels is essential (Mason and Brown, 2014, Stam, 2014). Moreover, a well-developed system which helps new ventures to transition between the different types of funding sources is benefitting their ability to grow and upscale (North et al., 2013).

Markets

As Isenberg (2011) states that "the money from a profitable customer is the sweetest form of finance for the entrepreneur" (p. 6), he highlights the importance

of earnings from operational activity next to external finance and thus the importance of markets in the ecosystem.

Firstly, the availability of strong local markets and customers with specialised needs creates opportunities for new ventures. Secondly, the presence of a curious community willing to be early adopters and hence serving as a proof-of-concept is essential as early ventures rely on fast feedback to their innovative products or services (Herrmann et al., 2015). While local markets provide start-ups a platform to build up their capabilities for future expansion (Feldman, 2001), the unconstrained access to global markets is ultimately essential (Spilling, 1996).

Moreover, a thriving ecosystem is said to depend on the presence of social networks that allow a free flow of knowledge and information which helps members in the community to perceive gaps in products, services and suppliers in the local but also distant markets (Dubini, 1989, Neck et al., 2004, Mason and Brown, 2014).

Therefore, the infrastructure, especially the physical and virtual connectivity of an entrepreneurial ecosystem has been mentioned as a factor enhancing venture creation and growth (Wiklund et al., 2011).

Support

Intermediaries such as co-working spaces, incubators and accelerators as places where founders have the possibility to work, connect and in some cases receive preparation for attaining first investors may accelerate the growth of an ecosystem (Isenberg, 2014). While a large number of events (e.g. meetups, bootcamps, pitch days, startup weekends, hackathons and competitions) for the community to connect with visible and authentic participants is stated to be an essential prerequisite (Herrmann et al., 2015, Stam and Spigel, 2016).

Besides, professional service providers, e.g. lawyers, accountants, business consultants, real estate and recruitment agencies, familiar with the unique needs of start- and scale-ups take an important role in the support domain. Often they assist young firms at no charge in the expectation of a long relationship or as an equity-for-service arrangement (Spigel, 2016, Koch and Stahlecker, 2006, Isenberg, 2010).

Policy

Most leading proponents of the entrepreneurial ecosystem approach agree that such systems must grow organically through the interaction of several participants.

Whereas on the one hand especially the role of the private sector was emphasised, which might has the competence to intervene holistically in the development of entrepreneurial ecosystems (Foster et al., 2013), on the other hand it was stated that "the government has the mandate to intervene holistically, but not the competence" (Isenberg, 2011, p. 11).

Hence, well-established proponents of the entrepreneurial ecosystem concept agree that governments cannot simply "implement" an entrepreneurial ecosystem or copy successful ones such as Silicon Valley (Autio et al., 2014, Isenberg, 2010). Therefore, aiming to derive the most appropriately funded support programs designed to encourage entrepreneurship, an extensive amount of research was conducted. Whereas most public policies were directed at enhancing the number of mice, recent public policies shifted the focus towards fostering gazelles. This involved a shift from support mechanisms such as providing public funds, tax incentives for investors (Foster et al., 2013) or investments in R&D towards policies which intend to optimise framework conditions for the participating actors. This will encourage the entrepreneurial community itself and hence facilitate networks and peer-based support (Mason and Brown, 2014, Isenberg, 2011). Furthermore, policymakers can reduce bureaucratic and regulatory requirements (Isenberg, 2010, Huggins and Williams, 2011), support public research institutions (Morales-Gualdrón et al., 2009) and guarantee a tight network of basic infrastructure that helps to attract human capital into the ecosystem (Ewers, 2007).

Overall, while policymakers can enhance the supportive conditions for entrepreneurial gardens to blossom and cultivate, it was stated that "when a start-up community starts relying on the government as a leader, bad things happen" (Feld, 2012, p. 63). It was further claimed that governments which are driven by relatively short-termed electoral cycles should leave the role of the leader to active entrepreneurs who have recognised that the process of building a vibrant community and an entrepreneurial ecosystem takes time (Mason and Brown, 2014).

2.3. Summary

Even though various components and models of entrepreneurial ecosystems have been proposed and the concept gained widespread acceptance (Peltoniemi and Vuori, 2004), many "fundamental conceptual, theoretical and empirical questions"

(Stam, 2015, p. 1764) have been unanswered. These include the lack of a widely-accepted understanding and a clearly defined geographical level. Moreover, previous studies focused on superficial generalisations, were predominantly based on best cases and widely neglected the evolutionary process (Stam and Spigel, 2016, Alvedalen et al., 2017).

Furthermore, each of the discussed domains and its numerous determinants interact in idiosyncratic ways, and subsequent multi-dimensional cause-effect relationships underlie the complex nature of entrepreneurial ecosystems (Isenberg, 2011). Due to this complexity, a holistic view is necessary which requires knowledge about every single domain, interconnection as well as the roles that the participating actors and institutions play within the specific ecosystem (Isenberg, 2011, Spigel, 2016). Such actors are, for instance, large firms, universities, banks and service providers (Brown and Mason, 2017).

While research has looked at some components more frequently, such as the role of universities, “the role of large existing firms, in contrast, is often downplayed with the EE literature” (Brown and Mason, 2017, p. 15). Though prior literature reveals that “there is considerable evidence which shows that large, incumbent firms play a central role in configuring some ecosystem” (Brown and Mason, 2017, p. 15), it is spread across literature from various research domains and has not yet been brought together.

3. THE ROLE OF CORPORATIONS IN ENTREPRENEURIAL ECOSYSTEMS

3.1. The co-existence of elephants and gazelles in entrepreneurial ecosystems

Literature which explores the roles corporations take within entrepreneurial ecosystems stems from two dimensions; firstly, direct interaction and cooperation of bringing gazelles and elephants together and secondly, indirect impacts at the ecosystem level.

Collaboration benefits

Direct interactions increased tremendously since globalisation, digitalisation and innovations from entrepreneurial communities flattened the world – these developments are still threatening well-established elephants (March, 1991, Roberts, 2007, Enkel et al., 2009). As a response, elephants turned to mice and gazelles to transform them into engines of corporate innovation and to regain an advantageous trait and (Kupp et al., 2017). Such cooperation is beneficial for both as each has what the other lacks; the elephants have the resources needed for growth, brand credibility and an easy access to the market (Stinchcombe and March, 1965, Freeman et al., 1983), while gazelles have the talents with promising ideas, the agility to change and the willingness to deal with risk and digitalization. Therefore, collaboration has surged and moved increasingly towards formalised programs and ecosystem engagement (KPMG, 2015) which take various forms as shown in figure 2:

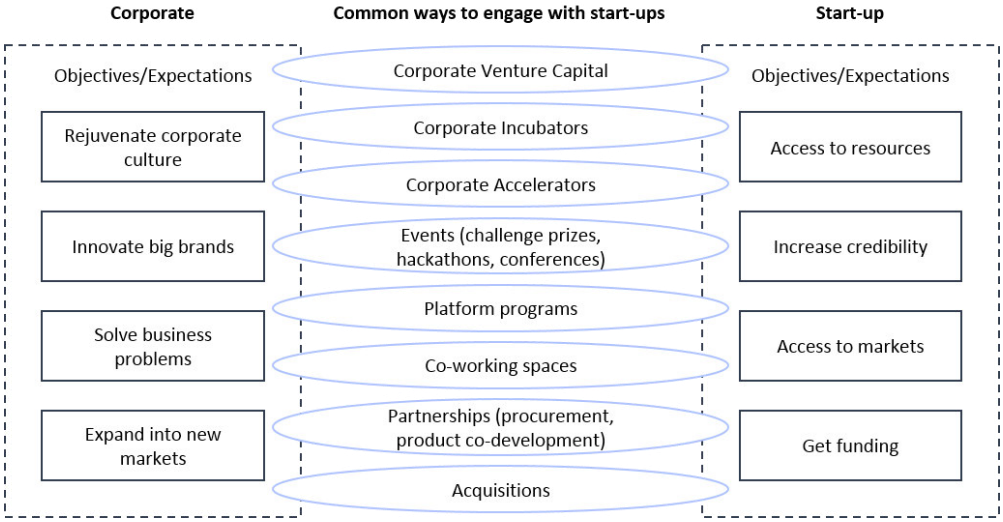


Figure 2: Common ways of corporate start-up engagement with each side's objectives (based on Mocker et al., 2015, Kohler, 2016).

As mentioned earlier, there is no research which provides a comprehensive overview of the roles elephants take within entrepreneurial ecosystems. Hence,

literature which explores the direct and indirect impacts on entrepreneurial ecosystems will be brought together and synthesised according to the six domains which constitute self-sustaining ecosystems.

3.2. Established literature on the role of corporations in entrepreneurial ecosystems

3.2.1. Culture

Role models, lighthouses

Mason and Brown (2014) argue that locally headquartered businesses are most effective in stimulating an entrepreneurial ecosystem as they provide a sustainable amount of senior management jobs as well as local shareholders "and the business is likely to be embedded, with a strong commitment to the local area" (p. 9).

Once the local corporation created considerable wealth for founders, investors, managers and employees, they reinvest their wealth and experience as investors, mentors and serial entrepreneurs (Mason and Brown, 2014). This relates to Isenberg's "law of small numbers", as explained in section 2.3. The effect has been observed in various clusters (Mason, 2008), such as in Seattle where Microsoft had a significant role in its development as a hub for software development or in Finland where Nokia was once the sole entrepreneurial "training ground" (Mayer, 2013) and centre of entrepreneurial activity but led to the emergence of a vibrant start-up community (Mason and Brown, 2014). In these clusters, successful corporations act as role models on the inside of the ecosystem and as lighthouses on the outside of it by proving that the present resources make it possible to create a successful venture in the region (Napier and Hansen, 2011).

Entrepre-neurial aspirations

But as not all mice and gazelles turn out to be successful, tolerance to entrepreneurial failure and a high valuation of entrepreneurship are important foundational characteristics of entrepreneurial ecosystems (Isenberg, 2011). Research proposed that large companies can deliberately and unintentionally contribute towards a supportive milieu of firm creation by disseminating a risk-taking culture in the area (Napier and Hansen, 2011).

Corporations can intentionally create cultures of entrepreneurship by raising awareness and providing legitimacy for an entrepreneurial mind-set through hosting business plan competitions. Further, targeting students through

competitions could increase the pool of those considering an entrepreneurial path (Ritsila, 1999, Murphy, 2010).

Influence of dominant industries

Moreover, a local market which is coined by dominant industries associated with distinct cultural and social attributes can heavily influence the norms and culture of the region. An example is the oil and gas industry in Calgary, where "oil dominates the economic and social life" (Spigel, 2017, p. 59) which created a culture in which personal wealth is attributed the highest social reward and resulted in a persisting preference to work for a large corporation rather than a start-up. Since most of the region's entrepreneurship builds around this local market, its cultural attributes shifted the focus of entrepreneurship towards the wealth creation aspect of it. Hence, new firms focused on fast growth rather than innovation and the community showed less interest in building networks with other entrepreneurs (Spigel, 2017).

3.2.2. Human capital

Both elephants and gazelles rely on the availability of skilled employees, making human capital one of the most crucial elements of an effective entrepreneurial ecosystem (Lee et al., 2004, Qian et al., 2013).

Talent magnets

Corporations which act as talent magnets and thereby increase the locally available workforce were identified as high-reputation, technically oriented organisations which offer positions in a range of functional areas. These organisations provide jobs for both indigenous employees and those who were attracted to the region by the quality of employment opportunities and the quality of life. As these talent magnets require large numbers of new employees every year, they attract many talented graduates, highly skilled scientists and engineers from outside the region. Therefore, they play a crucial role in the development of technology clusters (Harrison et al., 2004, Feldman et al., 2005).

Further, places with many large organisations are attractive to highly qualified workers because they allow the possibility of pursuing a "horizontal" career and also offer the prospects of moving to another organisation in the event that the initial job did not work out (Florida, 1995).

Training providers

Apart from attracting skilled labour to a region, corporations also provide valuable training for their employees and hence contribute to the development of a

managerial talent pool in the region (Adams, 2011, Mason and Brown, 2014, Aaltonen, 2016).

While corporations provide training for new graduates from universities to think like businessmen, scientists and engineers improve their technical skills during the course of their employment. Moreover, job mobility within the same or in different organisations is crucial as employees who get the chance to work in various management functions, acquire interdisciplinary management skills, which are very valuable for start-ups (Harrison et al., 2004, Neck et al., 2004, Napier and Hansen, 2011, Mason and Brown, 2014). While otherwise, in case corporations train their personnel narrowly and organise them so that engineers only talk to engineers, the ecosystem might lack skilled workers with the cross-functional knowledge and management which could be an essential requisite for a versatile founding team (Cooper, 1973).

Incubator organisation

Although Harrison et al (2004) note that most entrepreneurs in Ottawa's high tech firms had several jobs before starting their own business, especially the established organisation for which the founder worked before beginning his or her own company plays a vital role in the development of employees. These organisations are termed "incubator organisations" (Cooper, 1985) and are generally the setting in which the decision to start a new business is made (Harrison et al., 2004). Hence, it is the source of the "displacement" or "trigger event" which sets the business start-up process in motion (Harrison et al., 2004). Such trigger could be a market opportunity, which arose from the employee's knowledge of technology, customer or supplier environments of the incubator organisation or an excess invention which the incubator organisation was not interested in commercialising (Harrison et al., 2004, Audretsch and Lehmann, 2005, Aaltonen, 2016). In many cases, negative reasons triggered the entrepreneurial decision, which are summed up in Saxenian's (1996) observation that 'Silicon Valley entrepreneurs [...] were typically engineers who were frustrated by unsuccessful attempts to pursue new ideas within the region's established companies"(p. 112).

The relationship between the incubator and its spin-offs can be of two types: implicit, when the incubator organisation was not aware of the employee's plan to leave, as well as explicit, in case the incubator organisation knew about the employee's plans (Neck et al., 2004). Even further, some multinational corporations provide employees sabbatical leave to experiment with their entrepreneurial ideas,

with the option of returning to the company if the start-up fails (Subrahmanya, 2017b).

The characteristics of the incubator organisation influence entrepreneurship in many ways. Firstly, established organisations influence the nature of the newly founded businesses as entrepreneurs tend to exploit what they knows best. Hence, they mostly use the same general technology or served the same market as the parent company (Cooper, 1985). Secondly, during their employment period entrepreneurs developed various relationships and hence established social and professional networks (Brown and Mason, 2017). These networks may prove to be valuable during the entrepreneurial process as they may lend credibility when approaching external investors for funding or when identifying and recruiting suitable employees (Harrison et al., 2004). Thirdly, the incubator organisation affects the location of the new firm as entrepreneurs tend to found their companies in close proximity to the incubator organisation. While avoiding disrupting family ties and locational preferences may play a role, most crucial factor are the social networks as they provide the resources and social support required during the founding process (Sorenson, 2005).

But even among firms in the same geographical region spin-off rates appear to vary widely. Some organisations function as incubators to a much greater extent than others as the nature of the organisation is critical in determining whether spin-offs actually occur (Cooper, 1973). A study by Harrison et al. (2004) finds that small firms are more often the source of entrepreneurs rather than large corporations as they provide knowledge about what is involved in starting and managing a new firm and hence are “better training grounds” for both entrepreneurs of technology firms (Cooper, 1970, Cooper, 1973) and in general (Cross, 1981, Fothergill and Gudgin, 1982, O'Farrell, 1986).

Furthermore, effective incubators need to provide employees exposure to leading-edge technology and an understanding of markets and customers to identify business opportunities (Mason and Brown, 2014). Hence, while production-oriented branch plants that lack R&D and management functions are poor incubators (Malecki and Nijkamp, 1988), exponentially growing firms operating in a premature industry of pioneering technologies are most effective incubators. Typically, such organisations generate too many commercial opportunities to take advantage of themselves (Garnsey et al., 2006). In case incubator firms serve

markets that are stable or declining or are in industries which require significant capital investments, future entrepreneurs might struggle to get the required funding or find a lack of incentives to enter the field (Cooper, 1973).

Overall, it has been noted that although most incubator organisations are small firms, entrepreneurs have significant prior working experience in large firms (Garnsey et al., 2006). In regions in which organisations with poor spin-off characteristics dominate, it was proposed that the first new firm is either not related to the business of the parent firm or established by a founder from another geographical location (Cooper, 1973, Shapero, 1971).

