MASTER THESIS

HOW TO BE A SUCCESSFUL ECOSYSTEM BUILDER?

- A qualitative approach to the Entrepreneurship-in-Networks model

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EXECUTIVE SUMMARY

The importance and value of innovation ecosystems has gained more attention as they are recognized as valuable sources of competitive advantages for all parties involved. Moreover, entrepreneurial ventures are considered to play a crucial role in such setting as they provide innovative input and are a driving force of regional growth. Many corporate and governmental institutions aim to harness the networking advantages of such ecosystems as well as the innovative power of startups. Although startups are therefore considered as key aspect in vivid ecosystems, they often lack the resources to fully implement their vision and many of them fail.

One possible solution to two of these problems is the establishment of accelerators. They do not only support entrepreneurs but often also connect different actors that are interested in startups and the entrepreneurial culture. Accelerators are thus often considered as a bridge between different worlds. Moreover, there is a certain type of accelerator, the so-called Ecosystem Builder, that explicitly aims at providing support for startups as well as connecting them with the various stakeholders in order to foster entrepreneurship and its ecosystem.

But what specifically needs to be offered by an Ecosystem Builder in order to be of value for the ventures and thus also for the ecosystem? To provide more insights on that, the Entrepreneurship-in-Networks model was applied as it suggests that new ventures require four types of capital to be successful: strategic, cultural, economic and social capital. Therefore, this concept was used to categorize the challenges encountered by the startups and the support mechanisms provided by Ecosystem Builder.

To find out about the challenges and support mechanisms, semi-structured qualitative interviews were conducted with six accelerators characterized as Ecosystem Builders that are located in Germany, the Netherlands and the US. These interviews were transcribed and analyzed based on a coding strategy that was inspired by the Grounded Theory.

The results show that entrepreneurial ventures encounter various challenges, but the studied accelerators also provide numerous support mechanisms that can be allocated to the different capitals. Additionally, the analyzed data indicates that the four capitals of the Entrepreneurship-in-Networks model are interrelated and thus an adjusted version of this model is presented.

Moreover, Ecosystem Builders appear to function as innovation intermediary between the different stakeholders. Therefore, there are four main take-aways for being a successful Ecosystem Builder: (1) provision of value for everyone involved, (2) developing an adapted accelerator structure, (3) provision of support for all four capitals, (4) provision of additional functions. These aspects were further used to derive the VACE (Value-Accelerator-Capitals-ESB Functions) Factors as guidelines for this specific accelerator type. The VACE factors are also applied in an illustrative case in order to demonstrate their applicability.

Based on these various findings, this master thesis contributes to academia in four ways: (1) through the combination of different concepts, it provides a new perspective on possible measures to support entrepreneurial ventures in ecosystems, (2) certain challenges and support mechanisms revealed by the collected data were not discussed on previous studies, (3) the suggested adjustment of the Entrepreneurship-in-Networks model could support the refinement of future research based on this model, (4) the developed VACE Factors are a new theory on how to support entrepreneurial ventures and its ecosystem as Ecosystem Builder.

The practical contribution covers three aspects: (1) the VACE Factors are used to develop a checklist which is a guideline for practitioners, plus its application is shown on illustrative case, (2) by structuring an Ecosystem Builder according to the VACE Factors, its attractivity for startups in increased, (3) thesis also provides guidance for startups that search for the most important benefits an Ecosystem Builder should offer them.

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List of definitions

Accelerator:	An organization supporting not-early stage, rather later stage startups by providing specific resources and services focused on education, mentoring and funding during an intensive program of limited duration (Kohler, 2016; Pauwels, Clarysse, Wright, & Van Hove, 2016).
Corporate-Startup- Engagement (CSE):	A summary of collaborations between established corporates and startups e.g. in the form of pilot projects (own definition based on the usage of this term by the interview participants)
Ecosystem Builder (ESB):	A type of accelerator described by (Pauwels et al., 2016) and defined as an "accelerator typically set up by corporate companies that wish to develop an ecosystem of customers and stakeholders around their company. Large companies [] install or support an ecosystem builder accelerator in order to extend their network of stakeholders. The accelerator is used as a matchmaking device to connect lead customers with promising start-ups and in this way nurture the development of an ecosystem around the company." (p.21)
Incubator:	An organization that focuses on supporting early-stage startups, usually does not take equity and is run as non-profit organization (Christiansen, 2009). It offers its participants different targeted services, e.g. space, business support and network opportunities, usually during a limited duration (European Commission, 2003).
Innovation Ecosystem (IES):	A concept to clarify interdependencies of innovation activities and value creation of different collaborating actors (e.g. established companies, entrepreneurs, investors, research and governmental institutions, universities, venture capitalists, etc.) in an ecosystem (e.g. Hekkert, Heimeriks, & Harmsen, 2011)
Innovation Intermediary (II):	An organization that acts as broker in any aspect of the innovation process between two or more parties and thereby is neither focused on the generation nor the implementation of innovations, but on enabling other organizations to innovate (Howells, 2006; Winch & Courtney, 2007).
Regional System of Entrepreneurship (RSE):	A concept concerned with comprehending how entrepreneurial activities are shown in economic and societal contexts and how they are influenced by the regional setting and institutional environment (e.g. Cooke, 2001)

List of abbreviations

A#	Accelerator and its assigned number as research participant
CSE	Corporate-Startup-Engagement
EiN	Entrepreneurship-in-Networks model
ESB	Ecosystem Builder
IES	Innovation Ecosystem
II	Innovation Intermediary
KB	Knowledge Broker
OECD	Organization for Economic Cooperation and Development
RSE	Regional Systems of Entrepreneurship
VACE	Value-Accelerator-Capitals-ESB Functions

1 INTRODUCTION

In recent years, the importance and value of business ecosystems has gained more attention from scholars and practitioners as they are recognized as valuable sources of competitive advantages for all parties involved (e.g. Adner, 2006; Baldwin & Von Hippel, 2011; Chesbrough, 2003; Clarysse, Wright, Bruneel, & Mahajan, 2014). This is mainly because of three reasons.

Firstly, such ecosystems appear to be very information rich. Accessing information and knowledge on new buyer needs, evolving technologies and marketing concepts is less time- and money-consuming (Mason & Brown, 2014). They thus also facilitate the conversion of inventions from the knowledge economy (e.g. universities, etc.) into innovations for the commercial sector (Jackson, 2011).

Secondly, closeness to different actors and a loosely-coupled structure help to create an innovation culture, instead of top-down governance (Markman, Gianiodis & Phan, 2009). Accordingly, there are important trust relationships between the different actors in an innovation ecosystem (IES) (Jackson, 2011). These relationships as well as investments in infrastructure lead to improved efficiency of the IES (Jackson, 2011).

Thirdly, especially ecosystems of the evermore important knowledge economy are strongly influenced by agile and disrupting new ventures (Startup Genome, 2015). While the startups benefit from the already existing infrastructure (Audretsch, Heger, & Veith, 2014), they are driving force of regional growth (Qian, Acs, & Stough, 2013; Szerb, Acs, Autio, Ortega-Argiles, & Komlósi, 2013) and established companies profit from the innovative ideas of the entrepreneurs (Mason & Brown, 2014).

However, in order to benefit from these advantages, actors in the IES need to overcome different challenges that come from project management complexities and different goals of the various parties. Firstly, since different actors (e.g. established companies, entrepreneurs, investors, research and governmental institutions, universities, venture capitalists) with different goals and motivations are involved in an innovation ecosystem (Jackson, 2011), they run into the risk of conflicts of interests and culture (Perkmann & Walsh, 2007; Razak, Murray, & Roberts, 2014) as well as trust issues (Chesbrough & Brunswicker, 2013; Perkmann & Walsh, 2007; Razak et al., 2014). Accordingly, it might be difficult for actors to find a suitable research partner in the first place (Chesbrough & Brunswicker, 2013).

Secondly, there are project dependencies that need to be considered (Adner, 2006; Chesbrough & Brunswicker, 2013). Therefore, actors need to show advanced knowledge management skills (Chesbrough & Brunswicker, 2013) and consider that the innovation ecosystem's success depends on their own efforts but also on the effort and timing of their partners (Adner, 2006).

Thirdly, agreeing on funding arrangements for projects or commercializing the collaboratively developed product might be problematic because of already mentioned differences in interests and dependencies of the ecosystem's actors (Chesbrough & Brunswicker, 2013; Razak, Murray, & Roberts, 2014).

Fourthly, successful entrepreneurs are not a dime in a dozen and often simply lack the resources to fully implement their vision (Kohler, 2016). Additionally, it needs to be considered that entrepreneurial ventures are embedded in a wider economic and societal context and thus the quality of the outcome is

influenced by the regional and the institutional setting (Ács, Autio, & Szerb, 2014; Qian et al., 2013; Startup Genome, 2017; Szerb et al., 2013).

Nevertheless, fully planning out the ecosystem and the different positions in it, is not a solution to those challenges (Adner, 2006). It is rather that there needs to be a strategy with regards to the process of emergence and its challenges that lead to a successful ecosystem (Adner, 2006; Startup Genome, 2017). As a result, governments develop policies and initiatives that target supporting innovation ecosystems and entrepreneurship (Mason & Brown, 2014). These plans might include special funds, investments in infrastructure, tax reliefs for investors and publicly funded co-working spaces (Ács, Autio, & Szerb, 2014; Nager, 2014). However, such governmental induced support mechanisms often lack the anticipated success (Nager, 2014).

Another approach to support an IES comes from the corporate side. Numerous companies (e.g. Microsoft, Henkel, Bayer, Accenture, BMW, Siemens, Lufthansa) with the aim to strengthen their position in the ecosystem, but also the ecosystem in general, establish an accelerator that has the goal to enhance collaboration between the different actors (Kawohl, Rack, & Strniste, 2015; Pauwels, Clarysse, Wright, & Van Hove, 2016).

Furthermore, such accelerators can be used to bridge the gap between entrepreneurs and corporates as one has what the other lacks (Kohler, 2016): flexibility, passion and innovative ideas vs. resources, experience and scalable business models. Therefore, accelerator programs gain evermore importance because dispersed specialized knowledge and network-characteristics of a technology's life-cycle increase competitive pressure on incumbent businesses and their networks (Kawohl, Rack, & Strniste, 2015). Plus, accelerators are also beneficial for the startups as they reduces challenges new ventures often face (Kohler, 2016).

In a recently published paper, Pauwels et al. (2016) distinguish between three types of accelerators: (1) Ecosystem Builder, (2) Deal-Flow Maker, (3) Welfare Simulator. Especially interesting for this research is the Ecosystem Builder (ESB) because it acts as matchmaker between customers, corporates and startups to build an IES. It is defined as an

"accelerator typically set up by corporate companies that wish to develop an ecosystem of customers and stakeholders around their company. Large companies [...] install or support an ecosystem builder accelerator in order to extend their network of stakeholders. The accelerator is used as a matchmaking device to connect lead customers with promising start-ups and in this way nurture the development of an ecosystem around the company." (Pauwels, et al., 2016, p.21)

Examples for such ESBs are Accenture's FinTech Innovation Lab in London and Microsoft's Venture Accelerator in Berlin. Both accelerators seek to strengthen their relation with business partners and startups in their respective industry in order to reinforce their own market positions and to support the whole ecosystem (Pauwels, et al., 2016).

According to the given definition, there are two key aspects of a good ESB: (1) fostering entrepreneurship and strengthening the connection to startups as well as (2) strengthening the

connection to other stakeholders. This research however will focus on the relation between accelerator and startups because they are key of a vivid innovation ecosystem (Startup Genome, 2017) as well as a driving force of regional growth (Qian et al., 2013; Szerb et al., 2013).

Taking a closer look at entrepreneurship, it is suggested that startups are embedded in social systems (Groen, 2005) and require four types of capitals (i.e. strategic, economic, cultural and social capital) in order to successfully pass through different entrepreneurial phases – a process which is called the Entrepreneurship-in-Networks (EiN) model (Kirwan, Van Der Sijde, & Groen, 2006). Nevertheless, startups often struggle for example with developing a scalable business model (aspect of strategic capital) (Kirwan, et al., 2006), receiving enough funding (aspect of economic capital) (Groen, 2011) or balancing strong and weak ties in networks (aspect of social capital) (Peters, Rice, & Sundararajan, 2004). However, it is argued that those described four capitals can be supported by hosting and facility mechanisms that could be provided by accelerators (Arroyo-Vázquez, van der Sijde, & Jiménez-Sáez, 2010).

Consequently, in this research it will be explored how the accelerator type ESB supports the four types of capital of the EiN model in order to support entrepreneurial ventures in its ecosystem. These thoughts are visualized in Figure 1. The light blue items show the research's focus, namely the support provided by an ESB for the four types of capital of the EiN model. Although not a core theme of this study, it is also visualized that these four capitals are required by entrepreneurial ventures in order to be successful (grey box and arrow), while the dashed grey circle stands for the surrounding setting of the ecosystem.



Figure 1: Research context as extended but simplified version of the Entrepreneurship-in-Networks model by Groen (2011)

1.1 Research goal and research question

But what support mechanisms need to be provided by an Ecosystem Builder to be of value for the entrepreneurial ventures in its ecosystem? The goal of this master thesis is

- (1) to find out which startup-challenges in an IES are recognized by an ESB
- (2) to find out about the support mechanisms for startups provided by an ESB
- (3) to categorize the startups' challenges and the ESB's support mechanisms according to the four capitals of the EiN model.

Therefore, it will be analyzed which challenges the startups encounter and how these are diminished by the accelerator. Further, it can be indicated to what extent the capitals of the EiN model are supported. Eventually, best-practices or implementations recommendations with the aim to foster entrepreneurial for an ESB

Consequently, the master thesis will thus focus on the following research question:

"How does an Ecosystem Builder support entrepreneurial ventures based on the four types of capital of the Entrepreneurship-in-Networks model?"

The structure of this paper is as follows: It begins with a critical literature review which provides insights into innovation ecosystems, regional systems of entrepreneurship (RSE) and two importance actors in such ecosystems, namely accelerators and entrepreneurial ventures. Furthermore, one specific type of accelerator, the so-called Ecosystem Builder is discussed in more detail. Thereafter, the focus lies on entrepreneurial ventures and the Entrepreneurship-in-Networks model is explained. Additionally, the chapter is used to show different challenges of startups and mechanisms to diminish these challenges according to the four types of capital of the EiN model. The various findings of the literature review then build the basis for the propositions and conceptual model developed in chapter 2.5. The methodology describes the research design, the interview guidelines, case selection and explains data collection as well as data analysis. Eventually, the results show different findings of the research. Those findings will be used in the discussion to answer the research question and to refine the previously developed propositions and conceptual model. ESB. Additionally, this study's contributions and its limitations are indicated as well as suggestions for further research are made. Finally, an illustrative case based on the VACE Factors is provided in the Appendix (see 7.8 Appendix 8: Illustrative Case).

1.2 Academic and practical relevance

This master thesis is relevant for academia in four ways. First, it combines concepts like IES and RSE with the EiN model and the ESB and thus provides a new perspective on how entrepreneurial ventures in ecosystems can be supported. Second, the results entail challenges of startups and support mechanisms by ESBs that were not reveal in previous studies and hence provide more insights on the challenges of startups and how to diminish them. Third, an adjustment of the EiN model is suggested which could support the refinement of future research that uses this model. Fourth, the derived VACE Factors represent a theory on how to support entrepreneurial ventures as ESB based on the EiN model.

The practical relevance of this research is threefold. First, the VACE Factors also cover a checklist which is a guideline for practitioners to plan or improve an ESB. Additionally, this checklist is applied to an illustrative case with the aim to clarify its application. Second, by structuring an ESB according to the VACE factors, attractivity of the accelerator for startups (and the whole ecosystem) is increased. This would lead to more application the ESB team could choose from und thus increase its competitiveness. Third, this thesis also provides guidance for startups that search for the most important benefits an ESB need to provide.

2 THEORETICAL FRAMEWORK

The following chapter will show the theoretical framework of this research. First, it is shown how a critical literature review is applied in this research. Second, different concepts about innovation ecosystems, regional system of entrepreneurship and accelerators as well as important findings related to the Entrepreneurship-in-Networks model will be discussed summarized. Third, key aspects of the theoretical findings will be summarized and connected in a conceptual model which again will be used as basis for the empirical part of this study and to eventually answer the research question.

2.1 Literature review methodology

To develop the theoretical framework for this research, a literature review has been conducted based on the guiding question *"What is known about business accelerators in innovation ecosystems?"*. Further, to comprehensively screen and analyze existing studies on this topic, the approach of a critical literature review suggested by Saunders, Lewis, & Thornhill (2009) was followed.

The emphasized critical aspect of this method is defined in the fact that the used literature is assessed with willingness to question it (Saunders, Lewis, & Thornhill, 2009). To do so, topicbased knowledge as well as skills to analyze different resources (e.g. concerning their relevance, reliability, validity) and to assess their appropriability are required (Saunders et al., 2009). The main purpose of a critical literature review is to gain a broad understanding about studies and trends that influence a research topic, to demonstrate an understanding of what is already known about it and thus to being able to relate new findings to the previously done research in this field (Saunders et al., 2009).

A critical literature review has five main steps: (1) beginning with the definition of key parameters based on research questions and objectives; (2) deriving keywords and obtaining first literature; (3) reading and evaluating initial findings/ draft; (4) redefining parameters and obtaining new literature; (5) repeating steps until sufficient material for a critical literature review is collected (Saunders et al., 2009) (see Figure 2). Additionally, while conducting step 2 - 4 four tasks are advised, namely previewing (i.e. concerning its research goal and how it adds to the literature review), annotating (i.e. assessing the findings), summarizing (i.e. concerning the materials influence on the planned research).





(1) The initial parameters were provided by the two studies on which this research is based, namely the concept of the Ecosystem Builder (Pauwels, Clarysse, Wright, & Van Hove, 2016) and the Entrepreneurship-in-Networks model (Kirwan, Van Der Sijde, & Groen, 2006).

(2) The resulting initially used keywords were "business accelerator", "business incubator", "ecosystem builder", "innovation network", "innovation ecosystem", "Entrepreneurship-in-Networks model" as well as different combinations of these terms.

(3a) After reading and evaluating the initial findings, it was noted that more information about certain specifications and aspects of these terms were needed in order to reach the goal of this research.

(4a) Therefore, terms like "regional innovation systems", "regional systems of entrepreneurship", "innovation intermediary" were added to the search to broaden insights on innovation ecosystems. Moreover, further information about the EiN model and its capitals needed to be collected by searching for "strategic capital", "cultural capital", "economic capital" and "social capital" in combination with "startups", "entrepreneurship", "challenge", "support", "accelerators" or "incubators". Additionally, the snowball effect was applied: relevant references of the read articles were also retrieved and evaluated.

(3b) After reading and summarizing the readings collected in 4a, it became clear that more information about the creation of innovation ecosystems were needed.

(4b) Therefore, more literature was obtained by searching for terms like "creating/ developing innovation ecosystem", "regional system of entrepreneurship creation/ development" and "creating/ developing innovation networks", also in combination with "strategic capital", "cultural capital", "economic capital", "social capital", "startups" and "entrepreneurship".

(5) Eventually, it was clear which topics needed to be emphasized in the theoretical framework and sufficient information were provided. An overview of all 63 publications considered for the final literature review can be found in 7.1 Appendix 1: Overview Literature Review.

In order to find these articles, general databases like UTwente's Online Library, Scopus, Web of Science and Google Scholar as well as topic-specific databases like Emerald Insight, SAGE Journals online, Science Direct, Springer Link and Wiley Online Library were used. Further, only studies from the fields of social science and business administration have been considered. While importance was placed on using articles not older than 15 years, some fundamental publications exceeding this boundary were considered (e.g. Ahuja & Morris, 2002; Burt, 1992; Edquist, 1997). In Table 1 the used key words, exclusion criteria as well as the number of considered publications during step 2-4 are shown.

Table 1: Overview of used key words and exclusion criteria to select relevant publications for the critical literature review

	Key words	Exclusion criteria	# of articles screened	# of articles used
Step 2	"business accelerator", "business incubator", "ecosystem builder", "innovation network", "innovation ecosystem", "Entrepreneurship-in-	 Information promised by title or abstract were not provided Too context-specific (industry or country) not 	17	9

Step 4a	Networks model" and different combinations of these terms "regional innovation systems",	•	making it applicable to this research' settings Too old Definitions of capitals did	74	45
	"regional systems of entrepreneurship", "innovation intermediary", "strategic capital", "cultural capital", "economic capital" and "social capital" in combination with "startups", "entrepreneurship", "challenge", "support", "accelerators" or "incubators	•	not match the ones used in this research based by Groen et al. (2008) Information promised by title or abstract were not provided Too context-specific (firm, industry or country) not making it applicable to this research' settings Too old		
Step 4b	"creating/ developing innovation ecosystem", "regional system of entrepreneurship creation/ development" and "creating/ developing innovation networks", also in combination with "strategic capital", "cultural capital", "economic capital", "social capital", "startups" and "entrepreneurship"	•	No new information Information promised by title or abstract were not provided Too context-specific (industry or country) not making it applicable to this research' settings Too old	24	9
Step 5	/	/		115	63

The approach of a critical literature review was applied for two reasons: (1) The researcher was unfamiliar with current studies about specific types of innovation ecosystems and accelerators as well as with the EiN model. Therefore, a broad variety of literature needed to be studied in order to gain deep knowledge about state-of-the-art insights. (2) Besides always studying new materials with a certain degree of awareness, having a critical mind was especially important for this research. This is because concepts concerning innovation ecosystems and business acceleration are widely discussed, but often under very specific conditions leading to research findings that are not applicable for this study.

2.2 Innovation Ecosystems and Regional Systems of

Entrepreneurship

Research on innovation ecosystems (IES) and regional system of entrepreneurship (RSE) aims to clarify interdependencies of innovation activities, value creation (Ritala, Agouridas, Assimakopoulos, & Gies, 2013) and also entrepreneurship (Mason & Brown, 2014). They hence capture the growing importance of dispersed specialized knowledge and network-characteristics of resources and technologies and side with concepts of innovation networks and value chains (Baldwin & Von Hippel, 2011; Chesbrough, 2003; Clarysse, Wright, Bruneel, & Mahajan, 2014). Therefore, the two concepts will be discussed in more detail in the following.

The term ecosystem was first used by Moore (1993) when he emphasized that businesses would evolve through interacting with suppliers, customers and financiers and in this way, create more value than

operating on their own (Adner, 2006). Notable about such innovation ecosystems is that they do not follow a classical, linear value creation process but rather jointly cooperate through horizontal relations (Clarysse, Wright, Bruneel, & Mahajan, 2014; Iansiti & Levien, 2004). Hekkert, Heimeriks, & Harmsen (2011) summarize later that innovation ecosystems are based on four building blocks, namely (1) actors (e.g. companies, consumers, R&D, educational organizations); (2) institutions (e.g. technology standard, legislation); (3) networks (e.g. linkages, coalitions) and (4) technology (i.e. technology enabling and constraining different innovation activities).

Certainly, the aforementioned actors see different advantages in participating in ecosystems in general. To begin with, there are different beneficial functions in an IES: (1) facilitating entrepreneurial activities, (2) knowledge development, (3) knowledge exchange, (4) formation of markets, (5) mobilization of resources and (6) counteracting resistance to change (Hekkert, Heimeriks, & Harmsen, 2011). The geographic proximity brings closeness to knowledge, research, partners and competitors (Simard & West, 2006). Accordingly, IES appear to be very information rich and thus gaining access to information and knowledge on new buyer needs, evolving technologies and marketing concepts is less costly (Mason & Brown, 2014; Simard & West, 2006). This again facilitated the conversion of inventions from the knowledge economy (e.g. universities, etc.) into innovations for the commercial sector (Jackson, 2011). Additionally, closeness to different actors and loosely-coupled structures foster an innovation culture instead of top-down governance (Iansiti & Levien, 2004; Markman, Gianiodis & Phan, 2009) as well as using knowledge spillovers (Simard & West, 2005). Further, actors in strong business ecosystem have built important trust relationships (Jackson, 2011). These relationships as well as investments in infrastructure lead to improved efficiency (Jackson, 2011). Fostering entrepreneurship in ecosystems leads to increased productivity growth and innovativeness (Mason & Brown, 2014) as well as to increased regional growth (Qian, Acs, & Stough, 2013; Startup Genome, 2017; Szerb, Acs, Autio, Ortega-Argiles, & Komlósi, 2013). At the same time, startups in such ecosystems benefit from again knowledge spillovers, but also access to missing resources and to mobile personnel (Saxenian, 1996; Simard & West, 2006).

However, using these collaboration benefits comes with different challenges for the various actors. Since different actors with different goals and motivations are involved, there are risks of conflicts of interests and culture (Jackson, 2011; Perkmann & Walsh, 2007; Razak, Murray, & Roberts, 2014) as well as trust issues (Chesbrough & Brunswicker, 2013; Perkmann & Walsh, 2007; Razak et al., 2014) and effecting funding arrangements or commercialization (Chesbrough & Brunswicker, 2013; Razak, Murray, & Roberts, 2014). Moreover, joint value creation has management complexities and dependencies (Adner, 2006; Chesbrough & Brunswicker, 2013) that require actors to show advanced knowledge management skills (Chesbrough & Brunswicker, 2013) and to consider that the innovation's success depends on their own efforts but also on the effort and timing of their partners (Adner, 2006).

Moreover, to specifically support entrepreneurship, it needs to be considered that (1) entrepreneurs take risks when pursuing an opportunity (Ács, Autio, & Szerb, 2014) and (2) they need to mobilize own resources as well as those owned by other in order to do so (Ács et al., 2014); (3) the perception of desirability and feasibility of pursuing an opportunity (i.a. concerning the entrepreneur's own capabilities

as well as regional and institutional factors) regulates the entrepreneurs' actions (Ács et al., 2014). Therefore, mechanisms in IES should facilitate these three aspects.

In order to harness the advantages and to overcome the challenges, the successful management of ecosystems has been gaining more attention from academia as well as from business and governmental organizations (Adner, 2006; Ritala, Agouridas, Assimakopoulos, & Gies, 2013). However, there are various studies focusing on generic features of IES (Mason & Brown, 2014) and those can mainly be divided into two types of research: (1) research on building ecosystems and different lifecycle phases (e.g. Moore, 1993; Ritala, Agouridas, Assimakopoulos, & Gies, 2013); (2) research on management mechanisms in ecosystems (Ritala et al., 2013).

It is explained that the creation of ecosystems focuses on the initial engagement of different actors, while management approaches explore maintenance and coordination of the actors (Ritala et al., 2013). Ritala et al. (2013) combine different findings of those two notions and summarize four common phases of creating and managing ecosystems: (1) attracting participants and building structures that connect them (2) setting-up contractual frameworks and establishing shared business goals; (3) establishing formal structures, inter-firm and inter-personal relationships, trust and open communication between actors (i.e. maintaining value creation); (4) finding appropriability in contracts and guidelines for profit generation as well as ensuring the communication and understanding of the different actors' goals and needs.

Still, the common understanding is no "one size fits all" (Fransman, 2014; Mason & Brown, 2014; Saxenian, 1996). This is mainly because the aforementioned phases are influenced by regional factors (e.g. infrastructure, network relations) and actors in the ecosystem (e.g. established companies, entrepreneurs) (Fransman, 2014; Mason & Brown, 2014; Ritala et al., 2013; Saxenian, 1996), the age of the ecosystem (Fransman, 2014; Mason & Brown, 2014; Saxenian, 1996) and the prevailing industry (e.g. service- or technology-focus, regional- or global-focus and speed of change) (Ritala et al., 2013; Saxenian, 1996). Moreover, although entrepreneurship is considered as a crucial aspect in competitive ecosystems (Mason & Brown, 2014; Qian et al., 2013; Szerb, et al., 2013; Startup Genome, 2013), approaches on IES oftentimes considered entrepreneurship to happen automatically and disregard factors that are necessary in order to exploit entrepreneurial opportunities (Qian et al., 2013; Szerb et al., 2013)

Therefore, research on regional systems of entrepreneurship (RSE) is especially interesting for this study. While there are many different categories of IES (e.g. national and regional innovation systems, clusters and science parks, etc.), RSE is concerned with how entrepreneurial ventures are embedded in a wider economic and societal context as well as influenced by the regional setting (e.g. access to resources, infrastructure, network characteristics, culture) (Ács, Autio, & Szerb, 2014; Cooke, 2001; Doloreux, 2002; Schrempf, Kaplan, & Schroeder, 2013; Qian et al., 2013; Szerb, Acs, Autio, Ortega-Argiles, & Komlósi, 2013) and the institutional environment (e.g. subsidies, bankruptcy laws, labor market regulations, agreements between incumbent market players) (Audretsch, Heger, & Veith, 2014; Audretsch, Falck, & Heblich, 2011). Mason and Brown (2014) further explain RSE as a set of three connected main actors: (1) organizations (e.g. companies, banks, venture capitalists), (2) institutions

(e.g. governmental or research, financial bodies) and (3) entrepreneurial actors (potential and existing entrepreneurs) that all engage in entrepreneurial processes (i.e. enhancing and governing regional entrepreneurial performance). Therefore, the concept of RSE can be utilized as basis to define the research setting and hence to analyze different actors and their support for entrepreneurship and eventually on the regional ecosystem.

