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Are dynamic capabilities relevant for incubation performance?

A contrarian case study on incubation.

by

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Abstract

Performance research on incubation is a vibrant and complex field, which has received a lot of criticism in recent studies. So far, no dominant theory for incubation performance has evolved and authors request the application of more diverse economic frameworks on incubation to gain improved understanding. As a response, this study takes the fresh perspective of dynamic capabilities and resource-based theory as the baseline for the creation of a new model for incubation performance. By utilizing a qualitative research approach combining data from interviews and observations, the case of VentureLab, a Swedish university incubator, is presented and explored along various theoretical dimensions. The data is then used to adapt the theoretical performance model to practical reality within the incubator and draw conclusions on hurdles for customized or personalized incubation programs and for future methodologies in incubation research. The study concludes by pointing towards the positive effects of dynamic capabilities based on entrepreneurial satisfaction, motivation, personality, psychological state, resource needs and stakeholder expectations on incubation performance.

Keywords: entrepreneurial institutions, incubation, performance, resource-based theory, dynamic capabilities, Swedish, Polish, case study, qualitative, observations, framework, strategy

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1 Introduction

According to the Oxford Dictionaries, the term “incubator” describes an apparatus, which provides a protective environment for premature babies (Oxford Dictionaries, 2019). In business, incubators are safe environments, which lead participants through the early stages of creating a company by providing various services (Bergek, Norrman, 2008). Due to the high concentration of entrepreneurs in small spaces, they are known as hotspots for entrepreneurial culture (Bergek, Norrman, 2008). Often, they are led by incubation managers, who try to empower entrepreneurs to pursue their very diverse businesses, measured on how many companies successfully mature out of the incubation (Theodorakopoulos, Kakabadse, McGowan, 2014). In the past, there have been many approaches towards measuring an incubators performance through the means of many different factors like a company’s survival rate (Mian, 1997; Rothschild, Darr, 2005). Although many studies have been done on incubation, the complexity of the field proves to cause many critiques on conclusions and findings in incubation environments. To pick up on this work, this study explores the field of dynamic capabilities, a common concept in strategic management, to draw conclusions on incubation performance, in hope of them being more stable than previous findings.

1.1 Background

In practical terms, an incubator is often the first touchpoint for entrepreneurs who look to explore a specific idea for a business. Hence, it is especially important for them to properly support young companies and their ability to capture the market share they are looking for. While the public celebrates incubators as a source for the companies of the future, research is more critical about their effects on the participating ventures. For example, a study in 2007 concludes that an incubators impact on the economic development of a region is rather modest (Tamasy, 2007). From the entrepreneur’s viewpoint, a study in 2013 concludes, that incubators do not positively affect their problems, although they tend to go through serious struggles in the incubation process (Ratinho, Harms, Groen, 2013). This perspective is reflected in the criticism of entrepreneurs, who positively react to the offering of incubators in surveys but are generally unsatisfied with the way management implements their offerings (Abduh, D'Souza, Quazi, Burley, 2007). Therefore, many studies have criticized past research on incubation and suggest new methodologies like rationalization or privatization of incubation environments (Abduh, D'Souza, Quazi, Burley, 2007). Furthermore, they suggest increasing the theoretical reach of incubation models towards the direction of resource-based theory, which is adapted in this study (Rice, 2002).

The resource-based theory has been explored in terms of performance by looking at a sustainable, competitive advantage in the past (Barney, 1991). In resource-based perspective, all assets, capabilities, organizational processes and firm attributes are categorized into different

types of resources (Barney, 1991). This connects to performance, as the right combination of resources can provide competitive and sustainable advantages to businesses of any type if matched accordingly (Barney, 1991). The decision to take the specific lens of dynamic capabilities in resource-based theory was then inspired by authors of incubation, who find large differences in how valuable tech entrepreneurs perceive incubators (McAdam, McAdam, 2008). It seems easy to assume, that this is the case because incubators, who own resources that can provide entrepreneurs with a sustainable competitive advantage, are ranked as more valuable and therefore more successful. Hence, it seems reasonable to explore if the overall success of incubation could be improved if the resources inside of incubation environments are more customized to the requirements of the containing incubatees. As dynamic capabilities are defined by research as capabilities, that can change operational capabilities and processes, they might provide the right tool for creating customized or more personalized incubation environments (Helfat, Winter, 2011).

Besides these theoretical aspects, I have also participated in incubation environments myself in the past. During my time at Deutsche Telekom, I joined a private incubator designed to spawn new projects to incentivize internal business. In 2018, I left the German corporation to start my own company and joined the VentureLab incubator at Lund University, who's incubation manager will also take part in the interview. Currently, I am part of another private corporate accelerator with Sony. During my time in these environments, I was able to meet other students and the staff during operational activities. While extending on my time in private incubators would extend the theme of this study, my observations at the VentureLab incubator in Lund will be provided as a component of the research methodology.

1.2 Research Purpose

Previous research concludes, that incubators require more attention and improvement to create value for startups (Aernoudt, 2004; Abetti, 2004; Cheng, Schaeffer, 2011; Perdomo, Arias, Lozada, 2014; Sentana, González, Gascó, Llopis, 2017). This originates in research for entrepreneurial needs, which highlights, that every region, business, and personality requires a different support model during the incubation period (Abduh, D'Souza, Quazi, Burley, 2007; Bullough, De Luque, Abdelzaher, Heim, 2015; Hietanen, Järvi, 2015; Kakouris, 2015; Buckley, Davis, 2018). However, a lot of research in performance measurement has neglected this issue in the past, because it was mostly limited to comparing different incubators based on the participant's survival rates and differences in their general services, without considering the individuality of the entrepreneurs and their businesses (Abetti, 2004). Issues of such an approach were also identified in a study from 2016 exploring incubators in Chile, Israel, and Italy, which found that incubators clients make an important difference in its performance (Oliveira, Vieira, 2016). Hence, the research could benefit from a fresh theoretical model to optimize incubation performance. While such approaches have sparingly been explored in the past, researchers agree, that the application of broader strategic frameworks is still rare and requires more attention (Perdomo Charry, Arias Pérez, Lozada Barahona, 2014). For reasons elaborated in the background, the study will, therefore, make use of the perspective of dynamic capabilities to suggest new opportunities for improving incubation performance.

From the practical side, the need to increase the performance of incubation is clear. Especially in public incubation a lot of money and resources are being used to support the creation of new companies. Better efficiency of the invested money and a larger transformation into successful startups would provide reasoning for further investing in incubation and the benefits of small business (Thurik, Wennekers, 2004; Acs, 2006). Furthermore, a successful first touch with entrepreneurship, especially by young entrepreneurs, could significantly impact the development of a personal positive mindset, which has often been correlated with startup success (Baluku, Kikooma, Kibanja, 2016; Dessyana, Riyanti, 2017). Overall more successful incubation programs will result in time better invested for the program participants and result in overall superior growth outcomes for the economy.

Hence, the purpose of this phenomenological study is to develop an incubation model based on dynamic capabilities, which might be capable of optimizing incubation performance for incubation institutions. At this stage of the research, the incubator will be generally defined as an institution supporting entrepreneurs in their pre-seed and pre-founding state of their projects and companies. While the research question is very generalized, it is expected that findings of this study are more limited to the incubators, which are part of the case study to make first assumptions about how to test the suggested model for general applicability.

1.3 Aim and Objectives

As another critical study in the field of incubation, the thesis looks to explore more about performance and success elements in incubation. In this sense, the resource-based theory presents the framework of choice and will provide the basic components for testing a fresh theoretical performance model. More precisely the field of dynamic capabilities is observed as a core element of incubation performance and success. The relevance of the provided theme and propositions will be verified through a qualitative research design combining interviews and observational data. Through this, it tries to answer the following research questions.

As key questions, the thesis explores what role dynamic capabilities take for optimizing incubation performance. Secondly, it looks to explore hurdles, that make optimizing incubation performance through dynamic capabilities difficult. As sub-questions, the study explores how VentureLab and Krakow Technology Incubator have made use of dynamic capabilities in the past. Secondly, it looks to understand, what difficulties in methodology, research in performance optimization of incubation suffers from.

1.4 Outline of the Thesis

The main points of the thesis consist of an extended and detailed literature review on existing theory on incubation, which is used for the creation of a performance model based on dynamic capabilities. The theory is then tested in relevance through an exploration of two incubators as a case study consisting of interviews and observational data. After the presentation of the case, the study discusses findings and considers the relevance of dynamic capabilities for incubation

performance. Furthermore, it provides practical feedback on customized or personalized incubation programs and summarizes methodological issues and difficulties in studying incubation performance.