Characteristics of Industry	
Low Birth-Rate	**High Birth-Rate**
Slow industry growth	Rapid industry growth
Slow technology change	Rapid technological change
Heavy capital investment required	Low capital investment required
Substantial economies of scale	Minor economies of scale
Characterstics of Established Incubator Organizations	
Low Birth-Rate	**High Birth-Rate**
Large number of employees	Small number of employees
Organized by function	Product-decentralized organization
Recruit average technical people	Recruit very capable, ambitious people
Relatively well-managed	Afflicted with periodic crises
Located in isolated area of little entrepreneurship	Located in area of high entrepreneurship
All the attributes in a given column are not necessarily found together nor are they required to bring about a given spin-off rate. Various combinations may exist.	

Figure 3: Industry and organisation attributes related to the birth-rate of new firms (adopted fromCooper, 1973).

One factor which has significant impact on the birth-rate is the economic success of the incubator organisation. If the established firms are well-managed, avoid periodic crises and provide high wages, there may be little incentive for potential founders to leave comfortable positions at high switching costs to be an entrepreneur (Erina et al., 2017). Under such conditions, there might only be few successful founders present in the region which could bolster the confidence of the employee or provide advice in the process of establishing a new business (Cooper, 1973). Moreover, there may only be few local sources of venture capital experienced in investing in new firms are hence making contact with possible investors may be time-consuming (Cooper, 1973).

On the contrary, the death or shrinkage of large corporate incumbents can have a positive influence on entrepreneurship in their environment (Isenberg, 2013). This

'Whale fall'

is called “whale fall” as in the same way a dead whale becomes a seabed flora and fauna for hundreds of species, released talents often adapt quickly to the new environment and many start their firm or join other start-ups (Neck et al., 2004, Isenberg, 2013). Many examples of “whale-fall” leading to higher rates of new venture formation were observed such as in the Waterloo-Kitchener region of Canada as a result of the decline of RIM (maker of Blackberry) and in Helsinki with the shrinkage of Nokia (Mason and Brown, 2014). Also in Boulder IBM’s downsizing contributed to the city’s success as a vibrant entrepreneurial community as people were certain that “IBM may not stay but IBM talent is here to stay” (Isenberg, 2013).

3.2.3. Finance

Corporate Venture Capital

Besides corporations’ ability to contribute to a large pool of skilled labour, they can significantly increase financial resource capacity in the ecosystem such as by taking the role of a strategic investor or financing partner (Foster et al., 2013). A growing form of financing is direct investments, which are often referred to as corporate venturing. Through such investments, corporations receive a minority percentage of the start-up’s equity. An increasing number of corporations is establishing corporate venturing arms, either run internally, as a subsidiary or as a joint investment fund supported by private and public investors (Clark, 2013). This can boost the corporation’s profits and may have a strategic benefit of interacting with new technology.

Acquisitions

Acquiring start-ups is the logical extension of corporate venturing and can either result in merging the young venture into the already existing organisational structure or in keeping it as a subsidiary of the corporation. These are impactful ways to extend capabilities, acquire complementary technology and to enter new markets. It also aids corporations in solving specific business problems by acquiring the talent, skills and expertise of a team (WEF, 2018). Such an acquisition can further be an exit opportunity for a start-up, especially for those that fall short of commercialising an otherwise good innovation (Napier and Hansen, 2011). Studies reveal that these exit opportunities concentrate in large Silicon Valley corporations and contribute significantly to the development of industry in the Valley (Aaltonen, 2016).

However, research revealed that gazelles which grow to locally headquartered companies can create beneficial financial spill-over effects and thus stimulate the

ecosystem. Therefore, young firms which grow by gaining financial capital through an IPO were claimed to be more valuable for the ecosystem than those which were acquired by a multinational corporation (Mason and Brown, 2014).

Business angels and venture capital

Moreover, corporations can also directly impact the ecosystems financial resources, especially if region is driven by a strong and wealthy industry as those tend to have more potential angel investors and venture capital firms (Mayer, 2013). As most business angels favour investments in businesses that are in close geographic proximity (Harrison et al., 2004), the local entrepreneurial ecosystem might benefit.

A study placed in Calgary revealed that high wages of the present oil and gas industry created many investors who serve as an important resource for entrepreneurs. But as most of these investors had the same industrial background, they did not have the ability to invest and advice firms outside this sector (Spigel, 2017). Hence, "while there is substantial investment capital to be found in the ecosystem, not all entrepreneurs have equal access to it" (Spigel, 2017, p. 62).

3.2.4. Markets

Customers, proof of concepts

Isenberg states that "providing support to entrepreneurs in form of space or capital or loans is meaningless unless more mature companies are willing to engage start-ups as potential suppliers" as "entrepreneurs need early customers to talk to in order to define products and levels of service and serve as references […]." (Isenberg, 2011, p. 8)

Established firms can provide early market support (Subrahmanya, 2017b) by acting as important initial "lighthouse customers" (Foster et al., 2013, Eliasson, 2000, Napier and Hansen, 2011) and borrow their credibility to young ventures through brand displays and references which can often be the tipping point between success and failure, or between starting and scaling up (Grando, 2016).

Strategic partnerships

They often form strategic business partnerships which can range from relatively short-term, transactional engagement to a long-term, committed relationship (WEF, 2018). These partnerships can take the form of product co-development partnerships, which may include procurement and joint research and development partnerships. On the corporations' side, such a partnership can provide a solution

to a business problem or access to cutting-edge technologies and new business models (Chesbrough, 2006).

New market opportunities

Large corporations which require complementary products and services to foster their business ecosystem (Moore, 1993) can trigger the creation of new markets (Clarysse et al., 2015). Along these lines, few large companies created programs to encourage entrepreneurs to build complementary technologies (Feld, 2012) such as Apple's and Google's store for mobile applications (Gawer and Cusumano, 2014). In this case, the corporations provide technology resources which start-ups can use to build complementary products and hence, further strengthen the platform (Grando, 2016).

Moreover, large corporations can deliberately create market opportunities due to outsourcing activities, in which they redistribute significant portions of their business to reduce risk during downturns. Thereby corporations might also create numerous entrepreneurial opportunities across multiple management and specialised functions such as product management, human resources, logistics and customised software development and hence drive an entrepreneurial ecosystem that provides resources for entrepreneurs both inside and outside the corporations' industry (Spigel, 2017)

Even though many market opportunities can be exploited from distant places, strong local markets are of distinct importance in catalysing the development of an entrepreneurial ecosystem (Stam and Spigel, 2016). Domestic customers, which also encompass large corporations with specific and specialised needs create opportunities for start-ups (Foster et al., 2013, Spilling, 1996). Local entrepreneurs, who are in close contact with these potential customers, are able to do market research and identify opportunities within the local marketplace (Stam and Spigel, 2016, Foster et al., 2013). Moreover, Motoyama and Mayer (2017) found that the growth of a company often came from its ability to find a problem and derive a market niche from it. Similarly, Parker et al. (2010) claimed that high-growth firms tend to have a strong market orientation and emphasise customer engagement.

Moreover, large exogenous firms can provide essential links to markets beyond the regional borders. These provide markets insights which entrepreneurs can exploit (Tappi, 2005) and commercial opportunities for local businesses, which is of particular importance in peripheral regions (Mason and Brown, 2014). In this way,

UK's oil and gas ecosystem in Aberdeen enabled small businesses to reach out to international energy companies operating in the North Sea. Based on these relationships, SME's gained access to other foreign oil and gas markets (Raines et al., 2001).

While many entrepreneurial ecosystem models highlight the role of access to customers in foreign and domestic markets (Isenberg, 2011, Foster et al., 2013) and high-growth firms reported plenty of benefits working with a corporation, it was also said that "without specific large joint customer opportunities, small companies waste astounding amounts of energy trying to gain their attention" (WEF, 2018, p. 21).

Networks

In addition to access to global markets, the presence of multinational corporations with offices in other innovative or R&D intensive locations can also provide access to entrepreneurial and innovative capacity in distant regions. Employees can build business relationships or even move to other offices for a particular time, hence extending their networks which might enable a flow of talent and funds and gaining exposure to innovative and entrepreneurial cultures.

Bangalore, a widely-recognised entrepreneurial ecosystem has particularly benefitted from the presence of a large number of MNCs with close connections to Silicon Valley. Hence, a good amount of employees who spend time in Silicon Valley had exposure to start-ups and developed an inclination to become start-up owners back home (Subrahmanya, 2017a).

Builders of industrial patterns

Furthermore, the industries on which large corporations are based coin the constitution of an ecosystem. As most successful ecosystems typically comprise concentrated powerful companies based on one or a group of particular industries, which attracts entrepreneurs with ambitions to set up in this specific industry (Isenberg, 2011, Best, 2015). While a dominant industrial pattern is beneficial to young ventures within the sector, it might also impose more difficulties on entrepreneurs outside the dominant sector to access the ecosystem's labour pool, investment capital, and social networks (Spigel, 2017).

Another important factor are the markets and technologies on which the area's industry is based. If rates of market growth and technological change decline, entrepreneurship might decline, and potential founders might find fewer areas of opportunity (Cooper, 1973). This effect increases with more firms focusing on a

narrow industrial sector as it allows the decline and even disappearance of an ecosystem (Mack and Mayer, 2016).

Hence, scholars found that thriving ecosystems appear to encompass entrepreneurial dynamism which exceeds industries and individual technologies (Malecki, 2018). Moreover, entrepreneurs are less likely to share a market or sector than a core technology and challenge such as coding and growing a new venture (Spigel, 2016). Thus, it was stated that entrepreneurs within an ecosystem benefit most from exchanging experiences and knowledge about the entrepreneurial journey itself rather than particular sector or market knowledge (Pitelis, 2012). Consequently, the presence of multiple organisations capable of supporting entrepreneurs across a variety of different industries promotes dynamism within ecosystems (Pitelis, 2012).

3.2.5. Support

Moreover, corporations can provide support and infrastructure which connects entrepreneurs and enables exchange among them.

Events

While anchor events and conferences serve as "platforms for the creation, maintenance, and rejuvenation of the relationships fundamental to the development of ecosystems" (Autio et al., 2014, Cukier et al., 2015), corporations can provide event spaces open to the ecosystem (Feld, 2012, Lester and Piore, 2006). Moreover, they can sponsor hackathons or competitions (KPMG, 2015) which offer start-ups the opportunity to win a monetary prize, to practice their pitching capabilities and to network with other entrepreneurs, mentors and potential customers (Briscoe, 2014). For the corporation, such an engagement with the entrepreneurial community can be a good opportunity to interact with entrepreneurial mind-sets, learn about new ideas and trends in technology, to trigger an internal culture change and strengthen the innovative image of the brand.

Co-working spaces

Moreover, an increasingly common way used by corporations to build a more innovative brand is to share resources with start-ups (Accenture, 2015b). This could either be in form of eased access to corporation's tools, products and services such as physical co-working spaces. These provide flexible office environments, either

for free or rent whereas their leasing terms are usually tailored towards the very dynamic nature of start-ups (Mocker et al., 2015).

Accelerator, incubator

Further, large corporations can also contribute to the dynamics of entrepreneurial ecosystems in a variety of other ways such as by offering meeting space, mentorship and advice, e.g. insights into new markets and industry structures (Foster et al., 2013). This could be provided through formalised programs such as incubators and accelerators (Becker and Gassmann, 2006, Bruneel et al., 2012) which have rapidly grown in number during the past ten years and today, thousands of them are attracting start-ups (WEF, 2018). These incubators or "start-up factories" (Miller and Bound, 2011) offer a co-working space and additionally are designed to support growth-oriented new ventures via intensive coaching, funding, and peer-based mentoring (Clarysse et al., 2015, Dee et al., 2011). After a start-up spent its early days in the incubator, it could be integrated into the corporation's existing or future business activities, could exploit markets as an independent spin-off or could be sold to another corporation (WEF, 2018). Accelerator programs usually offer tangible and intangible services from the same range as the incubators, but are time-limited (e.g. three to six months) and provide a more intense process of learning, testing and iterating the young ventures business model. Further, they usually have strong connections to networks of business angels and culminate in a 'demo day' to investors (KPMG, 2015).

While both – accelerators and incubators – might train start-ups in methodologies such as agile methods (Abrahamsson et al., 2017), lean start-up (Schwab, 2013), customer development (Brannback et al., 2008), and disciplined entrepreneurship (Brannback et al., 2008), they also enhance building networks. These help new entrepreneurs to learn informal and formal skills associated with being an entrepreneur and foster an active exchange about new opportunities, markets and technologies within the ecosystem (Stam and Spigel, 2016). Moreover, "the experience of starting in the program at the same time fosters uncommonly strong bonds and communal identity" (Cohen and Hochberg, 2014, p. 10), hence participants often create a supportive community which is coined by knowledge-sharing, feedback processes and emotional encouragement during demanding and uncertain times (Motoyama and Knowlton, 2017). Thus, support programs of corporations further support the network components of entrepreneurial ecosystems.

Regardless of the type of program – either incubator or accelerator – it is the objective of a program which ultimately defines the focus (industries, maturity and size of start-ups, technology, business models and the like), the organizational setting (strong or not so intense corporate linkages, stand-alone or attached to other business units) and appropriate measurement indicators (financial, technological and cultural) (Kupp et al., 2017). The success of these programs mostly depends on goal alignment between the sponsor in the established organisation, the management team and the respective start-up (Accenture, 2015b).

3.2.6. Policies

It was suggested that corporations could provide input into the design and implementation of policies and reforms promoting entrepreneurship. Therefore, they can become representative voices of regional businesses, and through "an open, transparent, and democratic dialogue" (Khattab and Al-Magli, 2017, p. 91) with the government they can provide guidance in shaping an entrepreneurship ecosystem according to local circumstances (Khattab and Al-Magli, 2017).

Contrarily, entrepreneurs from various industry sectors and places have reported the presence of "policies favouring the market incumbent that has a monopoly of the market and close ties to the government" (Drexler et al., 2014, p. 84), suggesting that corporations adversely shape policies for young ventures.

3.3. Summary

Most of compiled research on corporations in entrepreneurial ecosystems was a by-product of holistic studies on entire ecosystems or investigated the specific relation of established businesses and start-ups. Hence, they focused on the broad range of forms of collaboration and explored the motives, potential benefits and challenges. At the same time, they neglected the effects of cooperation on the other domains and thus their interrelationships with the entire ecosystem.

The conducted literature review revealed numerous, mostly beneficial impacts elephants could have on each domain of the entrepreneurial ecosystem, as summarised in table 1. Hence, one might conclude that Isenberg's statement claiming the presence of large corporations to be imperative in the growth of

entrepreneurial ecosystems has further been endorsed. However, literature lacks a holistic inquiry into the roles they play and how they impact the domains and interconnections within the concerned ecosystem.

	Literature review	+/-
Culture	• **Role models/lighthouses**	+
	• **Entrepreneurial aspirations**	
	– Disseminate a risk-taking culture	+
	– Legitimize entrepreneurial mind-sets	+
	– Legitimize entrepreneurial mind-sets	+
	• **Influence of dominant industries**	-
Human Capital	• **Talent magnets for high-skilled labour**	+
	• **Training providers**	+
	• **Incubator organisation**	+
	• **Whale fall**	+
Finance	• **CVC as financial resource**	+
	• **Acquisitions as exit opportunities**	+
	• **Create pools of business angels and venture capital**	+
Markets	• **Customers' proof of concept**	+
	• **Strategic partnerships**	+
	• **New market opportunities**	
	– Complementary products, market research, outsourcing	+
	– Access to global markets	+
	– Gaining corporations attention causes delays	-
	• **Networks**	
	– Connect to branches in innovative places	+
	• **Building industrial patterns**	0
Supports	• **Events**	+
	• **Co-working spaces**	+
	• **Incubator , Accelerator**	+
Policy	• **Representative voices of regional businesses**	+
	• **Monopoly-focused policies**	-

Table 1: Findings of the literature review on the role of corporations

4. RESEARCH DESIGN AND METHODOLOGY

4.1. Research question

Conclusively, as corporations are said to be a crucial part of the system (Aaltonen, 2016), their role within the entrepreneurial ecosystem and the interplay with other domains, actors and institutions could make a beneficial contribution to the overall research subject.