However, there is a lack of understanding how RSE evolve and how to manage them (Mason & Brown, 2014). Therefore, a combination of aspects of the previously discussed four phases of an IES and conditions that are favorable for entrepreneurship should provide more insights into successfully managing innovation ecosystems emphasizing regional entrepreneurship. To do so, it is considered that innovation ecosystems as well as the requirements of entrepreneurship are mainly supported by two other regional actors, namely governments and corporations (Kawohl, Rack, & Strniste, 2015; Mason & Brown, 2014; Nager, 2014).

Governments in the Organization for Economic Cooperation and Development (OECD) have been strongly focusing promoting new ventures, universities and research organizations during the last twenty years in order to foster regional ecosystem (e.g. R&D grants and tax incentives, business accelerators and incubators, proof-of-concept funds and access to funding, support for university-based spin-off firms, increasing the supply of risk finance initiatives) (Clarysse, Wright, Bruneel, & Mahajan, 2014; Mason & Brown, 2014; Nager, 2014). Additionally, new policies are aiming at the development of networks, alignment or priorities and synergies between different actors. (Clarysse et al., 2014; Mason & Brown, 2014). However, these governmental initiatives often lack the anticipated success (Nager, 2014). Governmental incubators and accelerators often lack market exposure, while the research findings are less suitable for commercialization (Mason & Brown, 2014).

Then again, in each RSE, there appears to be at least one established company with key management functions (e.g. creating a shared vision and network configurations), that is rich in technology and highly skilled employees (lansiti & Levien, 2004; Mason & Brown, 2014; Partanen & Möller, 2012). These firms attract skilled workers from outside the area (Feldman, Francis, & Bercovitz, 2005; Partanen & Möller, 2012), provide commercial opportunities for local businesses and invest in infrastructure (lansiti & Levien, 2004; Jackson, 2011; Partanen & Möller, 2012) as well as provide space and resources for local startups (Mason & Brown, 2014). Companies that actively focus on building an ecosystem and fostering startups that match their innovation strategy through incubators and accelerators, engage in so-called ecosystem venturing (Clarysse et al., 2014 based on Birkinshaw & Hill, 2005). These accelerator programs gain evermore importance because of dispersed specialized knowledge and network-characteristics of a technology's life-cycle (Kawohl, Rack, & Strniste, 2015). By bringing these various benefits, companies in these focal positions strengthen different actors and thus the whole RSE (Mason & Brown, 2014).

The function of an RSE is thus to enable interactions between three major actors: entrepreneurs, organization (e.g. firms, research institutions and government agencies) and governmental institutions (e.g. government) (Mason & Brown, 2014; Qian et al., 2013) (see Figure 3: Illustration of a RSE (own illustration)) in such a way that value can be created that no single actors could have created alone

(Adner, 2006). This research however focuses on how one specific type of accelerator, the Ecosystem Builder, supports entrepreneurs in its regional ecosystem. Therefore, the following two chapters will focus on accelerators and entrepreneurial ventures.



Figure 3: Illustration of a RSE (own illustration)

2.3 Accelerators: The Ecosystem Builder

As an important party in an innovation ecosystem, accelerators are known as organizations that offer support for entrepreneurs in form of networking opportunities, mentorship and access to funding (Pauwels, Clarysse, Wright, & Van Hove, 2016). However, accelerators are often mixed up with incubators as both have become umbrella terms for startup programs providing some sort of service structure (Pauwels, et al. 2016). There are countless definitions of both types (e.g. Cohen & Hochberg, 2014) which probably stems from but also has led to an inconsistent distinction among practitioners and variations in the execution of different venture support programs.

Incubators focus on early-stage startups, usually do not take equity and are run as non-profit organizations (Christiansen, 2009). They offer their participants different services (e.g. space, business support and network opportunities) and thus reduce overhead costs which increases the survival and growth prospects of new ventures (European Commission, 2003).

While some provided benefits overlap with those of an incubator (Cohen & Hochberg, 2014), accelerators usually support not early-stage ventures by providing them with specific services focused on education and mentoring as well as company-specific resources during an intensive program of limited duration (Kohler, 2016; Pauwels, et al., 2016). Therefore, accelerators are seen to not be primarily designed to provide monetary and materialistic support but to emphasize business development and enhancing a startup's attractiveness for investments (Pauwels et al., 2016).

Although there are still many variations regarding profit- or non-profit-orientation, duration, program structure, availability of co-working space, industry-specificity, affiliation with companies, universities and other organization, most researchers agree on the following characteristics of an accelerator: program duration is limited; provision working space and opportunities for funding; focus on networking, education and mentorship (Cohen, 2013; Radojevich-Kelley & Hoffman, 2012).

But why are accelerators so interesting for established companies? – Practitioners, just like scholars, are aware that knowledge necessary to generate innovations increasingly resides in the external environment of corporations (Chesbrough, 2003; Kohler, 2016; von Hippel, 2005). Different researchers (e.g. Ahuja & Lampert, 2001; Dushnitsky & Lenox, 2005) find entrepreneurial ventures to be a valuable source of highly innovative ideas which could be straightforwardly accessed by offering capital and other advantages (Chesbrough & Tucci, 2004).

Regarding the accelerators' value for innovation ecosystems, research indicates two main problems that can be diminished by such an organization. Firstly, it is stated that it is not that the companies in ecosystems compete against each other but rather that they compete against other ecosystems (e.g. Partanen & Möller, 2012). Consequently, companies are highly motivated to strengthen their ecosystem and support innovation generation with the aim to keep being competitive (e.g. Dushnitsky & Lenox, 2005; Teece, Pisano & Shuen, 1997). Nevertheless, traditional processes often hinder the search and discovery of innovation and thus lead to missed opportunities (Baldwin & Von Hippel, 2011; Chesbrough, 2003). Secondly, while startups promote disruptive innovations that often replace established business models and incumbent technologies, they often lack the resources to fully implement their vision (Kohler, 2016).

Here accelerators come into play – often funded along specific industries or technologies (e.g. automotive, FinTech, etc.) – they can be used as contact point between established companies and innovative startups (Kawohl, Rack, & Strniste, 2015; Kohler, 2016). Accelerators provide startups with support by offering them lacking resources and network contacts, while the ecosystem around the accelerator benefits from the startups' innovativeness (Kawohl et al., 2015; Kohler, 2016). Therefore, accelerators strengthen the competitiveness of an IES and its organizations in it, while they also increases startups' survival rate which again contributes to regional growth (Qian et al., 2013; Szerb et al., 2013).

Nevertheless, setting up an accelerator program comes also with challenges and hence different researchers studied startup support programs in order to find success factors. Radojevich-Kelley and Hoffman (2012) for examples analyzed the top five accelerator programs (i.e. Capital Factory, LaunchBox Digital, Start@Spark, TechStar and Y Combinator) in the US and found the most critical

success factor of the programs was mentorship in combination with access to investors and venture capitalists. Kawohl et al., (2015) conducted a research in which they analyzed the German market and studied more than 40 incubators and accelerators. Their research resulted in discussing different challenges and opportunities of such different accelerators. Their findings are summarized in Table 2: Opportunities and challenges of incumbent companies and startups engaging in accelerators (adapted from Kawohl et al., 2015).

	Opportunities	Challenges
Incumbent Company	 Connecting startups' dynamics with imbedded companies' resources to generate new products, services and business models Learn from startups' behavior (agility, dare to fail, customer orientation, etc.) and transferring this behavior to its corporate environment 	 Conception of a program that matches the company's setup Management of financial risks Clash of two different worlds
	 Generating positive image effects 	
Startup	 Reducing risks during business formation through having resources, favorable conditions available because of collaborating with a corporate (e.g. location, financial measures, coaching) 	 Identification of a suitable program Different/ divergent interests between startup and corporate company
	 Support during the development of a business plan and hence simplification of the follow-up financing 	

Table 2: Opportunities and challenges of incumbent companies and startups engaging in accelerators (adapted from Kawohl et al., 2015)

One approach to exploit these opportunities and to cope with these challenges is to develop an accelerator that is rather specific of its purpose and goals (Kawohl et al., 2015). Therefore, it is important to define the accelerator's mission and structure the program accordingly to make it successful. Of interest for this research are thus accelerator setups that not only support startups but that are also specific about the strengthening their innovation ecosystem.

2.3.1 Ecosystem Builder

One specific type of accelerator that is interesting for this research is the so-called Ecosystem Builder (ESB). This typology matches the concept of ecosystem venturing and steams from the work of Pauwels and his colleagues (2016) where they applied the design perspective by Zott and Amit (2010) to pinpoint an accelerator's primary design (i.e. Theme, Program Package, Strategic Focus, Selection Process, Funding Structure and Alumni Relations).

The ESB is defined in the introduction as

"accelerator typically set up by corporate companies that wish to develop an ecosystem of customers and stakeholders around their company. Large companies [...] install or support an ecosystem builder accelerator in order to extend their network of stakeholders. The accelerator

is used as a matchmaking device to connect lead customers with promising start-ups and in this way nurture the development of an ecosystem around the company." (Pauwels, et al., 2016, p.21)

and its aim is – as the name implies – to develop an ecosystem of companies, startups, investors as well as other stakeholders around their business (Pauwels et al., 2016). At the same time, it serves as matchmaker: the Ecosystem Builder incorporates its stakeholders in its accelerator's operations (e.g. executives are involved in selecting promising ventures, employees are mentors for the startups) and can build up a network which is oriented towards the current and potential customer base (Pauwels et al., 2016). Another striking characteristic is that it has no profit orientation and provides a participating startup not with any investments (Pauwels et al., 2016). Therefore, value is mainly added by connecting different stakeholders as well as by providing mentoring (Pauwels et al., 2016).

Since the ESB is described as an accelerator design with the aim to match startups, companies, investors and other stakeholders and to build an innovation ecosystem, it is similar to concepts of so-called innovation intermediaries (II) (also sometimes referred to as knowledge brokers). Therefore, this research stream also interesting for this thesis because it provides an overview of possible functions of an Ecosystem Builder.

The term innovation intermediary as defined by Howells (2006) describes "an organization or body that acts as an agent or broker in any aspect of the innovation process between two or more parties." (p.720) and engages in activities like scanning markets, generating and combining information, brokering and gatekeeping between parties as well as supporting the commercialization of collaboration outcomes. A second definition interesting for this paper, is one that describes an II as "member of a network of actors in an industrial sector that is focused neither on the generation nor the implementation of innovations, but on enabling other organizations to innovate." (Winch & Courtney, 2007, p. 751).

Therefore, IIs have the aim to diminish challenges like lack of common knowledge, shared vision and trust, or complexity of knowledge transfer and to facilitate innovation (Hargadon & Sutton, 2000; Ye & Kankanhalli, 2013). Additionally, different researchers (e.g. Mason & Brown, 2014) emphasize the importance of an innovation intermediary coordinating different aspects of an innovation ecosystem: supporting startups, coordination knowledge flows between established companies and new ventures as well as linking resources.

The accelerator type ESB and innovation intermediaries are promising third-parties connecting different actors in ecosystems. Both act as bridging parties who connect, recombine and transfer knowledge in their ecosystems in order to facilitate innovation. Howells (2006) suggested typology indicates a range of activities to foster entrepreneurship and knowledge flows in innovation ecosystems. Therefore, the tasks assigned to an II can be used as guideline to describe the activities of an ESB and relate them directly to positively influence entrepreneurship and innovation generation.

Moreover, such networking organizations have two important features. Firstly, the institutionalization of networking indicates that they have established mechanisms that lead to scalability of networking effects (Hansen, Chesbrough, Nohria, & Sull, 2000). Secondly, networking offers preferential access to

resources (e.g. being able to call a meeting and receive the full attention of busy people) (Hansen et al., 2000). Both features are beneficial for startups entering a new ecosystem.

2.4 Entrepreneurial Ventures: The Entrepreneurship-in-Networks Model

As one of the major components of an innovation ecosystem, it is important to take a closer look at entrepreneurs, how entrepreneurship evolves and sustains in social systems. This is something the Entrepreneurship-in-Networks (EiN) model aims to explain (Groen, 2011). In order to understand this complex construct, it is necessary to take a closer look the Social System Theory (Parson, 1951), the Three Entrepreneurial Phases (Van der Veen & Wakkee, 2004) and the 4s Model (Groen, 2005) since they build the base for the EiN model. However, they will only be shortly summarized because they are not considered in the subsequent parts of this master thesis.

The Social System Theory (Parson, 1951) explains social systems based on two assumptions: Firstly, social systems consists of multiple actors (individuals, groups or organizations) which are always in interaction with each other and whose behavior is assumed to be driven by the purpose of optimization of gratification and mediated by culture (Groen, Wakkee, & De Weerd-Nederhof, 2008 based on Granovetter, 1985). Secondly, the relationship between different types of capital as input and output of actions needs to be considered (Groen et al., 2008). From this, Groen (2005) and later other colleagues (Groen et al., 2008) derived four mechanisms that influence a social system (meaning in this context a business venture): (1) Goal attainment: Setting and pursuing goals; (2) Pattern maintenance: Creating and maintaining an effective pattern of behaviors; (3) Adaption/ Efficiency: Aiming to achieve greater efficiency in carrying out actions; (4) Integration: Sharing/interacting with other actors, so as to ensure that the other three dimensions are coordinated (Groen, 2005; Groen et al., 2008).

These four mechanisms must function effectively in conjunction with one another in order to achieve sustainability. Moreover, by regarding them with an entrepreneurial lens, those four mechanisms provide a tool which helps to analyze the founding and establishment of new business ventures (Groen, 2005) or the so-called entrepreneurial process.

Although studies on the entrepreneurial process focus on different aspects (e.g. economic and social value creation, contingency factors, role of the entrepreneur), most researchers agree that it is a procedure – including various actions, roles and functions – which aims at identifying and evaluating opportunities and the allocation of resources to use those opportunities for value creation (Glancey, 1998; Kunene, 2009; Shane, 2003; Singh, 2001). Additionally, most scholars consider between two to five steps for the entrepreneurial process (Kunene, 2009).

Van der Veen and Wakkee (2004) reviewed 100 of studies on the entrepreneurial process and summarize their findings as a three-step approach: (1) Opportunity Recognition (i.e. forming ideas into business opportunities); (2) Opportunity Preparation (i.e. translating required resources and market

needs into a business concept); (3) Opportunity Exploitation (i.e. interacting with the market) (Van der Veen & Wakkee, 2004). The researchers emphasize that the process might appear to be linear and sequential, but it is rather dynamic and iterative, while the entrepreneur is considered as the driving force (Van der Veen & Wakkee, 2004). Further, the process is influenced by the entrepreneur's environment which matches to the notions of IES and RSE and is therefore suitable for this study.

Moreover, the networking function for entrepreneurs comes here into play because, in a social context, networks enhance learning and adapting, while firms can benefit from each other's tangible and intangible resources (Groen, 2005). Having access to and generating these resources – or capitals – are crucial aspects in networks. In order to better understand these dynamics of the entrepreneurial processes, Groen (2005) converted the before mentioned four social system mechanisms into four dimensions: (1) Scope: refers to the implementation of strategic intent in order to reach different goals and can be translated into strategic capital; (2) Skills & Value: refers to organizational culture (e.g. norms, rules, routines) and pattern maintenance (i.e. preservation of experience and knowledge) and can be translated into cultural capital; (3) Scale: refers to the entrepreneur's strive for optimization and the requirement to exchange resources for that and can be translated into economic capital; (4) Social Networks: refers to interactions in networks (e.g. communication, collaboration) and the access to other actors' resources and can be translated into social capital; (6, 2005; Groen, de Weerd-Nederhof, Kerssens-van Drongelen, Badoux, & Olthuis, 2002; Groen et al., 2008)

This 4s Model enables to analyze differences in the dynamic entrepreneurial process from a network perspective (Groen, 2005). It also indicates that these processes result in different types of capital which are necessary for an entrepreneur to increase strategic flexibility as well as operational effectiveness (Groen et al., 2008). Moreover, the research team found out that each type of capital is required when building up a sustainable venture(in some cases, a higher amount of one capital can compensate a shortcoming of another capital) (Groen et al., 2008) which leads to the EiN model. Figure 4 provides an overview of the mechanisms of the social system, the derived dimensions of the 4s Model and the resulting capitals of the EiN model (i.e. strategic, cultural, economic and social capital).



Figure 4: Overview of mechanisms, dimensions and capitals based on Groen (2008, 2011) and Groen et al. (2011) (own illustration)

The EiN model was introduced by Kirwan, Van Der Sijde and Groen (2006) with the aim to illustrate the process of an entrepreneur accumulating the required capital that enables opportunity recognition, preparation and exploitation – and thus the establishment of a new venture. As mentioned before, the researchers emphasize that a certain amount of each capital is necessary when building a viable business (under some conditions a higher amount of one capital can compensate a shortcoming of another capital) (Groen, 2005; Groen et al., 2008). Moreover, the four types of capitals are involved in every exchange between the actors (Groen, 2005) and can be considered as input and output of all actions in the entrepreneurial process (Groen et al., 2008). It can be seen in Figure 5: Entrepreneurship-in-Networks (EiN) model (adapted from Groen, 2011) that the four types of capital (grey) influence each phase of the entrepreneurial process (blue) which are all part of a value creation process (inside dashed lines).



Figure 5: Entrepreneurship-in-Networks (EiN) model (adapted from Groen, 2011)

Since the EiN model indicates the different needs of a startup and hence builds the ground for the research described in this paper, it is necessary to take a closer look at the strategic, cultural, economic and social capital. First, each capital is defined and explained in more detail. Then challenges and support measures are discussed. This approach will help to provide content for data collection and will be used as basis for developing guidelines on how an Ecosystem Builder can support those new ventures.

2.4.1 Strategic Capital

Strategic capital is defined as "the set of capacities that enables actors to decide on goals and to control resources and other actors to attain them" (Groen et al., 2008, p.62) and is assign to the goal attainment

mechanism as it describes how an entrepreneur mobilizes resources and other players in order to reach its particular goal. This leads to the business model of a venture and is a concept which Al-Debei and Avison (2010) describe as the fundamental reasoning of a business by converting strategic objectives into viable tasks and functions. A business model also shows how an organization creates and captures value by assessing and serving customer needs (e.g. Chesbrough, 2007) and how it is linked to and interacts with its external environment and competitors (Al-Debei & Avison, 2010).

Nevertheless, new ventures often need support when developing their business strategy and analyzing its market since activities in fields of business development, accounting, fiscal liabilities and marketing are often new for the tech-savvy entrepreneurs and their teams (Arroyo-Vázquez et al., 2010). The greatest strategic capital challenge faced by startups are not having a marketing expert in their team, misunderstanding their target market or unwillingness to adapt to market needs (Kirwan et al., 2006; Radojevich-Kelley & Hoffman, 2012). Acquiring first paying customers/ identifying lead users and defining an appropriate sales strategy are additional problems (Giardino, Bajwa, Wang, & Abrahamsson, 2015; Kirwan et al., 2006).

Further, it is difficult for startups to define their minimum viable product (MVP) (e.g. capturing and evaluating assumptions that might fail the business concept) (Giardino et al., 2015) and evaluating how unique the venture's technology is (Kirwan et al., 2006). Startups also need support concerning setting-up contractual arrangements (with customers, production partners and distributors) and an appropriate IP strategy (Kirwan et al., 2006). Therefore, being too focused on the technology and neglecting the market environment could lead to a startup's failure (Groen, 2011; Salamzadeh & Kawamorita Kesim, 2015).

To overcome these challenges, studies about incubators and accelerators suggest to offer their tenants specialized business service like business plan development, market analysis and financial planning (Bøllingtoft & Ulhøi, 2005). In order to foster collective learning, it is also suggested to develop tenant-customized coaching programs and networks to increase the startup's competitive advantage (Peters, Rice, & Sundararajan, 2004). Nager (2014) adds that regulations and IPR in a digitalized economy need to protect real innovation but it should not be allowed to patent the obvious or to use IPRs as economic weapons.

A summary of all aspects to consider, challenges and support measures concerning strategic capital can be found in Table 3: Summary of strategic capital based on findings of the literature review.

Aspects to consider	 Business model (incl. assessing and service customer needs) (Al-Debei & Avison, 2010; Chesbrough, 2007; Groen et al., 2008; Wickham, 2006) Strategy (incl. market opportunities and market interaction, objectives, scope, competitive advantage) (Al-Debei & Avison, 2010; Groen et al., 2008; Wickham, 2006)
Challenges	 Lack of management & commercial skills (Arroyo-Vázquez et al., 2010Giardino et al., 2015; Kirwan et al., 2006; Radojevich-Kelley & Hoffman, 2012) Problems with business plan development and market analysis (Kirwan et al., 2006; Radojevich-Kelley & Hoffman, 2012) Technology orientation vs. market (Groen, 2011; Salamzadeh & Kawamorita Kesim, 2015)

Table 3:	Summary of	strategic capital	based on	findings of	the literature	review
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	•	Acquiring first paying customers and identifying lead users (Giardino et al., 2015; Kirwan et al., 2006) Difficulty to evaluate uniqueness of technology (Kirwan et al., 2006)
Support measures for startups and entrepreneurs	•	Specialized business services, coaching and networking programs (Bøllingtoft & Ulhøi, 2005; Peters, Rice, & Sundararajan, 2004) Market-technology-network assessment (Bøllingtoft & Ulhøi, 2005) Balancing strong IPRs and also setting limitations to them (Nager, 2014)

2.4.2 Cultural Capital

Cultural capital in general refers to forms of dominant societal knowledge, skills and the degree of education a person has and relates to an individual's status or power (Bourdieu, 1983). Groen (2005) explains cultural capital from a network perspective as values, norms, beliefs, assumptions, symbols, rule sets, behaviors and artefacts that define the actors, their environment and relations. Therefore, it is related to the pattern maintenance mechanism and allows organizational learning, knowledge exchange as well as adaption to change and thus leads directly to opportunity exploitation (Groen, 2008). The concept of organizational knowledge summarizes what employees know about their customers, products/ services, internal and external process, the market as well as success factors and mistakes (Bollinger & Smith, 2001).

Regarding the cultural capital, startups mostly face problems concerning the venture's legitimacy, but also concerning the team, it skills and education. A lack of legitimacy does not only influence the startup's status and credibility as a company but also as an employer (Cardon & Stevens, 2004).

Despite claiming that knowledge management is too time-consuming and too expensive, it is crucial because of customer intimacy, product-to-market excellence and operational excellence (O'Dell & Grayson, 1998). A lack of these skills can indeed lead to a startup failing (Groen, 2011; Salamzadeh & Kawamorita Kesim, 2015).

In order to increase legitimacy as member of a network, new ventures can participate in well-known accelerator programs to increase their visibility and credibility (Bøllingtoft & Ulhøi, 2005). To improve their struggle with knowledge management, startups are advised to use knowledge management platforms, wikis and collaboration tools early on (Cardon & Stevens, 2004).

A summary of aspects to consider, challenges and support measures concerning cultural capital can be found in Table 4: Own summary of cultural capital based on findings of the literature review.

Aspects to consider	 Value & norms, routines, rules, behavior, symbols and artefacts (Groen, 2005) Organizational knowledge & knowledge management (Bollinger & Smith, 2001; Groen, 2008)
Challenges	 Organizational legitimacy as company and employer (Cardon & Stevens, 2004) Lack of knowledge management (Groen, 2011; O'Dell & Grayson, 1998; Salamzadeh & Kawamorita Kesim, 2015)
Support measures for startups and entrepreneurs	 Participating in well-known accelerator program to increase visibility and recognition (Bøllingtoft & Ulhøi, 2005) Applying knowledge management tool (Cardon & Stevens, 2004)

Table 4 Original and an			···· C···· ····	- Call - Providence	
Table 4: Own summar	y of cultural c	apital based:	on findings	of the literature	review

2.4.3 Economic Capital

The definition of economic capital is "the set of mobile resources that are potentially usable in exchange relationships between the actor and its environment in processes of acquisition, disposal or selling" (Groen et al., 2008, p.63), it relates to the efficiency function and highlights a company's aim to achieve greater efficiency in carrying out their business. It is important to consider that the company size influences the selected kind of financing and that the chosen source of capital has a great impact on the future development of the company (Cassar, 2004). For example, bootstrapping might be sufficient for strengthening the initial idea while during the seed phase, angel investors are more interesting and venture capitalists become more relevant during later stages (Salamzadeh & Kawamorita Kesim, 2015). Accordingly, Kollmann, et al., (2017) show in their study the "Deutscher Startup Monitor 2017" (eng.: German startup monitor 2017) that startups in Germany use following types of funding most often (decreasing order): own equity, family and friends, business angels, operative cashflow, venture capital, bank loan, incubators/ accelerator, crowdfunding/ crowd-investing, venture debt, IPO, others.

Unsurprisingly, most challenges of startups are associated with its economic capital. Different researchers (Giardino, Bajwa, Wang, & Abrahamsson, 2015; Radojevich-Kelley & Hoffman, 2012; Salamzadeh & Kawamorita Kesim, 2015) found that acquiring enough funding/ grants/ subsidies – not only in the early stages - is one of the major obstacles for new ventures. Not receiving enough funding to overcome the Valley of Death (Groen, 2011) or not reaching the break-even point (Giardino et al., 2015) means for the startup that profits cannot balance losses and it cannot continue working on its project.

While experienced investors can coach founders and thus make a big difference for the startup's success, also policymakers can take measures that facilitate access to venture capital. Concerning public funding programs, Nager (2014) emphasizes that governments should further focus on specialized support packages for entrepreneurs. There are for example already the European Investment Fund (EIF), the European Angels Fund and an Innovation Platform enhancing the collaboration between fund manager, corporate investors and portfolio companies. Nevertheless, more money does not necessarily mean more success. Especially considering research on RIS and RSE, policy makers need to keep in mind that funding initiatives should meet the needs of the local ecosystem (Nager, 2014). While public funds cannot alone support startups throughout the whole lifecycle, they surely are very useful as seed money to attract private investors (i.e. Business Angels, etc.). Also accelerators and incubators can play in important role as they not only offer funds to startups but also inexpensive rents, services and equipment that would otherwise be unavailable or unaffordable (Bøllingtoft & Ulhøi, 2005). Another popular measure to gain funding is accessing capital through crowdfunding. This enables companies to generate money from non-accredited investors (not including equity offerings and not requiring a lead investor) (Nager, 2014).

A summary of aspects to consider, challenges and support measures concerning financial capital can be found in Table 5: Own summary of financial capital based on findings of the literature review.

Aspects to consider	 Financial resources (Groen et al., 2008) Capital and funding arrangements (Cassar, 2004) Startup's development stage and needs (Cassar, 2004; Salamzadeh et al., 2015)
Challenges	 Valley of Death (time-to-market vs. investment needed) (Groen, 2011) High costs and high risks of projects (Giardino et al., 2015) Lack of available funding (Nager, 2014) Acquiring not enough funding/ grants/ subsidies (Giardino et al., 2015; Radojevich-Kelley & Hoffman, 2012; Salamzadeh & Kawamorita Kesim, 2015)
Support measures for startups and entrepreneurs	 Venture capital (Kollmann, et al., 2017) Funding programs (Nager, 2014) Private investors (Kollmann, et al., 2017) Crowdfunding (Nager, 2014) Accelerators & incubators (Bøllingtoft & Ulhøi, 2005)

Table 5: Own summary of economic capital based on findings of the literature review

2.4.4 Social Capital

Social Capital is defined as "the set of network relations through which actors can utilize, employ, or enjoy the benefits of capital that is controlled or owned by other actors" (Groen et al., 2008, p.63) and relates to the integration mechanisms and the social networking mechanism. Moreover, social capital summarizes social networks, ties and structures that enforce access to information and other resources (Bøllingtoft & Ulhøi, 2005; Hoang & Antoncic, 2003) as well as the creation and management of those (Ingram, Hechavarria, & Matthews, 2014). Groen et al. (2008) emphasize that social capital only concerns the network of an actor that directly or indirectly gives access to other actors and their resources but does not concern the resources themselves. Further, a high social capital in networks decreases transaction costs (e.g. search and information costs, bargaining and decision costs, and policing and enforcement) between firms and other actors as it enhances trust, norms and building of networks through reliable and effective communication (Landry, Amara, & Lamari, 2002).

However, there are challenges concerning a venture's networking partner and quality of contacts. For one, it might be that a startup is focusing on an academic network and hence has a bad link to a commercial network (Groen, 2011). Other researchers found that collaborating and networking are hampered because of gaps between university research knowledge and business practices (Razak, Murray, & Roberts, 2014), struggle to find a suitable research partner (Chesbrough & Brunswicker, 2013) and trust issues, e.g. concerning the risk of disclosing valuable information (Bruneel, Ratinho, Clarysse, & Groen, 2012; Chesbrough & Brunswicker, 2013; Razak et al., 2014).

To overcome these challenges, dense innovation networks and clusters are enforced by different policies focused on attracting skilled employees, creating physical hubs, driving awareness in the media as well as building ecosystems with mentors, academics and researchers (Nager, 2014). While public startup hubs often struggle because of governmental procurement and bureaucracy, governments can support innovation hubs by offering financial support, incentivizing private investment and creating a suitable infrastructure (Nager, 2014). Moreover, accelerators, incubators, startup hubs and co-working spaces provide a place for actively sharing knowledge and networking activities, while they are also

great focal points for mentors, investors and others looking for an opportunity to get involved in the startup ecosystem (Bøllingtoft & Ulhøi, 2005; Nager, 2014).

Noteworthy is that there is a difference in quality and features of networks provided by the accelerators (Peters et al., 2004). Based on Granovetter (1973) it is known that homogeneous ties in networks are only of limited value to ventures as ties to the same kind of information accumulate and the marginal value of each following tie drops. Burt (1992) adds that concerning the flow of information strength of ties is less important than its redundancy with other ties. Accordingly, accelerators need to support the entrepreneur's connection to a loosely-coupled network (Peters et al., 2004) so that new ventures get the most out of their network.