After this initial introduction, the thesis will continue by providing a focused literature review on incubation, entrepreneurship, startups and the resource-based model in chapter 2. This literature review is closed by creating a theoretical performance model for incubation based on the theory of past research. Afterwards, the applied methodology in the study is extended on in Chapter 3. As the next step, the case of the study is presented and discussed in the analysis within Chapter 4. In this, part research findings are presented and summarized. Finally, conclusions and opportunities for future research can be found in the fifth chapter.

2 Literature Review

The incubator is a phenomenon from the area of entrepreneurship, which has been heavily studied in the past. Therefore, this literature review will start by reviewing the past literature on incubation and its success factors. While researchers have come up with many different typologies of incubators, significant improvements in their effects on society or young companies could not be observed through the exploration of success factors. That is the reason past theory has examined incubation effects on the environment or participating companies and why it tries to make conclusions on how to improve incubator performance. Incubation theory also depends heavily on the research for entrepreneurs. Due to this the literature review will also contain theory on entrepreneurship, like entrepreneurial needs, entrepreneurial motivators, their satisfaction with incubation and startup success factors. Finally, the literature review will cover previous work on incubation frameworks and knowledge transfer, as well as work on business strategy in the category of resource-based models and capability theory. This will be used as the groundwork for the creation of the resource and capabilities-based view on incubation and therefore this study's conclusions for performance optimization.

2.1 Theory on incubation

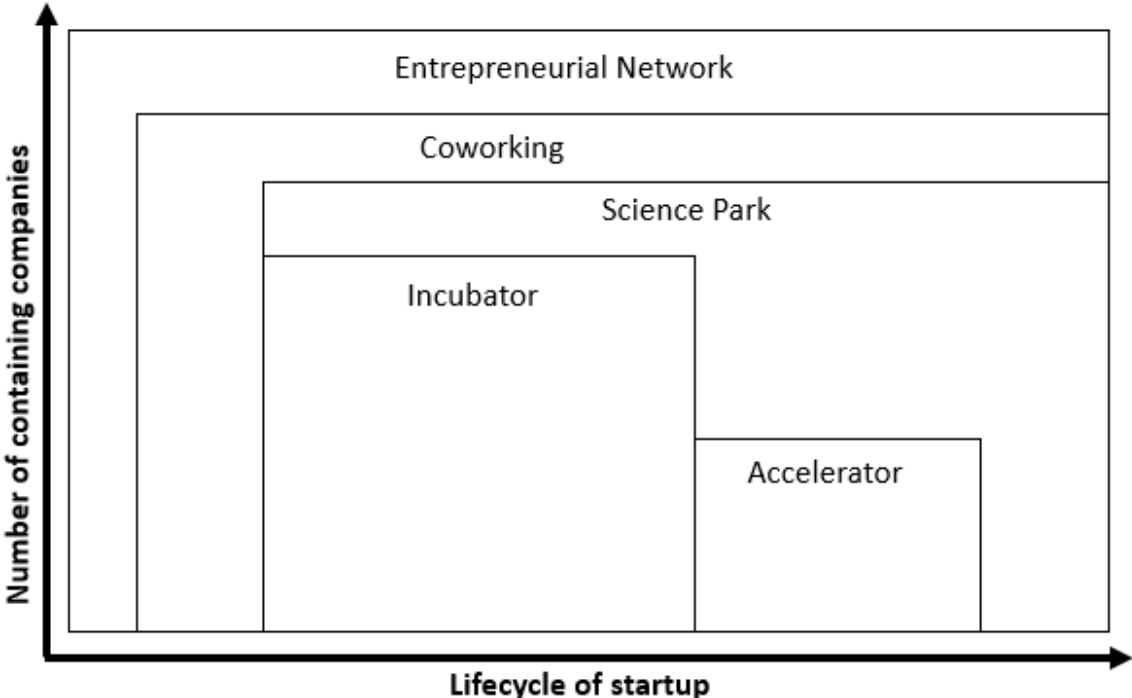
Before discussing more in-depth research of incubation it is necessary to find a general definition for an incubator and differentiate it from other similar institutions like accelerators, entrepreneurial communities, science parks, and coworking spaces. However, the purpose of this paper is not to define an incubator or similar environments, as research in this area is partly inconclusive, contradictory and admits difficulties in separation. For example, early research identifies an incubator as a business support process, which accelerates the successful development of startup companies by providing entrepreneurs with targeted resources or services like a workspace, shared facilities and business support (Isabelle, 2013). The same author concludes, that there is no accepted definition of an accelerator, however, differentiates it based on them looking for a return on investment through accelerating the growth of containing firms, while incubation services are often based on non-profit organizations (Isabelle, 2013). This perspective is supported by work from 2004, which concludes the main goal of incubation to be the creation of successful firms, which are financially viable and independent (Aernoudt, 2004). Clearer differentiation between incubators and accelerators is suggested in 2013, where incubation is defined with the factors of a duration of 1 to 5 years, no rental charges, non-profit orientation, non-competitive selection processes and minimal mentorship (Cohen, 2013). In comparison accelerators contain companies for a duration of 3 months with the goal of return on investment, tend to have competitive or cyclical selection procedures and offer an education based on seminars with intense mentorships (Cohen, 2013).

Closely related to these offerings are coworking spaces, which are known for not having a clear definition beyond being a space for work and social interaction (Spinuzzi, 2012). Hence, there

seem to be some shared factors between incubation and coworking, although coworking could be differentiated due to the absence of concise mentoring or knowledge transfer (Spinuzzi, 2012). Further differentiation is required between incubation and science parks. In research science parks are defined as using local university networks to commercialize research ideas and provide accommodation to well established or small businesses. Usually, they support knowledge transfer between organizations on site. (Bakouros, Mardas, Varsakelis, 2002) This is very similar to incubators, which is why a study from 2005 indicates, that both incubator and science parks are property-based organizations with identifiable administrative centers, which focus on the mission of business acceleration through knowledge agglomeration and resource sharing (Phan, Siegel, Wright, 2005). Science parks could be differentiated from incubators by considering them having no exit or graduation policy, whereas companies usually leave incubators within specific time frames. Finally, the concept of entrepreneurial networks is explored, which try to create entrepreneurial opportunities through dynamic relationships and interaction with the environment (Anderson, Jack, 2002). They are understood as abstract concepts dependent on the focal point of interaction measured by diversity, size, energy expended on creation, density and number of direct or indirect ties (Birley, Cromie, Myers, 1991). Sometimes individuals make their network available to others as valuable resources providing a kind of service (Birley, Cromie, Myers, 1991).

Overall it seems as if there are difficulties in finding a definition for different types of business vehicles. To conclude, coworking spaces, incubators, accelerators, and science parks are all part of entrepreneurial networks. Coworking spaces could be identified as a core element of science parks, incubators, and accelerators. Meanwhile, accelerators and incubators seem to exist next to each other and become viable to companies during different timelines. Finally, the science park could contain incubation or acceleration environments but also exists on its own. This relationship is presented in Figure 1.

Figure 1 Entrepreneurial institutions



2.1.1 Typology of incubators

Most basic research on incubation revolves around its typologies. Through this, scientists hoped to overcome difficulties in measuring performance outcomes of incubators around the globe and provide a better framework for comparing incubators with similar features. In this process, researchers came up with incubation typologies based on incubation objectives, strategic aims, historical dimensions or specialization. This typology is often the first step in research on incubation performance to identify incubators with similar characteristics for comparison. For example, an early study in 1990 differentiates between incubators for-profit property development, for non-profit property development, for academic development and for-profit development with seed capital based on primary and secondary objectives (Allen, McCluskey, 1991). In 2003 researchers choose a multi-criteria approach based on dominant activities in client's projects, incubator objectives and pursued exit requirements resulting in the incubator categories of economic development, academic, scientific, business and private investment (Audet, 2004). This is followed on by researchers, who differentiate incubators based on their main philosophy, which results in the incubation categories of mixed, economic development, technology, social and basic research (Aernoudt, 2004). Another popular approach is the differentiation by objectives in combination with historical dimensions resulting in categories like centers of innovation, university, private business and private independent (Grimaldi, Grandi, 2005).