Isenberg (2011) argues that entrepreneurial ecosystems cannot be understood without considering their unique local situation and specific context. Hence, in order to be able to enhance research findings on entrepreneurial ecosystems, especially regarding the role of corporations, the research will be placed in one second-tier "economic garden" of entrepreneurial activity, Munich.

Despite Munich's increasingly growing entrepreneurial activity, its ecosystem is rarely discussed in recent research, and its location-specific characteristics, as well as the causational relationships between its components, have not yet been explored. In order to provide insights into a second-tier entrepreneurial ecosystem, the research strives to answer first the question:

- What are the place-specific assets, dominant attributes and gaps in the entrepreneurial ecosystem of Munich?

Further, the presence of a strong corporate sector in Munich offers an excellent opportunity to gain additional insights into the dynamics of ecosystems by investigating the impact of established corporations on the individual domains of the ecosystems. Hence, the study strives to enhance established research on the engagement of corporations in entrepreneurial ecosystems by answering the following question:

- Are the propositions regarding the roles of corporations, synthesised from established research, applicable to the corporations present in Munich? Does established literature cover all the roles of corporations that can be found in Munich?

Therefore, by identifying location-specific characteristics of a second-tier ecosystem, the underlying factors and their dynamics will help the stakeholders in the specific ecosystem to gain opportunities for further engagement. Moreover,

the knowledge added to the research stock of entrepreneurial ecosystems might support other municipalities which are establishing and enhancing their ecosystems. Particularly, understanding the impact of corporations on the entrepreneurial ecosystem could help policymakers to align entrepreneurship strategies with private sector development strategies. Thus, the success to manage the interaction and to create synergies of partnerships with the private sector can be increased (Khattab and Al-Magli, 2017).

4.2. The setting – Munich's rising entrepreneurial ecosystem

Munich was selected as a case to explore the role of corporations in entrepreneurial ecosystems because combines the presence of a strong corporate sector with growing entrepreneurial activity.

Being the economic heart of Germany, Munich headquarters seven blue-chip companies listed on the DAX and for the past decade ranked first in the German cities' "stock market league", which attributes companies' market capitalisation to their home city (City of Munich, 2017). Recently, the city received increasing attention for its entrepreneurial ecosystem which provides a great context to investigate the interdependencies between a thriving corporate sector and a young, but rising entrepreneurial ecosystem.

The ecosystems growth is reflected through its increasing recognition in European and international rankings. Lately, it was ranked second in terms of number of start-ups in Germany, eleventh in Europe (Nesta, 2018) and was recognised as Europe's top tech-hub (de Prato and Nepelski, 2014). Even further Munich is among the four German start-up hotspots which are expected to gain in importance (PwC, 2017a) and received attention on a global scale as it was acknowledged in the a renown global entrepreneurial ecosystem report for the first time in 2018 (Startup Genome, 2018).

4.3. Sources and data

A qualitative research approach was chosen as it is able to capture the complexity of an ecosystem and allows for a fundamental examination of Munich's entrepreneurial ecosystem and the impact of corporations within this context. Moreover, as indicated by d'Iribarne (1996) the chosen approach complies with Isenberg's finding, stating that entrepreneurial ecosystems have to be viewed from

a holistic perspective (Isenberg, 2011) and as indicated by Steyaert and Katz (2004) it is valuable in examining "the socially constructed nature of the entrepreneurship process" (Spigel, 2017, p. 57).

In order to gather a solid basis of data, which provides a starting point for theoretical research, an iterative approach with a mixed method of data collection was used. A case study method was predominantly applied as it enables an analysis of complex real-life phenomenon which lack a rigorous examination (Noor, 2008). Further, the respective data stems from semi-structured interviews and secondary sources which was assembled through the process shown in figure 4.

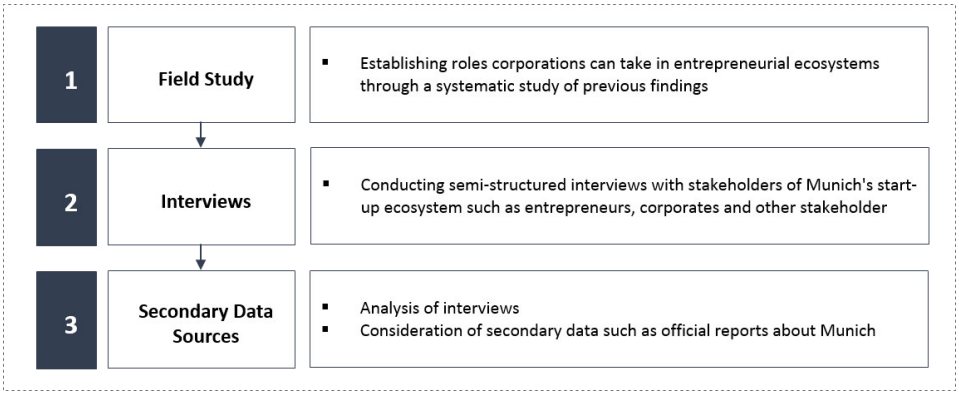


Figure 4: Data collection process.

Field study

Firstly, a field study was conducted to gain initial insights into Munich's entrepreneurial ecosystem and to identify potential interview candidates. Overall, four events were visited, and six interviewees were recruited.

Interviews

Secondly, the semi-structured interviews were conducted among stakeholders within the entrepreneurial ecosystem in Munich. Basic information about the interviewees' background can be obtained from table 2. Overall, the initial base of six interviewees was extended through recommendations, also known as the snowball method (Noy, 2008) as well as through online research. In the end, fourteen interviews were conducted, which allow for a certain variance and divergence in the data. All interviews were held between the 23rd of July 2018 and the 10th of August 2018 and lasted between 30 and 120 minutes. While most of the interviews were conducted in English, four interviews were conducted in German.

Even though an interview guide was designed (Patton, 1980) (see Appendix), the semi-structured interview approach provided the researcher the flexibility to

modify the order of questioning and to add or omit questions throughout the interviewing process (Qu and Dumay, 2011). Thus, later respondents could be asked questions which verified or rejected insights revealed from prior interviewees. All the interviews were tape-recorded, except one in which the interviewee did not agree to recording, and relevant passages of all interviews were transcribed.

Acronym	Current Role	Previous Roles
I-1	Tech Evangelist (Technology and Fashion Scale-Up), Mentor, Business Angel	Entrepreneur, Multiple co-founding roles
I-2	Professor for Entrepreneurship, CEO (University's entrepreneurship centre)	Entrepreneur, Manager (High-Tech Sector)
I-3	Managing Director (Private Start-Up Support Organisation)	Manager (Multiple corporates), Co-Founder (University Entrepreneurship Centre)
I-4	Co-Founder of a FinTech Start-Up	Journalist
I-5	Head of Industry Cooperation at a Government-supported support organisation, Mentor	Venture Manager (High-tech corporate), Entrepreneur, Director (Multiple Organisations)
I-6	Business Angel and Mentor	Serial-entrepreneur
I-7	Managing Director (Accelerator of a multinational telecommunications provider)	Serial entrepreneur, Director at an independent accelerator program
I-8	Founder (Digital division of a multinational professional services network), CEO (University Entrepreneurship Centre)	Serial entrepreneur
I-9	CEO (Founders conference, Innovation education provider)	Various positions at start-ups and consultancies
I-10	Manager (Accelerator Program of a Mass Media Company)	Various positions at start-ups and corporates
I-11	Co-Founder (eHealth Start-Up), Managing Director (Independent Start-Up Hub and co-working space)	CEO (Digital Venture), Manager (Media Corporate)
I-12	Founder (Munich's Business Angel Network), Entrepreneur, Project Manager (Universities Accelerator Programme)	Songwriter
I-13	Project Manager (Start-Up Cooperation at a multinational consultancy)	Entrepreneur, Manager (Multiple corporate accelerator programmes)
I-14	Project Manager (University-affiliated Centre for Innovation and Business Creation)	Entrepreneur, Manager (Multinational consultancy)

Table 2: Overview of Interviewees

Secondary data sources

In a third step, an analysis of secondary data was conducted comprising documentary sources such as reports about Munich, a guide for entrepreneurs in Munich, start-up rankings and few newspaper articles both from print and online media.

4.4. Methods of analysis

The subsequent data analysis was conducted through three steps shown in figure 5.

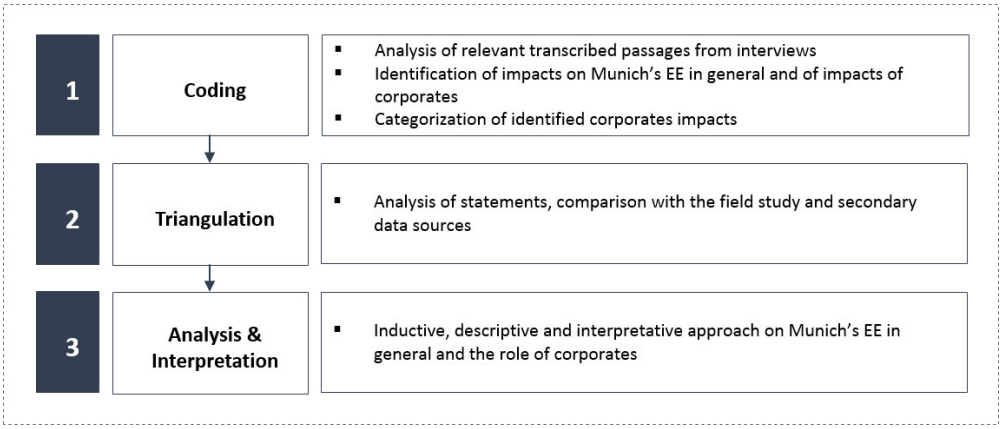


Figure 5: Data analysis process

Coding

In a multistage coding process, the collected data was divided into findings regarding Munich's entrepreneurial ecosystem in general and findings revealing the impact of corporations. The latter were further categorised according to Isenberg's (2011) domains as described in chapter 2.3. Relevant interview passages were compared, and statements were categorised according to the corresponding domain. The compiled categorisation indicated the times they were mentioned and therefore their respective relevance.

Triangulation

All the categorised statements reflect the interviewees' subjective experience of events (Robinson et al., 1991). In order to strengthen their validity, the triangulation method was applied (Andersen and Skaates, 2002). Through comparing the information from the initial observations, interviews and secondary data, the triangulation method allowed for a cross-verification of the findings while moreover, it added further perspectives to it (Deacon et al., 1998).

Analysis & Interpretation

The interpretation of results was conducted in two steps: First, findings regarding the development and current state of Munich's entrepreneurial ecosystem were analysed to provide an understanding of the context in which, in a second step, the impacts of corporations were revealed according to the six domains of the ecosystem.

5. THE BLOSSOMING OF MUNICH'S ENTREPRENEURIAL GARDEN

5.1. The fertile soil of Munich's entrepreneurial garden

When the industrial revolution found its way to continental Europe in the 19th century, Munich was still a mid-sized city with about 100.000 residents and an agrarian economy with no big companies. Today, it is one of Europe's most diversified and balanced city economies and counts 1.53 million inhabitants (Landeshauptstadt München, 2018).

Economic transition

Munich's economic transition from an agrarian municipality to one of the leading high-tech hubs in Europe stems from the times after World War II (Sternberg and Tamásy, 1999). Whereas the first years after the World War II were dominated by poverty, hunger and corruption the situation abruptly changed in 1948. With the currency reform and the help of the Marshall plan, Munich benefitted from the economic recovery of Germany, widely known as the "Wirtschaftswunder" (literally: economic miracle) (Schönenberger, 2014, p. 98). During this period, Munich experienced an influx of skilled workers and benefitted from the relocation of headquarter offices of medium and large companies from Berlin and Eastern Germany. As a result, the arrival of firms such as Siemens and Knorr-Bremse set off Munich's development into a leading high-tech region. Furthermore, moving the headquarters of the leading research institute, Max-Planck Gesellschaft to Munich and founding the Fraunhofer Gesellschaft strengthened the city's position as a research hub (Clark and Moonen, 2014, LSE, 2018).

Development in 1960/ 1970s

During the 1960s and 1970s, Munich-based companies such as BMW and Siemens experienced substantial growth and were able to position themselves in global markets. It was during the same period when substantial and systematic government investments in the knowledge infrastructure, led to the development of new clusters such as nuclear energy, computing and aerospace. These developments pushed the growth of Frauenhofer Gesellschaft into Europe's largest application-oriented research organisation which attracted numerous other research and knowledge institutes to the city (Van Den Berg, 2017). Investments were furthermore directed to the development of Munich's universities. In subsequent years, the city received a great deal of government investments in defence which, such as in the case of Silicon Valley, laid the foundations for the microelectronics industry (Schönenberger, 2014).

Moreover, the 1972 Olympics in Munich laid the cornerstone of the cities excellent infrastructure and public transportation system (Colantonio et al., 2013). The city continued to strengthen its international orientation after the Olympic Games and opened its international airport in the mid-90s, which is today the sixth-largest in Europe (City of Munich, 2018b). While the insurance and banking sector strongly grew during the 1990s, the good national and international flight connections and Munich's central location within Europe has attracted many multinationals like Rosche, Novartis, Airbus, Lufthansa and Sky. Moreover, many foreign ICT companies such as Microsoft, Google, Amazon, Intel, Adobe and Telefonica (BMWi, 2018) have located their German or even European headquarters and innovation labs such as IBM's global Watson IoT research centre (Genome, 2017) in the city and strengthened its global reach.

International corporations

Apart from these multinational and foreign companies, Munich is home to many local corporations which have grown to global players such as Allianz, BMW, Infineon Technologies, Linde, Munich Re, Siemens and several SMEs. Together they span across a broad variety of sectors such as automotive, aerospace, cleantech, ICT, insurance and media and constitute the "Munich Mix", one of the strongest features of the region (Colantonio et al., 2013, I-11, I-7). The public research institutions with over 33.000 employees significantly contributed to Munich knowledge base with the highest number of R&D workers and the highest share of ICT patents within Germany (Prognos, 2010). Till date the city counts 17 academic institutions, among them two elite universities, offering a wide array of technology and business courses to more than 117.000 registered students (Landeshauptstadt München, 2018).

Munich Mix

The deep connections between these public, private and third sectors constitutes Munich's "institutional thickness" (Amin and Thrift, 1995, Colantonio et al., 2013), exhibiting high levels of collaborative relationships and a shared vision of a common regional goal (Spigel, 2016). It contributed towards the ongoing economic success of the region which even despite the negative effects of the dot-com bubble burst in 2002 and the following financial crisis, kept its position as a strong economic centre.

Institutional thickness

But, not only the economic power and the corresponding broad offering of jobs led to the growth from 100.000 inhabitants to Germany's third largest city (Schönenberger, 2014). Also the surroundings with the natural beauty of Lake

Cultural attributes

Starnberg and Mount Zugspitze nearby and the city's unique mix of culture including world-renown museums, opera houses and theatres as well as a broad offering of leisure possibilities, trade fairs and conferences as well as festivals and events, such as the popular 'Oktoberfest' (Peek et al., 2016) make the city an attractive place to live (Peek et al., 2016, I-1, I-9, Colantonio et al., 2013). But there is a price to be paid for its attractiveness: it is one of the most expensive cities in Germany (Statista, 2018, I-7, I-11).

Image

Overall, the city has an image of an economic city where success is highly valued and is renown for its high quality of life, a wide variety and standard of leisure time activities and is often called a pleasant, clean and elegant city (Van Den Berg, 2017). At the same time, it is also known for its Bavarian traditions and beer halls and is often called a conservative city (I-1, I-9, I-7) which reflects in locals appreciation of traditions, "courtesy, demureness and doing the right thing" (Raisher et al., 2017, p. 20).

5.2. The seeds of Munich's entrepreneurial garden

> *„At first glance, the city doesn't appear to be crazy, creative hubs of nomads where everybody is working on ideas to found companies. The first impression is misleading, however Munich has been a huge success story for decades"*
>
> Raisher et al. (2017, p. 9)

While all these attributes constitute the fertile soil of an entrepreneurial garden, along with previous research findings (Van Den Berg, 2017, Schönenberger, 2014), interviewees who had been around for longer in the ecosystem agreed: it is an older ecosystem which has developed over decades in waves.