A summary of aspects to consider, challenges and support measures concerning social capital can be found in Table 6: Own summary of social capital based on findings of the literature review.

Aspects to consider	 Contacts to customers, suppliers, networks, experts, colleagues and support agents (Goren et al., 2008) Access to resources, information and know-how (Bøllingtoft & Ulhøi, 2005; Greve & Salaff, 2003; Groen et al., 2008; Hoang & Antoncic, 2003) Trust (Landry et al., 2002) 			
Challenges	 Focus on academic networks and thus a bad link to market network (Groen, 2011) Network conditions (Peters et al. 2004) 			
	 Gaps between university research knowledge and business practices (Razak et al., 2014) 			
	 Struggle to find a suitable research partners (Chesbrough & Brunswicker, 2013) 			
	 Challenges to implement networking activities (Peters, Rice, & Sundararajan, 2004) 			
	 Trust issues (Bruneel, Ratinho, Clarysse, & Groen, 2012; Chesbrough & Brunswicker, 2013; Razak et al., 2014) 			
Support measures	Brokerage (Peters et al., 2004)			
for startups and	 Access to business networks and clusters (Bøllingtoft & Ulhøi, 2005; Hoffman 			
entrepreneurs	& Radojevich-Kelley, 2012)			
	 Access to a loosely-coupled network (Peters et al., 2004) 			

Table 6: Own summary of social capital based on findings of the literature review

2.5 Propositions & Model Conceptualization

In the following paragraph, different findings of the literature review will be used to develop propositions and a conceptual model. This model will again be examined after evaluating the qualitative interviews to indicate how to support entrepreneurial ventures as Ecosystem Builder.

It is to consider that ESBs are organizations that offer support mechanisms for entrepreneurial ventures, while they also emphasize building an ecosystem with different kinds of stakeholders (Pauwels, Clarysse, Wright, & Van Hove, 2016). Moreover, ESBs usually offer like every accelerator different services focusing on education, mentoring and networking (Kohler, 2016; Pauwels et al., 2016; Radojevich-Kelley & Hoffman, 2012) in order to increase the startup's survival rate (Kawohl, Rack, & Strniste, 2015; Kohler, 2016). Then again, these offered services show a wide range with different

emphases that can be related to the four capitals of the EiN model. This leads to the first main proposition:

PROPOSITION 1: An Ecosystem Builder provides support mechanisms for entrepreneurial ventures for all four types of capital of the Entrepreneurship-in-Networks model.

This proposition can again be divided in four sub-propositions, each one concerned with another type of capital of the EiN model and its support mechanisms.

Strategic capital concerns the startups abilities to define its goals and to use resources to reach those (Groen et al., 2008). However, new ventures are often in need of support when developing their business plan and analyzing the market environment (Arroyo-Vázquez et al., 2010). As accelerator, an ESB offers business services and coaching programs about business plan development (Bøllingtoft & Ulhøi, 2005) and financial planning (Bøllingtoft & Ulhøi, 2005) as well as about accessing different markets (Kohler, 2016; Pauwels et al., 2016). Since most ESB are focused on building a topic-specific ecosystem (Pauwels et al., 2016), most stakeholders involved can provide new ventures with industry-specific knowledge (Kohler, 2016) and hence support their understanding of market needs and requirements. Therefore, it might be expected that an ESB supports the startups ability to use resources to reach its goals which is the startup's strategic capital (Groen, Wakkee, & De Weerd-Nederhof, 2008). This leads to the first sub-proposition:

SUB-PROPOSITION 1a: An Ecosystem Builder provides support mechanisms for an entrepreneurial venture's strategic capital.

Though cultural capital concerns status of an actor, values and knowledge, startups find themselves struggling to be regarded legitimate firm (Cardon & Stevens, 2004). In this context, accelerators can counteract this by promoting entrepreneurial culture (Kawohl, Rack, & Strniste, 2015). Accordingly, it is suggested that startups can increase their legitimacy in an ecosystem by participating in well-known accelerator programs (Bøllingtoft & Ulhøi, 2005). Moreover, it is a challenge for new ventures to be considered as credible employer and hence they often lack necessary skills to fully exploit their business opportunity (Cardon & Stevens, 2004). Here, ESBs can make use of their specialized ecosystem and draw attention of well-educated and motivated employees towards new ventures (Feldman, et al., 2005; Mason & Brown, 2014; Partanen & Möller, 2012). These aspects lead to the second sub-proposition:

SUB-PROPOSITION 1b: An Ecosystem Builder provides support mechanisms for an entrepreneurial venture's cultural capital.

A new venture's economic capital foremost concerns its financial resources (Groen, Wakkee, & De Weerd-Nederhof, 2008) as well as its funding arrangements (Cassar, 2004) which are also the aspects that are associated with the most challenges. Although economic capital in monetary form is seldom directly provided by an ESB (Pauwels et al., 2016), its ecosystem is a promising source of different types of investments and funding arrangements for startups (Giardino et al., 2015; Radojevich-Kelley & Hoffman, 2012; Salamzadeh & Kawamorita Kesim, 2015). Moreover, it is a key aspects for startups to decide which type of financing is best for their current situation (Cassar, 2004). By offering different workshops and information about various types of financing options, accelerators support startups in

finding suitable sources of capital. Additionally, accelerators often provide low-cost coworking spaces and inexpensive equipment which leads to lower overhead costs of the startups (Bøllingtoft & Ulhøi, 2005). Therefore, the third sub-proposition is:

SUB-PROPOSITION 1c: An Ecosystem Builder provides support mechanisms for an entrepreneurial venture's economic capital.

The social capital of new ventures concerns its network and relationships through which they gain access to resources controlled by other actors (Groen et al., 2008). It thus relates to social ties and structures that enable access to information and other resources (Bøllingtoft & Ulhøi, 2005; Hoang & Antoncic, 2003) as well as the creation and management of those (Ingram et al., 2014). However, many startups struggle with finding a suitable commercial network (Groen, 2011) and managing their contacts (Bøllingtoft & Ulhøi, 2005). Certainly, accelerators in general are providers of locations for actively sharing knowledge and hosting networking events for all actors interested in startups (Bøllingtoft & Ulhøi, 2005; Nager, 2014). Nevertheless, networking and connecting different actors are key functions of the specialized accelerators type ESB since it is defined as "a matchmaking device" (Pauwels, et al., 2016, p.21) between different actors. Therefore, the fourth sub-proposition is:

SUB-PROPOSITION 1d: An Ecosystem Builder provides support mechanisms for an entrepreneurial venture's social capital.

While an accelerator ideally enhances all four types of capital, it can also be assumed that different accelerators support the four capitals varyingly strong as the various types differ in their structure and in what they offer the startups (Cohen & Hochberg, 2014; Radojevich-Kelley & Hoffman, 2012). An ESB – as a rather specialized accelerator - emphasizes providing value by building a suitable commercial and academic network and connecting different parties in an ecosystem (Pauwels et al., 2016). Additionally, ESB show two striking features: established networking mechanisms lead to scalability of networking effects and networking offers preferential access to resources (e.g. being able to call a meeting and receive the full attention of busy people) (Hansen et al., 2000). These three key aspects (i.e. value through network building, scalability of networking effects and preferential access to resources) indicate that an ESB support a startups' social capital the most. Therefore, the main second proposition is:

PROPOSITION 2: An Ecosystem Builder provides the most support mechanisms for social capital.

An ESB can also be considered as bridging third party, as it has the position to diminish challenges (e.g. lack of shared vision and trust, or complexity of knowledge transfer) and to facilitate innovation between the three actor groups (i.a. institutions, entrepreneurs and organizations) (Howells, 2006; Mason & Brown, 2014; Pauwels, Clarysse, Wright, & Van Hove, 2016; Ye & Kankanhalli, 2013) in an RSE. Pauwels et al. (2016) already suggest that an ESB "nurtures the development of an ecosystem" (p.21) by connecting different stakeholders. Although it is not the focus of this study, in this research it is rather suggested that by incorporating different stakeholders in its operations and working closely with them (Pauwels et al., 2016), an ESB recognizing their challenges and needs and eventually enhances working

towards solutions provided by the ecosystem (e.g. subsidiaries for entrepreneurs, market entry regulations, investments in infrastructure) (Cooke, 2001; Doloreux, 2002; Mason & Brown, 2014; Qian et al., 2013; Szerb et al., 2013). Therefore, an ESB might also be able to mobilize the four different types of capital the overall available for entrepreneurial ventures in its ecosystem. The resulting third proposition is thus:

PROPOSITION 3: An Ecosystem Builder mobilizes the four types of capital available for entrepreneurial ventures in its innovation ecosystem.

These propositions lead to the model shown in Figure 5: Conceptualized model (own illustration). The different black arrows indicate the expected strength of support the ESB offers. The thin black arrows show a normal or average provision of support mechanisms (P1, P1a-P1d), while the thick black arrow (P2) illustrates that the ESB is expected to provide the most support for social capital. Additionally, the doted black arrow (P3) indicates that there might be support mechanisms for the availability of the capitals. This model will also be used for the data collection process and thus as a theoretical basis for the qualitative interviews.



Figure 6: Conceptualized model (own illustration)

3 METHODOLOGY

This section will provide more information on how data is collected and analyzed in this master thesis. First, the research design is discussed. It covers aspects like the research's perspective, the reasoning for conducting semi-structured interviews and coding them inspired by the Grounded Theory (Glaser & Strauss, 1967) as well as thoughts on reliability, validity and generalizability of this study. Second, the sample selection is explained and selection criteria are clarified. Third, the interview guide describes the interview structure, the development of the questionnaire and adjustments made after the pretest as well as general remarks on conducting interviews are highlighted. Fourth, data collection shows more information about the conducted interviews as well as about the different interviewees. Fifth, data analysis provides insights into the applied coding approach.

3.1 Research Design

The goal of the master thesis is to explore what are best practice regarding an Ecosystem Builder supporting a startup's capital-related needs based on the Entrepreneurship-in-Networks model. Therefore, the research question is:

"How does an Ecosystem Builder support entrepreneurial ventures based on the four types of capital of the Entrepreneurship-in-Networks model?"

To answer this question, an Entrepreneurship-in-Networks-perspective is applied. Additionally, this research can be categorized as exploratory research as Robson (2002) defines it as studying "what is happening, to seek new insights; to ask questions and to assess phenomena in a new light" as well as a descriptive research which is explained as "to portray an accurate profile of persons, events or situations" (p.59). Moreover, a deductive approach – meaning structuring your practical research based on theoretical findings - is applied (Boeije, 2010), while the collected data serves as base for deriving to some extent generalized assumptions about Ecosystem Builders and their support offered to startups concerning the different types of capital.

Further, the data used for this research is based on six case studies of accelerators located in Germany, the Netherlands and the USA. One reason for conducting case studies is that they are useful for theory development because they investigate phenomena in its environmental context (Ridder, 2017). Another advantage is that the cases can be used as illustrations for the suggested propositions and for answering the research question based on concrete practical examples (Siggelkow, 2007). Moreover, using multiple case studies for a cross-case analysis supports the illustration of differences and commonalities of identified mechanisms and hence they increase replication logic (Ridder, 2017).

Primary data is gathered through semi-structured interviews with open-end questions. Moreover, additional data from the accelerators' website is used to add further information. During the non-standardized but in-depth interviews, the interviewer and interviewee discuss different topics and questions which are allowed to differ during each interview (Saunders et al., 2009). Therefore, the researcher has the freedom to adjust structure and content to the individual context and flow of conversation (Saunders et al., 2009). Accordingly, additional questions might be asked in case the

interviewer has the opportunity to dig deeper into the nature of the studied event (Saunders et al., 2009). All in all, there are three advantages of a semi-structured interview: (1) the interview is not strictly scripted and can differ accordingly; (2) allowing a conversation mode and opportunities for two-way interactions; (3) more important questions will be open rather than closed-ended and thus leave room for discussion (Yin, 2015) which matches the purpose of this research. Additionally, conducting interviews is recommended when planning on doing within-case or across-case analysis (Ridder, 2017).

As interviews and resulting discussion are used to gain deeper insights, it is advised to audio-record the conversion and to take notes (Saunders et al., 2009; Yin, 2015), if permitted by the interviewee.

The analysis of the collected data is inspired by the Grounded Theory by Glaser and Strauss (1967) which is suited for developing new theories instead of focusing on verification of already existing ones two unique features (Cho & Lee, 2014). One being the constant comparative analysis and the other one being theoretical sampling (Cho & Lee, 2014). Constant comparative data analysis describes an iteravtive process of data collection, analysis and finding comparable cases (Cho & Lee, 2014). Boeije (2010) clarifies that this method of stepwise data analysis can be used with the goal of deriving a theory because an explorative research becomes more focused over time as it is sought to verify earlier results by finding comparative cases that allow expanding, confirming or deepening the new insights (Boeije, 2010; Cho & Lee, 2014; Starks & Brown Trinidad, 2007). This focused way of sample selection is called theoretical sampling and is conducted until data saturation is reached (Boeije, 2010; Cho & Lee, 2014; Starks & Brown Trinidad, 2007). The selection of the theoretical sample in this study will be discussed in more detail in 3.22 Case Selection.

In Grounded Theory, the interviewer's goal is to learn about the interviewee's experience. While both participants "assume that their words will be understood as spoken and intended" (p.1375), probing questions are used to find out more about details (Starks & Brown Trinidad, 2007). Saunders et al. (2009) summarize the three tasks in Grounded Theory and explain that "the disaggregation of data into units is called *open coding*, the process of recognizing relationships between categories is referred to as *axial coding*, and the integration of categories to produce a theory is labelled *selective coding*" (p.509). Therefore, this approach is suitable as inspiration for data analysis in this master thesis research because it supports finding relationships between categories which matches an explanatory study, while methods of qualitative content analysis are rather focused on extracting categories from the data (Cho & Lee, 2014).

Moreover, the data management software ATLAS.ti 8.0 is used to code the interviews and manage the collected data.

As in every research project concerns about reliability, validity and generalizability regarding the semistructured interviews needed to be considered. In a qualitative research setting, reliability refers to whether different researchers would disclose similar information although there is a lack of standardization in the semi-structured interviews (Saunders et al., 2009). Then again, the data collected through semi-structured interviews only reflect reality at a certain point of time, with dynamic and complex circumstances, and thus might not be intended to be repeatable (Marshall & Rossman, 1999; Saunders et al., 2009). Saunders et al. (2009) note that in terms of reliability also bias of interviewer and interviewee should be considered. Interviewee or response bias describe given answers that not reveal the whole truth or interviewees avoiding aspects because they want to hold on to a socially desirable picture (Saunders et al., 2009). The interviewer might create bias through comments, tone, non-verbal behavior, lack of credibility or trust that influence the interviewee's response and disclosed information (also concerns the validity a little), the interpretation of gathered data is also prone to interviewer bias (Saunders et al., 2009). Taking a closer look at the validity of semi-structured interviews, it describes the scope of accessed data and the interviewer's ability to interpret the participant's language (Saunders et al., 2009). Therefore, validity appears to be a rather minor issue because carefully conducted non-standardized interviews leave room to discuss and clarify meaning and events from different points of view (Saunders et al., 2009). Concerns about the generalizability are on the other hand important to consider because data gathered through semi-structured interviews is not sufficient for deriving generalizations about the entire population when they are based on an unrepresentative number of cases (Saunders et al., 2009).

In order to minimize concerns about reliability and validity of this research following precautions were taken. To increase depth and significance of the research, open and probing questions were asked (Saunders et al., 2009) as discussed previously in more detail. Moreover, a pilot test of the interview was conducted before performing it with the participants. In this way, the researcher could assess flaws, limitations or other weaknesses within the interview design and had the possibility to make necessary adjustments before implementing the study (Turner, 2010). Regarding the reduction of interview bias, the interviewer sent information about herself and a picture beforehand in order to establish trust. During the interviews, a professional attitude and the role of the pollster interviewer were used, while interfering as little as possible in order to gain unbiased responses. Reduction of interviewee bias was enhanced by different measures. Each interview started with a summary of the research, a reminder that all the information provided will be treated confidentially and a little small talk to lighten the mood. At the end of the interview, the main points were summarized, and each participant had the opportunity to add or correct aspect. Additionally, each interview ended in the following way: I have no further questions. Is there anything else you would like to bring up, or ask about, before we finish the interview?" which again provided the interviewee with the possibility to mention additional thoughts, worries or other comments (Kvale & Brinkmann, 2009).

3.2 Case Selection

For this research, so-called theoretical sampling is applied since the samples are selected intentionally, based on the requirements of the study and until saturation is reached (Boeije, 2010). Therefore, potential interviewees needed to meet the following conditions:

(1) Characterization as an ESB. Noteworthy is that the population of Ecosystem Builders Is very little and in order to conduct sufficient interviews all these accelerators were considered that matched the specification of an Ecosystem Builder in a broader sense than defined by Pauwels et. al (2016). This means that accelerators were considered as ESB builder when:
(1a) Being characterized as an accelerator according to their own description and judgement of the researcher, e.g. Accelerator 6: "In addition to coworking infrastructure, startup ecosystem and network for science and research, our innovation workshop offers you these advantages: Creative Space, Exchange with all partners, Foresight and Innovation Impulse."

(1b) Being focused on developing an innovation ecosystem and match-making between different parties, e.g. Accelerator 2: "The accelerator brings together the community, startups, corporations and academia to promote digital entrepreneurship in Germany and beyond."

(1c) Providing mentoring and networking opportunities for the startups, e.g. Accelerator 4: "Customized mentoring and advice from industry experts and accomplished entrepreneurs, investors and service providers."

(1d) Thereby not necessarily being a corporate accelerator.

(2) Regional focus, e.g. Accelerator 6: "The accelerator is the center of the digital ecosystem in Bonn."

(3) Working with startups in industries that are relevant for the upcoming knowledge and digital economy (meaning focusing on FinTech, Industry 4.0 and rather not on media, art, etc.), e.g. Accelerator 5: "Aims to innovate the FinTech & CyberSecurity ecosystem by providing the most promising startups in the world with a top-notch accelerator program based in Amsterdam."

(4) Preferably residing in Western Europe because of a similar culture regarding entrepreneurship/startups and also risk-taking.

(5a) Exceptions were made regarding following aspects in order to increase the number of possible interviews: non-profit orientation/ no investments; corporate or non-corporate accelerator; accelerating very early-stage startups and thus convey the impression of an incubator, e.g. Accelerator 5: *"For the above program benefits, we ask for between 6-8% equity."*

(5b) Another exception to 4 is the Silicon Valley Accelerator. However, they are working with German Startups, meaning similar challenges view from a different perspective.

All in all, 28 accelerators in six countries were contacted, sometimes even twice. Seven agreed on doing an interview, while eight friendly declined the request and 13 did not respond. Noteworthy is that the low outcome is mainly attributed to one of the two reasons according to the accelerators' contact persons: (1) the accelerator's team had no time for the interview because of it being summer holidays and new startups batches were about to start; (2) general low capacity and they are focusing on making time for firms/ universities they are already collaborating with.

3.3 Interview Guide

Beginning with the opening or introduction of the interview, it is important to consider to establish trust and a comfortable setting for the interviewee (Saunders et al., 2009) so that important information become accessible. In order for the interviewer to not appear intrusive and rather enhance the openness of the interviewee, aspects emphasized by Saunders et al. (2009) about opening a semi-structured interview are used as guidelines:

- Thanking the participant for agreeing on the meeting
- Explaining briefly about the research and its goal
- Providing an information sheet
- Reiterating the participants right to confidentiality and anonymity
- Highlighting the interviewee's right to not answer questions and to stop the interview
- Provision and signing of the consent form
- Offering to provide a summary of the research's findings
- Asking for allowance to record the interview
- Summarizing topics of the interview and estimated time needed

Considering the main part of the interview, it was previously explained that semi-structured interviews might differ slightly in structure in covered content. Nevertheless, to make the different interviews comparable, the main questions will be the same for each accelerator.

Moreover, the questionnaire has been developed based on the literature review 2.2-2.4 (see 7.2 Appendix 2: Mapping of interview questions according to literature review), to examine and deepen the presented views and insights.

Therefore, the questions can be divided into five areas:

- 1. General part: accelerator program, regional innovation ecosystem
- 2. EiN Model Strategic Capital
- 3. EiN Model Cultural Capital
- 4. EiN Model Economic Capital
- 5. EiN Model Social Capital

While developing the questions for the parts 2-5, it was important to formulate the questions with clear and "easy" wording and adjust scientific terms to common language as the participants might not be familiar with the terms used in this research (Turner, 2010).

Furthermore, certain topics were enriched with probing questions (some of them are planned, while other might be posed ad-hoc) in order to clarify the given response or to explore it in more depth (Saunders et al., 2009).

At the end of each interview, it is advised to ask the interviewee whether he or she wants to add anything (Saunders et al., 2009). If so, further aspects can be discussed while the possibility to contact the interviewer later was also provided. Immediately after the interviews, the recordings should be checked and enriched with notes and other impressions.

The adjusted wording, structure and content of the questionnaire were tried out in a pretest interview with the goal to find any flaws and the revise them before the study is implemented (Turner, 2010). The result of the pilot test with a business consultant was that the wording was understandable, but

questionnaire can be shortened, while three questions could be merged, respectively moved to the general part (see

Appendix 3: Interview Guidelines before pretest and Appendix 4: Interview Guidelines after pretest for comparison).

3.4 Data Collection

Overall, data was collected through seven interviews with accelerators in four countries over a time period of 14 weeks. For analysis only six are being considered since one interviewee did not sign the consent form and thus the interview is not used for further steps (see Table 7: Overview interviews considered for analysis (own illustration)). This however does not influence the data's validity since saturation was reached with the interview conducted prior to that.

The duration of the interviews differed between 20-60min, depending on the interviewees schedule and were conducted in German and English as well as in person, face-to-face via Skype or vie telephone. However, in each interview there was enough time to cover all questions and thus to gain insights on the accelerator's program and explore different concepts discussed in the theoretical framework.

	Location	Language	Media	Duration
Accelerator 1 (A1)	Hannover, Germany	German	In person	~20min
Accelerator 2 (A2)	Berlin, Germany	German	Skype	~38min
Accelerator 3 (A3)	Den Haag, Netherlands	English	Telephone	~52min
Accelerator 4 (A4)	San Francisco, USA	German	Telephone	~60min
Accelerator 5 (A5)	Amsterdam, Netherlands	English	Skype	~50min
Accelerator 6 (A6)	Bonn, Germany	German	Skype	~20min

Table 7: Overview interviews considered for analysis (own illustration)

In advance of every interview, a short profile based on the information available online was prepared. Considered aspects included:

- Founding Year
- Location(s) of the accelerator
- Characterization as ESB
- Information about the program
- Admission criteria for startups
- Network partners

Having already some background information about the accelerator, allowed to adjust the interview content as discussed in 3.1 Research Design. Additionally, gathering data before the interview showed the interviewees that the interviewer is devoted to the topic and appreciates the time invested by the participants.

Moreover, to give the interviewee the chance to get familiar with the interview's content, a short presentation introducing the researcher and the research topic was sent beforehand (see 7.5 Appendix 5: Information Sheet for Interviewees). After each interview, the recording was transcribed and immediately enriched with note, remarks and first impressions.

3.5 Data Analysis

The analysis of the collected qualitative data is inspired by the Grounded theory by Glaser and Strauss (1967) and includes three steps.

The first step is called **Open Coding** and covers "breaking down, examining, comparing, conceptualizing and categorizing data" (Strauss & Corbin, 2008, p.61). To do so, after conducting each interview, first thoughts and impressions were noted, the interview's record was transcribed within two days and Open Coding was started afterwards. During Open Coding, it was considered that codes should be of descriptive or interpretative nature and relate to actions or processes (Boeije, 2010). Goal of this step is to explore and to get familiar with the collected data as well as to increase manageability (Boeije, 2010). For this initial grouping and labelling of text fragments, the main topics of the theoretical framework were used (i.e. IES and RSE, accelerators' structure and program,ESB, Entrepreneurship in Network model) and enriched with information as well as inspiration provided by the interviewees which is why this process is also sometime called Theoretical Coding (Beoije, 2010). The Open Coding of the six interviews, corresponding notes and information from the accelerators' websites resulted in a coding scheme of 278 codes. Those were later refined by improving wording and merging similar codes leading to a total of 165 codes that were used as a base for the next step.

Table 8 shows an example of the Open coding from the transcript of the interview with A3. The excerpt is the last part of the answer concerning the accelerator's program. The first part (blue) led to three codes, while the grey part entails four codes. Moreover, while the blue codes are based on the content of the interview, the first grey code "acting as gatekeeper and broker" is derived from chapter 2.3.1 Ecosystem Builder, the second grey code "providing startups with a "stamp of approval"" is inspired by the interviewee's wording. It was from then on used for similar quotes because it was considered as a concise description of the accelerator's impact on the startups' legitimacy.

Transcript/ Quotes	Codes developed during Open Coding
"[] Again, it depends on the level of experience of the	
team: sometimes we invest in companies with fantastic	 Considering the founding team's experience
technologies, very smart people who have invented it,	
but they are often less business-savvy. So, sometimes	 Setting up startup-specific milestones
a milestone is that they have to hire a commercial- or	
more business-savvy person. This is somehow our	
manner to guide the startups to a level where a follow-	 Supporting to find follow-up funding
up investor or private investor is getting interested in it.	
To cut a long story short, I think it's almost always	 Acting as gatekeeper and broker
possible to open the doors and I think it is important	
that we provide some sort of "stamp of approval". If we	Providing startups with a "stamp of approval"
invest in a startup, it is something different compared	 Increasing the startups legitimacy
to when it comes by itself without any backing.	

Table 8: Open Coding example

Suddenly there is a company that has invested in the	
startups - and it is not your everyday company, no, it is	 Considering the importance of the accelerator's
a reputable organization with money and a university	reputation
behind it - and that really helps the companies in our	
portfolio."	

The second step is called **Axial Coding** and includes the development of categories, allocation of matching codes and assessment of their relevance (Boeije, 2010). This process leads to a reduced data set as well as to increased conceptual abstraction (Boeije, 2010). In this research, the step resulted in 6 category groups, 14 main categories and 7 subcategories (see Appendix 6: Coding Overview – Open and Axial Coding and Appendix 7: Coding Scheme with explanation).

Table 9 shows how the codes from the previous example (see Table 8: Open Coding example) are used for Axial Coding. Further, it can be seen that some codes are allocated to more than one subcategory/main category/ category group because they relate to different factors. Moreover, it needs to be considered that Axial Coding is not a linear process and that the development of subcategories, main categories and category groups was an iterative process involving many small steps, adjustments and refinements. Therefore, the table below illustrates a rather finalized coding scheme.

Open Coding	Axial Coding		
	Subcategory	Main Category	Category Group
"Considering the founding team's	Program	Structure	Accelerator
experience"			
"Setting up startup-specific milestones"	Program	Structure	Accelerator
"Supporting to find follow-up funding"	/	Challenge	Cultural Capital
"Acting as gatekeeper and broker"	Gatekeeping and	Acting as ESB	Accelerator
	brokering		
"Providing startups with a "stamp of	Benefits	Structure	Accelerator
approval"	/	Support	Social Capital
	/	Support	Economic Capital
	/	Support	Cultural Capital
"Increasing the startups legitimacy"	/	Support	Cultural Capital
"Considering the importance of the	/	Challenges	Accelerator
accelerator's reputation"	/	Internal Affairs	Accelerator

Table 9: Axial Coding example

Furthermore, the quotes used and codes developed during Axial Coding were utilized to show a "challenge-and-support-measures" distribution of the interviewed accelerators. By counting the number of challenges recognized and support measure provided by the accelerators, it can be stated which capital is cared for the most. By presenting the number of quotes allocated to the different challenges and support measures, an indication of importance, presence or central role of a capital can be made.

The third step is the so-called **Selective Coding** and summarizes the process of analyzing the developed categories regarding possible connections between them and to form corresponding core categories. The goal is to transfer the findings into a more abstract, theoretical model facilitating the answer of the research question (Boeije, 2010). While developing core categories, Boeije (2010) suggests considering linkages to the theoretical framework and thus to the research goal as well as to the collected data and current events. In this case, Selective Coding was inspired again by the theoretical framework but also by terms used by the interviewees and resulted in 4 core categories that appear as appropriate, overarching themes that support the answer to the research question: (1) provision of value for everyone involved, (2) developing an adapted accelerator structure, (3) provision of support for all four capitals of the EiN model for entrepreneurial ventures, (4) provision of additional ESB functions.

These core categories will be presented in more detail in chapter 5.2.1 How to be a successful ESB and Main Take-Aways as the VACE (Value-Accelerator-Capitals-ESB Functions) factors.

4 RESULTS

In this chapter, the results of the conducted interviews are outlined. After collecting and coding the data, the outcome was a total of 364 analyzed text passages and 155 codes (see Appendix 6: Coding Overview – Open and Axial Coding). These findings are presented according to the three category groups, i.e. IES & RSE, Accelerator and Entrepreneurship-in-Networks model as well as along the according main categories and subcategories (see Appendix 7: Coding Scheme with explanation)

Moreover, the results for IES & RSE, accelerator and the Entrepreneurship-in-Networks model are analyzed differently. Aspects discussed under **IES & RSE** concern ecosystems of the different accelerators and have the aim to indicate factors that possibly influence the accelerator and startups in the respective ecosystem.