Over time these approaches were supplemented by further splits and even more categories like virtual incubators, farming incubators, bottom-up incubators or networked business incubators (Abetti, 2004; Bøllingtoft, Ulhøi, 2005; Von Zedtwitz, Grimaldi, 2006). Special focus in research has also been targeted at the typology of specialized or generalized incubator offerings (Schwartz, Hornych, 2008; Schwartz, Hornych, 2010; Gabarret, Jaouen, Nakara, Vedel, 2013; Roseira, Ramos, Maia, Henneberg, 2014; Thom, 2015; Höglund, Linton, 2018). Another new approach is found in more recent research, where incubators are categorized according to their human resource management approach (Bakkali, Messeghem, Sammut, 2014). The sheer number of categories is an indicator for the difficulties, which researcher come across in closely categorizing incubators across the available dimensions.

2.1.2 Effects of incubation

Based on these typologies researchers then made conclusions on their effects on stakeholders and society. For example, researchers in 2014 conclude, that research incubators create more process and product innovations, but similar amounts of organizational innovation as other categories (Barbero, Casillas, Wright, Garcia, 2014). Other work from 2017 indicates, that technology-based incubators serve well as drivers for regional entrepreneurial ecosystems for regional integration and benefits (Lamine, et al., 2018). Especially university-based incubators show benefits for the containing universities in innovation and economic output (Jamil, Ismail, Mahmood, 2015; Kolympiris, Klein, 2017).

From the perspective of startups, research from 2011 concludes, that more recent established incubators provide more suitable services than older incubators (Ratinho, 2011; Bruneel, Ratinho, Clarysse, Groen, 2012). Researchers also expected a performance increase from specialized incubators, however, there is evidence, that capturing value from specialization is quite difficult due to cost restrictions and other unknown effects (Schwartz, Hornych, 2008; Schwartz, Hornych, 2010). However, there are also researchers assessing the general value of

incubators without categorization, which is overall quite inconclusive. Studies find incubators to be a modest tool for economic development, where success depends heavily on location and the use of financial resources. This is supported by a study on a public incubator in Israel, which did not show any evidence towards cost-effectiveness and value in pursuing its goal of supporting high-tech startups (Roper, 1999). Other researchers look at entrepreneurs as stakeholders and conclude, that incubators do not help them in dealing with the serious problems, that they come across (Ratinho, Harms, Groen, 2013). Sometimes incubators also seem to have negative effects like tensions and conflicts between incubation members (McAdam, Marlow, 2007).

In contrary to these negative outcomes, other studies find the number of incubators to be correlated to the economic success of a country and argue for positive linkages towards job creation, wealth creation and economic growth in developing and developed countries (Ratinho, Henriques, 2010; Ogutu, Kihonge, 2016). Then in 2017, a researcher chose a different approach of arguing for incubators, by relating an incubators economic effects to the effects of small business, which is known for transforming and developing communities and connecting them with resources (Ribeiro-Soriano, 2017). However, his conclusion is opposed in research from 2012, which evaluated the effects of common incubator services like funding, monitoring or business assistance on young companies to be barely moderate (Khalid, Gilbert, Huq, 2012).

2.1.3 Success and performance measurement for incubators

Beyond the effects of incubation, there is also a lot of research on success factors and performance measurement for incubators from a general and categorical perspective. For example, the success of incubators connected to science parks seems to mostly rely on age and category of science park (Löfsten, Lindelöf, 2001). Other work from the e-business indicates success factors to be shared services and facilities, incubator governance, tenant entry or exit criteria, mentoring, networking support, government support or protections, university regulation and system infrastructure (Gozali, Masrom, Haron, Zagloel, 2015). On the other hand, in network incubators, performance measurement of entrepreneurs seem to increase the value of incubators (Roseira, Ramos, Maia, Henneberg, 2014). Furthermore, incubators in developing countries seem to benefit from purpose and mission, a manager with business experience and monitoring processes (Akcomak, 2009). Additionally, university incubators seem to benefit especially from shared office services in comparison to business services (Mian, 1996a). In contrary to this approach, a literature review identified factors like mediation, search or selection and business support as important for incubator performance (Hausberg, Korreck, 2018). However, a single more recent study from the perspective of cultural entrepreneurship on success factors for incubators argues, that these factors differ based on entrepreneurial needs, which are different across regions and areas (Franco, Haase, Correia, 2018).

Most of the previous performance studies use a limited set of performance measures to indicate, whether an incubator is successful. For example, real estate incubators have been measured on occupancy rates, job creation and the number of graduated firms (Allen, McCluskey, 1991). In general, measurement factors can be separated into internally and externally measured factors. Commonly measured internal factors are the fulfillment of stakeholder goals, set-up costs, number of incubatees, occupancy rates, length of tenancy, ratio of manager to incubatees, organizational design and staffing (Mian, 1996b; Mian, 1997; Alsos, Hytti, Ljunggren, 2011; Meyer, Meyer, Kot, 2016; Oliveira, Vieira, 2016; Wann, Lu, Lozada, Cangahuala, 2017). External performance indicators mostly try to capture the success of graduated firms through

factors like firm survival, total revenues, total received funds, sales growth, revenue growth, employee growth, job creation, innovation results, new products or reputation (Chrisman, Carsrud, DeCastro, Herron, 1990; Mian, 1996b; Mian, 1997; Colombo, Delmastro, 2002; Hsu, Shyu, Yu, You, Lo, 2003; Abetti, 2004; Pena, 2004; Rothschild, Darr, 2005; Rothaermel, Thursby, 2005; Studdard, 2006; Hughes, Ireland, Morgan, 2007; Meyer, Meyer, Kot, 2016; Wann, Lu, Lozada, Cangahuala, 2017). These factors are often applied on either a fixed set of typological incubators or regionally restricted incubators. However, the results of these studies are questionable, as especially external performance indicators relate to the success factors of startups, which differ across industries, markets and type of business (Kirchberger, Pohl, 2016; Baluku, Kikooma, Kibanja, 2016; Böhm, et al., 2017). Past research on this topic did not consider these insights from research on startup success factors. Furthermore, studies show, that there are significant differences in service implementation of incubators across regions (Meyer, Meyer, Kot, 2016). Hence the success factors might be completely differently implemented and therefore lack validity as a reliable indicator for success.

2.1.4 Existing strategic frameworks for incubators

Based on previous research, authors have suggested different frameworks to gain a structural understanding of incubation. Sometimes these are targeted at the general model of incubation. For example, research has created models to ensure, that incubators are truly comparable in performance. Those studies suggest comparing incubators in program implementation, program outcomes, similarities, business development and what value the incubator is supposed to add (Cornelius, Bhabra-Remedios, 2003). This is extended on by a study in 2009, which creates a complex outranking framework for general incubator performance (Schwartz, Göthner, 2009). Studies in 2015 extend on this by creating a conceptual framework for classifying incubators based on a staging approach into pre-incubation, main-incubation and post-incubation phases (Gerlach, Brem, 2015). Other work creates best practices for incubators based on case studies from the 21st century on incubation. They indicate that clear incubation goals increase graduation rates, that survival rates like 90% are possible and that an active role of cooperation on research and development for technology transfer increases output rate on patents. (Mubarak AL-Mubarak, Busler, 2014) Also, research has tried to create business model concepts for service providers and enterprise to support them in their creation of profitable incubators (Liu, Huang, Ding, 2014).

However, much work is also targeted at specific industries, regions or typologies. For example, scholars from the European space sector give advice on how to create incubators, which support the creation of companies based on space technologies. They conclude with the advice and urgent need for incubators to better familiarize themselves with, what makes startups successful in their target sector and to develop industry-specific capabilities. (Sagath, van Burg, Cornelissen, Giannopapa, 2019) Another framework targeted at the region of South Africa concludes with tools to create effective business frameworks for product development, sponsorship and advanced technical facilities (Lose, Tengeh, 2015). Meanwhile, research on incubators in New York comes up with a dynamic model for self-sustainable business development and highlight the value of incubators in such as high contributors to develop regions science parks and research or development centers (Al-Mubarak Muhammad, Busler, 2015). On the other side of the globe, Chinese research has developed a resource and capabilities model on networking resources in incubators. They conclude, that these are detrimental to gain access to governmental policy resources and are therefore the key element

for regional incubation success in comparison to service capabilities (Lin, Wood, Lu, 2012). Different conclusions are made from a study on Swedish incubation while creating a value framework. The study highlights strategic drivers of the value chain, timing, revenue model and focuses on cooperation or competition (Baraldi, Havensvid, 2016). Other work from 2012 on the typology of economic development incubators results in a strategy map and balanced scorecard, which incentivizes incubators to improve through continuous learning and yearly feedback loops (Vanderstraeten, Matthyssens, Van Witteloostuijn, 2012). More precisely in 2005, a study creates a framework for the creation of university-based incubators by leading the reader through the process of stakeholder exploration, service selection, implementation of incubator success factors and infrastructure creation (O'neal, 2005).