Foundation of Munich's EE

Despite Munich's long track record of economic development, the first wave of entrepreneurial activity was triggered when Munich's competitive position was under threat during the mid-1990s. During that time, the 1993-1994 recession was taking toil on Munich's economy, aerospace and defence industries declined due to the end of the Cold War (LSE, 2018) and the German reunification and increasing globalisation exposed a risk on Munich's enduring economic growth (Colantonio et al., 2013). This resulted in a drop of the gross value added (GVA) per capita and patenting rates and Munich had to respond to those threats through new strategies to promote innovation and stimulate long-term growth. Hence, the Bavarian state

developed a central high-tech strategy which resulted in almost five billion Euro investment into additional technology, education, research and infrastructure projects which was made possible through the sale of public shares in local firms (Peek et al., 2016). One crucial element of the plan was entrepreneurship; therefore initiatives led to the establishment of the Bavarian-wide 'FLÜGGE' program which aims to increase the number of spin-offs from universities, three start-up centres as well as two business competitions. Taken together with the newly founded subsidiary of the Bavarian state bank, which provided venture capital for start-ups especially in the risky high-tech sectors (Colantonio et al., 2013), the initiatives laid the foundation for the development of the first wave of entrepreneurial activity.

First wave

This wave peaked during the times of the dot-com euphoria during which Munich experienced a strong start-up boom, and many young ventures went public at the "Neuer Markt" (literally: New Market) of the Frankfurt Stock Exchange. With the presence of a lucrative exit channel, Munich evolved as a hub for venture capital. However, this wave surged with the collapse of the dot-com bubble burst in 2000-2001 as the many young companies went bankrupt, the New Market closed down and venture capital almost diminished resulting in a shock for the newly emerging entrepreneurship ecosystem (Raisher et al., 2017, I-2, Schönenberger, 2014).

Foundation for the second wave

While the ecosystem remained relatively inactive after the bubble burst, the federal government had set the basis for the next wave in 1997 in form of the EXIST program (I-2) promoting "networks between universities, capital provider, and service companies to facilitate university spin-outs" (BMWi, 2018) and each of the four Universities established its entrepreneurship centre in 2002. Since then, the universities triggered the recovery of the start-up activities which for the next decade remained at a relatively low and steady level.

Recent wave

While the universities laid the seeds of the last wave of Munich's entrepreneurial ecosystem, it was the global entrepreneurship hype which ultimately watered the fertile soil and seeds around 2011 (I-6). The rise of awareness and importance of entrepreneurship in economies around the world also reached Munich and led to increased cooperation among the university centres while public research institutions and corporations gradually started entrepreneurial support activities in the city.

However, interviewees stated the Munich ecosystem to be still in its infancy in 2013. At that time, a TV program interviewed random people in Munich who were unable to describe the meaning of a start-up, representing the awareness of the general public (I-4). In the same way, I-1 reports that four years ago when he came into the city, he had to search for a long time to find a coffee space where entrepreneurs meet and "the very, very few co-working spaces looked like corporate offices so you would not go and work there."

5.3. The current state of Munich's ecosystem

5.3.1. Latest developments

Interviewees' state that was ultimately around 2015 when start-up activities took off and Munich's entrepreneurial ecosystem started to regain momentum (I-11).

Today, there are "more and more co-working spaces coming up in the city which helps the culture of the ecosystem to foster" (I-1) as well as a rising number of incubator and accelerator programmes out of which most are initiated by corporations or the local research institutes. Besides, "more and more organisations are starting to organise networking events" (I-1) which is illustrated by a 44% increase of meetup events since 2016 (Atomico, 2016) and founders as well as technology conferences such as „Bits&Pretzels"[1], are not only increasing in number in itself but also in terms of visitors.

An increase in start-up activity has also attracted funding sources which at present encompasses around 20 venture capital companies operating in Munich and a network of business angels, the Munich Business Angel Network (MBAN). Hence, Munich ranks 5th within Europe in terms of access to capital according to founders perceptions (Thannhuber et al., 2017).

Overall, Munich has seen an increasing number of start-ups developing in the city and more and more success stories such as Flixbus, Stylight or Westwing (City of Munich, 2018a). In 2018, the city celebrated its first unicorn[2] Celonis (Steger, 2017).

[1] Munich's largest entrepreneurial festival which takes places around the setting of the 'Oktoberfest' and connects 5000 entrepreneurial mind-sets such as investors, politicians, entrepreneurs and hosts popular speakers such as Mark Zuckerberg and Kevin Spacey (Munich Startup, 2018).
[2] Start-ups valued at more than $1 billion (Acs et al., 2017).

5.3.2. Drivers of the development of Munich's entrepreneurial ecosystem

University's entrepreneur-ship centres

All respondents agreed that this development was predominantly driven by the Universities as they contribute to the dynamics of the ecosystem by "attracting foreign people, offering a lot of co-working spaces, entrepreneurship programmes and do a great job in connecting people" (I-1).

The four entrepreneurship centres mentioned previously are each an academic part of the university as well as a private company that can build up its own business operations and therefore is in itself an entrepreneurial model. Among these centres, especially the UnternehmerTUM Centre has been repeatedly named as the lighthouse of Munich's entrepreneurial ecosystem. It is a joint initiative from the Technical University which is dedicated to becoming "The Entrepreneurial University" and Susanne Klatten, a successful local entrepreneur and investor (Schönenberger, 2014). Today, the centre's assets include a tech-focused accelerator, various executive entrepreneurial education programmes and an own venture capital fund. With support for more than 50 high-growth technology start-ups in all different stages each year and cooperation with more than 50 renown companies, it has become Germany's leading centre for business creation (Schönenberger, 2014, I-14, Ziesak and Müller-Starck, 2010).

While today, most successful young ventures have emerged out of at least one of the universities entrepreneurship centres (I-1), their initiatives have "raised the bar on people who are interested in entrepreneurship" (I-8) and contributed towards students seeing "entrepreneurship as a real career opportunity, whereas before it might have been an afterthought" (I-8). Moreover, 5.4% of all founders in Germany were students at the LMU or TUM (Bever, 2018).

Human Capital

Moreover, the universities are one of the main sources of Munich's community of well-educated workforce which is further enlarged through talented people which have been attracted by the strong economic base and the high quality of life. Among many rankings (Mercer, 2018, Prognos, 2016), also software engineers chose Munich among all global entrepreneurial ecosystems as the number one in terms of quality of living (Atomico, 2016). As literature states that "talented people are attracted by places where they can enjoy life" (Castells, 2000), it results in a cumulating effect as "talent tends to attract talent" (Richard, 2002, p. 15). Today, Munich has the second highest concentration of artificial intelligence talent in

Europe, the third highest for virtual and augmented reality and the highest for frontier hardware (Atomico, 2016). Hence, the city's rich talent base is one of the ecosystem's most valued assets as indicated by founders from Europe which were attracted to Munich especially due to its access to talent (Thannhuber et al., 2017).

5.3.3. Barriers of the development of Munich's entrepreneurial ecosystem

However, out of the founders who are attracted to Munich and hence should have a somewhat positive perception regarding the place, less than 60% appraise the quality of entrepreneurial ecosystem (Thannhuber et al., 2017) which corresponds with the consistent notion of the interviewees: Munich is still worlds apart and moreover, behind the development of Berlin's ecosystem. Literature further reinforces entrepreneurs and stakeholders opinions, stating that "despite […] its entrepreneurial history and its recently expanding culture of entrepreneurial endeavour, Munich is not producing many innovative companies that grow rapidly and develop into big global players and […] has not been able to sustain the momentum of the high-growth "Wirtschaftswunder" (Schönenberger, 2014, p. 101).

Mobility of finance and human capital

Even though, Munich has many assets, such as concentrations of mature corporations, SMEs, universities, research and development centres which could be potential sources of resources, the mobility of such, especially of people and capital is not fully deployed. Even though Munich is known for its economic power and its corporations which are increasingly engaging as a cooperation partner for start-ups, they are still not promising exit channels and investors due to their persisting conservative mind-set which avoids risky investments and unproven, new ideas. Therefore, the ecosystem lacks exit channels which together with increased legal restrictions, mainly a result of the financial crisis leads to a limited number of investors willing to allocate capital in this asset class such as venture capital and business angel investors (Fuerlinger et al., 2015, I-8, I-13, Schönenberger, 2014). While at the same time, the mobility of human capital, especially senior professionals interested in working for start-ups is also limited as "many people are a bit more conservative, so they prefer to have a safe job at a big corporation rather than taking the risk of working for a start-up or even founding one (I-1)." Without the necessary financial resources and promising exit stories,

most start-ups are neither able to attract these local experts nor additional professionals, entrepreneurs and co-founders from other regions.

Network

One of the most significant weaknesses of Munich's entrepreneurial ecosystem can be illustrated by the location of the ecosystems lighthouse, the UnternehmerTUM as it is located close to the Technical University on the border of Munich, thus in a „mental desert"(I-9). Hence, the ecosystem is missing a "single point of power" and "a central start-up hub where people interested in start-ups can come together" (I-13). Moreover, respondents perceive the city to be coined by "people who like to be on their own islands […] and closed-societies are often thought to be something great in the city" (I-8). This also affects the feeling in the start-up community as "the mind-set is often dominated by transaction-driven actions, not the karma-driven actions and people often only offer help if they will get something in return but not just because they believe in "paying-it-forward" (I-1).

Additionally, it has been observed that "there are still not as many events as in Berlin" (I-13) as "few networks for female entrepreneurs or networks dedicated for Fin-Tech ventures exist somewhere in Munich, while there are many popular and well-known in Berlin" (I-4). Hence, while the overall ecosystem is perceived to be rather closed and not very visible on the surface of the city, "initiatives like nodes have been started, but there is a lack of connection between them" (I-1). This contradicts the findings of a study conducted by van Weele et al. (2014) which revealed that smaller communities are better connected than large ones. Whereas serial entrepreneurs could play a critical role in connecting these nodes by building a community "from bottom-up, under the line" (I-2) through connecting entrepreneurs and acting as role models, mentors and investors, Munich lacks those as its ecosystem rather consists of start-ups than scale-ups.

Culture

The paucity of new global companies from Munich can be also be attributed to cultural attitudes. Studies (PwC, 2017b, Kollmann et al., 2017) report the motives of Munich entrepreneurs for starting a company to be independence and self-fulfilment which might result in founders giving more importance to keeping the total control over the company than overall wealth creation. Hence, they might not be willing to share equity with other investors but instead prefer to restrict the potential growth and international expansion of the start-up which might be reflected in Munich having the highest rate of self-funded start-ups on a national level (Kollmann et al., 2017). While in Germany a social stigma is attached to

bankruptcy and Germans in general have a low tolerance towards failure (Caliendo et al., 2009, Bosma et al., 2012, Fuerlinger et al., 2015), respondents observed that especially in Munich "founders do not have great visions for their start-ups, they are satisfied with less achievement" (I-7). Hence, many founders do not start out with a global perspective and Munich has not "the international crowd to make up for it" (I-11).

Moreover, respondents criticise that the city does not have the image of being a very diverse and "particularly funky" (p. 202) from a cultural point of view (Van Den Berg, 2017, I-1, I-9). Two reasons have been named: firstly, even though it is Germany's third largest city, it rather "possess the charm and ambience of a postcard village" (Raisher et al., 2017, p. 19) and might not feel like a "real city" (I-1). At the same time, the city has an image of an economic city, it is also the most expensive one in Germany. The city has a vast student population which are generally the social and cultural innovators of a place and more than 20% of inhabitants without German citizenship, which together they could contribute to the urban diversity. But, students often use the city as commuters rather than its home, and other kinds of people who bring diversity in the city such as immigrants, young artists, hip and trendy youngsters in the form of cultural creation do not form a visible part of the city's street image. This is due to its high rent levels which make it difficult to find cheap locations for student living and artistic experimentation (Van Den Berg, 2017). Hence, the city does not have many experimental artistic and underground scenes, which negatively impacts on the liveliness and "metropolitan' atmosphere.

While a class of creative people, who write software, create designs and discover new ways to combine elements, is increasingly gaining economic importance in developing a knowledge-intensive business basis (Richard, 2002), cheaper cities where labour is available at lower costs and diverse cities where it is not required to speak the local language, have a better position to attract creative professionals such as developers from other countries (Colantonio et al., 2013).

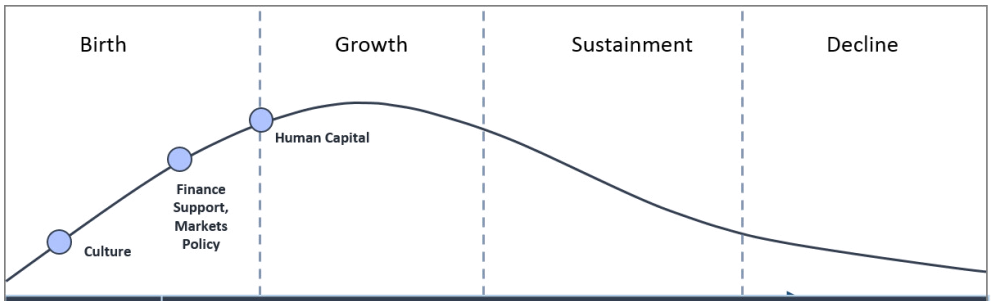
Whereas the economic development strategies of the Bavarian government and the municipality of Munich have been characterised as "top-down approaches with focus on innovation, knowledge and high-tech sectors" (Hafner and von Streit, 2010), initiatives formed during the 1990s continued including the FLÜGGE and

EXIST-programmes[3] and the Munich Business Plan Competition which till present supported more than 1600 active start-ups (BayStartUp, 2018). Most respondents perceive a lack of political attention in Munich which confirmed a study which revealed that Munich's founders' rate local start-up politics as merely adequate and less than 30% appraise the ecosystem for its ease of establishing and doing business in the region (Kollmann et al., 2017). While all respondents appraised politics intensive marketing of Berlin's ecosystem which led to increased awareness and attracted international funding rounds (I-4, I-10), they perceive that due to the prosperous economic situation, Munich's municipality does not see the need to promote the city as an economic garden for entrepreneurial activity (I-3, I-7, I-9). Hence, "from an outsider's perspective, it is not really seen as a hub, and people would only move or found their start-up in the city if their product is related to the main businesses. Otherwise, it does not make sense as the city is expensive and the network not so well connected" (I-1).

5.4. Summary

The Alps, the high culture, the Oktoberfest, the elite universities, the DAX-listed corporations and the overall wealth of the city all together form a highly fertile soil for the development of an entrepreneurial ecosystem. The current state of Munich has been evaluated by the use of Mack and Mayer's (2016) evolutionary model of entrepreneurial ecosystems. The analysis of each of the ecosystems components (see Figure 6) revealed that Munich acquired some elements of a thriving entrepreneurial ecosystem, especially human capital. Even though it has been agreed that Munich's ecosystem has made significant steps during the past few years, the ecosystem is still far from realising its full potential, especially regarding its diversity and network. Moreover, it is missing crucial components such as local success stories and a risk-taking, entrepreneurship-friendly culture as well as sufficient risk capital. Overall, this means that Munich's entrepreneurial ecosystem is still in the birth phase as it has not yet acquired the full set of components which would propel it to the next phase.

[3] Support programme sponsored by the German federal Ministry of Economic Affairs and Energy helping Universities in the formulation of an entrepreneurship strategy and providing funds to technical spin-offs from universities and research institutes (BMWi, 2018).



Domain	Current status
Policy	• Top-down policies, widely oriented towards traditional economic development efforts, e.g. cluster development • Entrepreneurs do not appraise Munich as a place where establishing and doing business is easy. • Entrepreneurship has been part of a wider innovation strategy but does not reach out to all stakeholders within the EE.
Finance	• Funding through business angels and venture capital is increasingly available but not sufficient to foster the development of scale-ups and global ventures. • Investors prefer solid business models and fast ROIs.
Culture	• Lack of serial entrepreneurs and visible success stories • Low visibility of urban diversity • Network among entrepreneurs is not well-connected • Helping culture is coined by transitionary thinking
Support	• Increasing presence of incubator and accelerator facilities • Lack of connections between these facilities, lead to fragmentation
Human Capital	• Universities provide entrepreneurial education and a vast number of well-educated workforce • The quality of life attracts additional talents to the region • Dominating risk-avoiding mentality reduces the mobility of talents to work for or found start-ups
Markets	• Presence of a broad technology industry and various other sectors • Corporations increasingly cooperate with start-ups (e.g. co-development, "get-a-corporate-as-a-customer programs") • Corporations conservative mind-set harms the positive effects of cooperation efforts.