Findings of the category group **accelerator** cover aspects regarding the ESBs' structure and their function to connect different actors, considering the emphasizes is put on supporting entrepreneurial ventures. Therefore, the findings are rather compared between accelerators indicating influential factors as well as shared or even best practices.

The facets listed under the results of the **Entrepreneurship-in-Networks model** solely focuses the accelerators' work with startups including the recognition of their challenges and the provision of support measures. Therefore, the third chapter should provide an overview of considerable challenges of startups, also indicating acuteness, and a comparison of support mechanisms from the different ESBs.

Nevertheless, the aim of all chapters is to indicate how the four capitals of or available to entrepreneurial ventures can be increased.

To connect different findings with certain characteristics of the ESBs, profiles of the interviewed accelerators are shown in Table 10 entailing the locations, founding year, financing and team size of the accelerator as well as additional notes made before and after the interview.

Accelerator 1	Location	n: Hannover, GER	Founding year: 2017			
(A1)	Financir	-inancing: Funded by the company behind the accelerator Team size: ~5				
	Notes:	 Close collaboration with established companies in whole Germany General focus on tech entrepreneurship No established measures, no fixed program Collaboration with the ecosystem is rather ad-hoc/ when it is needed or when there is an opportunity 				
Accelerator 2 (A2)	Location	n: Berlin, GER	Founding year: 2015			
	Financing: Fees from corporate partners, equity from startups Team size: ~15					
	Notes:	 Close collaboration with all stakeholders of the ecosys Advisory board consists of employees, investors, industacademics Collaboration between universities and established firr General focus on tech entrepreneurship, but company events and awards One more location in Germany Established networking activities Also accepting foreign startups 	tem stry experts and ns - and industry-specific			

Table 10: Profiles of accelerators considered for analysis (own illustration)

		First indication that all four conitals are connected and	that appalarator				
		- First indication that all four capitals are connected and	for the				
		entrepreneurial ventures					
Accelerator 3	Location	h: The Hague, NL	Founding year: 2011				
(A3)	Financir	ng: Funded by the government	Team size: ~9				
	Notes:	otes: - Close collaboration with industry and governmental institutions - Indication that all four capitals are connected and that accelerator needs to cover all four capitals in order to provide value for the entrepreneurial ventures					
Accelerator 4	Location	n: San Francisco, CA, US	Founding year: 2011				
(A4)	Financir	-inancing: Funded by the government Team size: ~12					
Notes: - Focused on supporting German companies in US - Emphasizing importance of adapting the accelerator's program to the focused industry (e.g. concerning product life cycles, B2B or B2C focus, m players) - Emphasizing the importance of mentors and a program that takes the individual startup's challenges into consideration - Indication that all four capitals are connected and that accelerator needs cover all four capitals in order to provide value for the entrepreneurial ventures							
Accelerator 5	Locatior	n: Amsterdam, NL	Founding year: 2010				
(A5)	Financir	ng: Fees from corporate partners, equity from startups	Team size: ~19				
	Notes:	 Industry focus: Huge portfolio with mentors (>140) and network partnet 17 other locations all over the world emphasizing the importance of the mentors' legitimacy Indication that all four capitals are connected and that cover all four capitals in order to provide value for the enventures established measures to increase number of application marketing and the accelerator's network) and to gather (e.g. through applications) with the aim to analyze and u forecasting 	ers / accelerator needs to ntrepreneurial ons (e.g. through data from the startups use it for market				
Accelerator 6	Location	n: Bonn, GER	Founding year: 2016				
(A6)	Financir	ng: Funded by the government, fees from corp. partners	Team size: ~13				
	Notes:	 Program is not structured and has no time limit Belongs to the Hub Network No fixed mentors 					

4.1 Innovation Ecosystem & Regional System of Entrepreneurship

The explanation for this category group is *"characteristics and aspects describing the Innovation Ecosystem and Regional Systems of Entrepreneurship"* and covers 13 codes in three main categories, namely **Infrastructure** (5 codes) and **Culture** (8 codes).

Table 11 provides an overview of the codes derived from the interviews concerning the ESBs' ecosystems' infrastructure and culture.

Category Group	Main Category	Code	A1	A2	A3	A4	A5	A6
Category Group Main Category Code IE & RSE Infrastructure Amount of available funds in Germany is increased Closeness to industry, academia and politics Knowledge about governmental substitutions for startups Regional support/ stimuli to compensate negative economic impacts Regional support/ stimuli to compensate negative economic impacts Culture Actors recognize startups' value Corporates, government and other actors are engaging more in open innovation Ecosystem supported by different actors General interest and participation in startup/ innovation-related events High importance of entrepreneurial culture Influences the perception of the startup culture Knowledge and innovativeness of startups is appreciated and used	Amount of available funds in Germany is increasing	х	x		x			
		Closeness to industry, academia and politics Knowledge about governmental substitutions for startups	x	x	x x	x	x	x
		Regional support/ stimuli to compensate negative economic impacts		x	x			
Culture Actors recognize startu Corporates, governmen engaging more in open Ecosystem supported b General interest and pa innovation-related even innovation-related even	Culture	Actors recognize startups' value	x	x	x		x	x
		Corporates, government and other actors are engaging more in open innovation			x			x
	Ecosystem supported by different actors			x	x	х		
		General interest and participation in startup/ innovation-related events		x	x		x	
		High importance of entrepreneurial culture		х		x	х	
		Influences the perception of the startup culture	х				х	
		Knowledge and innovativeness of startups is appreciated and used					x	
		Need to provide value for everyone involved					х	
		Startups usually have no problems to enter the regional innovation network	x					

Table 11: Overview codes and accelerators of IE & RSE –Infrastructure, Culture

When looking for aspects concerning the **infrastructure**, i.e. "*aspects describing the ecosystem's or region's infrastructure*" all interviewees explained that an advantage of their accelerator is the closeness to industry, academia and politics. Therefore, necessary resources are available in their ecosystem and problems often can be solved with network solutions.

"[...] and then we are looking at current challenges, needs, where help is need. Most of the times it is a network solution and then we are focusing on connecting startups with right organizations." A2

Three participants (A1, A2, A4) noticed an increase in available funds in Germany regarding private and governmental funding as well as venture capital, while A3 mentioned the importance of substitutions the government offers.

Further, A2 and A3 explained that regional stimuli often were established in order to compensate negative economic impacts.

"So, to compensate these negative economic impacts, the regional development companies were set up and they had the aim to stimulate and support the regional economy. The different governmental investments led to a growth of innovation and startups." A3

Five interview partners (A1, A2, A3, A5, A6) mentioned about the ecosystem's **culture** (i.e. "*aspects describing the ecosystem's or region's culture*") that the different actors recognize the startups' value, while respectively three described a high importance of entrepreneurial culture (A2, A4, A5) and a general interest of participating in startup-related events (A2, A3, A5). Additionally, it was explained that

the accelerator shifts the perception of startups and entrepreneurs towards value-adding actors in the ecosystem (A1, A5) and that startups usually have no problem to enter innovation ecosystems (A1).

A5 recognized that other actors are actively seeking contacts to entrepreneurs for getting inspired but also to present themselves as innovative organizations:

"Then eventually we discovered that there was a lot of interest to participate – sometimes as an investor but also as a sponsor and that for different reasons. First of all, to be in contact with the startups, to have some sort of structural approach to connect with them but also, let's say, for their PR exposure. They are positioning themselves as very innovative party. And also to generate some internal cultural change to get into a process of learning and transformation with their own people." A5

Accordingly, A3 and A6 noticed that other actors are engaging more in open innovation, while A3, A4 and A5 noticed support for the ecosystem from different actors. A5 emphasized thus that an ecosystem ideally provides value for everyone involved.

"So, we are building local ecosystems out of corporate partners, startups, mentors, industry experts, investors, sometimes government research facilities and so on, all around that specific topic. So, you would make a very targeted focus and make an efficient ecosystem around the processes that startups need. [...] and you see that there is a value in the network for everybody involved." A5

All these aspects already suggest the importance of the accelerator's location, considering that all interviewed ESBs are located in distinctive hubs known for their rich industry with a high concentration of relevant actors in general. Consequently, it is that A2, A4 and A5 have industry-targeted programs or industry-targeted elements in their program (see Table 10: Profiles of accelerators considered for analysis (own illustration)) to match their ecosystems which are all startup-/innovation-hotspots, while A1, A3 and A6 adapted to the regional circumstances as they are rather small organizations in less startup-dense regions. Therefore, they can use the given resources, while they add the most value to already established actors. However, these aspects will be taken up again in 4.2.1 Structure. Accordingly, although only mentioned by A5, it is important to consider that every actor of the ecosystem should benefit from it in order to motive their participation.

"We actively make these connections, and you see that there is a value in the network for everybody involved." A5

4.2 Accelerators: The Ecosystem Builder

To present the findings about the accelerator and use these for developing best-practice advice, a summary of generated codes allocated to this category group is provided in the following section. The explanation for the category group **Accelerator** is *"tasks or characteristics concerning the accelerator"* and entails three main categories **Structure, ESB Function** and **Challenges**. Noteworthy is that 69

codes are assigned to this group but only the most frequent striking codes will be presented as others are very context-specific or do not appear to be relevant for other accelerators and hence would not contribute to a result that is generalizable to a certain extent.

4.2.1 Structure

All in all, 37 codes are allocated to this main category which is defined as "*aspects describing the accelerator's structure*". It is also divided into the subcategories **Program** (20 codes), **Admission Criteria and Process** (9 codes) and **Mentoring** (8 codes). These subcategories are inspired by the characterization of the ESB (see 2.3.1 Ecosystem Builder) as well as by the sample selection criteria (see 3.2 Case Selection). Moreover, codes in these subcategories are concerned with aspect that need to be considered when developing the accelerator's structure and not with benefits provided for the startups (these will be shown in 4.3 Entrepreneurial Ventures: Entrepreneurship-in-Networks model).

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A 4	A5	A6
		Admission							
Accelerator	Structure	Criteria	Asking for equity from startups		х			х	
			Focusing on post-first-success startups		х		х		
			Focusing on team during selection process		х	х	х	х	х
			Not asking for equity or fees	х		x	х		х
			Prefering B2B startups				х	х	
			Selecting startups that match actors in the	v				~	
			ecosystem	^				^	
			Startups must be residing in the region			х		х	х
			Using a psychological test to assess quality of team					x	
			Working with foreign startups		х				

Table 12: Overview codes and accelerators of Accelerator - Structure - Admission Criteria

Beginning with the subcategory **admission criteria**, it concerns "*aspects describing the admission criteria of the accelerator program*", Table 12 shows all codes and accelerators.

Five ESBs (A2, A3, A4, A5, A6) stated that the team is more important than the product or service offered by the startup, especially when talking about pre-first success/ early-stage startups. Considerable aspects that were mentioned by the accelerators are the founders' commitment, credibility as well as willingness and openness to take and test the advice they will get during the accelerator program. A5 state about that:

"Since we are so early stage, the most important thing that we select upon is the team. We don't really care about technology or IP or products because that is something that is going to change in the program anyway when we work on the business model and on the product-market-fit, when we are going to collaborate with our partners. So, you see, nine out of ten startups pivot anyways in the program, so we don't care about the idea. We need very good teams that are able to execute."

Moreover, A5 conducts psychological test in order to assess the capabilities of the founding team.

The two smallest ESBs (A1, A6) stated to select startups according to the actors already in their ecosystem, while the two most industry-specific ESBs (A4, A5) prefer B2B startups. Furthermore, A2 and A4 are focusing on post-first success startups.

A1, A3, A4, A6 also do not ask for any fees or equity, while A2 and A5 require a certain percentage of equity from the startups. That a startup needs to reside in the region is asked from A3, A5, A6 with the reasoning behind it to foster the regional ecosystem and having it easier to participate in the accelerator's program. A2 is also working with foreign startups to support establishing their business in Germany and Europe.

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
Accelerator	Structure	Program	Considering differences between B2C and B2B startups				x	x	x
			Considering industry-specificity		x		x	x	
			Considering regional circumstances	x		x			x
			Differentiating between the stage of startups	x	x			x	
			Fixed duration of the program	x	x	x	x	x	
			Focusing on a lean/ demand-driven program		x		x		x
			Focusing on ad-hoc sessions and meetings on demand with startups	x					x
			Focusing on collaborating with investors and companies	x	x	x		x	
			Focusing on post-first-success startups		x		х		
			Focusing on pre-accelerating					x	
			Having established networking activities		x	x	x	x	x
			Having a mandatory program					x	
			Having a mandatory program with flexible parts		x		x		
			Having no planned program	x		x			x
			No fixed duration of the program						x
			Not industry-specific	x		x			x
			Scheduling workshops and regular meetings with startups	x	x		x	x	
			Setting up general milestones for startups			x	х	х	
			Setting up startup-specific milestones			х	х	х	х
			Working with mentors permanently	х			x	х	

Table 13: Overview codes and accelerators of Accelerator - Structure - Program

The subcategory **program**, it covers "*aspects of the accelerator's program*". Table 13 shows the codes and the corresponding accelerators.

The three ESBs located in upcoming regions (A1, A3, A6) mentioned that the program was developed in consideration of regional circumstance, while A2, A4, A5 – located in startup-hot-sports - are rather industry-specific.

"[...], if you have a FinTech program, then there are big banks involved, there are insurance companies involved, there are sometimes Cyber Security firms involved - those types of parties have very distinct interest in FinTech and Cyber Security basically. If you have a Smart Transportation program, you would go to energy companies, you would go to automotive companies, you would go to logistics companies because they have a very distinct interest in innovation in that field. So, I have been looking in the right cities to find the right industries to find a new focus for our program with the right corporate partners to participate and scouting the right startups."

Moreover, three accelerator programs (A1, A2, A5) differentiate between stages of startup and three participants (A4, A5, A6) pointed at the importance of considering the difference between B2C and B2B startups. A2 and A4 focus on post-first success startups, A5 also explained the importance of preaccelerating or paying early attention in order to increase the later success.

Also, four accelerators set-up startup-specific milestones (A3, A4, A5, A6) and three of the interview partners (A2, A4, A5) explained setting-up general milestones during the program. To find out about current problems of the startups, four interviewees (A1, A2, A4, A5) referred to regular workshops and meetings, while the two youngest and smallest ESBs A1 and A6 relied on ad-hoc or on-demand meetings.

Five accelerators (A2, A3, A4, A5, A6) indicated established networking activities, while three (A3, A4, A5) have mentors as permanent feature of their program and A1, A2, A3 and A5 are focused on collaborating with investors and companies. The tree smallest ESBs A1, A3 and A6 explained to have no planned program, A5 has a mandatory program, while A2 and A4 offer a mandatory program with flexible parts. Five of the analyzed programs (A1, A2, A3, A4, A5) run for a fixed duration, while A2, A4 and A3 also mentioned the importance of a lean program structure. A6 supports the participating startups as long as it is needed and emphasized to focus on providing support for the startup and not to running through the program on time:

"Moreover, the program has no fixed date or running time. I know that it's pretty standard and we thought a lot about it. [...] But we don't see the necessity to limit our program. The idea is to support our partners und some startups pivot their strategy and notice a few month later that it is still not the right direction. And also in such a situation we want to support them and not be saying: "Okay, but the program is now over after three months." So, for us this is a rather Open-End-Accelerator. Of course, there are certain milestones and we are motivating the startups to operate quickly but there are no artificial time limits.

The results concerning the accelerators' program suggest that all ESBs emphasize a close relationship with the startups in order to provide suitable support. Nevertheless, a few aspects stand out. A1 and A6 being the youngest and smallest have the least structured program and mechanisms, while A2 and A5 have the most developed program which might be connected to the equity they taken from the startups. Moreover, degree of program structure and stage of startups seem to be aligned. A5 which also targets early stage startups has a solely mandatory program, while A2 and A4 focus on post-first success startups and offer a mixed program.

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
Accelerator	Structure	Mentoring	Critique on working with mentors						x
			Matching suitable mentors with startups		x	x	x	x	
			Mentors need to prove themselves					x	x
			Mentors working for free					x	
			Organic/ ad-hoc meetings	x	x	x	x	x	
			Providing budget for mentoring hours	x			x		
			Too much differing advice		x	x		x	
			Working with mentors permanently	x			x	x	
			Working with mentors that are experts in their field	x	x	x	x	x	

Table 14: Overview codes and accelerators of Accelerator - Structure - Mentoring

All codes developed regarding the **mentoring**, **i.e.** *"tasks and characteristics of the mentors and the mentoring program of the accelerator"* of startups are shown in table 14.

Five interview partners (A1, A2, A3, A4, A5) pointed out that the mentors they are working with are real experts in their field, can provide the startups with helpful contacts and work together with the startups on a regular basis and on demand. A4 explained that mentors' advice that has a bigger impact than workshops and stated:

"We are a mentoring program, meaning that we are working with different mentors in different locations. These mentors are on average a serial entrepreneur in their respective ecosystem. So, they are working in this ecosystem for around 20-25 years, founded their own ventures, scaled up their business, collected funding, sold their business – and not once but multiple times."

However, during these interviews, it was made clear that startups also receive too much advice from too many different experts (A2, A3, A5) and four interviewees (A2, A3, A4, A5) emphasized that mentors and startups have to fit to each other and that mentors need to prove themselves (A5, A6). A5 pointed out that mentors need to understand the difference between "managing" and "mentoring" in order to be of valuable support:

"And there is a big difference between managing and mentoring: mentors have to appreciate the methodology the startups are working with, they have to know that mentor advice is no good advice before it isn't validated."

Moreover, two different types of accelerator-mentor-collaboration were mentioned: mentors working for free (A5) and startups using some sort of budget provided by the accelerator for mentoring lessons (A1, A4). This also illustrates the varying commitment of the mentors: A1, A4 and A5 have mentors as fixed part in their program, while A2 and A3 mainly support startups themselves or look for network solutions/ suitable mentors if needed.

A6 however criticized working invariably with mentors and advised startups not to share equity.

4.2.2 Ecosystem Builder Function

This main category entails all "tasks and characteristics that can be attributed to being an Ecosystem Builder besides accelerating entrepreneurial ventures". Those aspects add up to 25 codes which are allocated to **General** (6 codes), **Scanning**, **foresight and information processing** (4 codes) as well as **Gatekeeping and brokering** (6 codes).

Table 15 shows the codes describing the subcategory **general benefits** i.e. "general tasks and characteristics of an ESB that contribute to the whole ecosystem".

Category Group	Main Category	Sub- category	Code	Δ1	Δ2	Δ3	A 4	A5	A6
Accelerator	ESB Function	General Benefits	Accelerator's reputation attracts other actors' attention	x	, LL	x		x	x
			Central locality to work & to connect with other actors	x	х		x	x	
			Connect with allumni					x	
			Considering difference between "mobilizing" and "creating" an ecosystem					x	x
			Conveying strong sense of community				x	x	
			Focusing on close RS with other actors to strengthen ES	x		x		x	x
			Hosting general events	x	x	x	x	x	x
			Hosting specfic events	x	x	x	x	x	x
			Importance of CSE support		х			x	
			Influences the perception of the startup culture	х				x	
			Mentors connect different stakeholder through their contacts		х	х	x	x	
			Offering an online platform to connect and inform actors	x					x
			Offering education programs on entrepreneurship		x				
			Spreading in other regions/ cities and support the establishment of startups and corporate partners			x		x	
			Working with mentors that are experts in their field	x	x	х	x	x	

Table 15: Overview codes and accelerators of Accelerator - ESB Function - General Benefits

Every interviewed participant stated networking events which might be industry-specific or general occasions to get in contact with other actors. Accordingly, four interviewees (A1, A2, A4, A5) explained that the accelerator is considered as a central locality to work and connect with others and that different actors are connected through mentors working at or with the accelerator (A2, A3, A4, A5).

"So, our ecosystem is for every stakeholder in there and it is some kind of network advantage because different businesses are support by the same mentor and they help each other to get through the program." A5

Five of the interviewees (A1, A2, A3, A4, A5) attributed the collaboration with mentors as industryexperts an important factor concerning enhancing validation and commercialization of the new developed products. It was also stated four times (A1, A3, A5, A6) that an accelerator's good reputation might attract other actors' attention, even from those outside of the region and eventually spreading in other regions/ cities through the accelerator's contacts (A3, A5).

"By copying our most successful industry-focused programs in Europe to other continents, you would not only be able to service all high-potential startups but you would also be able to help the startups when they are alumni and have to scale and the ambition to go abroad to help them to do soft landings in, for example, the US or in Asia and so on. And the same goes for corporate partners actually. We

see a lot of European corporate partners collaborating with our partners in the US or in Asia. So, in that sense we are also some kind of a network organization that tries to connect the dots around the world at the moment." A5

Accordingly, A5 indicated that and that there is a difference between "mobilizing" and "creating" an ecosystem:

"Therefore, the model works in two ways: in [location was deleted according to confidential agreement] there it is very much about mobilizing and the program needs to provide value to all the stakeholder in the ecosystem, while in new countries, especially in developing countries, it is very much about ecosystem building and also about accelerating the process of becoming an attractive city for startups and investors in the first place."

Since A5 is the accelerator with the biggest network in general, it focuses additionally on building a network with alumni. The two accelerators showing the strongest connection to established corporates (A1, A5) also underlined the importance of support CSE.

Moreover, it was explained that accelerators influence the perception of the startup culture (A1, A5), convey a sense of community (A4, A5) and that by establishing close relations with all actors, the overall ecosystem is strengthened (A1, A3, A5 A6).

The two smallest ESBs (A1, A6) also highlighted another low-cost benefit which is offering an online platform to inform about events and trends.

Table 16: Overview codes and accelerators of Accelerator - ESB Function - Scanning, foresight and information processing

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A 4	A5	A6
	ESB	Scanning, foresight and							
Accelerator	Function	information processing	Considering universities as strategic partners		х				
			Gathering market information through applications					x	
			Gathering market information through hosting industry-specific events		x	x		x	
			Working with foreign startups wanting to push their business in GER & EU		x				

In the following paragraph, the codes allocated to **scanning**, **foresight and information processing**, i.e. *"tasks and characteristics of the accelerator concerning scanning the market, forecasting and information processing"* are summarized (see also Table 16).

Three of the participants (A2, A3, A5) explained to be hosting industry-specific events in order to scan the market and gather market information. A5 stated to gather market information through regular applications, while A2 also works with foreign startups foreign startups and universities to gain new insights which can be shared with other actors.

"We have 50.000 applications every year globally and when a startup applies for us, they have to answer all kinds of questions of course. Then we analyze all that data and because we have, for example, seven FinTech programs all over the world and we get all these applications from FinTech startups - that are all very early stage but very likely to come to market in the next 12 months – but based on the data we can pretty much predict where the FinTech market is going to in the next 12 to 18 months. And this is of course information we share with our corporates to direct their innovation efforts in the right direction." A5

It is that A1, A4 and A6 show no tasks or characteristics related to this subcategory. This could be because A1 and A6 are new accelerators which have not figure out all processes and possibilities yet, while A4 is shows highly established mechanisms.

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
Accelerator	ESB Function	Gatekeeping and brokering	Acting as match-maker and brokering between parties	x	x		x	x	x
			Actively approaching different actors		х	х	х	x	
			Being approached by different actors		x	x	x	x	x
			Connecting startups with suitable corporates, investors or other actorss	x	x	x	x	x	x
			Hosting general events	x	х	х	х	x	x
			Hosting industry-specific events	x	x	x	х	x	x

Table 17: Overview codes and accelerators of Accelerator - ESB Function - Gatekeeping and brokering

The codes allocated to **gatekeeping and brokering** (i.e. *"tasks and characteristics of the accelerator concerning gatekeeping and brokering"*) as well as the matching accelerators are illustrated in Table 17.

Every accelerator is hosting general or topic-specific events to which selected actors are invited and startups are connected with suitable collaboration partners. Five interviewees (A1, A2, A4, A5, A6) actively described the accelerator as match-maker and four (A2, A3, A4, A5) actively approach different actors, while various actors also approach the accelerators for collaborations (A2, A3, A4, A5, A6).

"And then there are bigger corporates that are looking for informal exchange to check for new trends. They are asking us about new startups in our batch "Is there a startup that is interesting for us?", "Could we arrange a meeting for lunch?". So, also the corporates are pushing to get in contact with us and our startups." A2

"We have already been talking to other regional companies about our fund because in the market people see what we are doing, and they like it. So, there is more interest and we are more included over time." A3

Remarkable in this subcategory is that every accelerator shows a high level of activities that are related to gatekeeping and brokering but, since all interviewees are ESB, these actions strongly match the description of this accelerator type.

4.2.3 Challenges

Although the interviewees were not specifically asked about it, the analysis of the data indicated that the role as accelerator in general but also in the position as Ecosystem Builder comes with a few

challenges, i.e. "*challenges the accelerator and its team is facing*". Those challenges were transferred into 7 codes and are presented in Table 18 and summarized in the following paragraph.

Category Group	Main Category	Code	A1	A2	A3	A4	A5	A6
Accelerator	Challenges	Adjustments of the program (according to industry or regional needs)		x		x	x	
		Being attractive for companies, politics and startups alike	x	x	x	x	x	x
		Being realistic about startups failing		x		x		
		Competing with other accelerators for the best startups				x		
		Difficulties in collaborating with governmental or research institution					х	
		Importance of accelerator's reputation/ standing	х		x		x	x
		Need to provide value for everyone involved		x	x	х	х	

Table 18: Overview codes and accelerators of Accelerator - Challenges

All interviewees pointed out to try to set-up an accelerator which is attractive for startups, companies and politics alike which matches they characterization of being an ESB. Accordingly, the accelerator ideally provides value for the whole ecosystem and serves different needs (A2, A3, A4, A5), while the accelerators with the most experience (A2, A4, A5) mentioned that this might require adjustments of the program.

A5 also explained it to be rather difficult to collaborate with governmental and research institutions because of "speaking different languages":

"The network consists of mentors, investors, corporate partners and - as far as we can – governmental organizations or academic institutions and so on. The last two partners it's hard to collaborate with because they don't speak our language and it's the other way around of course. So, it's hard but whenever it is possible they are there."

Additionally, four participants (A1, A3, A5, A6) also stated that the good reputation of an accelerator is important but needs to be proven by showing successful startups and collaborations with established organizations.

"We also provide them connections to our partners or to specific mentors that are of interest to them. Just to also show them the value of our program before we have even started. And this is very necessary because there are around 6000 or 7000 accelerators in the world at the moment and startups are getting more critical, so it gets harder to get the startups." A5

A5 explained further that because of the increasing number of accelerators offering similar benefits, competition between them is increasing. That this aspect was only mentioned once, might be due to the fact that A5 has the most elaborated program and biggest network making it sensitive for competition.

Moreover, the two accelerators taking equity form the participating startups (A2, A4) emphasized the need of being realistic about the probability of startups failing.

It is also noticeable that the two youngest accelerators (A1, A6) indicated the same challenges, i.e. "being attractive for startups, companies and politics" and the "importance of the accelerator's reputation".

4.3 Entrepreneurial Ventures: Entrepreneurship-in-Networks model

In this section, findings regarding **the Entrepreneurship-in-Networks model**, i.e. *"aspects that concern the four types of capital"* are presented. Therefore, different challenges the startups face as well as support measures the accelerator offer are summarized according to their matching capital.

Concerning the findings of the EiN model, numerous codes are mentioned multiple times and some of them entail more than six quotes (relevant for the findings concerning Proposition 2). This is because the developed codes capture the content on a rather summarized and conceptualized level and hence using a certain code multiple times in one interview aims at indicating the importance and relevance of different codes.

To provide a first overview, two figures indicating number of codes (see Figure 7: Distribution of codes for the four types of capitals) and quotes (see Figure 8: Distribution of quotes for the four types of capitals) distributed to the different types are shown below.



Figure 7: Distribution of codes for the four types of capitals (own illustration)

Overall, there are 73 codes allocated to the capitals. There are 14 codes for strategic capital (8 challenges, 6 support measures), 16 codes for cultural capital (9 challenges, 7 support measures), 20 codes for economic capital (13 challenges, 7 support measures) and 23 codes for social capital (8 challenges, 15 support mechanisms). This shows on the one hand that startups face the most challenges concerning their economic capitals and the least concerning their social and strategic capital. On the other hand, startups receive the most support regarding their social capital and the least regarding their strategic capital from the interviewed ESBs



Main Category and Subcategory

Figure 8: Distribution of quotes for the four types of capitals (own illustration)

Concerning the number of quotes, there is a total of 314 quotes with 63 quotes for Strategic Capital (31 quotes for challenges, 32 quotes for support measures), 60 quotes for Cultural Capital (22 quotes for challenges, 38 quotes for support measures), 90 quotes for Economic Capital (51 quotes for challenges, 39 quotes for support measures) and 101 quotes for Social Capital (39 quotes for challenges, 62 quotes for support mechanisms). Therefore, most quotes have been allocated to support and challenges concerning social capital and the least number of quotes was assigned to cultural capital.

The following paragraphs provide detailed findings on the challenges and support mechanisms stated by the six interviewees.

4.3.1 Strategic Capital

The main category Strategic Capital entails "*aspects attributed to the strategic capital of entrepreneurial ventures*" and covers 14 codes.