2.1.5 Critics on incubation theory

Previous studies have found many perspectives to criticize existing work on incubation to identify opportunities for improving performance results. For example, the difficulty of incubation typology is highlighted by studies in 2004, which explain that incubators do not just differ across known typologies, but also across regional and cultural characteristics (Aernoudt, 2004; Abetti, 2004). Hence, modern research questions whether the typology approach is appropriate to categorize incubators and criticizes, that researchers do not employ more complex models from organizational theory like agency, social capital or resource-based theory (Perdomo Charry, Arias Pérez, Lozada Barahona, 2014). Another type of research suggests methods to improve performance measurement of incubation. For example, researchers in 2011 identified bias in performance measurement due to external measurements of incubator environments (Cheng, Schaeffer, 2011). Other studies argue for incubation effects to arise over the long term, therefore making its impact hard to measure through current short-term oriented research methods (Sentana, González, Gascó, Llopis, 2017). Further work criticizes, that incubation programs do not impact the market value of companies, however, according to the theory they might be necessary to create innovation and value in their early phases (Markovitch, O'Connor, Harper, 2017). Work from 2007 highlights the importance of picking incubators, which are similar in goals and outcome parameters like selection, business support, and mediation and therefore recommends checking similarity in multiple typology dimensions to improve the value in comparisons of incubators (Bergek, Norrman, 2008).

Furthermore, studies try to identify opportunities to increase the impact of incubators. For example, to improve positive incubation effects researchers argue for privatization of incubators to improve on operational issues and social costs (Tamasy, 2007; Akcomak, 2009; Ratinho, Henriques, 2010; Wang, Hung, Wang, 2013). Hence, in 2012 authors argue for a green environment framework for incubators to decrease their social costs (Fonseca, Jabbour, 2012). Another example for criticism is a recent study, which highlights, that incubator performance can be improved by properly creating an incubator service portfolio with a mix of generalization or specialization and by including dynamic services (Vanderstraeten, Matthyssens, 2012; Roseira, Ramos, Maia, Henneberg, 2014). This portfolio should then represent services, that positively influence factors that correlate to performance in their incubatees companies (Baluku, Kikooma, Kibanja, 2016). Especially for business incubators, research concludes to put special attention on demand matched knowledge deployment and networks for entrepreneurs (Chen, Ma, Chang, 2006). In such an environment the value of incubation is also

directly dependent on the type of innovation of containing companies (Hughes, Ireland, Morgan, 2007). Additionally, the value of the incubator is dependent on whether the incubation model matches market needs of the new venture and its gaps in network externalities (Mrkajic, 2017). However, research has also identified a mismatch between the entrepreneur's expectations and incubators execution recommending a rationalization of incubator services (Abduh, D'Souza, Quazi, Burley, 2007). Hence, studies suggest designing incubation programs, which fit characteristics of entrepreneurs and their businesses like programs for small and medium-sized businesses (Monsson, Jørgensen, 2016). Furthermore, incubators must deal with the problems of multi-stakeholder complexity, which is why researchers have developed a stakeholder model for incubators to manage their stakeholders (Alsos, Hytti, Ljunggren, 2011; Greenhalgh, et al., 2017). Other work on bottom-up incubators notes, that incubation takes initiative away from entrepreneurs and might become artificial environments where business between friends is conducted (Bøllingtoft, 2012).

A lot of criticism on incubator value is closely related to regions. For example, a case study in China concludes, that incubators there rely on key capabilities of networking, which enables other services like infrastructure or external effects to take effect and requests a special focus on them (Lin, Wood, Lu, 2012). Local work from Barcelona concludes with the advice to improve organizational learning within incubation environments (Perdomo, Alvarez, Urbano, 2014; Markovitch, O'Connor, Harper, 2017).

2.2 Theory on entrepreneurship

Entrepreneurship has been studied for many years. According to Schumpeter an entrepreneur contains the characteristics of being the main shareholder of a firm, carrying out new inventions, not being a risk bearer, driven not by income or consumption but rather on the impulse to fight, the joy of creating or the will to conquer often not living to enjoy his acquisitions and not obeying the laws of production, but rather trying to generate value with low efforts (Swoboda, 1984). For Schumpeter entrepreneurship was basically breaking away from routines to destroy existing structures and to move away from the market system from its even, circular flow of equilibrium (Kirzner, 1999). This perspective has been extended, criticized and further explored by many authors of the current time in the field of entrepreneurial needs, motivators, satisfaction, knowledge transfer and success. However, discussing the actual definition of an entrepreneur would extend beyond this study as research indicates strong differences across cultures, characteristics, industries, and markets.

2.2.1 Entrepreneurial needs

Research on entrepreneurial needs is differentiated by focus and specialization. Some research tries to identify how general entrepreneurs can be best supported in their efforts of starting a company. For example, work in 2009 creates a full model for identifying learning needs (Aouni, Surlemont, 2009). Early research results in learning opportunities for how to use cash flow, increasing business value, compensations, hiring, adapting to changes and many others (Sexton, Upton, Wacholtz, McDougall, 1997). Other research with a focus on the young entrepreneur

adds more soft knowledge areas like lack of time, self-management and identification of personal deficits to possible learning areas (Lorrain, Laferté, 2006). Studies on researchers, who want to become entrepreneurs, indicates, that they especially need support in target applications and commercialization processes (Marion, Dunlap, Friar, 2012). A more recent study indicates, that providing general knowledge should result in support and advisory organizations to create training and knowledge capacities (Terziev, Arabska, 2017).

There is also work on comparing the needs of entrepreneurs. For example, a study on the assistance needs of males and females concludes, that there is no serious difference in received assistance except for the area of finance. It also indicated, that females seemed to start more companies than males in the study region and recommends against female specific entrepreneurial programs. (Chrisman, Carsrud, DeCastro, Herron, 1990) Other research is more critical in identifying specific entrepreneurial needs. For example, a study in 1993 already concludes, that cultural self-representation affects entrepreneurial needs and what is required to be successful as a startup (Baum, et al., 1993). In 2007 studies explore, that entrepreneurs need to accept, that they have knowledge gaps in areas, that they do not expect them (Thompson, Downing, 2007). Later researchers confirm, that identifying needs and lack of skills is the key to maximize knowledge gains for entrepreneurs (Lowden, 1988). However, this process seems to be difficult because first-time entrepreneurs with the most knowledge gaps are understood as unconsciously incompetent by research (Van Weele, Rijnsoever, Nauta, 2016). From a psychological perspective, lone entrepreneurs seem to require more psychological counseling than startups in a team (Memon, et al., 2015).

2.2.2 Entrepreneurial motivation

Research on entrepreneurial motivators can be classified into either specific motivational research and research looking for differences in motivational research across cultures, personality or industry. Specific research in Malaysia differentiates motivators based on intrinsic or extrinsic rewards and finds the local situation to be like the US and Russia. They also conclude, that males seem to cope better with entrepreneurship and that most local entrepreneurs do not consider working experience relevant. (Keat, Ahmad, 2012) Another study looking at entrepreneurial antecedents concludes that important factors for starting a company were the length of education, believes in business ideas and policy prescriptions. Furthermore, national environments and early-stage entrepreneurship seem to matter as a motivator to become an entrepreneur. (Phan, Wong, Wang, 2002) Another study from Cameroon separates entrepreneurial motivation to push and pull factors. They identify push and pull factors like unemployment, poverty or job security and highlight necessity business to be less successful than others. Also, they conclude demotivators to be lack of funding, business skills, bribery, corruption, strong competitors, high taxes and high labor costs. (Neneh, 2014) Research in South Africa shows that local entrepreneurial intention is quite low due to barriers like lack of capital, lack of competency, government support, risk, and macroeconomics. However, they include intentions to be employment, autonomy, creativity, and capital. (Fatoki, 2010) Other studies identify top motivators for entrepreneurship in South Africa to be independence, need for challenge, need to take advantage of creating talents, need to earn money and many others. They also conclude that motivations correlate to startup experience, entrepreneurial intention

and determinants of social valuation, role models and support for perceived barriers. (Malebana, 2014)