Figure 6: Assessment of Munich's entrepreneurial ecosystem current stage (Mack and Mayer, 2016)

6. ELEPHANTS AND GAZELLES: THE CASE OF MUNICH

6.1. The co-existence of elephants and gazelles in Munich's entrepreneurial ecosystem

„Apart from being famous for Oktoberfest and football, Munich has a reputation for being home of many major German corporations, including Siemens, BMW, and Allianz. It seems like corporate businesses is everywhere in this city"

(Raisher et al., 2017)

Munich accounts for a long history of economic prosperity during which local companies grew into global, prestigious corporations such as Allianz, BMW and MunichRe.

Even though Munich's "corporates are well off at the moment and still have full order books" (I-2), they are increasingly losing their competitiveness due to digitalisation and disruptive innovation while successful scale-ups "are […] overtaking in terms of innovation and business models" (I-14). As large corporations sought new ways to transform their businesses, it became evident "that they cannot foster such great innovations themselves" (I-1). Therefore "they are increasingly turning to start-ups to seek new blood and get a second life" (I-1).

Despite the increased efforts to reach out to start-ups, the engagement is in its very beginning (I-3) and stakeholders (I-1, I-6, I-7, I-9, I-10, I-11, I-14) in the ecosystem perceive that corporations do not use the full potential of the cooperation. Moreover, it was observed that corporate programs are just a "drop in the bucket" and many companies "mistake digitalisation with creating a website or an app whereas actually, their entire thinking has to become more digital" (I14).

Overall, it was commonly agreed that corporations are crucial for start-ups, whether as early customers, joint initiative partners or resource providers. Hence, the corporate sector in Munich is one of its entrepreneurial ecosystem distinctive features (I-11).

6.2. The role of corporations in Munich's entrepreneurial ecosystem

6.2.1. Culture

As identified in the literature review, elephants can be stimulants of entrepreneurial activity, both on the inside and outside of entrepreneurial ecosystems.

Role models

On the inside, elephants can act as role models of an entrepreneurial culture as revealed in the literature review (see chapter 2.2.3.). But, interviewees explain that "in Munich, people are inspired by digitisation and new ways of doing things" (I-8) and "would not say start-ups get it [inspiration] from the corporations" (I-8). A local entrepreneur explains that his online platform was started in a "pretty old-school industry […] with relatively old-fashioned management styles" (Raisher et al., 2017, p. 178) hence "the impulse to start a business stemmed from the opportunities of combining traditional aspects from existing businesses with innovative ideas" (Kollmann et al., 2017, p. 12). Even further, the FinTech start-up of a respondent (I-4) was the result of disapproval with the way corporations work. As the founding team observed that banks are profit-driven and „do not think from the customer's point of view" (I-4), the start-up started to offer disruptive, customer-centric financial services promoted with the slogan „Trust your friends, not banks"(I-4). Moreover, the motivation was also triggered by dissatisfaction with the management and governance structures of major banks and the desire to create a workplace with flat hierarchies and casual leadership (I-4). Overall, elephants were not perceived as role models for start-ups, but rather as a trigger of disruptive entrepreneurship comprising start-ups challenging existing business models (Auerswald, 2015) such as the success stories of Uber[4] or AirBnB[5] or in Munich, Flixbus[6] (I-8, I-11). These successful scale-ups (I-1, I-4, I-12) act as role models for Munich's entrepreneurs.

Lighthouses

On the outside of an ecosystem, corporations can act as lighthouses and put a region on the map (Napier and Hansen, 2011). In Munich, there is no doubt: "it is all about corporations" (I-12) which placed Munich on the national and

[4] Scale-up offering a peer-to-peer ride sharing platform which disrupted taxi markets across the globe (Christensen, 2015).
[5] Disruptive scale-up which offers a platform for private accommodation booking and experienced exceptional growth during the past years (Christensen, 2015).
[6] Munich-based scale-up which entered the traditional mobility market and is now offering affordable bus rides within Europe and US (Raisher et al., 2017).

international map and coined its image as an economic city (City of Munich, 2018b, I-3, I-6). But these corporations "do not use their brand to make the city more attractive as a start-up hub" (I-1) and rather scale-ups than large incumbents are perceived as lighthouses on the global map for entrepreneurs (I-8, I-9). The founder of Celonis, Munich's Unicorn (Petzinger, 2018) endorses this statement, claiming that his success is a message to other start-ups proving them that "you don't have to be in Silicon Valley to make it" (Steger, 2017).

On the contrary, all interviewees unanimously confirmed that most of the plenty of start-ups (I-4) and scale-ups (e.g. Celonis, Konux, ESR labs) in Munich are not recognised in public. As most of these are into B2B and high-tech businesses, they do not gain publicity in the same way B2C-oriented start-ups would (I-1, I-10, I-11) and therefore "it is more likely that you will not notice the success stories" (Neufeldt, 2013). As an example serves the sale of a Munich-based high-tech scale-up for 1.3 billion, which did not go through the 'founders press' (Neufeldt, 2013, I-4). Even though start-ups in B2B businesses often enable their clients to introduce widely-recognised innovations, the start-ups themselves are not heard off (I-1). For instance, the local scale-up ESR labs, which largely contributed to the success of BMW's car-sharing service DriveNow, but is nearly invisible behind the well-known corporate success (I-1). Conclusively, local success stories which could act as lighthouses are mostly unrecognised due to the nature of their business and hence do not put Munich on the global ecosystem map.

Entrepreneurial aspirations

It was stated that entrepreneurship is fostered in a setting where it is valued as a worthy occupation and where risk-taking is legitimised (Feldman, 2001, Kibler et al., 2014). People in the prosperous economic climate of Munich do not fear bankruptcy due to the financial loss or wasted time, but due to the associated risk to pride and status (Bernstein, 1996, Johansson, 2006, Fuerlinger et al., 2015). Further, as stated in section 5.3.3. a majority is said to be conservative (I-4, I-8, I-14) and prefers a permanent position, while Munich's corporations offer them plenty of high-paid jobs which "are great alternatives to founding an own business" (I-14).

At the same time, also corporations are dominated by a conservative mind-set (Fiedler and Hellmann, 2001, I-1, I-4, I-7, I-13, I-14) and therefore "rather care about a solid, working business model than a visionary, big idea" (I-1). One active mentor (I-1) observed that start-ups often get told by corporations "you are too

crazy for us" which influences the entrepreneurial aspiration in Munich's ecosystem as entrepreneurs look for more solid ideas. This back scales the realisation of certain ideas within the entrepreneurial ecosystem and drives those people to Berlin who would otherwise contribute to the diversity and "funky" image of the city (I-1). Another entrepreneur exemplifies the hesitation of big companies to invest in unproven new business models – such as her FinTech start-up – by describing that "it would have been easier to open the tenth online-shop for pet food as corporations would have observed the success of the previous nine and would thus feel safe and invest" (I-4). In summary, "there is no island for visionary, big and great ideas in the ecosystem."

Intrapreneur-ship

Contrarily, interviewees (I-5, I-7, I-9, I-14) observed that corporations increasingly launch intrapreneurship programmes to increase their internal innovate capacities. Intrapreneurship is associated with entrepreneurial employees who develop '[…] new activities for their main employer, such as developing or launching new goods or services, or setting up a new business unit, a new establishment or subsidiary' (Bosma et al., 2011, p. 7). Hence, corporations started to "create a ‚context' for entrepreneurship" (Hindle, 2010), but spill-over effects on the ecosystem itself or a noticeable cultural shift within the corporations have not yet been observed by the interviewees (I-5, I-7, I-9, I-14).

Influence of dominant industries

Corporations in Munich mainly attract high-tech start-ups into the ecosystem. While the reasons will be discussed later in chapter 6.2.4., it has the effect that a large share of entrepreneurs has a technical or engineering background (I-7, I-14). Previous research reveals that founders of technology start-ups appear to be relatively single-minded (Cooper, 1973), have a lower need for affiliation with other people (Roberts, 1989) and were described as "more reserved and less outgoing" (I-7). In accordance to research suggesting that high-technology companies are often founded by a group of entrepreneurs (Cooper, 1973), 4 out of 5 start-ups in Munich are founded by a team (Bever, 2018). Because teams also provide psychological support for each other during uncertain times (Cooper, 1973), they have an even lower need to search for networking within the ecosystem and "are more on their own when founding a start-up" (I-7). All in all, it can be concluded that (similar to the discussed situation in Calgary as in Chapter 3.3.1.), Munich's dominant industries indirectly influence the social attributes and thereby harm the network of its entrepreneurial ecosystem.

Further, the dynamics of Munich's entrepreneurial ecosystem were stated to be coined by multiple, somewhat disconnected islands (see chapter 5.3.3.). According to interviewees, corporations contribute to the island-shaped network in three ways.

Firstly, respondents observed that corporations are "building their own islands, have a closed and conservative mind-set and are defensive of their ideas" (I-9). Therefore, they coin a culture of competitiveness rather than "connected, community-focused thinking" (I-7). As previously stated in chapter 5.3.1., many corporations launched their physical incubator and accelerator programmes in Munich. Even though, they foster strong internal networks (Cohen and Hochberg, 2014) interviewees perceive that each program builds its own island within the ecosystem (I-1, I-7), hence "[…] it is difficult for others to get to know about them and to connect" (I-1).

Secondly, corporations' internal environment was reported to be revenue-oriented with a focus on measurable returns. Thus, support from corporations stems rather from an underlying business need than from intrinsic motivation (I-1, I-7, I-10, I-13). Interviewees observed that many entrepreneurs, who worked for or with large corporations earlier, absorbed the corporate culture and in this way contributed to the prevailing "transitionary-thinking" (see 5.3.3.) within the ecosystem. Entrepreneurs in "liaison-maker" (Sweeney, 1987) functions reported that while in Silicon Valley (I-1, I-9) "it would be a normal thing to help each other over a coffee to give feedback to business ideas, the helping culture in Munich is not very developed and if people are willing to help they might expect something in return and take a few weeks to actually find the time" (I-1). This might indirectly impair a dynamic exchange of ideas, experiences and resources and hence do not disseminate the island-structure of the ecosystem's network.

Thirdly, due to prosperous job market and the high level of salaries (see chapter 5.2.), the opportunity costs to found a new venture are higher than in other cities, and hence founders **"**work hard to make the product work and the business going so they have less time to join events and meetups" (I-5). This effect is further enhanced by the high living costs of the city which pressurises entrepreneurs to generate income and hence spend less time for networking.

Concluding, it can be stated that the three factors explained above harm the networking culture of the ecosystem and hence the ecosystem resembles a group of several disconnected islands.

6.2.2. Human capital

A particular strength of Munich's entrepreneurial ecosystem is its locally available workforce, to which corporations have contributed in multiple ways.

Talent magnets

As the analysis in 5.3.2. revealed, Munich is considered to be attractive for high-skilled workers (Van Den Berg, 2017). This is reflected in the steadily increasing employment rate, which ranks highest on a national level, and in the reported on-going influx of new arrivals (Landeshauptstadt München, 2018). This was further endorsed by the sample of the interviewees, as those who were not born in the city (I-1, I-4, I-5, I-7, I-9, I-14), came to Munich because of a local job offer.

Training providers

Furthermore, corporations in Munich contribute to the development of their employees, both in their fields of competence but also in general management and at the same time allow them to build valuable networks (I-1, I-4). One entrepreneur (I-4) reports that during her employment, she gained skills in business and management which turned out to be critical in the process of building her own business. The founder of a specialised software start-up highlights the importance of experience prior to the entrepreneurial process as he states that „if I could start from scratch, I would have tried to do an internship or even longer employment in the software industry beforehand. […] If I'd worked for three months at SAP or Salesforce, it would've helped me a lot" (Raisher et al., 2017, p. 175).

Incubator organisation

Among the various entrepreneur's employments before starting a business, the last employer, the incubator organisation, plays an important role (Cooper, 1985, Mayer, 2013, Mason and Brown, 2014). The incubator organisation is often the "trigger event" of the entrepreneurial process which, according to interviewees (I-5, I-13), applies to an estimated share of 50% of recent local founders, who left a corporation or SME to start their own business (I-4, I-5, I-11) while the other 50% of recent founders in Munich constitute of fresh graduates. For the former, interviewees state that these mainly detect a need which is not satisfied by the corporation and thus built the solution themselves (I-1, I-4, I-5). On the other hand, they also confirm the observed tendency that "often, these start-ups are built to be

acquired, the people do not aim to scale up and often have a local, very specific focus" (I-1). This reflects the general tendency of Munich's entrepreneurs which, as analysed in chapter 5.3.3., do not start their business with a global perspective. Moreover, other findings from the literature review have been validated in Munich: Firstly, one entrepreneur (I-4) reports that her co-founder exploited the same market as his parenting company and secondly, benefitted from the networks established during his employment at a corporation as it helped him to gain access to investors. Thirdly, both of them, interviewee 4 and her co-founder, initially moved to Munich due to their jobs at the incubator organisation, but then stayed as they did not want to disrupt their family ties. All in all, even though findings in Munich do not reveal the nature and size of the incubator organisation, its role has been found to be of great importance in various dimensions of the entrepreneurial process.

Employment preferences

A Munich-based study reveals that in the past used to be most desirable to start a career at an admired large incumbent like BMW or Allianz, which used to top the rankings as best workplaces (Tumasjan et al., 2011). But, since the global hype of entrepreneurship reached Munich a few years ago (I-6), interviewees observed a changing trend (I-7, I-13, I-14). Particularly, the young generation is changing (I-2, I-8) and is increasingly looking for a purpose and "for jobs that not only make money but also achieve something they can feel good about" (Raisher et al., 2017, p. 168). This is further endorsed by a study among Munich's entrepreneurs which revealed that a large and growing share prioritises the opportunity to realise their own ideas (see figure 7). Moreover, they are inspired by the success stories such as Celonis and increasingly seek jobs with "lowered hierarchies, flexible working hours and most important the opportunity to communicate and realise their ideas" (I-4). While corporations are dominated by rigid structures and lengthy decision-making processes, start-ups can offer young talents responsibilities and diverse roles early on and unique perks such as a personal stake in the company (Kupp et al., 2017, Tumasjan et al., 2011). The interviewed manager (I-13) who works at a multinational consulting enterprise observed that more and more young talents decide to work in a start-up environment as the enterprise did not adapt to their changing needs. Overall, it may be said that employment preferences of young talents shift from large incumbents towards start-ups as these are able to fulfil their changing needs.

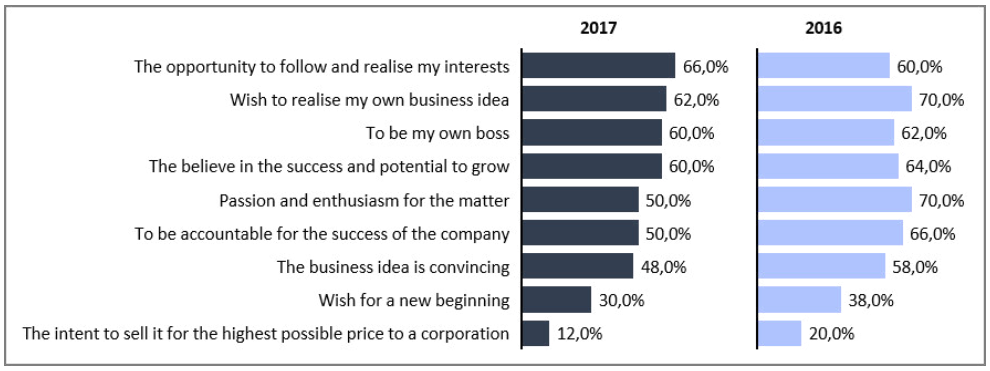


Figure 7: Motivations of Munich's entrepreneurs to start a business (PwC, 2017).