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
EiN model	Strategic Capital	Challenges	Acquiring first customer projects	х					х
			Corporates operating too slowly for startups	x					
			Entrepreneur/ startup making own decision	x	х				
			Finding new team members		х	х		x	
			Importance of balancing "working on product" and "acquiring investment/networking"		x	x		x	x
			Importance of business-/ commercial-savvy team member			x	x	x	x
			Importance of knowing the value of your product and presenting a strong USP	x		x	x		
			Too much differing advice		x	x		x	

Table 19: Overview codes and accelerators of EiN - Strategic Capital - Challenges

Beginning with the **challenges**, i.e. *"challenges concerning the entrepreneurial ventures and their development of strategic capital"* (8 codes, see Table 19: Overview codes and accelerators of EiN - Strategic Capital - Challenges) respectively four interviewees emphasized the importance of "balancing working on the product" and "acquiring investment/networking" (A2, A3, A5, A6) as well as the importance of having a business-savvy team member (A3, A4, A5, A6).

"You usually see that it takes, in our experience, six to eight months to raise your next round of funding and in these six to eight months you have to probably spend 80% of the time seriously on fund raising. Which means that during that time the business can be delayed and then you have of course a big problem and a lot of companies fall on these steps." A5

"But if I look at the team then, in some cases, I see much more business-savvy guys sitting there who are daring to ask, have their stories right, they put their chest upfront and aim for the CEO, for example. They see a lot of ways and know "Okay, let's think about where the money does sit in the company and where do we need to go?" "What do I need to pitch?" So, being able to sell your product, being able to sell your half ready project in a pilot, I think, is more about being sales-savvy and knowing what your proposition is, what is the worth. I think that is where people really make the difference and what other teams might be lacking." A3

Accordingly, A2, A3 and A5 explained that deciding which skills are needed for the next steps as well as choosing the right advice appear to be difficult. Another mentioned challenge is that corporates operating too slowly for a collaboration (A1), while startups struggle to acquire first customer projects (A1, A6). Moreover, A1 and A2 recognized that entrepreneurs struggle to be decisive, while A1, A3 and A4 emphasized the importance of knowing the products value and presenting it accordingly.

When looking at table 19, it is striking that A4 only recognizes only two challenges. This could be due to the fact that A4 works a lot with later stage startups that might already have solved a few of these problems. Additionally, the two mentioned aspects, e.g. importance of a commercial-savvy team member and a strong USP, are crucial factors for many startups but in this case, the presentation or sales skills need to be adjusted to the US market. This is however something many German startups struggle with according to A4:

"They don't know how to sell it here. Even if they have the best product, they are lacking the vision and the skills to bring it to the US market."

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
EiN model	Strategic Capital	Support	Connecting startups with suitable actors	х	х	x	х	х	х
			Considering differences between B2C and B2B startups				x	x	x
			Offering topic-related workshops		х	x	х	х	
			Strengthening startups' decision-making	х	х				
			Testing product-market-fit/ commercialization		x	x	x	x	
			Working with mentors that are experts in their field	x	x	x	x	x	

Table 20: Overview codes and accelerators of EiN - Strategic Capital - Support

Concerning the **support**, i.e. "support provided by the accelerator concerning entrepreneurial ventures' development of strategic capital" (6 codes, see Table 20: Overview codes and accelerators of EiN - Strategic Capital - Support) all accelerators aim to connect startups with suitable actors (e.g. for pilot projects). A1, A2, A3, A4 and A5 also offer working with mentors as industry-experts. The four accelerators with the most experience (A2, A3, A4, A5) offer advice and workshops concerning the business plan, product-market-fit and MVP development as a regular feature of their program.

"What we are trying to do as soon as possible, is to test whether there is a market for the product and that you can figure out quite fast with different techniques. There are different evaluation measures "How big is the market?", "Will the market grow?". Well, then of course, we sometimes find out that the market isn't as big as expected or the startup is not able to grow as fast as the market." A2

A1 and A6 might not have mentioned these support mechanisms because the programs are lacking a fixed program, experience or resources to systematically assess the market's or startup's potential.

However, A3, A5 and A6 emphasized differences between B2C and B2B startups, while A1 and A2 explained to strengthen the startups' decision-making.

"My advice is often that I don't give them anymore advice – which is not always easy. So, we try to see when it is enough and well, in the end it is about strengthening the entrepreneur in making own decisions, regardless of whether it is option A or B." A2

4.3.2 Cultural Capital

Cultural Capital is the main category described as "aspects attributed to the cultural capital of entrepreneurial ventures" and covers 19 codes.

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
EiN model	Cultural Capital	Challenges	Corporate/ startups need to adjust to each other structures	x		x	x	x	
			Finding new team members			x		х	
			Importance of business-/ commercial-savvy team member			x	x	x	x
			Importance of credibility and capability of the founding team			x			
			Personal relations are most often the reason for failure		x			x	
			Startup defining its culture and values					х	
			Startups and corporates speak different languages					x	
			Startups are not taken seriously as company	х			х		х
			Startups are not taken seriously as employer						х

Table 21: Overview codes and accelerators of EiN - Cultural Capital - Challenges

The **challenge**, i.e. *"challenges concerning the entrepreneurial ventures and their development of cultural capital"* (9 codes, see Table 21: Overview codes and accelerators of EiN - Cultural Capital - Challenges) recognized A3, A4, A5 and A6 is the necessity of having a commercial-savvy person in the team. A3 and A5 noticed startups struggling to find employees with the right cultural-fit.

"First of all, it's about qualities and then it is about cultural fit. That means that eventually, when you hire 200 people and their all have different cultures, you would have a very hard time to get them aligned." A5

"And another important thing is that the team has to hire for culture. Bad hires are something that we see in every startup. When they have the first funding in and they start hiring, they all make mistakes about that because it is just really not easy." A5

That startups fail most often because of personal relations was only mentioned by A2 and A5, although or precisely because they have the most elaborated programs. Therefore, they might have the capacities to support all business matters, while personal aspects can hardly be influenced.

Other revealed challenges are concerns about startups being regarded as employer (A6) and real company (A1, A4, A6), sometimes even as "copy cats" (A6), importance of credibility and capability of the founding team (A3) and the startup defining its values/ culture (A5) and also the aspect that startups and incumbent companies "speak different languages" (A5) and might need to adapt to the different structures (A1, A3, A4, A5).

"But having the right people in the team is crucial for the way you are able to execute your business. But also for the way your customer or your stakeholders regard you as being legitimate – if it is a very professional team, you would trust them. If you have a not so professional team, you would not trust them with a pilot. A3

"There are still some startups with questionable legitimacy. They are the tenth copy of a business model and the twentieth venture offering the same product." A6

"So, it's important for startups to figure out "who are we", "what is our culture", "what are our key values", "what are the things we believe in". And this should be done in a very early stage because if you have that mutual understanding of your culture and values, then it is way easier to hire the people not only with the right skill set but also with the right mindset and cultural fit for your company." A5

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
EiN model	Cultural Capital	Support	Considering differences between B2C and B2B startups				x	x	x
			Encouraging startups to present themselves		x				
			Hosting casual events		x		x		
			Hosting general/ not-industry-specific events	x	x	х	x	х	х
			Hosting industry-specific events	x	x	х	х	х	х
			Offering workshops about HR					х	
			Providing startups with a "stamp of approval"	x		х		x	x

Table 22: Overview codes and accelerators of EiN - Cultural Capital - Support

To **support**, i.e. "support provided by the accelerator concerning the entrepreneurial ventures' development of cultural capital" (8 codes, Table 22: Overview codes and accelerators of EiN - Cultural Capital – Support) the startups in these matters, all Ecosystem Builders host networking events to increase exposure and legitimacy. A2 also emphasized encouraging startups to present themselves at such events. Although A3 and A5 are the better known or more established ESBs, also A1 and A6 consider participating in their accelerator as approval stamp concerning quality and capability of the startup.

To cut a long story short, I think it's almost always possible to open the doors and I think it is important that we provide some sort of "stamp of approval". If we invest in a startup, it is something different compared to when it comes by itself without any backing." A3

"Concerning their role in the ecosystem... When they are in our program, they are credible, and we will connect them with the right corporates." A5

"So, I believe that in general there is very little problems with startups' legitimacy. But it is an advantage when the startups can say that they are part of our program. This kind of third-party validation or reference is appreciated by many actors." A6

However, A1 and A3 indicates that they are not hosting demo days, while A2 and A4 focus on hosting causal events (e.g. breakfast or dinner) for networking opportunities. Further measures that are mentioned are offering HR courses (A5).

A4, A5 and A6 stated to consider differences between doing business in a B2B or B2C context. A6 explains following reasons:

"In the B2B context there are different factors: budgeting that was planned month ago, established relationships – even though established companies are often far behind the startups tech."

It appears that hosting all kinds of networking events is a frequently used support measure among all ESBs – regardless of industry-focus or startup stage or financing.

4.3.3 Economic Capital

The main category Economic Capital covers all "*aspects attributed to the economic capital of entrepreneurial ventures*" and has 20 codes, divided into challenges and support.

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A 4	A5	A6
EiN model	Economic Capital	Challenges	Acquiring funding takes time (~3-6month per round)		x	x		x	x
			Acquiring medium and large funds (~100,000- 400,000€)	x	x	x		x	x
			Corporates hesitate to collaborate with startups concerning financial committment	x		x			
			Finding investors before being on the hockey stick curve			x	x		
			Importance of balancing "working on product" and "acquiring investment/networking"		x	x		x	x
			Importance of business-/ commercial-savvy team member			x	x	x	x
			Importance of considering juridical aspects		x				
			Importance of finding suitable investors		x			x	x
			Importance of pitch-quality		x	x	x		x
			Importance of timing, amount, type of investment			x		x	x
			Limited technical knowledge of investors				x		
			Phase just before market introduction is most critical			x		x	

Table 23: Overview codes and accelerators of EiN - Economic Capital - Challenges

Regarding the challenges (i.e. "challenges concerning the entrepreneurial ventures and their development of economic capital") (13 codes, see Table 23: Overview codes and accelerators of EiN - Economic Capital - Challenges), A1, A2, A3, A5 and A6 considered acquiring medium to large funds (around 100,000-400,000€) as a problem for startups. Respectively four of them mentioned the importance of balancing "working on product" and "acquiring investment" (A2, A3, A5, A6) and having a sales-driven team member (A3, A4, A5, A6). A2, A5 and A6 stated finding a suitable investor challenging as its influence on the startup needs to be considered (A6).

A2, A3, A5 and A6 considered that acquiring funding takes about three to six months as problematic.

The CEOs don't start in time to raise the next round or they raise too much or not enough money at the wrong evaluation or under the wrong conditions – making the startup less attractive for other investors in the following rounds. Then they run out of money and they don't have an investor capture, they have to go bankrupt. The most difficult thing there that it is super hard and takes a lot of time to raise these funds. It delays the business and brings a big risk with it." A5

Further, the phase just before market introduction (A3, A5) and finding investors before being on the hockey stick curve (A3, A5) are indicated as very critical. Moreover, aspects like pitch quality (A2, A3, A4, A6), corporates hesitating to invest because of financial commitment (A1, A3)

"Here comes the "but": To get pilots is mostly relative easy and most companies are open for it. But when it comes to paying or rather – how to call it – something like a co-development fee, which startups really need at the end of the day, that is rather difficult. So, there is openness to give some labor time and to allow startups to use some of their facilities or whatever they need to test something, but you want companies to also pay a little bit which show they are really interested." A3

A2 also stated to consider juridical aspects, while A3, A5 and A6 emphasized the importance of considering timing, amount and type of investment.

The limited technical knowledge of investors was only mentioned by A4 which might be due to the fact that the ESB has a special view from the US where the funding/ investors situation is differs from the one in Europe (e.g. numerous unspecific, rather risk-seeking investors in the US, while investors in GER/ NL are often highly devoted to the topic and rather risk-averse).

Moreover, when looking at Table 23, it is striking that A2 recognized only two challenges. This less specific feedback could be because of A1 being the newest accelerator out of the participants.

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
EiN model	Economic Capital	Support	Advising startups to be careful when sharing equity with mentors						x
		· · · ·	Connecting startups with suitable corporates and investors	x	x	x	x	x	x
			Knowledge about possible gov. subsidies for startups			x			
			Providing advice on type and amount of funding		x	х			x
			Providing funding (combined funding, often industry-specific)		x	x		x	
			Providing startups with a "stamp of approval"	х		х		x	x
			Supporting startups in finding follow-up funding			х	x	x	x

Table 24: Overview codes and accelerators of EiN - Economic Capital - Support

The one **support** (i.e. "support provided by the accelerator concerning the entrepreneurial ventures' *development of economic capital*") (7 codes, see Table 24: Overview codes and accelerators of EiN - Economic Capital – Support) measure provided by all Ecosystem Builders is that they connect startups with matching investors and corporates. A1, A3, A5 and A6 again emphasized the accelerators' "approval stamp" and thereby de-risking participating startups, while A3, A4, A5 and A6 support startups in finding follow-up funding.

"So, because they have our stamp and because they are in our network, they have more credibility and so the investors get a little bit the feeling that these startups are "de-risks" and that it is a safe investment. Therefore, it gets a little bit easier to raise some money and to take the next steps. " A3

The two accelerators that take equity from startups, A2 and A5, are also two of three that offer funding. However, A3, that is financed through governmental initiatives, also provides funding.

A2, A3 and A6 emphasize giving advice on appropriate types and amount of funding needed. A3 highlighted the importance of knowing about subsidies and A6 emphasized to advise startups on being careful and considerate when sharing equity because of the shareholder's influence on the venture.

4.3.4 Social Capital

The main category Social Capital summarizes 23 codes that all "*aspects attributed to the social capital of entrepreneurial ventures*". This is again split into two subcategories which will be explained in the following.

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A4	A5	A6
EiN model	Social Capital	Challenges	Availibility of too many networking possibilities		x	х		х	х
			Corporate/ startups need to adjust to each other structures	x		x	x	x	
			Importance of balancing "working on product" and "acquiring investment/networking"		x	x		x	x
			Importance of business-/commercial-savvy team member			x	x	x	x
			Importance of pitch-quality		x	x	x		x
			Knowing the right networking		x		х	х	х
			Need to show their quality/ product-market-fit	x	x	х		х	
			Startups and corporates speak different languages					x	

Table 25: Overview codes and accelerators of EiN - Social Capital - Challenges

Concerning the **challenges** (i.e. "*challenges concerning the entrepreneurial ventures and their development of social capital*") (8 codes, see Table 25: Overview codes and accelerators of EiN - Social Capital - Challenges) in this category, respectively four interviewees indicated the importance of balancing "working on the product" and "networking" (A2, A3, A5, A6) as well as of having a commercial-savvy team member that is focused on sales and business development (A3, A4, A5, A6). Accordingly, also four participants consider it difficult for startups to figure out which networking activities/ contacts are worth-while (A2, A3, A5, A6) and to acquire appropriate networking skills (A2, A4, A5, A6). A2, A3, A4 and A6 emphasized the pitch-quality and A1, A2, A3 and A5 showing product-market-fit. Other critical points mentioned were that startups and corporates "speak other languages" (A5) and also need to adjust to the other one's structures (A1, A3, A4, A5).

"The biggest challenge would be finding the right focus... and not finding possibilities." A2

"And then there is the decision "Do you really need to go to all these conferences and events?". [...] And the other thing is again "focus is key". So, if you are looking for investment, you need to very actively look for investor networks that you can tap into. If you are looking for corporate partnership, you have to be very specific on what corporates are interesting for you and how you would approach them." A5

Category Group	Main Category	Sub- category	Code	A1	A2	A3	A 4	A5	A6
EiN model	Social Capital	Support	Accelerator's reputation attracts other actors	x		x		x	x
			Connecting startups with other startups			x	х		
			Connect with alumni					x	
			Established measures to connect startups and corporates		x		x	x	
			Hosting casual events		x		х		
			Hosting demo days		x		х	х	x
			Hosting general events	x	x	х	х	х	х
			Hosting specific events	x	x	х	х	x	x
			Hosting startup/innovation-related events for the whole ecosystem		x			x	
			Offering an online platform to connect and inform actors	x					x
			Offering pitch training	x	x	x	x	x	x
			Participating in other actors' demo days	x					
			Schooling on networking strategies		x		х	x	x
			Sense of community				x	x	
			Working with mentors that are experts in their field	x	x	x	х	x	

Table 26: Overview codes and accelerators of EiN - Social Capital - Support

In order to **support** (i.e. "support provided by the accelerator concerning the entrepreneurial ventures' *development of social capital*") (15 codes, see Table 26: Overview codes and accelerators of EiN - Social Capital - Support) the startups in these aspects, all six accelerators are hosting industry- or company-specific networking events and are offering pitch-training. A1, A2, A3, A4 and A5 explained to match the participating startups with mentors who are well connected. A3 and A4 emphasized to connect their startups with each other, while A5 is building a strong alumni network. From four participants (A1, A3, A5, A6) it was indicated that the good reputation of the accelerator attracts other actors' attention towards the startups.

"They can use us as some sort of certificate, or if an a-brand corporate also joins the run, that immediately puts the startups on the radar. So that is something that is extremely helpful for their networking." A3 A1 and A6, which are the two smallest ESBs, explained that they are offering an online platform to connect and inform each other, while A2 and A5, which are the two biggest accelerators, are also hosting startup- and innovation-related events (e.g. meetups, panel discussion). Moreover, A2 and A4 are hosting causal events to provide startups with pitching and networking opportunities.

"So, whenever we have that business model we would also start running networking events and workshops together with our partners and investors and everybody in our network in order to get them that early attraction. That's how we make sure they can run pilots with their corporates customers and so on." A5

A2, A4, A5 and A6 mentioned to school startups on different networking strategies. Moreover, A4 and A5 convey a sense of community. However, A1 and A3 stated to not host demo days, while A1 participates in demo days hosted by other organizations. Additionally, A2, A3, A4 and A5 have as more experienced ESBs established measures to connect startup and corporates, while the two smallest and youngest ESBs (A1, A6) apply ad-hoc networking and match making.

Looking back at Table 26: Overview codes and accelerators of EiN - Social Capital - Support, it is striking that A2, A4 and A5 are providing the most support measures concerning social capital. This might be related to those three ESBs being the ones with the biggest networks, most elaborated program or most resources.

5 DISCUSSION & CONCLUSION

The following chapter entails the discussion and conclusion of this master thesis. In the discussion, the aim and research question of this master thesis are outlined. Moreover, the different theoretical and empirical findings are compared and the suggested propositions as well as the conceptual model are refined.

Thereafter, the conclusion explains the main take-aways of this research and the **VACE** Factors are introduced. The paragraph concludes with contributions and limitations of this study as well as with suggestions for further research.

5.1 Discussion

The goal of this master thesis is (1) to find out which startup-challenges in an IES are recognized by an ESB, (2) to find out about the support mechanisms for startups provided by an ESB and (3) to categorize the startups' challenges and the ESB's support mechanisms according to the four capitals of the EiN model. To do so, data was collected through qualitative interviews with employees of this accelerator type, coded and analyzed. Moreover, it was shown which challenges the startups encounter and how these are diminished by the accelerator. Additionally, it was also indicated to what extent the capitals of the EiN model are supported.

In this chapter, knowledge gathered during the literature review as well as findings collected through the qualitative interview are used to answer the research question of this study as well as to refine the developed propositions and model.

Beginning with the answer to the main research question of this master thesis,

"How does an Ecosystem Builder support entrepreneurial ventures based on the four types of capital of the Entrepreneurship-in-Networks model?"

one has to consider four major aspects: (1) provision of value for everyone involved, (2) developing an adapted accelerator structure, (3) provision of additional ESB functions, (4) provision of support for all four capitals. These aspects however will be discussed in more detail in chapter 5.2.1 How to be a successful ESB and Main Take-Aways.

All in all, there is not the one best-practice for planning out an ESB as individual and regional factors need to be considered. However, being aware of important features and success factors provide a first guidance when wanting to set-up an ESB. These aspects will be discussed in more detail by comparing the findings of this research with the insides gained through the literature review in the following.

5.1.1 Innovation Ecosystems & Regional Systems of Entrepreneurship

Besides talking about the accelerator, also questions about the region and the innovation ecosystem of the accelerator were posed to the participant.

Looking at the **infrastructure** for RSE, a fundamental or enabling aspects seems to be closeness to industry, academia and politics as this was stated by every interview participant. A high concentration of these parties also appears to be leading to availability of all necessary resources for entrepreneurs, an increase in governmental and private funding as well as to enabled network solutions. These results fall in line with the observations made by Hekkert, Heimeriks and Harmsen (2011) concerning the building blocks and functions of an IES as well as by Mason and Brown (2014) concerning the three main actors in an RSE.

Another central factor the ecosystems found in this study is **culture.** Generally, the ecosystems in this study appear to be highly interested in entrepreneurial ventures and innovative products which is shown by an increased engagement in open innovation and support of the RSE. Moreover, it can be assumed that the actors' motivation for this engagement is to receive value from the ecosystem. This was also suggested by the interviewees and correspond with the information gathered in the literature review as it was indicated that a successful ecosystem fosters value creation between the three main actors (Adner, 2006; Mason & Brown, 2014; Qian et al., 2013)

Although the generic infrastructure and culture of the accelerators' ecosystems appears to be similar (e.g. rich industry with a high concentration of relevant actors), the interviewees' statements indicate that there are different nuances and that "the devil is in the detail". These suggested unique conditions of the ecosystems agree with claims made by other researchers that emphasize regional differences (e.g. Mason & Brown, 2014; Qian et. al., 2013) and again supports the notion of "one size fits all" concerning the management and creation of ecosystems (Fransman, 2014; Mason & Brown, 2014; Saxenian, 1996).

Additionally, the accelerators' program seems to be adapted to the regional setting. In this study, the accelerators located in startup-hotspots have very industry-targeted programs or events, while accelerators located in less startup-dense regions do not show such specific focus. This appears to be a new aspect in the design of accelerators. Numerous studies consider industry focus (e.g. Kawohl et al., 2015; Kohler, 2016) or program elements (Hoffman & Radojevich-Kelley, 2012; Kawohl et al., 2015; Pauwels et al., 2016), but the connection between the accelerators' structure and the regional environment is missing.

5.1.2 Accelerators: The Ecosystem Builder

The analysis of the interviews and additional information about the ESBs, revealed that the accelerators are mainly defined by five factors: *financing, program, mentoring, admission criteria* and other *benefits* provided for the whole ecosystem. Comparing these findings with the research by Pauwels et. al (2016), it appears that the earlier study and this master thesis come to similar results. Pauwels and colleagues (2016) distinguish between *Theme, Program Package, Strategic Focus, Selection Process, Funding Structure and Alumni Relations* as design elements when defining the three type of accelerator they studied (i.e. Ecosystem Builder, Deal-Flow Maker and Welfare Simulator). Nevertheless, during the coding process of the collected data in this research, it became clear that mentors and benefits for the whole ecosystem should be discussed separately because of their diversity, while the aspect of alumni

relations is considered as feature of the accelerator's general benefits. These results can of course also to be attributed to the goal of the research and the specific questionnaire.

Concerning the accelerator's structure there are a few major aspects to think of.

Beginning with the admission criteria, it appears to be important to decide on following aspect depending on the accelerator's goals: focusing on B2B and/ or B2C startups; focusing on post-first success startups and/ or pre-accelerating; focusing on team quality and capabilities (e.g. the founders' commitment, credibility as well as willingness and openness to take and test the advice); focusing on selecting startups that match actors already in the ecosystem; focusing on startups on the region and/or extending the scope. These variations fall in line with previous research on differing characteristics of accelerators (e.g. Cohen, 2013; Radojevich-Kelley & Hoffman, 2012).

Moreover, an admission committee often consists of accelerator staff, investors and industry experts to make a well-conceived decision on which startups to take in.

Another important aspect to decide on is whether the accelerator takes equity from the startups. On the one hand, this provides the accelerator with another financial source and a little power over the startup. On the other hand, it could discourage promising teams to apply for the program if they do not want to provide shares. However, there is no proof in the collected data or studied literature to confirm or disconfirm that point.

Comparing the accelerators' programs, it appears that they are either matched to the regional conditions (e.g. concerning other actors in the ecosystem, infrastructure) or to a prevailing industry (e.g. regarding product life cycles, service- or technology-focus), depending on the specificity and development of the ecosystem (also discussed in the paragraph about IES & RSE). These factors are reflected in the duration of the program, workshop topics and general milestones. Kawohl et al. (2015) indeed mention the increasing importance of accelerators because of network-characteristics of a technology's life-cycle and indicate that a targeted program is key for a successful accelerator. Moreover, Ritala et al. (2013) and Saxenian (1996) also emphasize the prevailing industry's influence on actors in an ecosystem.

Next to these specific aspects, there are general remarks that combine findings concerning the program and the admission criteria. A lean program combining mandatory and flexible parts seems to be advisable. Another major aspect is the provision of startup-specific support, like individual milestones and consideration of their development stage as well as close collaboration and connecting them with suitable investors.

Additionally, the program structure appears to be related to the accelerator's size and resources. The smaller or younger the ESB, the less structured is the program. Further, accelerators that require equity form their startups, appear to have the most elaborate program and established mechanisms which falls in line with previous findings (e.g. Hoffman & Kelley, 2012)

Moreover, degree of program structure and stage of startups/ experience of the startups' team seem to be related. ESBs that also target early stage startups have more mandatory program elements, while ESBs focusing on post-first success startups and offer rather mixed programs. Although it is explained in the literature review that incubators rather focus on early-stage startups (Christiansen, 2009) and accelerators on later-stage ventures (Kohler, 2016; Pauwels, et al., 2016), there is no common consent on how these two organizations are defined (e.g. Cohen & Hochberg, 2014; Pauwels, et al. 2016) and thus there is no clear explanation on how the stage of startups is reflected in the accelerator's or incubator's program.

Another important aspect is mentoring. While mentors add a certain value to the Ecosystem Builder's program, the interviewees also underlined that the fit must be right. It was mentioned to consider necessary qualities in a mentor (e.g. knowing the responsibilities and tasks but also about the limits) and maybe even assessing them. In order match startups with mentors, the accelerator teams usually planned certain events and "dating time" before the commitment. These findings agree with previous studies: Radojevich-Kelley and Hoffman (2012) and Pauwels et al. (2016) found mentorship to be one of the critical success factor of accelerators' programs. However, findings on how to integrate mentors in the program differ in this research, while there are also no other studies about this topic, yet.

Besides accelerating startups, ESBs also indicate **functions** that concern the other actors in their ecosystem.

The benefits provided for the whole ecosystem by the accelerators can be summarized into several aspects as indicated by the interview participants. The accelerator appears to connect the whole ecosystem as some sort of focal point by offering a central locality to work, but also by hosting diverse networking, presentations and schooling events. Moreover, the empirical findings revealed that ESB use these events in addition to the startups' application forms order to scan the market and gather market information which can be shared with other actors. This doing was also suggested by Howells (2006) in his typology of innovation intermediaries. Accordingly, the interviewees reported to actively connect and approach different actors by offering these benefits and thus acting as gatekeeper and broker (Howells, 2006).

These main functions of course go along with the ESB's definition by Pauwels et al. (2016), but also align with the suggested findings in the literature review concerning an ESB's characterization and tasks as innovation intermediary (Hargadon & Sutton, 2000; Howells, 2006; Mason & Brown, 2014; Winch & Courtney, 2007 Ye & Kankanhalli, 2013). Therefore, ESBs enable the beneficial functions of ecosystems, e.g. facilitated knowledge exchange (Hekkert et al., 2011; Mason & Brown, 2014; Simard & West, 2006), mobilization of resources (Hekkert et al., 2011), facilitated conversion of inventions from the knowledge economy into innovations for the commercial sector (Jackson, 2011), innovation culture (lansiti & Levien, 2004; Markman, Gianiodis & Phan, 2009) and finally, because of the increasing number of startups, also increased productivity growth and innovativeness (Mason & Brown, 2014) as well as increased regional growth (Qian, Acs, & Stough, 2013; Startup Genome, 2017; Szerb, Acs, Autio, Ortega-Argiles, & Komlósi, 2013). Therefore, ESBs might eventually diminish different challenges explored by other researchers (e.g. conflicts of interests or culture (Jackson, 2011; Perkmann & Walsh, 2007; Razak et al., 2014), commercialization of joint projects (Chesbrough & Brunswicker, 2013; Razak, Murray, & Roberts, 2014).

Nevertheless, there are a few remarks to make. Firstly, it can be assumed that the accelerator's industry focus relates to it emphasis on CSE, since the ESBs with the strongest connection to established companies underlined the importance of supporting CSE. Secondly, surprisingly only one ESB offered a well-developed alumni network, although previous studies considered this aspect as more important (e.g. Pauwels, et al., 2016). Thirdly, although all interviewed accelerators showed a high activity in this main category, there are little differences when looking at different subcategories and the type of benefits or functions, e.g. bigger accelerators show more established mechanisms, while the smaller rather focused on ad-hoc opportunities. Therefore, findings of this thesis indicate that the amount or degree of offered benefits/ functions is related to the size and resources of the ESB. Fourthly, it was further also only once recognized that an ESB might not only be able to mobilize, but also even to create innovation ecosystems. However, since this was stated by the ESB with the most developed network and structure, it might be expected that such a strong assumption (i.e. being able to create an ecosystem) is yet again influenced by the accelerator's resources. Fifthly, although suggested by previous studies (e.g. Nager, 2014), ESBs in this research show no striking differences in their structure that could be related to the fact whether they are publicly or privately funded (considering that this study followed up on the success of the accelerated startups).

The data also revealed **challenges** of an ESB. While all interviewed accelerators share the goal to attractive for startups, companies and politics alike and hence provide value for the whole ecosystem, they also explained that different needs have to be answered which agrees with findings of previous studies concerning risks of conflicts of interests and culture (e.g. Jackson, 2011; Perkmann & Walsh, 2007; Razak et al., 2014).