General research on entrepreneurial motivators concluded, that there are differences in intentions and motivators across men and woman, which is followed by research showing that different cultures or origins in developing and developed countries also show differences in intentions, dispositions, and sensitivity to barriers (DeMartino, Barbato, 2002; Davey, Plewa, Struwig, 2011; Giacomini, et al., 2011). Furthermore, influential factors towards entrepreneurship motivators have been identified as demographic variables, optimism, and entrepreneurship education (Basu, Virick, 2008; Samuel, Ernest, Awuah, 2013; Giacomini, Janssen, Shinnar, 2016). Also, researchers conclude, that entrepreneurs look at the benefits of entrepreneurship with a large amount of over-optimism (Giacomini, Janssen, Shinnar, 2016). There are more studies on Schumpeter's entrepreneur, concluding that they are a very rare case. The researchers find, that especially scientists show very rare values on the Schumpeter scale. Furthermore, scientists report social pressure and personal control beliefs to be important motivators to entrepreneurs. (Cantner, Goethner, Silbereisen, 2017) In 2019, researchers then conclude, that motivators also seem to depend on cognitive factors of personality and differences across industries or fields of business indicating a required custom approach to motivating entrepreneurs (Lang, Chuanlan, 2019).

2.2.3 Knowledge transfer for entrepreneurs

Based on previous work on differences across entrepreneurial motivators and needs there have been conclusions for knowledge transfers to entrepreneurs, which evaluate methods of teaching entrepreneurs. Work in 2007 indicates the need for entrepreneurial education to be more contextualized and not done in isolation (Hietanen, Järvi, 2015). In 2012 researchers conclude, that coaching effectiveness has not been proven and conclude it to be unlikely, that standardized forms of knowledge benefit future changes in entrepreneurial behavior. Furthermore, there does not seem to be research, which identified factors that make coaching successful, showing that there might be many unexplored variables affecting entrepreneurial coaching. (Audet, Couteret, 2012) This is supported by work in 2015 which shows, that learning depends on individual characteristics and that current environments do not seem to be supporting women as much. Furthermore, the work shows missing links between elements of the curriculum or wrap around services and learning effectivity. (Bullough, De Luque, Abdelzaher, Heim, 2015) On the other hand, a study in 2012 identified winning factors for coaching as regular meetings, the credibility of the coach and willingness of the entrepreneur to change (Audet, Couteret, 2012). Further studies indicate, that learning organizations need to ensure awareness of entrepreneurial barriers, which differ based on the social group of the entrepreneur and provide safety nets to overcome these. Additionally, the study finds the need for political influences to be minimized as they have found to be limiting entrepreneurial learning (Pantea, 2016). Other research proofs, that knowledge retrieval is based on the entrepreneurs underlying assumptions or deep beliefs and concludes learning courses to be strongly influenced by stereotypes and doubtful business cases of the past. Also, the research hints towards a focus on intrinsic learning needs (Kakouris, 2015).

More recent work concludes, that deliberate practice in dynamic environments, like sports or similar fields increases entrepreneurial results only in dynamic environments (Keith, Unger,

Rauch, Frese, 2016). Other work concludes maximum knowledge transfer to appear through monitoring learning and publicly sharing knowledge outputs with others. The researchers, therefore, recommend learning feedback loops. (Soylu, 2016) Other work agrees with this and adds the notions of making entrepreneurship a lifelong learning journey, where entrepreneurs are included in the learning process as co-creators of new knowledge (Robinson, Neergaard, Tanggaard, Krueger, 2016). Other researchers conclude, that practical training is essential for success and that entrepreneurial students should create projects based on their education. On the other hand, knowledge institutions could also create flexible curriculums, which adjust based on the business ideas of the students. (Kakouris, 2015) However, research does agree, that entrepreneurial competences are learnable and should start through inspiring students toward entrepreneurship (Rașcă, Deaconu, 2018). On the other hand, researchers also conclude, that there are severe discrepancies between procedural knowledge and awareness of entrepreneurial motivators or temperament in educators, who try to foster entrepreneurial behavior (Ustav, 2018).

2.2.4 Satisfaction with existing incubation concepts

This criticism of current knowledge transfer processes has also sparked the measurement of entrepreneurial satisfaction with incubation programs in the past. A general framework for the measurement of satisfaction with entrepreneurial coaching has been created by researchers in Tunisia, who looked at the satisfaction of entrepreneurs with several factors like identifying entrepreneur's problems, empathy, listening, contact frequency, challenging of the entrepreneur's assumptions and many other (Ben, Salem, Lakhil, 2018).

However, most research is targeted on how to improve the entrepreneur's satisfaction with incubation programs. First, work in 2007 concludes, that entrepreneurs are generally dissatisfied with the execution of incubator services (Abduh, D'Souza, Quazi, Burley, 2007). This is opposed in research from 2016, which concludes that incubatees feel as if objectives are being met but admit that there is room for improvement (Lose, Tengeh, 2016). Furthermore, in 2010 researchers indicate, that the satisfaction with incubators clearly depends on how well entrepreneurs can exploit the given features (Bøllingtoft, Ulhøi, 2005). Then research in 2012 shows, that incubation satisfaction depends on whether the entrepreneurs proactively exploit the social networking opportunities at the incubator. They report, that gaining value makes the entrepreneur satisfied and suggest the commitment and trust of the entrepreneur to the incubator as performance outcomes. (Adlešič, Slavec, 2012) In 2011, researchers find that the work quality of the incubator team and its manager is detrimental to its success. They also show that graduates are more likely to exploit incubation features. (Arlotto, Sahut, Teulon, 2011) Later researchers find that self-efficacy and risk-taking positively influences an incubators desirability, as long as it is properly communicated to all containing entrepreneurs (Martínez, Fernández, Laviada, Crespo, 2018). Finally, a study in 2019 argues, that there is no one size fits all program for incubators. They advise incubators to focus on buffering and bridging mechanisms to conclude that incubators should develop dynamic capabilities to increase entrepreneurial satisfaction. (Buckley, Davis, 2018)

2.2.5 Success factors for startups

The research field of success factors for startups is separated into the different areas of either specific success factors or factors which lead to failure and criticism on previous research. Specific findings are introduced by a study on psychological capital of entrepreneurs indicating, that factors like resilience, self-efficacy, hope, optimism and trust dimensions relate positively to success in terms of likelihood of survival (Baluku, Kikooma, Kibanja; 2016). However, this also seems to depend on the target community of the entrepreneur (Dessyana, Riyanti, 2017). A study in 2017 then adds the factor of motivation as psychological capital (Gundolf, Gast, Géraudel, 2017). Another study focuses on more practical factors like start date, seed funding, total rounds of funding, burn rates and many others (Krishna, Agrawal, Choudhary, 2016).

However, most research on success factors is specialized in a specific industry sector or regional area. For example, a study on technology commercialization concludes on many different factors like industry closeness, resource availability, transfer strategy, and commercialization suitability to be important to predict the startup's success (Kirchberger, Pohl, 2016). Another study on crowdfunding being a success factor concludes, that the right financing source depends on a startups lifecycle and intended benefits of the finance source (Paschen, 2017). Research in Mexico puts special focus on the factors of professional advice, retaining of employees and how well the business connects to partners (Guzmán, Lussier, 2015). Other studies from Russia highlight the factors of knowledge capitalization, worthwhile and innovative business ideas, a quick adaptation of projects to existing outside conditions and experience to be important (Veselovsky, 2017). Then research on design startups highlights the value of factors like idea commercialization, continuous investments and constant new creation of designs as valuable (Kim, Kim, Jeon, 2018). Beyond success factors, studies have also looked at how to identify factors leading to failure. For example, a recent study from 2018 indicates the factors of running out of cash, difficulty finding customers, high cost acquiring customers and the missing of a proper business model highlighting future failure (Cantamessa, Gatteschi, Perboli, Rosano, 2018).