Absorbents of talent

Even though corporations have a broadening effect on the locally available workforce, they also adversely affect the labour market for start-ups. While on the one hand, it has to be noted that "Bavaria has a thriving University community that provides plenty of fresh talent every year" (I-2), a professor observed that a large share of students "has job offers from prestigious corporations such as BMW or Siemens" (I-2) even "before they finish their studies" (I-8). Furthermore, as corporations offer plenty safe jobs, also senior managers, which were described as risk-averse, prefer to work for a large incumbent, which contributes towards the reported lack of human capital mobility (see 5.3.3.). Furthermore, corporations attract a large amount of workforce from other regions, but they also "[…] absorb most of the talent, leaving a relatively low base of recruits for start-ups" (Schönenberger, 2014, p. 102).

High salary expectations

Additionally, due to the plenty of high-paying corporations in the city "salary expectations are high, and start-ups could find themselves priced out of the market" (Raisher et al., 2017, p. 104).

6.2.3. Finance

Corporate Venture Capital

Corporations invest in young ventures to achieve strategic and financial gains through corporate venture capital funds (McNally, 1997, Chesbrough, 2002, Ivanov, 2017, I-5), which can be a crucial source of financial resources within entrepreneurial ecosystems. Though the share of Munich's young ventures, which received investments from corporate venture capital funds, doubled from 6% in 2016 to 12% in 2017 (PwC, 2017b), interviewees (I-5, I-7, I-8) raise the need and the potential among Munich's corporations for further corporate funds. By stating that entrepreneurs might benefit more from investments through corporate venture

capital than from incubator and accelerator programmes, respondents highlight the importance of the financial resource (I-7, I-8, I-9).

Acquisitions

Moreover, as revealed in the literature review in chapter 3.1.3. large corporations can act as exit opportunities for start-ups, and thus can be a crucial source of return on investment for entrepreneurs and investors in the ecosystem. While this was confirmed for corporations based in Silicon Valley, corporations based in Germany rarely acquire start-ups (Aaltonen, 2016). By looking at data regarding M&A transactions in Germany, certain tendencies can be observed. Although the M&A market is clearly dominated by corporate investors (Ernst & Young GmbH, 2018), 82% of acquired German start-ups were attained by US corporations. Only 43 German corporations bought a start-up between 2012 and 2016 (Kroker, 2017). German-wide research reveals that one of the most significant factors underlying corporations' hesitation to acquire start-ups is the fear of cultural clashes (1st Mover, 2015). This hesitation causes two effects: While it was revealed that entrepreneurs tend to sell their businesses to corporate investors (see chapter 5.3.3.), the lack of local exit opportunities forced a large share of Munich's founders to sell to a multinational player (I-1). These were claimed to have less beneficial effects on the development of the ecosystem than local companies (Mason and Brown, 2014). Secondly, Munich-based research found that the lack of local exit opportunities discourages the infusion of venture capital (Schönenberger, 2014) which might be a valuable source of significant amounts of late-stage funding. This could enable more ventures to grow big and ultimately raise capital through an IPO rather than selling to multinational corporations. Hence, the corporation would stay local and might have beneficial spill-over effects on the ecosystem.

Business angels

Even though the analysis in chapter 5.3.3. revealed that a lack of exit channels adversely impacts the investments of business angels, respondents observed this trend to be gradually changing due to an indirect impact of Munich's corporations. Respondents (I-5, I-7, I-14) claimed that this trend in Munich is due to the abundance of wealthy individuals in the region out of which an increasing number is engaging as business angels. Even though respondents (I-5, I-7, I-13) state that many of them are successful entrepreneurs, they also recognise that a rising percentage of business angels comprises successful managers and consultants from Munich's large corporations. In accordance to previous research revealing that business angels tend to favour investment businesses that are in close geographic

proximity (Harrison and Leitch, 2010, Brown and Mason, 2017), place-specific research confirms that the "plenty business angels in Munich tend to favour start-ups which are closely located" (I-5).

Increasers of cost level

Corporations also are the primary driver of the good economic situation and the high demand for real estate in the city, which increases the costs of setting up a business in the city. While it is not only expensive for entrepreneurs to finance their living and an office space, the preceding analysis revealed that corporations also raise the cost of hiring high-skilled talent. Moreover, as identified in chapter 5.2, the high price level in the city is also a cause for the lack of visible diversity which impacts the presence of creative industries in Munich.

6.2.4. Markets

Customer, proof-of-concept

Research findings claim that corporate support is most valuable in the form of customer relationships and early feedback on start-ups products or services (Eliasson, 2000, e.g., Isenberg, 2011, Foster et al., 2013). These were validated in Munich's entrepreneurial ecosystem through consensus among respondents (I-7, I-10, I-13) and a survey conducted among Munich's entrepreneurs (see figure 8).

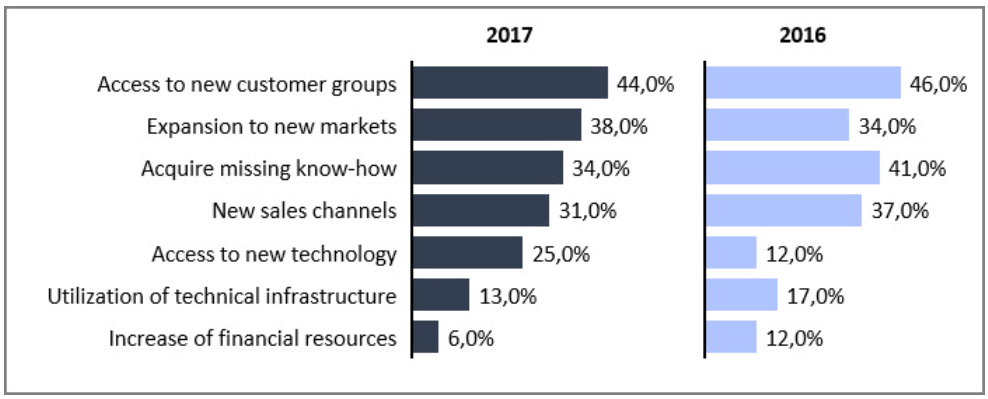


Figure 8: Motivation of Munich's entrepreneurs to cooperate with corporations (PwC, 2017).

The importance of co-creation lies in market evidence, as customer feedback provides insights into their needs and guides the development of new products or technologies (Raisher et al., 2017). Hence, the founder of Munich's unicorn, advises – both as an entrepreneur and business angel – "every start-up to listen to customer feedback as early as possible" (Raisher et al., 2017, p. 172). The case of a FinTech start-up (I-4) further highlights the importance of lighthouse customers and references for the growth of start-ups. While in their early-stage the business

collaborated with very few banks, which had a leap of faith in them, through successive recommendations of their initial partners today they are a trusted partner of 13 banks.

Strategic partnerships

Interviewees reported that corporations are more and more understanding the needs of start-ups and hence, increasingly change the type of their support programs. While incubator and accelerator programs had a strong focus on mentoring and providing resources, they are now turning to models of "co-creation" (I-8), "customer-supplier-relationships" (I-4), "sales cooperation" (I-11), "joint-ventures" (I-13) and "winning the corporate as a client" (I-7). This was illustrated by two interviewees (I-7, I-10) who are working at large incumbents and reported a changed focus of their incubator programs: Whereas in the past these solely focused on direct funding and providing office spaces, they switched to different approaches such as offering market reach through media and advertising volume, providing direct revenues through customer relationships and borrowing their credibility to raise additional funding from venture capitalists (I-7, I-10).

Even though customer feedback was stated to be of particular importance, also the financial aspect of such relationships was highlighted. As bank loans are difficult to obtain for young start-ups and "VCs only invest in one out of 100 companies" (I-8) and CVC investment in Munich is small (as previously discussed), most of the start-ups need to generate earnings from operational activity (I-8). Therefore, they need to "do business development, and the best way to do business development is with corporates" (I-8).

Delays, false promises

While on the one hand, all interviewees consistently highlighted the importance of cooperation with corporations, on the other hand, they identified numerous obstacles which arise even before the cooperation starts. As time is a critical component for a young venture, respondents criticised the pace of corporations during negotiations of a potential partnership. One respondent illustrates the issue by describing that once both parties agree to start cooperating "the start-up looks at their watch while the corporate turns around and looks at the calendar on the wall" (I-8). The experience of a mentor (I-11) further underlines the obstacle, as he states that his mentees often wait weeks to receive responses from corporations. An entrepreneur (I-4) even had to wait one and a half years until contracts were signed. Delays and false promises from corporations can cause severe consequences for young ventures which have limited financial capacities and hence

depend on expected revenues. Therefore, deviances could cause a situation in which the start-up is unable to pay its employees or important suppliers (I-4). While few interviewees think "that it is just the nature of the corporate beast" (I-8), others state that corporations at times do not see the need to understand the pressure start-ups are facing (I-4).

Hierachies, bureaucratic processes

Moreover, respondents (I-1, I-11) claim the size of the corporation to be decisive in the processes of setting up a cooperation. Interviewee 1 noted that it "highly depends on which door of the corporation you [the start-ups] enter. You need to get in contact with people […] who actually have the power – especially the will-power – to take the risk and do something new" (I-1). Due to corporate hierarchies, bureaucratic processes and competition between different departments it is difficult to reach the right person (I-1, I-9, I-11). Moreover, in many cases, even corporations employees are not aware of the bureaucratic approval processes themselves due to their complexity (I-1 I-11, I-14).

Dependencies

Despite the vast benefits corporations can bring to the young ventures, it was mentioned that once start-ups rely on corporations too heavily, they get dependent, which is toxic for their business and might also harm them in scaling up their business properly and might hinder them from further expansions (I-6, I-7, I-8, I-10).

New market opportunities

Whereas the interviewees mentioned that corporations in Munich "have businesses that are not easy to change; very industrial such as semiconductors" (I-8), it was observed that many opportunities for new businesses stem from the presence of deep clusters across several sectors in the region. This is in accordance with previous research which found that diverse urban economies can act as "nursery cities" (Duranton and Puga, 2001) which "promote idea flows and allow new ideas to emerge out of the old" (Colantonio et al., 2013, p. 150). These "intersectoral marriages" (Van Den Berg, 2017, p. 214) are a source of innovation and new business opportunities.

Networks

Apart from creating local market opportunities, research reveals that corporations can impact entrepreneurial ecosystems by providing start-ups access to global markets. In Munich, a direct connection to innovative places such as Silicon Valley through locally-based MNC's such as Microsoft, Oracle and Google was only highlighted in previous research (Schönenberger, 2014), whereas interviewees

instead perceive that "big businesses do not do much to connect the city with other hubs" (I-1). But, an indirect connection was reported which was established through corporate incubator and accelerator programmes, in particular, those initiated by MediaMarktSaturn and BSH Hausgeräte GmbH which are cooperating with prestigious global program partners such as Plug and Play[7] and TechStars[8] (Konrad, 2017, BSH, 2018a, Plug and Play, 2018b). This connects the ecosystem to the partner's origins, Silicon Valley and Boulder, and their other global locations which contributes to the ecosystems networks and promotes Munich as a start-up hub (I-11).

Moreover, one interviewee working at a support organisation, which aims to raise the international awareness about Munich as a start-up hub, reports that the government of Singapore plans to send their start-ups to Munich as the local corporations are potential customers (I-3). Hence, other start-up hubs are increasingly interested in partnering with Munich due to its unique access to markets (I-3, I-7, I-11) – "one advantage, which has still so much more potential than the ecosystem is realising at the moment" (I-11). A recent report confirms this statement, revealing that the international connectivity of Munich ecosystem is significantly lower than Berlin's global connectivity index (Startup Genome, 2018).

Research findings state that "successful ecosystems build upon existing agglomerative forces based on particular industries" (Brown and Mason, 2017, p. 25), which in case of Munich, one of Europe's best-performing high-tech business regions, is advanced and deep technology (Clark and Moonen, 2014). For those, the ability to work in close proximity to potential customers is essential (Cooper, 1973). The reason for this necessity stems from the unique challenges of these start-ups such as longer timeframes for product development (Startup Genome, 2018), lengthy-time-to-market, high capital intensity, technology risk (de la Tour et al., 2017). Therefore, they intensively rely on funding, market access, technical and business expertise which can be provided by corporations (de la Tour et al., 2017, I-1, I-2, I-5, I-7, I-8, I-14).

Moreover, the proximity to numerous potential customers attracted many start-ups with B2B focused businesses (Perez et al., 2013), which was confirmed by a

[7] Global start-up accelerator network, venture capital fund headquartered in Silicon Valley. It also offers corporate innovation programs which exposes corporations to start-ups (Plug and Play, 2018a).
[8] Global seed accelerator program founded in Boulder, Colorado. Among the broad spectrum of programs, it has its own venture capital fund and hosts corporate innovation programs (Techstars, 2018).

local entrepreneur stating that “the Munich area is very good for our start-up because it’s a strong B2B environment. […] so we have many local customers, like BMW, Siemens, Allianz and Munich Re.” (Raisher et al., 2017, p. 176).

Further, while on the one hand corporations in Munich attract start-ups in the high-tech industry, on the other hand, they discourage the emergence and presence of social entrepreneurship. As corporations push the wealth of the city which reflects in high tax revenues which “work to ensure that the city remains safe, clean and beautiful” (Raisher et al., 2017, p. 20) people are not facing social issues on a daily basis and stakeholders observed a low number of start-ups aiming at social issues in Munich (I-1, I-9, I-14).

6.2.5. Support

Whereas start-ups in Munich have an increased need for collaboration with large incumbents due to their high-tech and B2B focus, more and more corporations realise that start-ups can increase their innovative capacities. Thus, they responded by sponsoring events and conferences as well as by setting up accelerator and incubator programs.

Incubator, Accelerator

The first visible initiative in Munich’s ecosystem was started by Telefonica in 2011, as they build a co-working and event space open for the entrepreneurial community in the city centre. At that time, it was something new and very special for the community (I-7). Today, almost all corporations opened their doors for start-up collaboration and enriched the ecosystem with a broad range of formalized programmes such as SevenVentures (ProSiebenSat.1), AllianzX (Allianz), next47 (Siemens), the InsurTech Hub launched by 13 insurance companies, the BMW Start-Up Garage (BMW) and the Data:Lab (VW) (I-7, I-5, I-11, I-13). Even though these programmes bring resources into the ecosystem, all interviewees reported that these are still in the experimentation phase, and corporations need to fully understand which support and cooperation model benefits both sides the most. Hence, local incubator and accelerator programmes experienced numerous changes – the former lab of MediaMarkt-Saturn started to partner with other retail corporations hence, developed into the RetailHub (I-1), the Telefonica incubator changed its strategy, and also the team at the BMW start-up garage was replaced (I-7).

Even though corporations increasingly attempt to cooperate with start-ups, business literature (Accenture, 2015a, KPMG, 2015, Deloitte, 2017a), academic research (Weiblen and Chesbrough, 2015, Hora et al., 2018) and all interviewees unanimously agree: start-ups and corporations are like two worlds colliding. These cultural clashes are mainly attributed to the conservative mind-sets of Munich's traditional corporations which conflict with the disruptive mind-set and the agility of start-ups (I-9). Moreover, on the one hand corporations often try to force their regulatory requirements and governance functions on the start-ups (I-5), they want to set up their programs quickly (I-9), and they expect fast returns (I-8), whereas on the other hand start-ups often still lack quality, do not have ISO-certifications but require numerous investments and time to develop (I-5). Hence, corporations should be open-minded, should leave start-ups their space and freedom and need to understand how both parties can benefit (I-7). Moreover, even though start-ups are engines of innovation, many times corporations turn to start-ups with already specified requirements, milestones and deadlines (I-8).

One interviewee (I-10) who works at a public listed media corporation which runs an incubator program, reports that only 10 out of 100 start-ups brought a return on investment. Hence, he emphasises that corporations need to endure negative returns for long periods and thus require the support and patience of their shareholders.

At the same time, during which the number of accelerator and incubator programmes rapidly increased, the number of promising start-ups remained static (I-5, I-7). Hence, corporate programmes increasingly accept weak start-ups to fill empty spaces (I-5). Contrary to the aim of the accelerator to speed up the development of a start-up, interviewees (I-5, I-8) observed an increasing number of start-ups going through multiple programs, referring to "accelerator hopping" (I-5). Even though it "has become a way to stay in business" (I-8), interviewees noticed that it merely enables weak start-ups to survive for a few months longer. Moreover, one respondent (I-5) claims that the abundance of support offerings triggers people without entrepreneurial capabilities and less seriousness to start a business and sees a correlation with start-ups' low number of patents. Thus, the programmes rather develop single personalities than successful ventures (I-5).