Another key challenge, also confirmed by other researchers (e.g. Partanen & Möller, 2012) is that companies in ecosystem do not compete with each other but increasingly compete with other ecosystem. Accordingly, this research showed that competition between accelerators offering similar benefits in different ecosystems. Even though this aspect appears to be more relevant for accelerators in bigger cities with several accelerators, it provides new insight in innovation ecosystems. Therefore, the findings of this research add two more challenges to the table (see Table 2: Opportunities and challenges of incumbent companies and startups engaging in accelerators) developed by Radojevich-Kelley and Hoffman (2012), namely "considering and adjusting regional factors" and "competition among accelerators".

5.1.3 Entrepreneurial Ventures: The Entrepreneurship-in-Networks model

Beginning with the **Strategic Capital**, the biggest challenges for the startups found in this master thesis appear to be having a business-savvy person and accordingly "balancing working on the product" and "acquiring investment/networking". Moreover, the interviewees mentioned a lack of decision-making skills as well as a lack of knowing the products value and presenting it accordingly. It was further explained that startups struggle to acquire first customer projects, while different structures of startups and established companies complicate collaborations. These detected challenges fall in line with earlier studies (e.g. Arroyo-Vázquez et al., 2010; Giardino et al., 2015; Kirwan et al., 2006; Radojevich-Kelley & Hoffman, 2012). Other researchers also mentioned struggle with IP strategy (e.g. Kirwan et al., 2006)

or neglecting the market environment (e.g. Salamzadeh & Kawamorita Kesim, 2015), these aspects however were not mentioned during the interviews for this paper.

Most important support measures provided by the interviewed accelerators are offering advise concerning the business plan and MVP development, connecting startups with corporates for pilot projects and educating them on business topics. Therefore, support instruments suggested by Bøllingtoft and Ulhøi (2005) and Peters et al. (2004) are also found in this master thesis research.

Yet again, other researchers also emphasize the importance of supporting contractual arrangements as well as IP strategies and policies (e.g. Nager, 2014). Although, interviewees mentioned considering juridical aspects and aviailability of attorneys in their ecosystems, contracts and IP strategies seem not to be key aspects in the studied accelerators' programs.

Moreover, previous research on support mechanisms for startups appear to neglect the impact of differences between B2C- and B2B-market, was emphasized by half of the interviewees in this research.

The overarching challenge concerning the **Cultural Capital** seems to be that the accelerator has the position to connect different actors, but the startup still needs to show in a credible way its quality and value to customers, investors and collaboration partners as well as to potential employees. These concerns with legitimacy fall in line with the study by Cardon and Stevens (2004).

Nevertheless, this research also indicates challenges that were indicated in the literature review as "aspects to consider", e.g. that startups and incumbent companies have varying cultures and might need to adapt to the different structures or that startups struggle with finding a commercial- or sales-savvy team member who also fits to their entrepreneurial culture. Further, problems with knowledge management (e.g. Groen, 2011; O'Dell & Grayson, 1998; Salamzadeh & Kawamorita Kesim, 2015) appear to not be problems for startups that participated in the interviewed accelerators (might be because they are in earlier stages).

To support the development of this capital, the accelerators in this study host various networking events (e.g. topic- or industry-related, for specific actors or the whole ecosystem, demo days) with the goal to increase exposure and legitimacy of the startups. This falls in line with the findings in the literature review (e.g. Bøllingtoft & Ulhøi, 2005; Groen, 2011; O'Dell & Grayson, 1998; Salamzadeh & Kawamorita Kesim, 2015) and also indicated that networking events are a popular support measure among all ESBs – regardless of industry-focus or startup stage or financing source. Moreover, it was explained during the interviews that the ESB's reputation serves as approval stamp concerning quality and capability of the startup. This agrees with Bøllingtoft and Ulhøi (2005), but also with a research notion not discussed previously, namely "signaling tools". Researchers like Kleer (2010) found out that entrepreneurial ventures increase their chances on private investors when they have received governmental funds or awards and thus signal quality.

Regarding **Economic Capital**, the interviewees explained that acquiring lager investments (around 100,000-400,000€) is challenging for startups in Germany and the Netherlands since they are rarely available. Moreover, the need to balanced time spend on "working on the product" and "acquiring investment" and to consider the timing, amount and type of investment was mentioned by the ESBs.
Accordingly, the phase just before market introduction and finding investors before being on the hockey stick curve were declared as critical phases for the startups. Other researchers (e.g. Casser, 2004; Giardino et al., 2015; Groen, 2011, Nager, 2014; Radojevich-Kelley & Hoffman, 2012; Salamzadeh & Kawamorita Kesim, 2015) also drew attention to these problems.

To support the startups' economic capital, the studied accelerators claim to "de-risk" startups by approving them in their program and eventually also introducing them to possible investors. This again agrees with the research findings on signaling quality by Kleer (2010), introduced in the previous paragraph. Additionally, the interviewees also explained almost unanimously to support their startups in terms of finding follow-up funding or governmental subsidies, while they also stated that tech-related startups with good ideas usually have no problems acquiring smaller funds (around 30,000€). These solutions match the aspects discussed in the literature review (e.g. Kollmann et al., 2017; Nager, 2014). Furthermore, three accelerators in this study offer funding options themselves. While this falls in line with Bøllingtoft & Ulhøi (2005), it is contrary to the original definition of ESBs by Pauwels et al. (2016).

Surprisingly, none of the participants talked about crowdfunding as source of funding, although Nager (2014) found it to be a popular method. A possible explanation for that is that crowdfunding is only used by 4,1% of startups in Germany (Kollmann, et al., 2017). Moreover, one ESB in this study emphasized to be very carefully when sharing equity with e.g. mentors because of their unpredictable motives.

Lastly, looking at **Social Capital**, one major challenge indicated by the interviewees was the availability of simply too many possibilities for networking or information events, since many of them have almost no value to the startups. Accordingly, startups appear to struggle to acquire appropriate networking skills and are often in need of a commercial-savvy team member that is focused on sales and business development. Further, showing product-market-fit as well as not "speaking the other language" are obstacles that the interviewed ESB mentioned. Therefore, the findings of the collected data differ slightly from the insights gathered during the literature review. While it can be agreed on the importance of the quality of the network (e.g. Groen, 2011), appropriate networking activities (Peters et al., 2004), knowledge gaps (e.g. Razak et al., 2014) and finding suitable research partners (e.g. Chesbrough & Brunswicker, 2013), other studies also found trust issues (e.g. Bruneel, et. al, 2012; Chesbrough & Brunswicker, 2013; Razak et al., 2014) as well as a bad link to a commercial network (e.g. Groen et al., 2008).

Offered support mechanisms by the Ecosystem Builders in this study usually cover hosting various networking events, matching startups with mentors who are well-connected themselves and building up an alumni network. Through this institutionalized networking structure, ESB and their participants can benefit from scalable networking effects as well as preferential access to resources (Hansen, Chesbrough, Nohria, & Sull, 2000). Additionally, the ESBs explained to be advising startups on networking strategies and offering them pitch-training. These various mechanisms are also discussed by earlier researchers (e.g. Bøllingtoft & Ulhøi, 2005; Hoffman and Radojevich-Kelley, 2012; Nager, 2014; Peters, et al., 2004).

Yet again it can be assumed that number of support measures for an entrepreneurial venture's social capital is positively related to an accelerator's resources since the interviewed ESBs show this tendency.

Moreover, it was indicated during the interviews that the good reputation of the accelerator attracts other actors' attention towards the startups. However, this view on an accelerator's reputation was not found in the literature review. It might also be surprising that the interviewees criticized the availability of too many networking possibilities but host themselves various types of networking events. A possible explanation for this is that the events of the ESBs are rather specialized and often also target a certain actor group and thus provide valuable connections for the startups.

All in all, the interviews confirm the importance of entrepreneurial ventures having a certain amount of each capital. However, another striking conclusion of this research is that the four capitals appear to be strongly related to each other and may not be seen as single unit - especially not when considering the models practical implementation. Therefore, the **EiN model's structure** might need to be adjusted. This reasoning is based on three aspects.

Firstly, already when working on the theoretical framework, the distinguishing and allocation of different challenges as well as of support measures was not always clear (e.g. concerning required commercial skills or networking). Secondly, in each interview there was a point in time when the participant indicated that the reasons for certain problems are connected to each other. This also counts for support mechanisms as many of them increase more than one capital. Accordingly, the third reason is that during data analysis is become explicit that numerous challenges and support measures, and hence numerous codes, could not unambiguously be allocated to only one category of capital. Examples of cross-capital features are: "approval stamp" of the accelerator; hosting networking-event; being considered as a central locality to work and connect; deciding between spending time on the product, networking or acquiring funding; needing a business- or commercial-savvy team members; finding a suitable mentor. An illustrative quote of one of the interviewees would be:

"And another important thing is that the team has to hire for culture. Bad hires are something that we see in every startup. When they have the first funding in and they start hiring, they all make mistakes about that because it is just really not easy. But having the right people in the team is crucial for the way you are able to execute your business. But also for the way your customer or your stakeholders regard you as being legitimate – if it is a very professional team, you would trust them. If you have a not so professional team, you would not trust them with a pilot." A5

This statement shows that a factor like team members or employees does not only influence the startup's capability to "execute their business" concerning knowledge and skills as well as pilot projects (related to strategic capital), but also the way startups are perceived, trusted (related to social capital) as well their legitimacy (related to cultural capital).

Therefore, another conclusion of this research is a suggested adjustment of the EiN model's structure where not only every capital influences the entrepreneurial process and value creation but also each other (see dotted dark blue arrows in Figure 9: Adjusted version of the Entrepreneurship-in-Networks model).



Figure 9: Adjusted version of the Entrepreneurship-in-Networks model by Groen (2012) (own illustration)

5.1.4 Propositions and Model Revision

Based on the findings of this study, a refined version of the propositions and the model developed in chapter 2.5 Proposition and Model Conceptualization are presented in the following.

The first main proposition suggested that an ESB provides support mechanisms for entrepreneurial ventures for all four types of capital and the findings of this research confirm this. Not only was this put forward by the findings of the literature review, but also by the empirical findings of this master thesis. The overview of codes in chapter 4.3 show that each of the interviewed accelerator provides support for each capital. Moreover, Figure 7: Distribution of codes for the four types of capitals (own illustration) provides a summarized quantitative overview of this. Therefore, main proposition is remaining:

PROPOSITION 1: An Ecosystem Builder provides support mechanisms for entrepreneurial ventures for all four types of capital of the Entrepreneurship-in-Networks model.

This proposition was again divided into four sub-propositions, each one focusing on the support for different types of capital of the EiN model.

Firstly, regarding strategic capital, it was derived from the literature that ESBs provide support in forms of specialized business service like business plan development, market analysis and financial planning (Bøllingtoft & Ulhøi, 2005) as well as with industry-specific knowledge (Kohler, 2016). Findings of this research even reveal six support mechanisms: connecting startups with suitable actors; considering a different strategic orientation for B2C and B2B startups; offering business-topic-specific workshops; strengthening startups' decision-making; testing product-market-fit/ commercialization; working with mentors that are experts in their field. Therefore, this sub-proposition can be confirmed:

SUB-PROPOSITION 1a: An Ecosystem Builder provides support mechanisms for an entrepreneurial venture's strategic capital.

Secondly, the support mechanisms for cultural capital suggested by other researchers cover aspects like promoting entrepreneurial culture (Kawohl et al., 2015), increasing startups' legitimacy by accepting them into to accelerator program (Bøllingtoft & Ulhøi, 2005) and drawing attention of employees towards new ventures (Feldman, et al., 2005; Mason & Brown, 2014; Partanen & Möller, 2012). In this study, seven support mechanisms by ESBs for entrepreneurial venture's strategic capital which also mainly agree with the theoretical findings: considering a difference in recognition between B2C and B2B startups; encouraging startups to present themselves; hosting casual events; hosting general/ not-industry-specific events; hosting industry-specific events; offering workshops about HR; providing startups with a "stamp of approval". Therefore, also the second sub-proposition can be confirmed:

SUB-PROPOSITION 1b: An Ecosystem Builder provides support mechanisms for an entrepreneurial venture's cultural capital.

Thirdly, the studied literature indicated that i.a. ESBs might support entrepreneurial ventures by providing information about various types of financing options (Cassar, 2004) and connecting them with potential investors (Radojevich-Kelley & Hoffman, 2012). The findings of this thesis cover seven support measures: connecting startups with suitable corporates and investors; providing startups with knowledge about possible governmental subsidies; providing advice on type and amount of funding; providing funding (combined funding, often industry-specific); providing startups with a "stamp of approval"; supporting startups in finding follow-up funding; advising startups on being cautious when sharing equity. Therefore, also the third sub-proposition can be confirmed:

SUB-PROPOSITION 1c: An Ecosystem Builder provides support mechanisms for an entrepreneurial venture's economic capital.

Fourthly, concerning the support of strategic capital, it was found in the literature that ESBs i.a. provide locations for sharing knowledge and hosting networking events (Bøllingtoft & Ulhøi, 2005; Nager, 2014) and can be defined as "a matchmaking device" (Pauwels, et al., 2016, p.21). The results of this research even show 15 support mechanisms: ESB's reputation attracts other actors; connecting startups with other startups; establishing an alumni network; established measures to connect startups and corporates; hosting demo days; hosting general events; hosting specific events; hosting startup/innovation-related events for the whole ecosystem; offering an online platform to connect and inform actors; offering pitch training; enabling participating in other actors' demo days; schooling on networking strategies; conveying a sense of community; working with mentors that are experts in their field; hosting casual events. Therefore, also the fourth sub-proposition can be confirmed:

SUB-PROPOSITION 1d: An Ecosystem Builder provides support mechanisms for an entrepreneurial venture's social capital.

The second main proposition was again concerned with social capital. It was suggested that ESBs as specialized accelerators focusing on providing value by building a suitable network and connecting different parties in an ecosystem (Pauwels, Clarysse, Wright, & Van Hove, 2016), would provide the most support mechanisms for the capital related to these aspects. This study shows that social capital appears to gain the most support from ESBs (i.e. support measures for strategic capital: 6 codes,

support measures for cultural capital: 7 codes, support for economic capital: 7 codes, support measures for social capital: 15 codes, see Figure 7). Additionally, most quotes were allocated to social capital in general (i.e. strategic capital: 63 quotes, cultural capital: 60 quotes, economic capital: 90 quotes, social capital: 101 quotes, see Figure 8) indicating its importance and dominant presence, although it is closely followed by financial capital. Therefore, also the second main proposition can be confirmed:

PROPOSITION 2: An Ecosystem Builder provides the most support mechanisms for social capital.

The third main proposition was concerned with an ESB's ability to not only support the four capitals but also to mobilize them in general. Although is was not the focus of this study, the findings indicate that an ESB with its various functions is able to support collaborations and information exchange between the key three actor groups of a regional innovation ecosystem, which are entrepreneurs, organizations and institutions. Even though startups are generally appreciated in the different ecosystems, the accelerators - by having a good reputation and a valued opinion - are able to shift the ecosystems actors' attention towards the startups. Therefore, ESBs can change the perception of the needs and qualities of the entrepreneurs and might influence the ecosystem's culture and support a better alignment of governmental policies or corporate entities targeting entrepreneurial ventures and hence, eventually increases the general availability of all types of capital. Thus, even though this was not primary focus of this study, also the third main proposition can be confirmed:

PROPOSITION 3: An Ecosystem Builder mobilizes the four types of capital available for entrepreneurial ventures in its innovation ecosystem.

However, the results also indicate that ESB adapt their offered support mechanisms and functions according to their ecosystem. The interviews showed that accelerators are adjusted to regional factors as the organizational set-up varies between different ESBs and the program structure oftentimes matches industry-specific requirements. Four of the six interviewees stated that the accelerator's program was developed in consideration of regional circumstances. This is for example reflected in networking with available partners (e.g. established companies, universities, research and governmental institutions), receiving funding from governmental subsidies and hosting events that are available for the everyone interested. One very influential factor in this category appears to be the industry that is prevalent in the region since the program structure and content as well as milestones for the startups are often aligned with products cycles and industry requirements. Therefore, a fourth main proposition is added:

PROPOSITION 4: An Ecosystem Builder is aligned to the conditions of its ecosystem.

These refined propositions lead to the adjusted model shown in Figure 10: Revised model (own illustration). The different sized black arrows indicate again the amount of support the ESB offers. P1a and P1b still show a lesser amount of provided support mechanisms than P1c, while P1d/2 show the most support mechanisms. The two dark blue arrows (P3 and P4) illustrate the new discovered relationships.



Figure 10: Revised model (own illustration)

5.2 Conclusion

This following paragraph provides a final assessment of the conducted research. Firstly, it is concluded how to be a successful ESB by summarizing the main take-aways of this research and by introducing the VAEC factors. Secondly, practical and theoretical contributions are explained, and limitations of this master thesis are discussed. Finally, suggestions for further research are made.

5.2.1 How to be a successful ESB and Main Take-Aways

The first main take-aways of this study are based on the core categories (i.e. (1) provision of value for everyone involved, (2) developing an adapted accelerator structure, (3) provision of support for all four capitals of the EiN model for entrepreneurial ventures, (4) provision of additional ESB functions) introduced on chapter 3.5 Data Collection. These four core categories yet again led to the development of the VACE Factors. This was done by considering the three elements of theory development as summarized by Ridder (2017): (1) including components that describe the crucial elements of the studied phenomenon, (2) describing the relation between the components, (3) considering limitations of the theory (this aspect is discussed in following paragraph about this research's limitations).

In Figure 11, it is shown how the core categories are used to develop the VACE Factors, followed by an explanation of each factor.



Figure 11: Development of VACE Factors based on the core categories

In order to support startups based on the EiN model, an ESB accelerator needs in general to consider four main aspects, the **VACE** (Value-Accelerator-Capitals-ESB Functions) **Factors**.

- 1. Value: The ESB's ecosystem should provide value for all three actors involved in order to facilitate the exchange of resources and information and thus to be sustainable and competitive.
- Accelerator Structure: The ESB's structure (incl. program, admission criteria and mentoring) should be adapted to the industrial and regional circumstances of the ecosystem. In this way, the ESB provides targeted support for entrepreneurial ventures that are of value for the whole ecosystem.
- 3. Capitals: Accordingly, it should also be considered that all four capitals of the EiN model are coupled and each one requires support mechanisms. Only providing strong support measures for one capital is not sufficient for successful entrepreneurial ventures.
- 4. **E**SB Functions: An ESB should also provide additional functions (e.g. scanning, foresight and information processing) in order to foster the engagement between the ecosystem's actors and thus to increase their perceived value and the overall value of the ecosystem.

Tables 33 - 35 (see Appendix 8: VACE Factors Checklist) provide a checklist based on these factors. However, it needs to be considered that V – the value – is an overarching theme or even the result of following the three other factors and thus requires no tasks by itself. Moreover, aspects under "A" (Accelerator Program) are high context specific and thus entail considerable factors instead of recommendations. The checklist concerning "C" (Capitals) covers only the most crucial challenges and support mechanisms for startups, while they also appear to be more generally applicable. Finally, aspects regarding "E" (ESB Functions) specific recommendations, they however still need to be adapted to the accelerator's context and resources.

To show the practical application of this checklist, an illustrative case based on the **VACE Factors** is provided on Appendix 9.

The second main take-away is that accelerators are valuable support tools for entrepreneurs and innovation ecosystems but they are no guarantee for a successful ecosystem with a flourishing startup scene. It is equally important to recon that every actor in the ecosystem can contribute to its overall success. Further, real deficiencies regarding an open and entrepreneurial culture or lacking support

instruments should not be mixed up market forces respectively "natural selection" in the market. The main effort needs to come from the entrepreneurs and the founding teams concerning their success and establishment in the ecosystem.

5.2.2 Contribution, Limitations & Further Research

This following paragraph provides a final assessment of the conducted research. Firstly, practical and theoretical contribution are explained. Secondly, limitations of this master thesis will be discussed. Finally, suggestions for further research are made.

This master thesis **contributes** to theory and practice in several ways. The first theoretical contribution of this study is that it combines concepts like IES and RSE with the Entrepreneurship-in-Networks model (Kirwan et al., 2006) and the Ecosystem Builder (Pauwels et al., 2016) and thus provides a new perspective on how entrepreneurial ventures in ecosystems can be supported.

Secondly, the analysis of the conducted interviews revealed challenges of startups and support mechanisms by ESBs that were not discussed in earlier studies. Therefore, the findings of this study provide more insights on the challenges of startups and how these can be diminished.

Thirdly, an adjustment of the EiN model and the relation between its capitals is suggested based on the findings of this research. This augmented version of the EiN model by Kirwan et al. (2006) incorporates that all four capitals are interrelated. By considering this aspect, future research based on this model is refined.

Fourthly, one of the main findings of this research are the VACE Factors. They build a new theory on how to support entrepreneurial ventures as ESB based on the EiN model and thus contribute to the growth of academic knowledge in the fields of entrepreneurship in regional ecosystems and accelerators.

The first practical contribution is that this research project resulted in the development of the VACE (Value-Accelerator-Capitals-ESB Functions) Factors checklist. By adapting these factors to the setting of the targeted ESB, startups and even the regional ecosystem are support to a certain extent. Therefore, although though this research did not discover the one best-practice, it shows key aspects for practitioners who want to establish a successful ESB. The given recommendations can also be used to improve an already existing ESB, since it can be checked whether the offered support and other functions align with the VACE Factors. Moreover, to illustrate and support the application of the VACE Factors, an illustrative case is provided in Appendix 9.

Second, structuring an ESB according to the VACE Factors would make it attractive for startups since the accelerator would support all four required capitals. This again would lead to more applications from startups which enables the accelerator to choose high-quality entrepreneurial teams that fit to the ecosystem and eventually increased the accelerator's competitiveness.

Third, this thesis also provides valuable information for startups searching for the most important benefits an Ecosystem Builder needs to provide in order to support all four capitals of the EiN model.

Beginning with **limitations** of reliability, the six participants were respectively one employee of each accelerator. Meaning that firstly, asking respectively two employees could have confirmed the findings or provide another view. Secondly, team members of accelerators were asked about challenges of startups – asking participating startups of the accelerators might have reveled other results. However, extending this research to this degree was not possible due to a limited scope and time frame. Another important aspect to considered is that just because a code was not found in a certain participant's interview, it does not necessarily mean that the aspect is not at all considered by the accelerator. More so, the interviewes might simply have not mentioned it or think of it in that moment. This, however, is part of the nature of qualitative interviews, but the participants still had the possibility to add any aspects afterwards.

Although saturation was reached after the sixth interview, more data might have revealed other aspects or supported features that appear to be of minor importance. Therefore, more participants could have also contributed to increase validity and generalizability of this research. Nevertheless, it was difficult to reach the accelerators and schedule interviews with them due to different reasons. First, there are simply not many accelerators that match the description of an Ecosystem Builder. Second, the interviews were conducted over the course of the summer, meaning many employees are on vacation and the beginning of a new round of accelerating startups needed to be prepared leading to less time available for interviews.

Accordingly, this is also a limitation of the developed VACE Factors. The theory on which they are based on is derived from a critical literature review and six qualitative interviews. Like mentioned before, conducting more interviews might have resulted in slightly different findings. Moreover, it is not defined how many support mechanisms of the "C" factor need to be offered in order to provide sufficient support for the entrepreneurial ventures.

In 3.1 Research Design, concerns about the interviewer and the interviewees not being native Englishspeaker appeared to not be a communication problem. Also, not doing the interviews face-to-face but via Skype or the telephone seemed to not influence trust or honesty of the interview participant negatively.

Further research is suggested on three topics that could provide value in this research notion. Firstly, future research could shift from focusing on support measures for startups towards critical factors for either mobilizing or creating a regional ecosystem provided by the accelerator type ESB. By indicating these critical factors and how to work with them, the implementation of accelerators (both private and public) could then be more targeted concerning either the managing or the creation of an ecosystem. This again could be especially of advantage for developing economies.

Secondly, it would be interesting to see whether other types of accelerators, possibly the Deal-Flow Maker and Welfare Simulator by Pauwels et. al (2016), show other scores of capitals. In this case, it would be possible to compare the benefits of different accelerators based on the EiN model and thus implement the one type that matches the need of the accelerator's stakeholder the most.

Accordingly, the third suggestion is to compare success and failure of startups that were coached by an Ecosystem Builder with those coached by other accelerator types. By obtaining these values, different accelerators could be compared and eventually success factors could be found that can be used to improve an accelerator's structure.

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7 APPENDIX

7.1 Appendix 1: Overview Literature Review

Table 27: Overview Literature Review part I (own illustration)

Author	Title 🔹	Main Findings 🗾
Ács, Z. J., Autio, E., & Szerb, L. (2014)	National Systems of Entrepreneurship: Measurement issues and policy implications	Introduction of a novel concept of National Systems of Entrepreneurship and an approach to characterizing them.
Adler, P. S., & Kwon, S. W. (2002)	Social capital: Prospects for a new concept	Synthesis of theoretical research across disciplinary domains on social research is feasible since there is a broad consistency; Integration across theoretical perspectives is more difficult since there is currently a lacj of a rigorous theory
Al-Debei, M. M., & Avison, D. (2010)	Developing a unified framework of the business model concept	It identifies four primary BM dimensions along with their constituent elements forming a complete ontological structure of the concept (i.e. Value -Network, -Propositions, -Finance, -Architecture); the framework explores three major functions of BMs within digital organizations (i.e. layer between strategy and process, assessing value of intangibles, mobilizes knowledge capital)
 Arroyo-Vázquez, M., van der Sijde, P., & Jiménez-Sáez, F. (2010)	Innovative and creative entrepreneurship support services at universities	University entrepreneurship support services have to behave in a creative and innovating manner in order to actively support business creation at the university
 Bollinger, A. S., & Smith, R. D. (2001)	Managing organizational knowledge as a strategic asset	According to the resource-based view of the firm (RBV), strategic assets are the critical determinants of an organization's ability to maintain a sustainable competitive advantage. Knowledge is a resource that is valuable to an organization's ability to innovate and compete. It exists within the individual employees, and also in a composite sense within the organization.
Audretsch, D. B., Heger, D., & Veith, T. (2014)	Infrastructure and entrepreneurship	Particular infrastructure policies can be used to facilitate regional startup activities.
Audretsch, D., Falck, O., & Heblich, S. (2011)	Who's got the aces up his sleeve? Functional specialization of cities and entrepreneurship	Cities that host basic research or integrated incumbents are more conducive to entrepreneurial activity,whereas the opposite is true of industrial agglom- erations. Urban agglomerations dominated by headquarters with only administrative functions and the service sector are not very entrepreneur-friendly, either.
Bøllingtoft, A., & Ulhøi, J. P. (2005)	The networked business incubator - Leveraging entrepreneurial agencu?	An entrepreneurial actor's social capital is constituted by all the social relationships and social structures that can be used to achieve his or her goals. Individual social capital is constituted by the set of social relations (social ties) surrounding the entrepreneurial actor in the incubator which can be mobilized when needed or when an opportunity arises. Access to collective social capital, for example, via a BI in general or a networked incubator in particular, seems to give rise to a particular set of social and economic opportunities.
Bruneel, J., Ratinho, T., Clarysse, B., & Groen, A. (2012)	The evolution of Business incubators: Comparing demand and supply of business incubation services across different incubator generations	Bls of all generations offer similar support services but tenants in older generation Bls make less use of the BPs service portfolio. This might be because of slack selection criteria and the absence of clearly defined exit policies.
Cardon, M. S., & Stevens, C. E. (2004)	Managing human resources in small organizations: What do we know?	Understanding of how small firms should hire, reward, and motivate employees but there is a lack theory and data to understand how to train employees, manage performance, promote or handle organizational change, or respond to potential labor relations
Cassar, G. (2004)	The financing of business start- ups	Start-up size, asset structure, organization type, growth orientation, and owners? characteristics influence choice and magnitude of finance use.
Chesbrough, H. (2003)	The logic of open innovation: managing intellectual propertu	In order to retain capacity for innovation, firms must begin to manage IP via the logic of open innovation emphasizing both the use of R&D produced outside the firm and the development of internal systems to reward commercially viable innovation within the firm.
 Chesbrough, H. (2007)	Business model innovation: it's not just about technology anymore	Practical definition of business models and offers a Business Model Framework that illuminates the opportunities for business model innovation.