Finally, studies also look at the methodology of measuring success factors in startups and give advice on how to improve their performance. Work from 2017 suggests categorizing factors into organizational, individual and external factors across the timeline of seed, early stage, growth, and expansion phase (Santisteban, Mauricio, 2017). Other studies show the potential of using technology to predict startup success by advising to give the responsibility of measuring hard factors to machines and using humans to measure soft values (Dellermann, et al., 2017). Other research criticized previous work on identifying specific startups success factors as misleading and highlights, that there are no globally agreed indicators of success beyond the psychological situation of entrepreneurs. According to them altruistic nature or neuroticism has a negative impact on startup success, while extraversion, consciousness, social toughness, and agreeability increase startup success. (Baluku, Kikooma, Kibanja, 2016) Finally, a study from 2017 finds, that success factors are also directly dependent on the business model a company is pursuing and differentiates them into 12 different clusters to make assumptions about their growth perspective (Böhm, et al., 2017). Other research focuses on the importance of aligning business models and business processes, suggesting a framework based on value, information, and processes (Lueg, Malinauskaite, Marinova, 2014).

2.3 Resource-based theory and capability theory

One of the commonly accepted pivotal works on resource-based theory was created by Barney on the topic of firm resources and sustained competitive advantage in 1991. According to his work, firms are heterogeneous in how they mix resources. Barney defines resources as all assets, capabilities, organizational processes, firm attributes, information, and knowledge controlled by a firm. Furthermore, the author categorizes resources into either physical, human or organizational capital. He describes, that these are the source of sustainable competitive advantage whenever they are rare, valuable, imperfectly imitable and not substitutable. (Barney, 1991) Based on this work Grant explores a methodology for formulating strategies, which make use of resources as a sustainable competitive advantage. He describes this strategy formulation as the process of identifying or classifying firms' resources and capabilities, appraising the rent-generating potential of resources or capabilities, selecting a strategy which exploits these resources and capabilities relative to external opportunities and finally identifying resource and capability gaps, which need to be filled. Grant also gives a definition for capabilities, which he describes as a routine or several interacting routines based on complex patterns of coordination between people and other resources that describe what a firm can do. (Grant, 1991) This is extended by Winter and Helfat, who differentiate between operational capabilities, dynamic capabilities, dual-purpose capabilities and capabilities with various variants. According to them a capability has a specific intended purpose, carries out an activity and enables the repeated reliable performance of an activity. They argue that operational capabilities are those which allow a firm to make a living in the present, while dynamic capabilities enable them to change how it creates profits. Furthermore, they find the line between operational and dynamic capabilities to be rather blurry or inconclusive, as some capabilities like market access can support existing and new business, which is why they add dual-purpose capabilities. In the end, they conclude, that some capabilities might appear in different variants which support either old or new business. (Helfat, Winter, 2011)

Beyond these definitions, few researchers have also looked at incubators or entrepreneurship through the lenses of resource-based models. An early study on entrepreneurship in 2001 critiques, that performance of ventures is often assessed without considering opportunity costs of other alternatives. Instead of performance outcome, the study finds, that the founder's success should be judged on how well they acquired the resources needed to exploit their identified opportunities. (Alvarez, Busenitz, 2001) This is supported by work in 2002, which finds it important to address knowledge gaps in entrepreneurs and highlights incubation processes like mentoring, networking and environmental interaction to be based on co-production. It also differentiates incubators resources into strategic, administrative and operating. (Rice, 2002) A study in 2004 adds on this and assumes dynamic capabilities as an important factor for incubator performance. However, it does not further pursue this perspective and concludes the resource-based view to be misleading as public incubators have no need to create a competitive advantage for themselves. (Hackett, Dilts, 2004) Then in 2008 research uses the resource-based model to identify the use of incubator resources during different lifetime-stages of startups and finds large differences in how valuable entrepreneurs in the high-tech sector perceive incubators (McAdam, McAdam, 2008). Furthermore in 2009 research finds, that after experiencing incubation founders agree, that incubation should not be formulaic in any way, but rather flexible and responsive to the individual context. Their work hints

towards a configurational approach to incubation, which is further defined due to the interaction between the entrepreneurs and the incubation team. Additionally, the scientists indicate a fluid form for incubation based on the assumptions, that incubators need to provide the resources or capabilities at the timing when the individual entrepreneurs require them and not all the time. (Patton, Warren, Bream, 2009) In the following year, another study creates a resource-based model on incubation based on the differentiation of human, organizational, technical and financial resources (Somsuk, Punnakitikashem, Laosirihongthong, 2010). Research in 2010 then uses the resource-based model to argue, that an incubator needs to provide a selected set of services very well, rather than a lot of services poorly, which hints towards abusing available resources as sustainable competitive advantages (Mian, Alain, Wadid, 2012). Finally, recent studies on resource-based theory also identify, that incubators should address the resource needs of startups to be successful. The researchers identify cognitive mechanisms, relational mechanisms and environmental mechanisms for incubation managers, but do not make conclusions of interacting with different characteristics of founders (Junaid Ahmad, 2014).

2.4 Applied theoretical framework

For an analysis of optimizing incubation performance, the following chapter first introduces a performance model, which describes what factors define an incubators performance. In the following sections, the text will then assemble this prior work in this field to a generally applicable resource-based representation of the incubation environment to draw conclusions for optimization of performance. Afterwards, this is extended on with the theoretical concept of dynamic capabilities utilizing recent insights on entrepreneurship, startups, and incubation. As a result, the text suggests several propositions to optimize incubation performance.

2.4.1 Sourcing a performance model for incubation optimization

As elaborated in the literature review, many incubation studies use the survival rate of companies as an indicator of incubation performance. The survival rate often indicates whether a company can survive the following years after incubation. However, the literature research has shown, that just as there is controversy around whether an incubator positively affects a company's success, there should be controversy around, whether an incubator can be identified for the failure of a company after incubation and to what extends such a relationship exists. Therefore, this study will not follow this proposal from the research of the past. On the contrary, it will only observe the internal survival rate of the incubator and no longer observe post-incubation periods. This results in the first factor for maximizing incubation performance, which can be summarized as maximizing the rate of started companies to failed companies that exit out of the incubator.

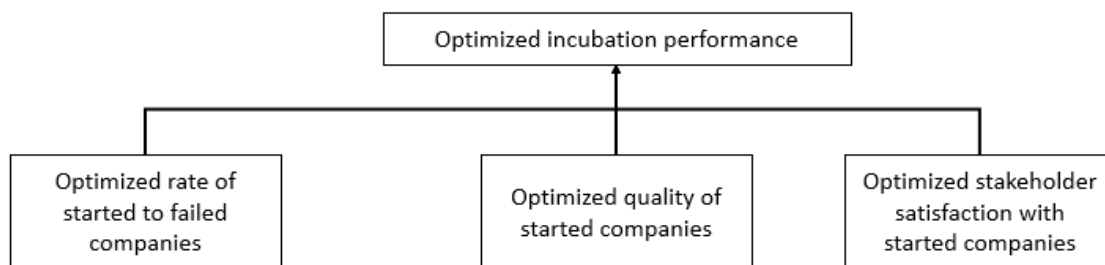
However, only observing internal rates of started companies to failed companies, might cause an incubator to create many companies, that do not operate well after incubation, but happen to exit the incubator successful very quickly. This is similar to how machine learning algorithms might overfit to solving domain-specific challenges. Such a situation must be avoided, as the incubators main goal is the creation of successful firms, which are financially viable and

independent (Aernoudt, 2004). The literature review has already shown, that there is no one fits all solution, for what factors make startups successful, as these differ based on the entrepreneur’s personalities or culture and the firm’s business characteristics. However, the incubator can still strive to use its resources to ensure that companies leave the incubator with the highest quality that the incubator's resources allow them to. Hence, the second factor for performance optimization must ensure that the quality of the companies being started in the incubator is as high as possible.

Thirdly, to perform well an incubator does not just have to deliver on the incubation task with optimal results. In contrary, most incubators are created for a very specific reason, which is mostly economic development or one of the other reviewed incubation factors of the literature review. Moreover, the incubator is often funded through diverse public sources, which requires it to keep its critical stakeholders satisfied with the incubation performance. Often it is those stakeholders that practically evaluate how well the incubator can serve its purpose. Therefore, an optimization of incubation performance also requires optimization of stakeholder satisfaction with the incubators results.

To conclude, the optimization of incubation performance relies on maximizing the rate of started companies to failed companies, on maximizing the quality of companies being started and on maximizing the incubators stakeholder satisfaction with the incubated companies. This is visualized in Figure 2. To create a theoretical baseline for the propositions, which affect this performance model, the next chapter suggests a resource-based model for incubation based on prior research in the field.