Other respondents stated that accelerator hopping might not be per se "a bad thing" (I-8) as they regard entrepreneurship as a learning journey such in case of

one entrepreneur describing that “I was very unsuccessful for a very long time and I learned a lot. So, I do not really think that staying in business and learning and trying to figure out how to pivot if you are committed is a bad thing” (I-8). On the other hand, scholars found that “failure, especially when it is quick, redeploys factor inputs, like people, money and other resources back into other high-potential ventures” (Fuerlinger et al., 2015).

Moreover, interviewees (I-5, I-7) report that with the great academic education provided in the city and increasing amounts of available funding, start-ups perceive a lower value of incubators and accelerators. Further, the manager of the VW programme recognised that „if you’re not open from the corporate side to listening to young and crazy guys who might have a different culture from your own, you won’t be able to build a beneficial collaboration” as today “start-ups are selecting us, we’re not selecting them” (Raisher et al., 2017, p. 98).

Allocation of support

Several respondents reported that corporations in Munich support mainly large, established and well-recognised centres within the ecosystem such as the UnternehmerTUM and major conferences such as Bits&Pretzels (I-8, I-9, I-14). At the same time they are neglecting the centres of institutes such as the University of Applied Sciences and organisers of smaller conferences (I-2, I-8, I-9). Interviewees (I-2, I-8) state that “the market is big enough for the big players and the small players” (I-8) and neglecting some of these harms the innovative process within the ecosystem.

Innovation Theaters

Even though, corporate support programmes have increasingly been growing in number, they have been questioned by respondents (I-5, I-7, I-9, I-14) stating them “to be the new CSR” (I-14). Corporate social responsibility was portrayed as “a public relations gimmick” (Hanlon and Fleming, 2009, p. 939) and a branding reference point rather than a serious corporate concern about ethics and the need to give back to society (Hanlon and Fleming, 2009). In the same way, interviewees state that corporations rarely launch support to help young ventures to grow, but rather because “they want to be cool, part of the game and want to change their image as boring companies” (I-1). Besides, it was perceived as a new way of HR branding to gain access to talent, especially in the technology sector (I-1). For instance, a large media corporation in Munich used its incubator program for marketing purposes which helped the corporation to be perceived differently by the general public but today it is closed, and more strategic initiatives have been

started (I-10). Moreover, corporations use those instruments to attain internal cultural change, even though interviewees' claim that merely these efforts will not bring the expected results on corporations' internal climate. Studies (e.g. Deloitte, 2017b) revealed that corporations are a lot happier with their programs than the start-ups "because the corporations are using it for culture change and the start-ups are using it to stay alive" (I-8). At the same time corporations are using initiatives for culture change and branding, they are missing the true value start-ups can generate (I-7, I-8).

Besides, hackathons, business challenges and events sponsored by corporations are perceived as a form of "pseudo-engagement" (I-11) which have more of a "show-character" (I-5), attracting "innovation wannabees" (I-11) rather than conveying quality content and generating value for the ecosystem (I-5, I-11). Hence, some corporations have even stopped sponsoring and organising events to be taken seriously within the "real entrepreneurial community" (I-11).

One interviewee concludes that "there is a lot of Innovation theatre going on at corporations. Looks good, lots of fun, […] but it's not really value" while he also states that the best indicator of the seriousness and benefit of a program are the financial resources the corporation invested. Thus, "if they do not have it funded, chances are they are just paying lip service to it, and it's not going to be very valuable for anybody" (I-8).

6.2.6. Policy

While respondents reported a lack of political attention towards Munich's entrepreneurial ecosystem, they further claimed that only a few stakeholders are included in political discussions and advisory boards. Hence, retrieving information regarding the political involvement of corporations was even more difficult. But, in the same way interviewees report that corporations do not engage within the ecosystem due to an intrinsic interest (see 6.2.1.), they (I-3, I-7, I-9) also state that corporations only represent the interests of start-ups in the political context when they have a particular objective in mind which would also serve their needs. The interviewee explains that "it might be the start-ups [who] are helping the corporations as they are tagging along because they want to get closer to the government" (I-8). Further, one interviewee in a corporate management position, representing Munich in the German Start-up Association and thus being major

representative voice of start-ups in Germany states perceived that government efforts are only marginal and in many cases do not reach the targeted stakeholder in the ecosystem (I-7).

6.3. Summary

Munich's corporations have a long-standing track record of growth and economic success, but since the rise of digitalisation and globalisation, their competitive advantage has increasingly been threatened. In order not to be left behind in the changing landscape, Munich's corporations are more and more turning to start-ups to gain an innovative spirit. These direct cooperation efforts have taken various forms and impacted Munich's entrepreneurial ecosystem in many ways. Moreover, indirect effects of corporations were observed and taken together, the case study confirmed the claim that they have numerous effects on the ecosystems dimensions (see table 3). While beneficial effects could be observed primarily in the development and attraction of human capital and the provision of access to markets and customer feedback, respondents also reported adverse effects. Among these, particularly the conservative mind-set and the cultural discrepancies with start-ups were mentioned. The subsequent summary section will compare these findings with those revealed in the literature review and concludes with a final note on the role of corporations on entrepreneurial ecosystems.

	Corporations in Munich	+/-
Culture	• **Not regarded as role models/lighthouses** • **Entrepreneurial aspirations** – Fear to pride and prestige – Foster opportunity entrepreneurship – Conservative, back scale visionary ideas – Intrapreneurship • **Influence of high-tech industries** • **Lower the level of Inclusiveness**	− − 0 − 0 − −
Human Capital	• **Talent magnets for high-skilled labour** • **Training providers** • **Incubator organisation** • **Employment preferences to self-fulfilment** • **Absorbents of talent** • **High salary expectations**	+ + + + − −
Finance	• **CVC increasing, but still small margin** • **Corporates' hesitation to acquire** • **Increasing number of business angels** • **Drivers of cost level**	+ − + −
Markets	• **Customers' for proof-of-concept** • **Strategic partnerships** • **Delays, false promises** • **Dependencies** could occur • **New market opportunities** – - "Intersectoral-marriages" • **Networks** – No efforts to connect the city with other hubs – Indirect connections through incubator/accelerator partner – Attractive as a partner for other hubs • **Builders of institutional patterns**	+ + − − + − + + 0
Supports	• **Events** • **Co-working spaces** • **Incubator, accelerator** – Cultural clashes – Lack of strategy and measurement metrics – Accelerator hopping • **Support focuses on established partners** • **Innovation Theatre**	+ + − − 0 − 0
Policy	• **Corporations driven by self-interests**	−

Table 3: Findings on the role of corporations in Munich's entrepreneurial ecosystem

7. SUMMARY, CONCLUSION AND FURTHER RESEARCH

7.1. Summary

The wide-spread assumption that technological advancements eradicated the importance of geographical distance and flattened the world, does not apply to its driving force, entrepreneurial activity. Its increasing concentration in entrepreneurial communities such as Silicon Valley provides evidence that "the world is not flat ... Not only is the world not flat: in many ways, it has been getting less flat" (Stiglitz, 2007, .p 56-57) and gave rise to the concept of entrepreneurial ecosystems. The systemic approach aims to explain the spatial development of entrepreneurial activities and gained wide-spread acceptance among scholars. While they proposed various components and actors which constitute successful entrepreneurial ecosystems, little understanding of their roles, relevance and interactions has been established. Though corporations were stated to be an imperative actor of entrepreneurial ecosystems, their role has widely been neglected in ecosystems literature. Hence, the conducted research explored their uninvestigated role within ecosystems through an illustrative case study. The case was placed in Munich, which combines an emerging ecosystem with a strong corporate sector and thus provides an interesting context to explore the research questions. Therefore, the development and current state of Munich's entrepreneurial ecosystem was analysed in a first step in order to provide an understanding of the context in which, in a second step, the impacts of corporations on the six domains of the ecosystem were explored.

7.2. Key findings on Munich's entrepreneurial ecosystem

During the last 150 years, Munich has become home to many universities, research and development centres, various local, globally-grown corporations, foreign multinational enterprises and a large number of SME's. These constitute Munich's leading high-tech cluster which coined the city image as Germany's "Silicon Valley". Apart from its economic success, Munich is renown for its high-quality life and its Bavarian culture, coined by traditional values. Taken together, all these components constitute the fertile soil of Munich's entrepreneurial ecosystem.

During the past few years, entrepreneurial activity prospered especially in the high-tech sector and among B2B businesses and culminated in the celebration of

Munich's first Unicorn. At the same time, the entrepreneurial ecosystem flourished due to the strong presence of a highly-skilled and diverse workforce and an increasing amount of available funding as well as a rising number of events, corporate start-up incubator and accelerator programmes.

Today, the ecosystem concentrates in numerous physical facilities of corporate programmes which were claimed to be weakly connected and thus, shape the ecosystems dispersed network. Moreover, it is missing crucial components for producing global scale-ups and local success stories. These encompass a missing global mind-set of most start-ups, a prevailing lack of mobility of human capital and financial resources due to the dominating risk-avoiding mind-set and the prevailing preference for safe investments and employment. The dominating conservativeness and the high price level of the city, account for the city's lacking diversity as they drive visionary ideas and the creative industries out of the ecosystem.

Whereas the corporations and the quality of life constitute the fertile soil of the rising entrepreneurial ecosystem, they are also the reason why Munich's municipality does not see the need to promote its rising start-up hub. Conclusively, even though local start-ups are flourishing and local success stories are on the rise, they are widely unnoticed and hence Munich's entrepreneurial valley surrounded by the Alps, might rather resemble Germany's "Silent Valley".

7.3. Key findings on the role of the corporations in entrepreneurial ecosystems

A literature review was conducted to dismantle the impacts of corporations on the domains of entrepreneurial ecosystems from prior research. Afterwards, these were compared with the collected data from semi-structured interviews with stakeholders of Munich's entrepreneurial ecosystem as well as from secondary sources. The revealed impacts as well as the direction (+/-/0 = positive impact/ negative impact/ not clearly identified) are summarised in table 4.

Thereby, several findings, revealed in the literature review were confirmed in the case study and marked with the same algebraic sign in table 4.

	Literature review	+/-		Corporations in Munich
Culture	• **Role models/lighthouses** • **Entrepreneurial aspirations** – Disseminate a risk-taking culture – - – Legitimize entrepreneurial mind-sets – Legitimize entrepreneurial mind-sets • **Influence of dominant industries** • **-**	+ + + + – 	– – 0 – 0 – –	• **Not regarded as role models/lighthouses** • **Entrepreneurial aspirations** – Fear to pride and prestige – Foster opportunity entrepreneurship – Conservative, back scale visionary ideas – Intrapreneurship • **Influence of high-tech industries** • **Lower the level of Inclusiveness**
Human Capital	• **Talent magnets for high-skilled labour** • **Training providers** • **Incubator organisation** • **Whale fall** • **-** • **-** • **-**	+ + + + 	+ + + + – –	• **Talent magnets for high-skilled labour** • **Training providers** • **Incubator organisation** • - • **Employment preferences to self-fulfilment** • **Absorbents of talent** • **High salary expectations**
Finance	• **CVC as financial resource** • **Acquisitions as exit opportunities** • **Create pools of business angels and venture capital** • **-**	+ + + 	+ – + –	• **CVC increasing, but still small margin** • **Corporates' hesitation to acquire** • **Increasing number of business angels** • **Drivers of cost level**
Markets	• **Customers' proof of concept** • **Strategic partnerships** • **-** • **-** • **New market opportunities** – Complementary products, market research, outsourcing – Access to global markets – Gaining corporations attention causes delays – - • **Networks** – Connect to branches in innovative places – - – - • **Building industrial patterns**	+ + + + – + 0	+ + – – + – + + 0	• **Customers' for proof-of-concept** • **Strategic partnerships** • **Delays, false promises** • **Dependencies** could occur • **New market opportunities** – - – - – - – "Intersectoral-marriages" • **Networks** – No efforts to connect the city with other hubs – Indirect connections through incubator/accelerator partner – Attractive as a partner for other hubs • **Builders of institutional patterns**
Supports	• **Events** • **Co-working spaces** • **Incubator , Accelerator** – - – - – - – - • **-**	+ + 	+ + – – 0 – 0	• **Events** • **Co-working spaces** • **Incubator, accelerator** – Cultural clashes – Lack of strategy and measurement metrics – Accelerator hopping • **Support focuses on established partners** • **Innovation Theatre**
Policy	• **Representative voices of regional businesses** • **Monopoly-focused policies** • **-**	+ – 	 –	• - • - • **Corporations driven by self-interests**

Table 4: Key findings from literature review and case study.

Even though several other factors found in prior literature also appeared in the case of Munich, their impact on the dimensions of the ecosystem deviated.

Deviated finding

These deviances dominated in the domain of culture: Whereas literature determined corporations as entrepreneurial role models and lighthouses, in Munich scale-ups are perceived to take these roles. Although literature revealed a positive effect on the risk-taking culture within an ecosystem, in Munich entrepreneurial aspirations are negatively affected by a prevailing risk-averse mentality. Moreover, corporations are one of the factors which back scale visionary ideas as they are dominated by conservative mind-sets. Furthermore, also findings in other domains diverged such as finance and markets: While on the one hand, the literature review suggested that local corporations can offer exit opportunities through acquisitions which have positive effects, on the other hand, the hesitation of corporations in Munich to acquire start-ups negatively affect the infusion of further venture capital. Though literature found that large corporations connect an ecosystem to innovative foreign places where they have branch offices, in Munich, it was observed that corporations do not make any direct efforts to connect the city to other hubs.

Additionally, the literature review revealed certain influences of corporations on entrepreneurial ecosystems for which no evidence was found in Munich. These comprise the effects of whale fall on the availability of human capital and different aspects of corporations creating new market opportunities. While the data collection regarding corporations influence on the policy domain was particularly difficult, the retrieved information was not sufficient to comment on the findings revealed by the literature.

Unconfirmed findings

On the contrary, the data collected in Munich revealed certain influences of corporations which were not identified in the literature review. Adverse impacts include corporations' indirect effect on the ecosystem's inclusiveness, increasing salary expectations of skilled workers and absorbing a large share of skilled talents. Moreover, they negatively impact start-ups within the ecosystem by driving up the city's cost level, making false promises or delay strategic partnerships and acting as growth-barriers by forcing start-ups into dependencies. Even though accelerator and incubator programmes were highlighted in both cases, research in Munich found that through cultural clashes and lack of strategy their effectiveness was impaired. Besides, corporations' preference for established cooperation partners was reported to harm the innovative processes within the ecosystem. In the domain of policy, few respondents indicated corporations' engagement as self-serving.

New negative findings

Despite the many negative impacts which were revealed through the case study of Munich, also positive effects of corporations could be observed. Hence, young talents' rising need for self-fulfilment and the inability of corporations to respond to these increases the number of people willing to work for start-ups. In the dimension of markets, the presence of corporations in multiple sectors allow for "intersectoral marriages" and hence open up new market opportunities. Furthermore, corporate accelerator and incubator partner indirectly connect Munich's entrepreneurial ecosystem with innovative places while the other way around corporations act as an attractive partner for other hubs.

New positive findings

However, for certain findings from the literature and case study in Munich, the direction of the impact could not be evaluated. This applies the observed shift away from necessity entrepreneurship (Baumol, 1990) towards opportunity entrepreneurship (Fuerlinger et al., 2015), effects of intrapreneurship and the concentration of the ecosystem around particular industries. Even though

Findings lacking direction of impact

respondents commonly observed the trend of "accelerator hopping", they perceived differed impacts of it. Moreover, interviewees questioned the value generated by corporate engagement within the ecosystem such as sponsored events, which were claimed to have a show-character. Along similar lines, corporate accelerator and incubator programmes were perceived as marketing and HR branding initiatives.

Overall, the conducted research revealed preliminary insights into the place-specific assets and unique composition of Munich's entrepreneurial ecosystem as well as the role corporations take within these complexities. While on the one hand the literature review revealed numerous beneficial effects corporations have on entrepreneurial ecosystems, on the other hand, the case study revealed that corporations in Munich predominantly adversely impact the ecosystems development due to a conservative, self-interested and risk-prevailing mind-set.