Table 28: Overview Literature Review part II (own illustration)

Author	Title	Main Findings
Chesbrough, H., & Brunswicker, S. [2013]	Managing open innovation in large firms	Customer co-creation, informal networking, and university grants are the three leading inbound practices in 2011. Crowdsourcing and open innovation intermediary services are rated lowest in importance. Joint ventures, selling market-ready products and standardization are the three leadin outbound practices. Donations to commons and spin-offs play a minor role. Customers, universities and suppliers are the three leading open innovation pattners reported by survey respondents. Firms are much more likely to receive "freely revealed" information than they are to provide such information.
Chesbrough, H. W., & Tucci, C. L. (2004)	Corporate Venture Capital in the Context of Corporate Innovation	CVC investments can complement the actions of other corporate innovation initiatives, effects that are not measured in analyses of the financial returns of CVC portfolio investments
Christiansen, J. D. (2009)	COPYING Y COMBINATOR, A Framework for developing Seed Accelerator Programmes Accelerating Startups: The	There are three intertwined elements that define if a seed accelerator programme will be successful. They are the intersection of highly qualified people that are experienced both in operating startups and angel investing, a clear technology or industry focus to the programme and a very distinct and compelling reason for existence. Seed Accelerator differ significantly from previously known models such as
Cohen S & Hochberg Y V (2014)	Seed Accelerator Phenomenon	incubators, angel investors and co-working environments concerning duration, cohort, business, selection and offered benefits.
Dushnitskų, G., & Lenox, M. J. (2005)	When do incumbents learn from entrepreneurial ventures?: Corporate venture capital and investing firm innovation rates	It is suggested that corporate venture capital programs may be instrumental in harvesting innovations from entrepreneurial ventures and thus an important part of a firm's overall innovation stratequ. Europe needs to foster entrepreneurial drive more effectively. It needs more
European Commission. (2003)	Green Paper Entrepreneurship in Europe	new and thriving firms willing to reap the benefits of market opening and to embark on creative or innovative ventures for commercial exploitation on a larger scale.
Giardino, C., Bajwa, S. S., Wang, X., & Abrahamsson, P. (2015)	Key challenges in early-stage software startups	Thriving in technology uncertainty and acquiring the first paying customer are among the top challenges, perceived and experienced by early-stage software startups.
Glancey, K. (1998)	Determinants of growth and profitability in small entrepreneurial firms	Larger firms are found to grow faster than smaller, and younger firms are found to grow faster than older. This is also some evidence that growth is stronger in urban than in suburban or rural locations. It is possible that entrepreneurial motivations are an important factor in this regard.
Greve, A., & Salaff, J. W. (2003)	Social networks and entrepreneurship	Entrepreneurs build networks that systemati- cally vary by the phase of entrepreneurship. Entrepreneurs talk with more people during the planning than other phases. Family members are present in their networks in all phases, particularly among those who took over an existing firm. Women use their kin to a larger extent than men, and even more than men when they take over an existing firm. Experienced entrepreneurs have the same networking patterns as novices.
Groen, A. (2005)	Knowledge intensive entrepreneurship in networks: towards a multi-level/multi dimensional approach. Journal of Enterprising Culture	Main conclusion is that combining social system theory for analysing entrepreneurship processes contributes to the development of a relevant scientific and practical framework.
Groen, A. J., de Weerd-Nederhof, P. C., Kerssens-van Drongelen, I. C., Badoux, R. a J., & Olthuis, G. P. H. (2002)	Creating and Justifying Research and Development Value: Scope, Scale, Skill and Social Networking of R&D	The 4S (scope, scale, skill and social networking) framework is developed for analysing the scope, scale, skills and social network aspects of Research & Development value. The framework is based on social system theory, a process contingency model, and recent Research & Development metrics.

Table 29: Overview Literature Review part III (own illustration)

Author	Title	Main Findings
Groen, Wakkee, I. a. M., & De Weerd- Nederhof, P. (2008)	Managing Tensions in a High- tech Start-up: An Innovation Journey in Social System Perspective	Based on social system theory, it is suggest that entrepreneurs use four types of functions to develop their business: goal attainment, pattern maintenance, social networking and economic optimization. Building sustainable firms requires the development of all four functions and the related types of capital (strategic, cultural, economic and social) up to a certain minimum; they must then be balanced in such a way that the exploration-exploitation tension can be dealt with adequately.
Hansen, M. T., Chesbrough, H. W., Nohria, N., & Sull, D. N. (2000)	Networked incubators. Hothouses of the new economy	Networked incubators have the potential to surpass existing organizational structures in creating and growing new businesses. They combine the benefits of large corporations with those of VC-backed start-ups, and they enhance access to key partners. Networked incubators are designed to launch a greater number of ventures more quickly than an established company can, and their ability to connect those start-ups surpasses that of an independent VC.
Hargadon, A., & Sutton, R. I. (2000)	Building an innovation factory	Innovation can be bolstered anywhere if people are given opportunities and rewards for taking good ideas from all sources inside or outside the company, while it is a matter of taking developed ideas and applying them in new situations.
Hekkert, M., Heimeriks, G., & Harmsen, R. (2011)	Technological Innovation System Analysis.	A manual that offers 5 steps that will be described how to perform the innovation system analysis. The first steps describe the mapping of the structure and functioning of the innovation system. After establishing the stage of development, step 4 and 5 identify the main barriers and provide handholds for appropriate policy making.
Hoang, H., & Antoncic, B. (2003)	Network-based research in entrepreneurship - A critical review	Network-based research in entrepreneurship is maomly conducted in three areas: content of network relationships, governance, and structure. Research on the impact of network structure on venture performance has yielded a number of important findings. In contrast, fewer process-oriented studies have been conducted and only partial empirical confirmation exists for a theory of network development.
Hoffman, D. L., & Radojevich-Kelley, N. (2012)	Analysis of Accelerator Companies: An Exploratory Case Study of Their Programs, Processes, and Early Results	It is suggested that accelerator companies use unique selection criteria and that mentorship driven programs increase the overall success rates of start- ups by providing entrepreneurs with access to angel investors and venture capitalists.
Howells, J. (2006)	Intermediation and the role of intermediaries in innovation	Reviewe and synthesis of literature in the field of innovation intermediation and the development of a typology and framework of the different roles or functions of intermediaries within the innovation process
lansiti M. % Levien B. (2004)	Strategy as Ecology Strategy as Ecology	Insidets on how to understand an ecosystem and an organization's role in it
Ingram, A. E., Hechavarria, D. M., & Matthews, C. H. (2014)	Does Cultural Capital Matter? Exploring Sources of Funding in New Venture Creation	Cultural capital is a more significant factor in acquiring funding than human or social capital.
Jackson B. D. J. (2011)	What is an innovation	An important feature of an innovation ecosystem is that the resources available to the knowledge economy are coupled to the resources generated by the commercial economy, usually as some fraction of the profits in the commercial economy. Another feature is that the ecosystem is usually developed around a specific technology.
Kawohl, J. M., Rack, O., & Strniste, L. (2015)	Status Quo Corporate Inkubatoren und Accelerator in Deutschland: Wie etablierte Unternehmen mit jungen Unternehmen zusammen arbeiten	Exploration of most active industries and companies, possibilitites and challenges of incuation and accelerator programs led to ten key take-aways.
Kirwan, P., Van Der Sijde, P., & Groen, A. (2006)	Assessing the needs of new technology based firms (NTBFs): An investigation among spin-off companies	Findings highlight specific needs related to five functional areas of importance to NTBFs, namely: R&D, market development and sales, organisation and governance, finance and administration, and production/operation.

Table 30: Overview Literature Review part IV (own illustration)

Author	Title	Main Findings
Kohler, T. (2016)	Corporate accelerators: Building bridges between corporations and startups	startups and create innovation benefits for the company. To leverage startups' innovation and to make corporate accelerators an effective part of a firm's overall innovation strategy, managers need to systematically and thoughtfully consider the design dimensions of proposition, process, people, and place.
Kollmann, T., Stöckmann, C., Hensellek, S., & Kensbock, J. (2016)	Deutscher Startup Monitor 2016	Overview of the German startup landscape regarding entrepreneurial motivation, founder and teams, startup strucutre as well as the economic situation in Germany.
Kortum, S., Lerner, J., & Kortum, S. (2000)	Assessing the Contribution of Venture Capital to Innovation	Increases in venture capital activity in an industry are associated with significantly higher patenting rates.
Kunene, T. R. (2009)	A critical analysis of entrepreneurial and business skills in SMEs in the textile and clothing industry in Johannesburg, South Africa	Key skills that enhance SME success include the ability to gather resources marketing, motivation, legal, financial and operational management skills. Successful SMEs considered key skills to be more important and rated themselves more competent in most of the key skills than did less successful SMEs. Successful SMEs had been trained in more skills categories than less successful SMEs, with most of the successful SMEs having received training in all the key skills identified.
Landry, R., Amara, N., & Lamari, M. (2002)	Does social capital determine innovation? To what extent?	There is strong evidence that diverse forms of social capital influence the innovation decision and that marginal increases in social capital, especially in social capital taking the forms of participation assets and relational assets, contribute more than any other explanatory variable to increase the likelihood of innovation of firms.
Mason, C., & Brown, R. (2014)	Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship	Important aspects of an entrepreneurial ecosystem include its culture, the availability of start-up and growth capital, the presence of large firms, universities and service providers, their origins, stimulus and also the processes by which they become self-sustaining. Policy intervention needs to take a holistic approach, focusing on the following: the entrepreneurial actors within the ecosystem; the resource providers within the ecosystem; entrepreneurial connectors within the ecosystem and the entrepreneurial environment of the ecosystem. Finally, it is important that policy-makers develop metrics in order to determine the strengths and weaknesses of individual ecosystems so that their strengths and weaknesses can be assessed.
Nager, M. (2014)	Fostering a startup and innovation ecosustem	Exploration of talent, density, culture, capital, and regulatory environment and how these factors help foster successful ecosystems.
Partanen, J., & Möller, K. (2012)	How to build a strategic network: A practitioner- oriented process model for the ICT sector	Pay early attention to the value-creating system architecture of the targeted new business concept and its customer value offering(s); Performa careful analysis of the relative importance and availability of the core value activities; Hedge against uncertainty through partner selection; Maintain flexibility in the network construction
Pauwels, C., Clarysse, B., Wright, M., & Van Hove, J. (2016)	Understanding a new generation incubation model: The accelerator	Identification of six key building blocks (i.e. Theme, Program Package, Strategic Focus, Selection Process, Funding Structure and Alumni Relations) and distinguishing between three different types of accelerators (i.e. Ecosystem Build, Welfare Stimulator and Deal-Flow Maker).
Perkmann, M., & Walsh, K. (2007).	relationships and open innovation: Towards a research agenda	There is sitll a need to match processes between universities and firms, and the organization and management of collaborative relationships.
Peters, L., Rice, M., & Sundararajan, M. (2004)	The Role of Incubators in the Entrepreneurial Process	It is suggested that entrepreneurial ventures established through an incubator are directly affected by the services offered by the incubator and the filter process. The filter process is described as the selection processes carried out by incubators. Moreover, when the objectives of the incubator match those of the tenants, there will be a higher number of graduates.

Table 31: Overview Literature Review part V (own illustration)

Author	Title	Main Findings
Qian, H., Acs, Z. J., & Stough, R. R. (2013)	Regional systems of entrepreneurship: The nexus of human capital, knowledge and new firm formation	It is suggested that entrepreneurial absorptive capacity is a critical driving force for knowledge-based entrepreneurial activity. Additionally, high technology and cultural diversity appears to contribute to the vibrancy of regional systems of entrepreneurship.
Radojevich-Kelley, N., & Hoffman, D. L. (2012)	A Process-Based Classification of Knowledge Maps and Application Examples	Empirical evidence indicates that trust relationships between innovation actors are difficult to achieve because of the perceived risk of disclosure,managerial complexity and conflicts of culture. Connecting variables that embody trust, motivation to innovate and strategic leadership are equally important to achieve commercial success.
Razak, A. A., Murray, P. A., & Roberts, D. (2014)	A Process-Based Classification of Knowledge Maps and Application Examples.	Innovation activities that underpin the commercialisation attempts of universities are seldomtranslated into commercialisation success. This is mainly attributed to poor manage- ment of innovation processes between innovation networks.
Ritala, P., Agouridas, V., Assimakopoulos D., & Gies, O. (2013	Value creation and capture mechanisms in innovation ecosystems: a comparative case study.	Overall, the research findings provide new evidence on the facilitating initiatives, underlying mechanisms and structures that are related to leading firms' orchestration of innovation ecosystems.
Salamzadeh, A., & Kawamorita Kesim, H. (2015)	Startup Companies: Life Cycle and Challenges	The lifecycle includes three main stages, which are bootstrapping stage, seed stage, and creation stage. Moreover, challenges concerning finance, human resources, support mechanisms and environmental elements are discussed.
Saxenian, A. (1996)	Inside-Out: Regional Networks and Industrial Adaptation in Silicon Valley and Route 128.	By rejecting the sharp distinction between what occurs inside and outside the firm, the network approach illuminates the complex and historically evolved relations between firms and the social structures and institutions of a particular locality. Through a set of comparisons of companies in Silicon Valley and Route 128, the article explains the divergent performance of these two apparently comparable regional clusters, and in so doing provides insidhts into the local sources of competitive advantage.
Simard C. & Vest J (2006)	Knowledge networks and the geographic locus of innovation	Despite the availability of globalization and electronic communication, regional networks play an important role in interorganizational knowledge flows. Government policies often ssek to encourage such innovative knoeldee flows and to strengthen national innovation sustems.
Shuthan Ganama (2017)	Global Startup Ecosystem	Global rankings and benchmarks on key factors such as funding, talent, market reach, corporate involvement, ambition, overall performance, and
Sinah. R. P. (2001)	A comment on developing the field of entrepreneurship through the study of opportunity recognition and exploitation	The author comments on an article concerning entrepreneurship research and the definition of entrepreneurial opportunities. He states that the use of terms often associated with entrepreneurship can only be applied post hoc once either initial business movers have created a market and data reveals there is support for future opportunities, or the venture becomes successful.
Szerb, L., Acs, Z. J., Autio, E., Ortega- Arailes. R., & Komlósi, É. (2013)	REDI : The Regional Entrepreneurship and Development Index – Measuring regional entrepreneurship	The main outcome of the project is a new index (REDI - Regional Entrepreneurship and Development Index) that describes the entrepreneuria process. The index takes into account both individual attitudes and characteristics and the regional context and, accordingly, not only whether people are willing to start a business but whether the conditions to do so an in place in the region concerned.
Teece, D. J., Pisano, G., & Shuen, A.	Dynamic capabilities and	The framework suggests that private wealth creation in industries of rapid technological change depends in large measure on improving internal technological, organizational, and managerial processes inside the firm rather than on strategizing, if by strategizing one means engaging in business conduct that keeps competitors off balance, raises rival's costs, and evaluates new retrates.
Veen, M. van der, & Wakkee, I. (2004)	Understanding the Entrepreneurial Process	Proposition of two detailed model for opportunity recognition and opportunity exploitation and the development of a conceptual model for the entrepreneurial process.
Von Hinnel F. (2005)	Democratizing innovation: The evolving phenomenon of user innovation	Users' ability to innovate is improving radically and rapidly as a result of the steadily improving quality of computer software and hardware, improved access to easy-to-use tools and components for innovation and access to steadily richer innovation commons.
Winch, G. M., & Courtney, R. (2007)	The organization of innovation brokers: An international review	The key role played by innovation brokers in the innovation process is the independent validation of new ideas, thereby facilitating diffusion. In order to carry out this task, innovation brokers are organized on a not-for-profit basis, tupically as a public-private partnership.
Ye, J., & Kankanhalli, A. (2013)	Exploring innovation through open networks: A review and initial research guestions	Investigation of different factors (e.g. knowledge exchange, collaboration projects, costs, norms, trust) that can promote participation in open networks.
Zott. C., & Amit. B (2010)	Business model design: an activity system perspective	A firm's business model is seen as a system of interdependent activities that transcends the focal firm and spans its boundaries. The activity system enables the firm to create value and also to appropriate a share of that value. Two sets of parameters are suggested that need to consider: design elements (i.e. content, structure and governance) that describe the architecture of an activity system; and design themes (i.e. novelty, lock-in, complementarities and efficiency) that describe the sources of value creation.

7.2 Appendix 2: Mapping of interview questions according to literature review

Table 32: Mapping of interview questions after pre-testing (own illustration)

Interview Topic	Interview Question	Related Chapter from the Theoretical Framework
Part I Questionnaire: Genera	al Part	
Accelerator program	What is the accelerator's program?	 2.3 Accelerators: The Ecosystem Builder 2.4 Entrepreneurial Ventures: The Entrepreneurship-in-Networks Model
Accelerator program	How do you get to know about the startups' challenges?	 2.3 Accelerators: The Ecosystem Builder 2.4 Entrepreneurial Ventures: The Entrepreneurship-in-Networks Model
Characteristics of regional innovation ecosystem	What is the role of the region you are located at?	2.2 Innovation Ecosystems and Regional System of Entrepreneurship
Characteristics of regional innovation ecosystem	What is special about your innovation network?	2.2 Innovation Ecosystems and Regional System of Entrepreneurship
Part 2 Questionnaire: EiN M	odel – Strategic Capital	
Challenges of startups	What do you think are the biggest challenges concerning the startups' business strategy?	2.4.1 Strategic Capital
Support mechanisms for startups from accelerator	How do you support solving these problems?	 2.3 Accelerators: The Ecosystem Builder 2.4.1 Strategic Capital
Support mechanisms for startups from regional innovation ecosystem	How do you use/ integrate your regional network to support the startups regarding their business strategy?	2.2 Innovation Ecosystems and Regional System of Entrepreneurship
Support mechanisms for regional innovation ecosystem from accelerator	How does the accelerator support regional network partners in their means to facilitate the startups' strategy development?	2.3.1 Ecosystem Builder
Part 3 Questionnaire: EiN M	odel – Cultural Capital	
Challenges of startups	What do you think are the biggest challenges concerning the startups' legitimacy/ appearance?	2.4.2 Cultural Capital
Support mechanisms for startups from accelerator	How do you support solving these problems?	 2.3 Accelerators: The Ecosystem Builder 2.4.2 Cultural Capital
Support mechanisms for startups from regional innovation ecosystem	How do you use/ integrate your regional network to support the startups regarding their legitimacy/ appearance?	2.2 Innovation Ecosystems and Regional System of Entrepreneurship
Support mechanisms for regional innovation ecosystem from accelerator	How does the accelerator support regional network partners in their means to facilitate the startups' legitimacy?	2.3.1 Ecosystem Builder
	·	·

Part 4 Questionnaire: EiN Model – Economic Capital				
Challenges of startups	What do you think are the biggest challenges concerning the startups' financials?	2.4.3 Economic Capital		
Support mechanisms for startups from accelerator	How do you support solving these problems?	 2.3 Accelerators: The Ecosystem Builder 2.4.3 Economic Capital 		
Support mechanisms for startups from regional innovation ecosystem	How do you use/ integrate your regional network to support the startups regarding their financials?	 2.2 Innovation Ecosystems and Regional System of Entrepreneurship 		
Support mechanisms for regional innovation ecosystem from accelerator	How does the accelerator support regional network partners in their means to facilitate the startups' financial development?	2.3.1 Ecosystem Builder		
Part 5 Questionnaire: EiN Mo	del – Social Capital			
Challenges of startups	What do you think are the biggest challenges concerning the startups' networks?	2.4.4 Social Capital		
Support mechanisms for startups from accelerator	How do you support solving these problems?	 2.3 Accelerators: The Ecosystem Builder 2.4.4 Social Capital 		
Support mechanisms for startups from regional innovation ecosystem	How do you use/ integrate your regional network to support the startups regarding their networking activities?	 2.2 Innovation Ecosystems and Regional System of Entrepreneurship 		
Support mechanisms for regional innovation ecosystem from accelerator	How does the accelerator support regional network partners in their means to facilitate the startups' network development?	2.3.1 Ecosystem Builder		

7.3 Appendix 3: Interview Guidelines before pretest

7.3.1 Interview Guideline English before pretest

Introduction/ Opening

- Thanking the participant for agreeing on the interview
- Explaining briefly about the research and providing an information sheet
 - Goal: The goal of this study is to analyze a certain type of accelerator the so-called Ecosystem Builder. Focus lies on the categorization of challenges startups face and the support provided by accelerators in regard to the four capitals of the EiN model. Eventually, best practice will be derived.
 - o The single interview will especially be about the experience of the accelerators
- Reiterating the participants right to confidentiality and anonymity
- Highlighting the interviewee's right to not answer questions and to stop the interview at anytime
- Offering to provide a summary of the research's findings
- Asking for allowance to record the interview
- Estimated time needed: 60 min

Part I Questionnaire: General Part

- What is the accelerator's program?
 - Probing question: Does it differ for each startup?
- What is the role of the region you are located at?
 - Probing question: Special challenges? Subsidies? Proximity to industry?
 - Probing question: What are the advantages and disadvantages of your location?
- What is special about your innovation network?
 - Probing question: Proximity or closeness to industry and research?

Part 2 Questionnaire: EiN Model – Strategic Capital

- How do you get to know about the startups' challenges concerning the startups' business strategy?
- What do you think are the biggest challenges?
 - Lack of market knowledge? Goal-orientation?
- How do you support solving these problems?
 - Probing question: Working with business models? Improving the business plan? MVPs? Market analysis?
 - Probing question: Juridical questions? IPR?
- How do you use/ integrate your regional network to support the startups regarding their business strategy?
- How does the accelerator support regional network partners in their means to facilitate the startups' strategy development?
 - Probing question: Broker between different parties? Scanning the market environment? Fostering the commercialization of inventions? Supporting IPRs?
- With what did you gain positive/ negative experience?

Part 3 Questionnaire: EiN Model – Cultural Capital

- How do you get to know about the startups' challenges concerning the startups' legitimacy/ appearance?
- What do you think are the biggest challenges concerning their legitimacy/ appearance?
 - Probing question: The startup's status? Finding the right people? Knowledge management?

- How do you support solving these problems?
 - Probing question: Increasing legitimacy? Supporting the startup culture of the whole network?
- How do you use/ integrate your regional network to support the startups regarding their legitimacy/ appearance?
- How does the accelerator support regional network partners in their means to facilitate the startups' legitimacy?
- With what did you gain positive/ negative experience?

Part 4 Questionnaire: EiN Model - Economic Capital

- How do you get to know about the startups' challenges concerning the startups' financials?
 - What do you think are the biggest challenges concerning their financials?
 - Which financial support is best for which situation?
- How do you support solving these problems?
 - Does the accelerator offer funding/ financial support? Provision of coworking-spaces? Tools? Equipment?
 - Consideration of exit strategy?
 - Probing question: Support from the network (Business Angels, VC)? Loans? Crowdfunding?
 - Probing question: Do you support the startups during negotiations with VC and other investors?
 - Probing question: How do you choose suitable investors?
- How do you use/ integrate your regional network to support the startups regarding their financials?
- How does the accelerator support regional network partners in their means to facilitate the startups' financial development?
- With what did you gain positive/ negative experience?

Part 5 Questionnaire: EiN Model - Social Capital

- How do you get to know about the startups' challenges concerning the startups' networking?
 - What do you think are the biggest challenges concerning their networks?
 - Probing question: Unsuitable network? Difference between industry and research?
 - Probing question: Implementation and establishment of activities?
 - Probing question: Distrust to share certain information?
- How do you support solving these problems?
 - Probing question: Broker between different parties? Looking for a network that suits the startup vs. looking for a startup that suits the network?
 - Probing question: Establishment of new startups?
 - Probing question: Networking events? Demo-Days?
 - Probing question: Support of the region to create and sustain an innovation network?
- How do you use/ integrate your regional network to support the startups regarding their networking activities?
- How does the accelerator support regional network partners in their means to facilitate the startups' network development?
- With what did you gain positive/ negative experience?

Closing

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- Do you want to add anything?
- Do you have any further questions?
- In case you want to add anything later on, you are more than welcome to contact me!

7.3.2 Interview Guideline German before pretest

Introduction/ Opening

- Vielen Dank, dass Sie sich Zeit für dieses Interview nehmen!
- Auf dem Informationsblatt finden Sie alle wichtigen Details. Wir gehen diese aber jetzt noch einmal kurz durch.
- Bei dieser Studie geht es darum, eine bestimmte Art von Accelerators, die sogenannten Ecosystem Builder, zu analysieren. Der Schwerpunkt dabei liegt auf der Kategorisierung von Schwierigkeiten der Startups und von Unterstützungsmaßnahmen, die von den Accelerators passend angeboten werden. Das Ziel ist das Erstellen einer Art Handlungskatalog mit Best Practice-Beispielen.
 - o Fortschritt, Forschungsziel, Datensammlung und -auswertung
- In diesem Interview geht es um unterschiedliche Problembereiche der Startups, Tätigkeiten ihres Accelerators und um Ihre Erfahrungen
- Die Informationen sind vertraulich und Daten werden anonymisiert
- Sie können jeder Zeit das Interview abbrechen oder sich dazu entscheiden, eine Frage NICHT zu beantworten
- Nach Fertigstellung, kann ich Ihnen gerne eine Zusammenfassung schicken
- Darf ich unser Gespräch aufnehmen?
- Das Interview wird ca. 60min dauern

Part I Questionnaire: General Part

- Wie sieht das Accelerator-Programm aus?
 - Hinweis: Ist das für jedes Startup unterschiedlich?
 - Welche Rolle spielt die "Region" in der sich der Accelerator befindet?
 - Hinweis: Besondere Herausforderungen oder Fördermittel? Nähe zu Industrie?
 - Hinweis: Was sind die Vorteile/ Nachteile an ihrem Standort?
- Was ist das besondere an ihrem Innovations-Netzwerk?
 - o Hinweis: Nähe zu Industrie und Forschung?

Part 2 Questionnaire: EiN Model - Strategic Capital

- Wie finden Sie die Schwierigkeiten der Startups im Bereich Businessstrategie heraus?
- Wo sehen Sie die größten Schwierigkeiten?
 - Hinweis: Fehlendes Marktwissen? Zielorientierung?
- Wie minimieren Sie diese Probleme?
 - Hinweis: Arbeit mit Business Modellen? Verfeinerung des Business Plan? MVP? Marktanalyse?
 - Hinweis: Rechtliche Fragen/ IPR?
- Wie nutzen Sie regionale Netzwerkpartner, um die Startups im Bereich Businessstrategie zu unterstützen?
- Wie unterstützen Sie selbst regionale Netzwerkpartner, die Startups in diesem Bereich fördern?
 - Hinweis: Vermittlung zwischen den Parteien, Scannen vom Markt, Unterstützung bei Kommerzialisierung und IPRs?
- Womit haben Sie gute/ schlechte Erfahrungen gemacht?

Part 3 Questionnaire: EiN Model – Cultural Capital

- Wie finden Sie die Schwierigkeiten bezüglich der Legitimität/ Auftritt des Startups heraus?
- Wo sehen Sie die größten Schwierigkeiten?
 - Hinweis: Auftritt/ Status des Startups? Zusammenstellung des Teams/ Finden von passenden Mitarbeitern? Personalmanagement? Wissensmanagement?

- Wie minimieren Sie diese Probleme?
 - Hinweis: Steigerung der Anerkennung und Legitimität des Startups? Förderung der Startups-Kultur um ganzen Netzwerk?
- Wie nutzen Sie regionale Netzwerkpartner, um die Startups im Bereich der Legitimität/ Auftritt des Startups zu unterstützen?
- Wie unterstützen Sie selbst regionale Netzwerkpartner, die Startups in diesem Bereich unterstützen?
- Womit haben Sie gute/ schlechte Erfahrungen gemacht?

Part 4 Questionnaire: EiN Model – Economic Capital

- Wie finden Sie die Schwierigkeiten im Bereich Finanzierung heraus?
 - Wo sehen Sie die größten Schwierigkeiten im Bereich Finanzierung?
 - Hinweis: Welche Finanzierung ist wann am besten?
- Wie minimieren Sie diese Probleme?

•

- Hinweis: Bietet der Accelerator Funding/ Werden die Startups anderweitig finanziell unterstützt? Coworking spaces? Werkzeuge? Ausstattung?
- Hinweis: Frühzeitiges Arbeiten an der Exit-Strategie?
- Hinweis: Unterstützung aus dem Netzwerk (Business Angels, VC)? Kredite? Eigenfinanzierung? Crowdfunding?
- Hinweis: Werden die Startups bei Verhandlungen mit VC und anderen Geldgebern unterstützt?
- Hinweis: Wir werden Investoren ausgewählt? Worauf wird geachtet? Background? Ziel?
- Hinweis: Wie oft scheitern Startups, weil sie nicht ausreichend finanziert werden können?
- Wie nutzen Sie regionale Netzwerkpartner, um die Startups im Bereich Finanzierung zu unterstützen?
- Wie unterstützen Sie selbst regionale Netzwerkpartner, die Startups in diesem Bereich unterstützen?
- Womit haben Sie gute/ schlechte Erfahrungen gemacht?

Part 5 Questionnaire: EiN Model - Social Capital

- Wie finden Sie die Schwierigkeiten der Startups im Bereich Networking heraus?
- Wo sehen Sie die größten Schwierigkeiten im Bereich Networking?
 - Hinweis: Unpassendes Netzwerk? Unterschiede zwischen Forschung und Wirtschaft?
 - Hinweis: Etablierung von Networking-Aktivitäten?
 - Hinweis: Misstrauen bestimmte Informationen zu teilen?
- Wie minimieren Sie diese Probleme?
 - Hinweis: Vermittlung zwischen den unterschiedlichen Parteien? Netzwerk passend zum Startup? Startup passend zum Netzwerk?
 - *Hinweis: Etablierung der neuen Startups im Netzwerk? Events? Demodays?*
 - *Hinweis: Unterstützt die* Region das Entstehen und Erhalten eines *Innovationsökosystems/- netzwerk?*
- Wie nutzen Sie regionale Netzwerkpartner, um die Startups im Bereich Networking zu unterstützen?
- Wie unterstützen Sie selbst regionale Netzwerkpartner, die Startups in diesem Bereich unterstützen?
- Womit haben Sie gute/ schlechte Erfahrungen gemacht?

Closing

- Möchten Sie noch etwas hinzufügen?
- Haben Sie noch Fragen?

• Falls ihnen später noch etwas einfällt, können Sie mich gerne kontaktieren!