Figure 2 Performance model for incubation optimization



2.4.2 Sourcing a resource-based model for incubation

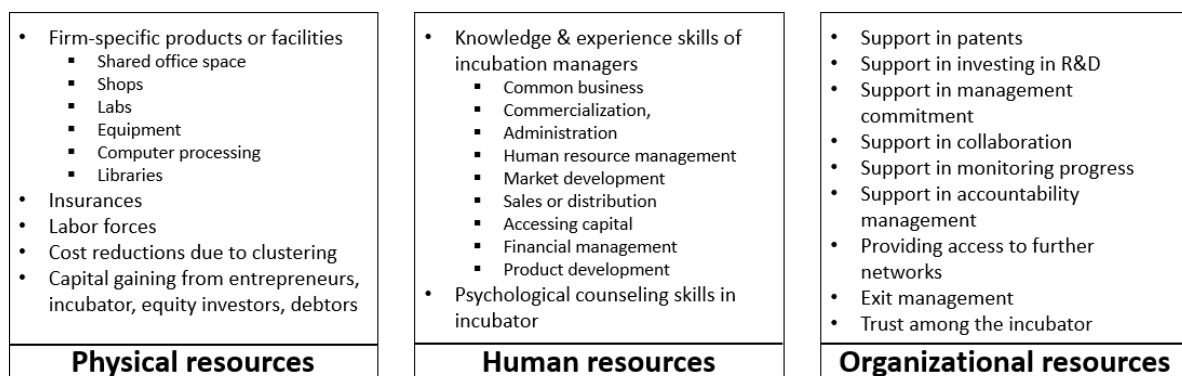
In 2002 Rice describes incubation as a co-production relationship with the outcome of resources, which should fill the resource gaps of the incubated firms (Rice, 2002). These resources are linked and controlled with the objective of facilitating successful new venture development with the outcome of incubated companies, which move on to be either successful or unsuccessful (Hacket, Dilts, 2004). Throughout the lifetime of a company, different types of resources are required by small entrepreneurial firms, which should be accessible without substantial costs (McAdaam, McAdam, 2008). Those resources are known to be the key attractor of entrepreneurial firms for the incubator and therefore provide the incubator with a sustainable competitive advantage, whenever they are rare, valuable, imperfectly imitable and not substitutable (Mian, Alain, Wadid, 2012). Similarly, the provided resources should also provide the participating firms with a sustainable competitive advantage to ensure superior

performance and a successful outcome (Junaid Ahmad, 2014). However, researchers find, that it is still unclear how specific resources impact new venture development (McAdaam, McAdam, 2008).

In their work previous authors have created their own resource-based models going astray from the original approach of Barney in 1991 (Barney, 1991). For example, Hackett and Dilts separate resources into strategic, administrative and operating resources, while other authors split them into dynamic or static resources (Hackett, Dilts, 2004; McAdaam, McAdam, 2008). Closest to Barney is a study in 2010, which remains on the types of human, technological, organizational and financial resources (Somsuk, Punnakitikashem, Laosirihongthong, 2010). Effectively the authors split up physical resources into technological and financial resources. Since the past has approached the creation of a resource-based model multiple times, this study will use the prior work to match previously explored resources into Barney’s methodology (Barney, 1991).

The resource-based framework is displayed in Figure 3, where resources from prior studies are sorted into either human, physical or organizational resources (Rice, 2002; Hackett, Dilts, 2004; McAdaam, McAdam, 2008; Patton, Warren, Bream, 2009; Somsuk, Punnakitikashem, Laosirihongthong, 2010). The human resources are identified as knowledge skills and experience of incubation managers along with the areas of common business, commercialization, administration, human resource management, market development, sales or distribution, accessing capital, financial management or product development and psychological counseling. Physical products are summarized as firm-specific products or facilities like shared office space, labs, shops, equipment, computer processing or libraries, insurances, labor forces, cost reductions based on clustering effects and capital gaining from entrepreneurs, incubator, equity investors or debtors. Organizational resources are then identified to be support in patents, investing in R&D, management commitment, collaboration, monitoring progress, accountability management, providing access to further networks, exit management and trust among the incubator. However, this is just a bare snapshot of different resources incubator might come up with as their reach is limited by the creativity of the incubator managers.

Figure 3 Resource-Based Model for incubation



Barney’s framework of the resource-based theory was extended by Helfat and Winter through the definition of capability theory. They suggest differentiating capabilities into operative or dynamic capabilities. (Helfat, Winter, 2011) The incubators operative capabilities can almost be summarized by providing the above resources to the incubatees inside of the incubation program. Those are only extended by activities, which belong directly to the incubator like

planning incubation programs, marketing to young startups, handling applications of startups and selecting those, that can participate in the incubator. As outlined in the literature review, this is also the sector that has been extensively studied for performance analysis and maximization in incubators without reaching any breakthroughs for the superiority of specific resources or operational capabilities except for selection mechanisms of incubators.

To summarize these studies, most performance researchers find, that the capability of selecting companies carries a key role in increasing incubator performance. Many studies, therefore, hint towards establishing especially strong selection processes in incubators. As almost no researcher looks for an explanatory understanding of why this is the case, this study uses resource-based theory to explain the phenomenon. Hence, this study assumes, that the capability of selecting companies shows positive performance results because through a selection of applications incubators ensure to only allow companies access to the incubator, which they consider gaining sustainable competitive advantage through the incubator's resources (Junaid Ahmad, 2014). This would make selection of companies a measure, which ensures, that the needs of the entrepreneurs and their business ideas match what the incubator is able to provide. Unfortunately, this measure fails as soon as an incubator leaves popular entrepreneurship areas and number of applications reduce itself. As our literature review showed, the core reason for the creation of incubators by public institutions is often to support growth in regions with low economic development, which might render the effect of the capability of selecting companies useless. However, the requirement of matching resources with the entrepreneurs and their businesses needs does match the description of dynamic capabilities, which alter the way that operative capabilities are being used throughout the incubator.

2.4.3 Exploring the dynamic capabilities of incubation

Therefore, this study proposes, that based on the previously suggested performance model, dynamic capabilities are the key to optimizing incubation programs, which is supported by the research of the past (Buckley, Davis, 2018). These must serve to alter the operational capabilities of the incubator to either increase the rate of started companies, their quality or their match to stakeholders' expectations. This is how the study expects incubators to become more specialized and how to simplify the capturing of value in such an environment through entrepreneurs (Schwartz, Hornych, 2008; Schwartz, Hornych, 2010). Furthermore, this picks up prior criticism of incubators, that recommends dynamic incubator services and more customized incubation programs similar to how science parks support small and medium-sized businesses (Vanderstraeten, Matthyssens, 2012; Roseira, Ramos, Maia, Henneberg, 2014; Monsson, Jørgensen, 2016). Overall this will force incubators to become flexible and responsive to individual contexts (Patton, Warren, Bream, 2009). Therefore, the following abstracts will define 6 different propositions for dynamic capabilities that significantly impact the performance of incubators.

The first proposition is based on the research of the past, which indicates that incubators very rarely fulfill the expectations of the incubated entrepreneurs. To fulfill these expectations and increase entrepreneurial satisfaction requires more insights into how satisfied the entrepreneurs are with the incubation programs execution. (Abduh, D'Souza, Quazi, Burley, 2007) Special focus should be pointed towards whether the entrepreneur has trust and commitment towards

the program (Adlešič, Slavec, 2012). Insights into the entrepreneurial satisfaction allow direct feedback loops to how well the incubation team can deliver the incubation program and whether the entrepreneurs are supported in their exploitation of the incubator's resources (Arlotto, Sahut, Teulon, 2011; Adlešič, Slavec, 2012). Hence, regularly assessing the entrepreneur's satisfaction as a dynamic capability, which influences the execution of the program will maximize the entrepreneur's satisfaction and therefore the entrepreneur's participation in the incubators program. At this point, it should be noted, that actions to increase the entrepreneur's satisfaction, do not always correlate to actions, which benefit the entrepreneur. Despite this contradiction, research has shown, that providing resources, which increases the entrepreneur's satisfaction is necessary for participants being able to use other resources the incubator provides (Mian, Alain, Wadid, 2012).

Proposition 1: An increased understanding of the incubated entrepreneur's satisfaction with the incubator's execution leads to superior incubation performance due to a higher rate of started companies, when it is translated into how operational capabilities in the incubator deliver resources.