Hence, Isenberg's (2013) claim "you simply cannot have a flourishing entrepreneurship ecosystem without large companies to cultivate it, intentionally or otherwise" could be validated but only if considered together with Mason and Brown's statement: "But for these benefits to occur it requires the businesses to be open and collaborative" (Mason and Brown, 2014, p. 9).

7.4. Limitations

As with any other research, the case study in Munich has limitations which encompass several dimensions such as the primary and secondary data sources, the abilities of the researcher and the local place-specific assets.

Even though interviewees cover different roles within the ecosystem, the responses from the semi-structured interviews have to be evaluated carefully as they might be subject to the interviewees' subjective perceptions. Besides, the interviews were limited in number and thus, only offer preliminary evidence (Robinson et al., 1991, Hammersley and Gomm, 2008). Moreover, the interviewer might impose further possible limitations on the nature of the findings due to the limited prior experience in postgraduate research (Patton, 1980). Though the researcher attended all preparatory courses on research methodology, a residual risk needs to be considered.

Apart from the researcher and the primary sources, also secondary sources might limit the outcome of the research. Since Munich's ecosystem has been widely neglected in prior academic research, popular sources and newspapers were considered as secondary sources. Even though they were carefully evaluated, a risk of inaccuracy and biases remains.

Further, the case study takes only limited account of evolutionary dynamics and cannot simply be generalised to other entrepreneurial ecosystems, as each ecosystems configuration is unique and tied to its place-specific assets (Isenberg, 2011). Hence, present findings are only a starting point for future research on Munich's entrepreneurial ecosystem as well as the role of corporation's influences on the domains and interactions of such.

7.5. Implications for further research

Though the research has some limitations, it provides evidence that corporations certainly impact the configuration of an entrepreneurial ecosystem which further endorses the need for a thorough understanding of corporations' roles and interactions within the complex construct of entrepreneurial ecosystems.

Further efforts could evaluate proposed findings of this study which lack an understanding of their direction of impact (indicated by 0 in table 4). These might include the effect of opportunity entrepreneurship, intrapreneurship and the actual value of accelerator and incubator programmes on each of the domains of an entrepreneurial ecosystem. Future research could also aim to reveal further insights into the role of corporations in the policy domain and investigate the role of SME's in entrepreneurial ecosystems. As soon as exploratory research has built a solid knowledge basis, a quantitative analysis could verify several assumptions (e.g. the number and quality of spin-offs from large incubators or quantitative assessment of accelerator performance). Moreover, there is a need for metrics that can be used to identify the dynamic influence of corporations on the dimensions of an entrepreneurial ecosystem.

The proposed research directions would provide a more rigorous understanding of entrepreneurial ecosystems and their impact on the entrepreneurship process and might enable more accurate and effective recommendations for corporations and policymakers to promote entrepreneurial ecosystems.

7.6. Implications for policy makers

Assuming that interviewees' (I-3, I-7, I-9) perception regarding a lack of government engagement in entrepreneurship policies reflects the actual situation, policymakers might be advised to shift towards an "entrepreneurship ecosystem strategy" (Isenberg, 2011, p. 1). While according to Isenberg (2011), this might even be a pre-condition to the long-standing cluster strategies of Munich's municipality (Van Den Berg, 2017), interviewees emphasise that policymakers should not aim to replicate Berlin (I-2, I-7) while at the same time they recommended that the municipality should raise benchmarks of entrepreneurial activity beyond Bavaria's borders (I-5).

Besides, ecosystem policy should aim to improve the entrepreneurial environment for gazelles rather than producing large amounts of mice (Mason and Brown, 2014). Within this context, elephants were claimed to have the competence to intervene holistically (Isenberg, 2011). Therefore, their importance in the development of an entrepreneurial ecosystem has been highlighted, which should be motivated by commercial considerations instead of being driven by social responsibility initiatives (Ebdrup, 2013).

Therefore, by bringing together the research findings regarding the role of corporations and the general insights into Munich's entrepreneurial ecosystem, implications for corporations and policymakers could be derived. As research has highlighted that there is no "silver bullet policy" (Isenberg, 2011, p. 8), Mason and Brown's (2014) taxonomy was applied to enable an analysis from a holistic perspective (Figure 10). Though, the preliminary nature of results has to be noted while even further the below recommendations comprise only the central insights derived from the study rather than a comprehensive policy agenda.

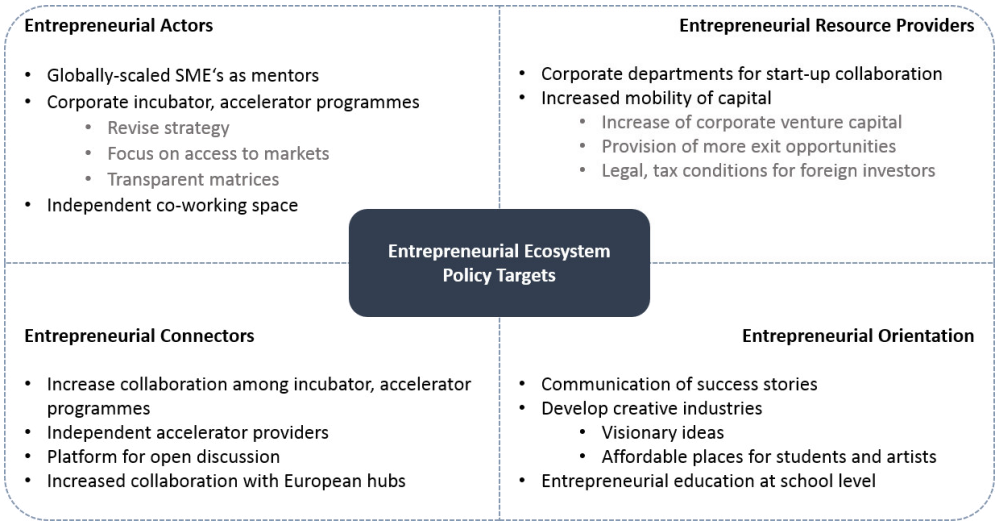


Figure 9: Key actors and inter-relationships within entrepreneurial ecosystems (Brown and Mason, 2017).

Actors

As Munich falls short on entrepreneurial recycling processes and hence lacks successful entrepreneurial mentors, globally-scaled SMEs could act as mentors for entrepreneurs. In Munich, corporations set up numerous incubator and accelerator programmes, but interviewees (I-1, I-5, I-6, I-7, I-8, I-11, I-14) emphasised that these programmes should revise their structure and strategy. This includes a focus on access to markets as well as a transparent measurement process of commitment and success. Literature (Isenberg, 2011) and entrepreneurs from Munich expressed the need for an independent co-working and networking space which is open to all entrepreneurial-minded people regardless of their background.

Resource providers

Interviewees (I-1 I-11, I-14) reach consensus that an incentivised department or person for start-up collaborations within large corporations could reduce bureaucratic, lengthy processes and thus could enable faster and more effective partnerships. Further, the mobility of capital needs to be strengthened. To pursue global opportunities, entrepreneurs need access to risk capital from scalable sources. Corporations could directly contribute by increasing corporate venture capital and indirectly by providing exit opportunities for start-ups which might attract more venture capital funds. Moreover, the government could make legal and tax conditions for foreign investors more attractive (Schönenberger, 2014).

Connectors

As the network of Munich's entrepreneurial ecosystem lacks the connections between its nodes, stronger collaboration and coordination among support organisations such as incubators and accelerators could have considerable benefits (I-1, I-5, I-7, I-11). Further, a joining force which bridges the cultural barriers

between corporations and start-ups is needed (I-1, I-13). Hence, it was emphasised that corporations should cooperate with independent accelerator providers such as TechStars (BSH, 2018b), which "brings their own mentors and fosters the TechStars culture while the corporation can learn from that and interact with start-ups" (I-1). Moreover, a platform for open discussions among stakeholders and policymakers could help to establish a common understanding of the current weaknesses and needs (I-7, I-9). Furthermore, policymakers and corporations should increase collaboration in Europe to enable entrepreneurs to benefit from the strengths of other systems (such as the designers in Paris, accountants in Switzerland, engineers in Munich (I-1)).

Orientation

As Munich was identified as Germany's "Silent Valley", policymakers could actively communicate success stories to the public to raise awareness of its prospering entrepreneurial ecosystem and make use of Munich's powerful media sector. Moreover, activities to develop creative industries and increase diversity in Munich could be established, comprising corporations opening up to visionary ideas, University programs targeting immigrants, subsidising the rent of buildings or an extended availability of affordable student housing (I-7, I-9, I-14). These actions could create a solid basis for a prosperous knowledge economy and improve the ecosystem's image. Further, many globally successful SMEs could actively engage as role models and guide entrepreneurs on how to build an international-oriented company. In order to develop an entrepreneur-friendly climate, entrepreneurial education could start at an earlier age (Fuerlinger et al., 2015).

Outlook

Overall, policy and corporations' initiatives could strengthen Munich's entrepreneurial ecosystem while interviewees (I-2, I-7, I-9, I-12) highlight the importance of the entrepreneurial-minded people in its development which are reflected in an interviewees concluding statement: "There is an abundance of great minds and ideas in the city, but in order to release Munich's entrepreneurial potential and strengthen its position as a hub for innovative ideas we need to get closer and form one community – innovative ideas need to flow and prosper within the region" (I-1).

8. APPENDIX: INTERVIEW GUIDE

The required data will be obtained through semi-structured interviews which will be audio-recorded. The following interview guide will provide guidance in form of a list of possible questions which might be asked during the interviews. Whereas the set of questions differs for each group of interviewees the interview process will be guided by the following order:

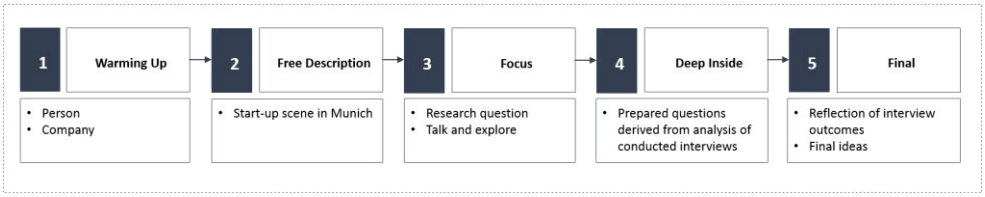


Figure 10: Interview process

1. Interview Guide for Entrepreneurs

1.) Warming-up:
   i. Who are you? Where are you from?
   ii. What is your role in the entrepreneurial ecosystem?
   iii. When was the start-up founded? When did you join the start-up?
   iv. What is the main business of your start-up?
   v. Since when is it located in Munich?
   vi. Where is your start-up located (in a co-working space, VC, incubator, rented space, …)? Was it always located there?

2.) Free Description:
   a. Munich as a start-up hub
      i. What is Munich famous for?
      ii. What is the reputation of the city in general and in the start-up scene?
      iii. Compared with other start-up hubs, what is special about Munich?
      iv. Would you recommend Munich as a location for other start-ups?

   b. Interaction within the ecosystem
      i. With which type of organisation (University/ Public research organisation/ Corporate sector/…) did you interact the most?
      ii. What were the reasons for the interaction?
      iii. Which benefits/ challenges did you face?

3.) Focus
    a. Interaction with corporations
        i. Have you interacted with corporations before/ after founding the start-up?
        ii. In which ways did you interact?
        iii. Which kind of interaction benefitted your start-up the most? And, in which of your start-up stages benefitted your company most from the interaction?
        iv. Do you interact with organisations based outside Munich?
        v. Did you face challenges in the interaction with corporations?
        vi. Is your start-up planning to engage more intensively with corporations in the future? For which purpose?
        vii. Would you wish to interact with corporations more intensively? What is the challenge of doing so?
        viii. Did you observe any major changes in the ecosystem over time?
        ix. How developed is the connection between entrepreneurs and corporations in Munich?
        x. Did you observe any changes in the interaction between start-ups and corporations over time? Did any specific events impact the interaction?
        xi. In general, which benefits and challenges do you perceive in such interactions?
        xii. Do you see any areas of further improvement areas in the ways in which entrepreneurs and corporations could interact in general?
        xiii. In your opinion, what is the motivation of corporations to interact with start-ups?

4.) Deep inside
        i. Questions which developed during previous interviews with entrepreneurs

5.) Final
        i. Any additional thoughts?
        ii. Concluding with the key findings

2. Interview Guide for Stakeholders

1.) Warming-up:

i. Who are you? Where are you from?
ii. Which organisation do you belong to? What is the purpose of your organisation?
iii. What is your role/ position in your organization?
iv. Where is the headquarter of your organisation?
v. Since when is it located in Munich? What is the focus of the Munich branch?

2.) Free Description:

a. Munich as a start-up hub

i. What is Munich famous for?
ii. What is the reputation of the city in general and in the start-up scene?
iii. Compared with other start-up hubs, what is special about Munich?
iv. How has the ecosystem changed during the past years? Any specific events?
v. Would you recommend Munich as a location for start-ups and for corporations to interact with such?

3.) Focus

a. Organisations interaction with start-ups

i. In which ways are you/ is your organisation interacting with Munich's ecosystem? Since when?
ii. What was your/ your organisations motivation for the interaction? Did the reasons change over time? Did the interaction change due to any specific events?
iii. Are you engaging with the ecosystem directly or do you collaborate with a third organisation? If so, why?
iv. Are you facilitating interaction with start-ups for other organisations?
v. Which benefits/ challenges did you/ your organisation face?
vi. Do you target a specific kind of start-ups and start-ups in a specific stage?
vii. Would your organisation wish to interact with the ecosystem more intensively? What is the challenge of doing so?
viii. Is your start-up planning to engage more intensively with the ecosystem in the future? For which purpose?

b. Engagement of corporations in the ecosystem

i. In general, how developed is the connection between entrepreneurs and corporations in Munich?
ii. Does it differ from other start-up hubs? In which ways?
iii. Did you observe any changes in the interaction between start-ups and corporations over time? Did any specific events impact the interaction?
iv. In general, which benefits and challenges do you perceive in such interactions for both sides?
v. Do you see any areas of further improvement areas in the ways in which entrepreneurs and corporations could interact in general?
vi. In your opinion, what is the motivation of corporations and start-ups to interact with each other?

4.) Deep inside

ii. Questions which developed during previous interviews with entrepreneurs

5.) Final

i. Any additional thoughts?
ii. Concluding with the key findings

3. Interview Guide for Corporations

6.) Warming-up:

i. Who are you? Where are you from?
ii. What is your role/ position in your organization?
iii. What is the business of your organization?
iv. Where is the headquarter of your organisation?
v. Since when is it located in Munich? What is the focus of the Munich branch?

7.) Free Description:

a. Munich as a start-up hub

i. What is Munich famous for?
ii. What is the reputation of the city in general and in the start-up scene?
iii. Compared with other start-up hubs, what is special about Munich?
iv. How has the ecosystem changed during the past years? Any specific events?
v. Would you recommend Munich as a location for other corporations in general and for engaging with start-ups?

8.) Focus

a. Organisations interaction with start-ups

i. Is your organisation engaging with start-ups? Since when?
ii. What was your organisations motivation for the interaction? Did the reasons change over time? Did the interaction change due to any specific events?
iii. Are you engaging with entrepreneurs directly or do you collaborate with a third organisation? If so, why?
iv. Which benefits/ challenges did your organisation face?
v. Which kind of interaction benefits your organisation the most?
vi. Do you target a specific kind of start-ups and start-ups in a specific stage?
vii. Do you interact also with start-ups based outside Munich?
viii. Is your start-up planning to engage more intensively with start-ups in the future? For which purpose?
ix. Would your organisation wish to interact with start-ups more intensively? What is the challenge of doing so?

b. Engagement of corporations in the ecosystem

i. In general, how developed is the connection between entrepreneurs and corporations in Munich?
ii. Does it differ from other start-up hubs? In which ways?
iii. Did you observe any changes in the interaction between start-ups and corporations over time? Did any specific events impact the interaction?
iv. In general, which benefits and challenges do you perceive in such interactions?
v. Do you see any areas of further improvement areas in the ways in which entrepreneurs and corporations could interact in general?

9.) Deep inside

iii. Questions which developed during previous interviews with entrepreneurs

10.)Final

i. Any additional thoughts?
ii. Concluding with the key findings

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