7.4 Appendix 4: Interview Guidelines after pretest

7.4.1 Interview Guideline English after pretest

Introduction/ Opening

- Thanking the participant for agreeing on the interview
- Explaining briefly about the research and providing an information sheet
 - Goal: The goal of this study is to analyze a certain type of accelerator the so-called Ecosystem Builder. Focus lies on the categorization of (1) challenges startups face and (2) the support provided by accelerators in regards to the four capitals of the EiN model. Eventually, best practice will be derived.
 - Progress: Data collection phase (interviewing different Ecosystem Builders in Germany and the Netherlands)
 - The single interview will especially be about the experience of the accelerators
- Reiterating the participants right to confidentiality and anonymity
- Highlighting the interviewee's right to not answer questions and to stop the interview at anytime
- Offering to provide a summary of the research's findings
- Asking for allowance to record the interview
- Estimated time needed: 45 min

Part I Questionnaire: General Part

- What is the accelerator's program?
- How do you get to know about the startups' challenges?
- What is the role of the region you are located at?
- What is special about your innovation network?

Part 2 Questionnaire: EiN Model - Strategic Capital

- What do you think are the biggest challenges concerning the startups' business strategy?
 Probing question: Lack of market knowledge? Goal-orientation?
- How do you support solving these problems?
- How do you use/ integrate your regional network to support the startups regarding their business strategy?
- How does the accelerator support regional network partners in their means to facilitate the startups' strategy development?
 - Probing question: Broker between different parties? Scanning the market environment?

Part 3 Questionnaire: EiN Model – Cultural Capital

- What do you think are the biggest challenges concerning the startups' legitimacy/ appearance?
 - Probing question: The startup's status? Finding the right people?
- How do you support solving these problems?
 - Probing question: Events? DemoDays?
- How do you use/ integrate your regional network to support the startups regarding their legitimacy/ appearance?
- How does the accelerator support regional network partners in their means to facilitate the startups' legitimacy?

Part 4 Questionnaire: EiN Model – Economic Capital

- What do you think are the biggest challenges concerning the startups' financials?
 - Probing question: Which financial support is best for which situation?
- How do you support solving these problems?
- How do you use/ integrate your regional network to support the startups regarding their financials?
- How does the accelerator support regional network partners in their means to facilitate the startups' financial development?

Part 5 Questionnaire: EiN Model - Social Capital

- What do you think are the biggest challenges concerning the startups' networks?
 - Probing question: Implementation and establishment of activities?
- How do you support solving these problems?
 - Probing question: Broker between different parties? Networking events? Demo-Days?
- How do you use/ integrate your regional network to support the startups regarding their networking activities?
- How does the accelerator support regional network partners in their means to facilitate the startups' network development?

Closing

- Do you want to add anything?
- Do you have any further questions?
- In case you want to add anything later on, you are more than welcome to contact me!

7.4.2 Interview Guideline German after pretest

Introduction/ Opening

- Vielen Dank, dass Sie sich Zeit für dieses Interview nehmen!
- Auf dem Informationsblatt finden Sie alle wichtigen Details. Wir gehen diese aber jetzt noch einmal kurz durch.
- Bei dieser Studie geht es darum, eine bestimmte Art von Accelerators, die sogenannten Ecosystem Builder, zu analysieren. Der Schwerpunkt dabei liegt auf der Kategorisierung von (1) Schwierigkeiten der Startups und von (2) Unterstützungsmaßnahmen, die von den Accelerators passend angeboten werden. Das Ziel ist das Erstellen einer Art Handlungskatalog mit Best Practice-Beispielen.
 - Fortschritt, Forschungsziel, Datensammlung und -auswertung
- In diesem Interview geht es um unterschiedliche Problembereiche der Startups, Tätigkeiten ihres Accelerators und um Ihre Erfahrungen
- Die Informationen sind vertraulich und Daten werden anonymisiert
- Sie können jeder Zeit das Interview abbrechen oder sich dazu entscheiden, eine Frage NICHT zu beantworten
- Nach Fertigstellung kann ich Ihnen gerne eine Zusammenfassung schicken
- Darf ich unser Gespräch aufnehmen?
- Das Interview wird ca. 45min dauern

Part I Questionnaire: General Part

- Wie sieht das Accelerator-Programm aus?
- Wie werden die Schwierigkeiten der Startups herausgefunden?

- Welche Rolle spielt die "Region" in der sich der Accelerator befindet?
- Was ist das besondere an ihrem Innovations-Netzwerk?

Part 2 Questionnaire: EiN Model - Strategic Capital

- Wo sehen Sie die größten Schwierigkeiten der Startups im Bereich Businessstrategie?
 Hinweis: Fehlendes Marktwissen? Zielorientierung?
- Wie minimieren Sie diese Probleme?
- Wie nutzen Sie regionale Netzwerkpartner, um die Startups im Bereich Businessstrategie zu unterstützen?
- Wie unterstützen Sie selbst regionale Netzwerkpartner, die Startups in diesem Bereich fördern?
 - Hinweis: Vermittlung zwischen den Parteien, Scannen vom Markt?

Part 3 Questionnaire: EiN Model – Cultural Capital

- Wo sehen Sie die größten Schwierigkeiten im Bereich der Legitimität/ Auftritt?
 - Hinweis: Auftritt/ Status des Startups? Zusammenstellung des Teams/ Finden von passenden Mitarbeitern?
- Wie minimieren Sie diese Probleme?
 - o Hinweis: Etablierung der neuen Startups im Netzwerk? Events? Demodays?
- Wie nutzen Sie regionale Netzwerkpartner, um die Startups im Bereich der Legitimität/ Auftritt des Startups zu unterstützen?
- Wie unterstützen Sie selbst regionale Netzwerkpartner, die Startups in diesem Bereich unterstützen?

Part 4 Questionnaire: EiN Model – Economic Capital

- Wo sehen Sie die größten Schwierigkeiten im Bereich Finanzierung?
 - Hinweis: Welche Finanzierung ist wann am besten?
- Wie minimieren Sie diese Probleme?
- Wie nutzen Sie regionale Netzwerkpartner, um die Startups im Bereich Finanzierung zu unterstützen?
- Wie unterstützen Sie selbst regionale Netzwerkpartner, die Startups in diesem Bereich unterstützen?

Part 5 Questionnaire: EiN Model – Social Capital

- Wo sehen Sie die größten Schwierigkeiten im Bereich Networking?
 - Hinweis: Etablierung von Networking-Aktivitäten?
- Wie minimieren Sie diese Probleme?
- Wie nutzen Sie regionale Netzwerkpartner, um die Startups im Bereich Networking zu unterstützen?
- Wie unterstützen Sie selbst regionale Netzwerkpartner, die Startups in diesem Bereich unterstützen?

Closing

- Möchten Sie noch etwas hinzufügen?
- Haben Sie noch Fragen?
- Falls ihnen später noch etwas einfällt, können Sie mich gerne kontaktieren!

7.5 Appendix 5: Information Sheet for Interviewees

How to be a successful Ecosystem Builder? – A qualitative research based on the Entrepreneurship in Networks model

A master thesis research by Karina Link





1

Contens

- 1. About me: Karina Link
- 2. Research Context
- 3. Research Theory & Research Goal
- 4. Before we get started...

2

1. About me: Karina Link

会 Education

09/2014 - 10/2017 | Masters program: M.Sc. Business Administration and M.Sc. Innovation Management & Entrepreneurship | University of Twente (NL) & Technical University of Berlin (GER)

09/2011-08/2014 | Bachelors program: B.Sc. International Business Administration | University of Twente (NL)

Practical experience

04/2017 - 10-2017

| Master thesis project "How to be a successful Ecosystem Builder" | University of Twente (NL) & Technical University of Berlin (GER) & KPMG Hannover

09/2016 - 03/2017 | Internship "Innovation, Digital Sales & Strategic Growth Initiatives" | KPMG Hannover

03/ 2016 – 09/ 0216 | **Internship "Innovation Management"** | Lufthansa Technik Logistik Services GmbH

2. Research – Context



Dispersed specialized knowledge and the evermore important network-characteristics of a technology's life-cycle increase competitive pressure on incumbent businesses

Established processes often hinder the search and discovery of innovation and thus lead to missed opportunities, while entrepreneurial ventures are found to be a valuable source of highly

entrepreneurial ventures are found to be a valuable source of highly innovative and disruptive ideas

Challenge Startups Between 90-95% of startups fail when declaring a project Common reasons: lousy business model, no/ weak sustainable comeptitive advantage, lacking financial support



26 years old

village near Hannover Speaks German, English,

Dutch and French

committee for the first KPM Smart Start Award 2017

Participated in projects with McKinsey & Company, InPro mbH and Berliner Stadtreinigungsbetriebe (engl: Berlin town cleaning

ntact me!

☎ +49(0)1741902639
 ☑ k.link@student.utwente.

.IIIIK@stuueIit.utwei

3

Solution Approach

- Companies increasingly shift towards collaborative innovation and R&D approaches
- Incubators and accelerators aim to bridge the gap between startup and corporate as one has what the other lacks
- Companies can increase startups' survival rate by offering lacking resources
- Startups can offer new innovative ideas and "entrepreneurial spirit"

4

3. Research – Theory & Research Goal



4. Before we get started...

□ The interview will last around 45min

 Topics: Your accelerator's network and your experience regarding the startups' business strategy, status, financials and networking

Consent form

- **U** You have the right to not answer questions and to stop the interview at anytime
- Data will be treated confidentially and anonymized
- □ Allowance to record the interview?
- □ Summary of the results on request

Thank you for participating!

If you have any further questions or remarks, please contact me at anytime!

7.6 Appendix 6: Coding Overview – Open and Axial Coding

Open Coding	Axial Coding							
# Codes	Category Group	# Codes	Main Category	# Codes	Subcategories	# Codes		
	IES & RSE	12	Infrastructure	4				
		15	Culture	9				
					Program	20		
			Structure	37	Admission Criteria and Process	9		
					Mentoring	8		
	A				Benefits	15		
	Accelerator	69	ESB Function	25	Gatekeeping and brokering	6		
155					Scanning, foresight and information processing	4		
			Challenges	7				
			Stratogic Capital	14	Challenges	8		
			Strategic Capital	14	Support	6		
			Cultural Capital	16	Challenges	9		
	EiN model	72	Cultural Capital	10	Support	7		
		/5	Economic Capital	20	Challenges	13		
				20	Support	7		
			Social Capital	23	Challenges	8		
				20	Support	15		

Table 33: Coding Overview - Open and Axial Coding (own illustration)

7.7 Appendix 7: Coding Scheme with explanation

Category Group	Explanation	Main Category	Explanation	Subcategories	Explanation
IES & RSE	Characteristics and aspects describing the Innovation	Infrastructure	Aspects describing the ecosystem's or region's infrastructure		
	Regional Systems of Entrepreneurship	Culture	Aspects describing the ecosystem's or region's culture		
			Aspects describing the accelerator's structure	Program	Aspects of the accelerator program
		Structure		Admission Criteria	Aspects describing the admission criteria of the accelerator program
				Mentoring	Task and characteristics of the mentors and the mentoring program of the accelerator
Accelerator	Tasks or characterisitcs concerning the accelerator	ESB Function	Tasks and characteristics that can be attributed to being an Ecosystem Builder besides accelerating	Genral Benefits	General tasks and characteristics of an ESB that contribute to the whole ecosystem
				Gatekeeping and brokering	Tasks and characteristics of the accelerator concerning gatekeeping and brokering
			entrepreneurial ventures	Scanning, foresight and information processing	Tasks and characteristics of the accelerator concerning scanning the market, forecasting and information processing
		Challenges	Challenges the accelerator and its team is facing		

Figure 12: Coding scheme with explanation part I (own illustration)

Category Group	Explanation	Main Category	Explanation	Subcategories	Explanation
	Nodel Aspects that concern the four types of capital	Strategic Capital	Aspects attributed to the strategic capital of entrepreneurial ventures	Challenges	Challenges concerning the entrepreneurial ventures and their development of strategic capital
				Support	Support provided by the acceleraotr concerning entrepreneurial ventures' development of strategic capital
			Aspects attributed to the cultural capital of entrepreneurial ventures	Challenges	Challenges concerning the entrepreneurial ventures and their development of cultural capital
EiN model		Cultural Capital		Support	Support provided by the accelerator concerning the entrepreneurial ventures' development of cultural capital
EIN Model		Economic Capital	Aspects attributed to the economic capital of entrepreneurial ventures	Challenges	Challenges concerning the entrepreneurial ventures and their development of economic capital
				Support	Support provided by the accelerator concerning the entrepreneurial ventures' development of economic capital
		Aspects attributed to the social capital of entrepreneurial ventures	Aspects attributed to	Challenges	Challenges concerning the entrepreneurial ventures and their development of social capital
			Support	Support provided by the accelerator concerning the entrepreneurial ventures' development of social capital	

Figure 13: Coding scheme with explanation part II (own illustration)

7.8 Appendix 8: VACE Factors Checklist

Table 34: VACE Factors Checklist - Factor A

VACE Factor: A
Accelerator Structure - Program
Considerations
Considering regional circumstance and targeted industry
Fixed duration
Differentiating between stages of startup
Structured program/ regular workshops with flexible parts
Establishing networking activities
Setting-up general milestones
Offering startup-specific support and startup-specific milestones
Ad-hoc or on-demand meetings
Accelerator Structure – Admission Criteria
Considerations
Team is more important factor than the product or service offered
Focusing on B2B or B2C or both
Assortment of admission committee
Demanding equity or fees
Accepting only regional startups
Accelerator Structure – Mentoring
Considerations
Focusing on careful selection and fit
Deciding on accelerator-mentor-collaboration structure
Accelerator Structure – Challenges
Considerations
Setting-up an accelerator which is attractive for startups, companies, research institutions and politics alike
Choosing the most promising startups
Competing with other accelerators
Importance of having necessary resources available in the ecosystem

Table 35: VACE Factors Checklist - Factor C

VACE Factor: C				
Capitals - Strategic Capital				
Considerable challenges	Considerable support mechanisms			
Continuously working on the product	 Provide startups with tools and knowledge concerning product improvement. Emphasize the importance of balancing "working on the product" and networking/acquiring funding 			
Having a business-savvy team member	 Support startups in finding a business-savvy team member. Emphasize its importance concerning strategy implementation. Support business plan development and strengthen decision-making. Offer business plan-related workshops, templates and tools. 			
Corporates operating too slowly for a collaboration	 Prepare startups to adjust to longer communication ways. Explain startups' needs to corporates and show them how to adjust their ways accordingly. 			
Acquiring first customer projects	 Connect startups with suitable corporates for pilot projects. Find mentors that are industry-experts who provide valuable insights and contacts. Support MVP development and testing. Support marketing efforts. 			
Capitals - Cultural Capita	al			
Considerable challenges	Considerable support mechanisms			
Having a commercial- savvy person in the team	 Support startups in finding a commercial-savvy team member. Emphasize its importance concerning legitimacy in the ecosystem. 			
Finding employees with the right cultural-fit	 Offer HR courses Support searching for new employees. 			
Establishing credibility	Host networking events to increase exposure and legitimacy.			
---------------------------	---			
and capability of the	Work on own reputation to provide startups with the accelerator's approval			
founding team	stamp.			
Defining values/ culture	Emphasizing the importance of the startup defining its value and cultures to			
Denning Values/ culture	know its standing and establishing it as legitimate ecosystem actor			
Startups and incumbent	Enhance CSE by supporting startups to adjust to the corporates ways and			
different lengue nee"	VICA VEISA.			
different languages	Support an open culture of failure in the whole ecosystem.			
	Considering differences between doing business in a B2B or B2C context.			
Capitals - Financial Capi				
Considerable challenges	Considerable support mechanisms			
Acquiring medium to	Connect with suitable investors.			
large funds (around	Work on own reputation to provide startups with the accelerator's approval			
100,000-400,000€)	stamp.			
Considering timing,	Advice startups on funding possibilities.			
amount and type of	Support finding a suitable investor with appropriate technical knowledge.			
investment	Inform about regional subsidies.			
	Emphasize importance of follow-up funding.			
	Consider provide funding on your own or in collaboration with a corporate or			
	governmental partner.			
High pitch quality	Support startups in improving their pitches.			
	 Host pitch events 			
Capitals - Social Capital				
Considerable challenges	Considerable support mechanisms			
Knowing how to network	Support startups in figuring out which networking activities/ contacts are			
	worth-while and in acquiring appropriate networking skill			
	 Advise startups on different networking strategies 			
	 Connect them with to other startups and alumni 			
Having commercial-	 Support startups in finding a commercial-savvy team member 			
sayyy team member	Emphasize its importance concerning increasing sales and business			
Savvy team member	Emphasize its importance concerning increasing sales and business development.			
Showing product market	Support improving pitch quality			
	Support improving pitch quality.			
III	Host pitch events.			
	Host networking events.			
	Find mentors that are industry-experts who provide valuable insights and contacts.			
	Colliduis.			
	work on own reputation to provide startups with the accelerator's approval stamp.			
Startung and incumberat	Stamp.			
Startups and incumbent	Enhance USE by supporting startups to adjust to the corporates ways and view verse.			
companies "speak other				
languages"	Considering differences between doing business in a B2B or B2C context.			

Table 36: VACE Factors Checklist - Factor E

VACE Factor: E
ESB Functions
Recommendations
Hosting networking events
Offering a central locality to work and connect
Attracting other actors with a good reputation
Offering an online platform to inform about events
Spreading in other regions/ cities to connect different actors
Scanning the market through applications and industry-specific events and use these information for foresight
Gatekeeping and brokering by increase approachability and systematically approach contacts that could add
value to the ecosystem

7.9 Appendix 9: Illustrative Case

In this chapter, one illustrative case is provided with the goal to show how to the insights gained through this qualitative research can be used to design a successful Ecosystem Builder, even if no best-practice could be derived from the findings. To do so, a CHECKLIST, based on the introduced VACE Factors and adapted to the first interviewed accelerator (A1), is developed in this chapter in two steps. Noteworthy is that this illustrative case is anonymized in order to protect the confidentially agreement between the researcher and the participant.

Firstly, the current situation of A1 are introduced. Secondly, the VACE Factors are adapted accordingly and hence provide measures for improving the current situation.

A1 is an accelerator program based in Hannover and established in 2017 that belongs to a network of leading auditing and advisory firms. Their goal is to establish themselves as broker between startups, established companies, academia and politics. The current approach to establish A1 as innovation broker includes following measures:

- collaboration with the co-working and makerspace Hafven
- Connecting different actors in the region (e.g. startups and incumbent companies or banks) through workshops
- Participating in different networking and startups events and topic-specific meet-ups
- Bestowing a startup award which enables the winner to utilize consultancy services and to become part of the A1's extensive network

Even if these steps are important and already a huge success, the main aspect – acting as accelerator – is lacking some sort of guideline. Therefore, based on the VACE Factors and other findings of this research, the following implementation recommendations are developed.

Firstly, recommendations for the accelerator's structure given (see Table 36: VACE Factors Checklist - Factor A - Illustrative Case). Secondly, it is shown how all four types of capital of the EiN model are supported (see Table 37: VACE Factors Checklist - Factor C - Illustrative Case). Thirdly, additional ESB functions are discussed in the context of A1 setting (see Table 38: VACE Factors Checklist - Factor E - Illustrative Case).

VACE Factor: A		
Accelerator – Structure - Program		
Considerations	Implementation recommendation	
Considering regional circumstance and targeted industry	 Focusing further mainly on banking and insurance companies and startups Know requirements of the industry, e.g. product life cycles, trends. Collaborate with established ecosystem partners from that industry that are interested in startups. 	
Fixed duration	 Awarded services can be used over the course of one year Assess whether a shorter timeframe (e.g. three to six month) is easier to manage. 	
Differentiating between stages of startup	 Currently differentiating between three the phases Assess needs of startups in the different phases and adjust your offered support. 	

Table 37: VACE Factors Checklist - Factor A - Illustrative Case

	Assess most demanded consultancy serviced by startups in the
	different phases and adjust your offered support.
	Assess what other support mechanisms besides the consultancy assuring and required by the different electron and adjust your afferred.
	serviced are required by the different startups and adjust your offered support.
Structured program/ regular	Voluntary workshops at the Havfen are offered
workshops with flexible parts	> Decide on mandatory course that are valuable for every startup value
	in combination with the awarded consultancy services.
Fatabliabias actualias	Decide on offering different programs for different startup stages.
activities	 Startups are invited to events and are connected with partners Establish certain events as regular feature in order to benefit from
activities	scalability of networking effects and preferential access.
	 Host industry-/topic-specific events and general events to establish
	different network connections.
	Decide which ecosystem actors adds the most value to the event.
Setting-up general	There are no general milestone established
milestones	Set-up general milestones that are related to industry-requirement.
Offering startup-specific	Specific support is offered by the individual consultancy services
support and startup-specific	There are no specific milestones
milestones	Consider aspects and changes that are important for that specific
	startup, its situation and goals.
	Consider support that can be offered by A1 as well as support from other playare in the apparture.
Ad-boc or on-demand	other players in the ecosystem.
meetings	A1 employees are available at the Hafven for short talks and quick
	advice
	Continue offering workshops and Q&As on different topics at the
	Hafven but also offer them in the office in order to improve standing
	as startup-friendly.
	Offer "open office" hours.
Accelerator Structure – Adm	nission Criteria and Process
Accelerator Structure – Adm Considerations	nission Criteria and Process Implementation recommendation
Accelerator Structure – Adm Considerations Team is more important	 ission Criteria and Process Implementation recommendation Application requires a short questionnaire, business model and/ or video
Accelerator Structure – Adm Considerations Team is more important factors than the product or	 Implementation recommendation Application requires a short questionnaire, business model and/ or video Test founders' commitment and credibility.
Accelerator Structure – Adm Considerations Team is more important factors than the product or service offered	 Implementation recommendation Application requires a short questionnaire, business model and/ or video Test founders' commitment and credibility. Make sure the founding team has willingness and openness to take and test the advice
Accelerator Structure – Adm Considerations Team is more important factors than the product or service offered	 Application recommendation Application requires a short questionnaire, business model and/ or video Test founders' commitment and credibility. Make sure the founding team has willingness and openness to take and test the advice. Currently no preference
Accelerator Structure – Adm Considerations Team is more important factors than the product or service offered Focusing on B2B or B2C or both	 Application recommendation Application requires a short questionnaire, business model and/ or video Test founders' commitment and credibility. Make sure the founding team has willingness and openness to take and test the advice. Currently no preference Consider in which cases B2B or B2C startups are adding more value
Accelerator Structure – Adm Considerations Team is more important factors than the product or service offered Focusing on B2B or B2C or both	 Application recommendation Application requires a short questionnaire, business model and/ or video Test founders' commitment and credibility. Make sure the founding team has willingness and openness to take and test the advice. Currently no preference Consider in which cases B2B or B2C startups are adding more value to the ecosystem.
Accelerator Structure – Adm Considerations Team is more important factors than the product or service offered Focusing on B2B or B2C or both Assortment of admission	 Implementation recommendation Application requires a short questionnaire, business model and/ or video Test founders' commitment and credibility. Make sure the founding team has willingness and openness to take and test the advice. Currently no preference Consider in which cases B2B or B2C startups are adding more value to the ecosystem. Usually consists of A1 employees, industry experts, investors, academics
Accelerator Structure – Adm Considerations Team is more important factors than the product or service offered Focusing on B2B or B2C or both Assortment of admission committee	 Application requires a short questionnaire, business model and/ or video Test founders' commitment and credibility. Make sure the founding team has willingness and openness to take and test the advice. Currently no preference Consider in which cases B2B or B2C startups are adding more value to the ecosystem. Usually consists of A1 employees, industry experts, investors, academics and politics
Accelerator Structure – Adm Considerations Team is more important factors than the product or service offered Focusing on B2B or B2C or both Assortment of admission committee	 Application recommendation Application requires a short questionnaire, business model and/ or video Test founders' commitment and credibility. Make sure the founding team has willingness and openness to take and test the advice. Currently no preference Consider in which cases B2B or B2C startups are adding more value to the ecosystem. Usually consists of A1 employees, industry experts, investors, academics and politics Focus on keeping this constellation but adjust persons according the industry
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Deciding on accelerator- mentor-collaboration structure	 Currently, the startups are provided with a certain budget to use for consultancy services Check whether the allocated reward should be adjusted according to the startup stage or industry-requirements.
Considerations	Implementation recommendation
Setting-up an accelerator which is attractive for startups, companies, research institutions and politics alike	 Current focus on established companies and startups Get more research and governmental institutions involved. Translated between the "different languages".
Choosing the most promising startups	 No fixed evaluation criteria Decide which aspect are most important to consider. Decide whether there should be different criteria for different development stages. Assess the capability of the team. Decide whether first successes should be considered.
Competing with other accelerators	 Currently, there is only one other similar program in Hanover Shift A1's reputation towards being startup- and innovation-focused. Show first successes with startups Consider different marketing measure for events and programs.
Importance of having necessary resources available in the ecosystem	 The location in Hanover offers closeness to industry, academia and politics and thus a high concentration of relevant actors Find actor that can still be included on the ecosystem. Strengthen the relation to academia and politics. Find gaps in the ecosystem and close them with suitable contact to easily prove network solutions.

Table 38: VACE Factors Checklist - Factor C - Illustrative Case

VACE Factor: C	
Capitals - Strategic Capital	
Considerable challenges	Considerable support mechanisms
Continuously working on the product	 Provide startups with tools and knowledge concerning product improvement. Emphasize the importance of balancing "working on the product" and networking/ acquiring funding
Having a business-savvy team member	 Support startups in finding a business-savvy team member. Emphasize its importance concerning strategy implementation. Support business plan development and strengthen decision- making. Offer business plan-related workshops, templates and tools.
Corporates operating too slowly for a collaboration	 Prepare startups to adjust to longer communication ways. Explain startups' needs to corporates and show them how to adjust their ways accordingly.
Acquiring first customer projects	 Connect startups with suitable corporates for pilot projects. Find mentors that are industry-experts who provide valuable insights and contacts. Support MVP development and testing. Support marketing efforts.
Capitals - Strategic Capital	
Considerable challenges	Considerable support mechanisms
Having a commercial-savvy person in the team	 Support startups in finding a commercial-savvy team member. Emphasize its importance concerning legitimacy in the ecosystem.
Finding employees with the right cultural-fit	 Offer HR courses. Support searching for new employees.
Establishing credibility and capability of the founding team	 Host networking events to increase exposure and legitimacy. Work on own reputation to provide startups with the accelerator's approval stamp.
Defining values/ culture	Emphasizing the importance of the startup defining its value and cultures to know its standing and establishing it as legitimate ecosystem actor.

Startups and incumbent companies "speak different languages"	 Enhance CSE by supporting startups to adjust to the corporates ways and vica versa. Support an open "culture of failure" in the whole ecosystem. Considering differences between doing business in a B2B or B2C context.
Capitals - Strategic Capital	
Considerable challenges	Considerable support mechanisms
Acquiring medium to large funds (around 100,000-400,000€)	 Connect with suitable investors. Work on own reputation to provide startups with the accelerator's approval stamp
Considering timing, amount and type of investment	 Advice startups on funding possibilities. Support finding a suitable investor with appropriate technical knowledge. Inform about regional subsidies. Emphasize importance of follow-up funding. Consider provide funding on your own or in collaboration with a corporate or governmental partner.
High pitch quality	 Support startups in improving their pitches. Host pitch events.
Capitals - Strategic Capital	Considerable comment models nices
Considerable challenges	Considerable support mechanisms
Knowing how to network	 Support startups in figuring out which networking activities/ contacts are worth-while and in acquiring appropriate networking skill. Advise startups on different networking strategies. Connect them with to other startups and alumni.
Having commercial-savvy team member	 Support startups in finding a commercial-savvy team member. Emphasize its importance concerning increasing sales and business development.
Showing product-market-fit	 Support improving pitch quality. Host pitch events. Host networking events. Find mentors that are industry-experts who provide valuable insights and contacts. Work on own reputation to provide startups with the accelerator's approval stamp.
Startups and incumbent companies "speak other languages"	 Enhance CSE by supporting startups to adjust to the corporates ways and vica versa. Considering differences between doing business in a B2B or B2C context.

Table 39: VACE Factors Checklist - Factor E - Illustrative Case

VACE Factor: E	
ESB Functions	
Results	Implementation recommendation
Hosting networking events	 Currently, no specific networking events are hosted Host general networking events to strengthen the overall ecosystem. Host industry-specific networking event to increase valuable ties between actors.
Representing a central locality to work and connect	 Currently, the Hafven is used as collaboration space Find room in the office for the awarded startups to bring them closer to A1 and its ecosystem.
Convincing with good reputation	 A1 is well-known as consultancy company which provides them with a trustworthy standing Lesser known as startup-focused and innovative Shift A1's reputation towards being startup- and innovation-focused.
Offering an online platform to inform about events	 Only foreign platforms are used Create an own, region-specific event calendar.

Spreading in other regions/ cities	 A1 has offices in whole Germany Connect startups from Hanover with partner from other cities.
Scanning, Foresight and information processing	 Currently, internal knowledge and market research are used for scanning, foresight and information processing measures Use application process for the award to gather information about market developments and trends. Host (industry-specific) events in order to receive and share key information.
Gatekeeping and brokering	 Mainly working with established contacts Host events that are interesting for the ecosystem and for players not yet in the ecosystem. Systematically approach contacts that could add value to the ecosystem. Increase approachability to other actors.

By following these given recommendations and implementing the explained support measures based on the VACE Factors, every actor in ecosystem perceives value, all four capitals are supported, and the overall ecosystem is strengthened through additional ESB functions, while regional- and industryspecific requirements are considered.