In the previous literature review, we concluded that every entrepreneur is likely unique in his motivators and personality. However, to keep the entrepreneur motivated to utilize the resource provided by him in the incubator, the incubation program needs to strengthen and support his individual motivators and cause an alignment with the incubators vision (Junaid Ahmad, 2014). Studies have shown, that this is the key to inspire entrepreneurs towards learning new competences and skills, as well as gaining trust and commitment (Rașcă, Deaconu, 2018). This is impossible without assessing the entrepreneur individually and during different stages of the program as these motivators differentiate along gender, cultures, origins, personality, lifecycle, industry or field of business (DeMartino, Barbato, 2002; Giacomini, et al., 2011; Davey, Plewa, Struwig, 2011; Lang, Chuanlan, 2019). Hence, a dynamic capability towards understanding every incubated entrepreneur's motivator is necessary to optimize the rate of started companies within the incubator.

Proposition 2: An increased understanding of the incubated entrepreneur's motivators leads to superior incubation performance due to a higher rate of started companies, when it is translated into how operational capabilities in the incubator deliver resources.

Thirdly, the literature review found different methodologies for the characteristics of incubation programs or coaching. They were structured towards being either more passive or active and regular or irregular. Unfortunately, the methodology of looking for generally successful characteristics has been criticized by research in the past, which highlights strong differences in incubatees regional and cultural characteristics (Aernoudt, 2004; Abetti, 2004). Highlighted was especially knowledge retrieval, which is based on the entrepreneurs underlying assumptions or deep beliefs (Kakouris, 2015). Understanding more about the entrepreneur is also helpful to identify their personal entrepreneurial barriers and corresponding safety nets, which differ based on the social group of the entrepreneur (Pantea, 2016). Hence, instead of looking for general program characteristics, this study proposes, that the program should be individualized to every single entrepreneur based on their personality characteristics and cultural backgrounds. Whereas some entrepreneurs might need regular and active programs to stay on track, others might prefer irregular and passive coaches to better fit their busy timetable (Rice, 2002). It should be emphasized, that this capability needs to exclude asking entrepreneurs for what they seem valuable, as research indicates that entrepreneurs are unknowingly

incompetent (Thompson, Downing, 2007; Van Weele, Rijnsoever, Nauta, 2016). This centralizes the process of incubation towards optimizing learning and support for entrepreneurs (Lowden, 1988; Junaid Ahmad, 2014; Bullough, De Luque, Abdelzaher, Heim, 2015; Robinson, Neergaard, Tanggaard, Krueger, 2016).

Proposition 3: An increased understanding of the incubated entrepreneur's personality, skills and culture lead to superior incubation performance due to a higher rate of started companies, when it is translated into how operational capabilities in the incubator deliver resources.

Beyond differences in personality, culture and individual skills, entrepreneurs or venture teams also experience the process of starting companies with different levels of stress. This depends on the previously explored factors, as well as their team or ventures characteristics. For example, research has shown that lone entrepreneurs psychologically suffer more from starting a venture than teams (Memon, et al., 2015). Supporting entrepreneurs stress and emotional control during this timeframe has been shown to increase the rate of started companies and was identified as one of the only globally applicable success factors (Junaid Ahmad, 2014; Baluku, Kikooma, Kibanja, 2016). Hence, it is critical to monitor how the containing entrepreneurs cope during the incubation program and intervene, where necessary.

Proposition 4: An increased understanding of the incubated entrepreneur's psychological stress throughout the program leads to superior incubation performance due to a higher rate of started companies, when it is translated into how operational capabilities in the incubator deliver resources.

Fourthly, the literature review shows, that startups of different types show different kinds of success factors (Baluku, Kikooma, Kibanja, 2016). While most performance studies on incubation ignore these differences and look for universally valuable resources in incubation, this study takes a contradictory position. The thesis assumes, that identifying the individual resource needs of the incubated startups results in larger performance gains, than providing generally valuable resources to the incubated startups (Junaid Ahmad, 2014). In the past such concepts have been defined by Grant in his strategy framework for defining a strategy through the resource-based theory or by McAdam who concludes, that resource provisioning should be flexible and sensitive to lifecycle progress (Grant, 1991; McAdaam, McAdam, 2008; Patton, Warren, Bream, 2009). This leads to the creation of incubator portfolios, based on the individual incubated companies, while putting special emphasis on demand matched resource deployment for entrepreneurs (Chen, Ma, Chang, 2006; Hughes, Ireland, Morgan, 2007; Baluku, Kikooma, Kibanja, 2016). This is important, as the value of the incubator depends on whether the incubation model matches market needs of the incubated ventures and its gaps in network externalities (Mrkajic, 2017). Such customization potential has been highlighted in the past, as leading towards a better fit of counseling and support services (Rice, 2002). Hence, the dynamic capability of exploring the incubated firms resource needs is detrimental to optimizing the individual incubation program towards an optimal firm quality.

Proposition 5: An increased understanding of the incubated firms resource needs leads to superior incubation performance due to a higher quality of started companies, when it is translated into how operational capabilities in the incubator deliver resources.

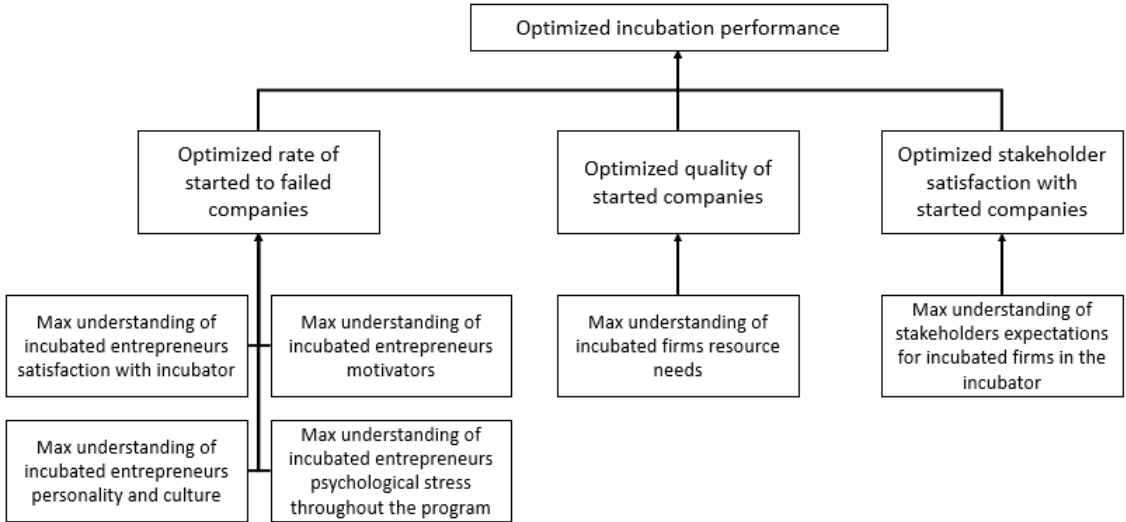
The importance of understanding stakeholder expectations has been argued for in previous studies to the extent, that full frameworks have been created to ensure that stakeholder

expectations are included an incubators design (O'neal, 2005). This problem is intensified due to the characteristics of multi-stakeholder complexity, which has been addressed by researchers with a specific framework of managing those (Alsos, Hytti, Ljunggren, 2011; Greenhalgh, et al., 2017). Both models require the incubator to learn more about its stakeholders to successfully manage them. Therefore, this study extends the previous work by suggesting a dynamic capability of exploring stakeholder's expectations. The dynamic capabilities proposed here require constant observation of stakeholder's expectations as these might change over the lifetime of the incubator and therefore influence the performance of the incubator.

Proposition 6: An increased understanding of the stakeholder's expectations for incubated firms in the incubator, leads to superior incubator performance due to higher stakeholder satisfaction with the incubated companies, when translated into how operational capabilities in the incubator deliver resources.

Overall these 6 propositions can be included in the performance model of incubation resulting in a larger schema as displayed in Figure 4. These propositions are purely based on prior theoretical research. Therefore, practical adjustments will be included in the analysis, where the qualitative interviews of the studies are examined towards either supporting or rejecting the propositions of this chapter.

Figure 4 Final theoretical model for optimizing incubation performance



2.5 Summary

The literature review has confirmed, that there is a lot of research targeted at identifying and improving incubation and entrepreneurship processes. These incubators differ along different dimensions and typologies. Studies suggest using these typologies as ensuring enough similarity for comparing performance. However, the researcher now understands, that incubation frameworks and suggestions for improving incubation effects require a specialization on more than one typology factor. Based on this, studies identify different factors

for improving incubation services through screening based on cultural and regional characteristics of entrepreneurs. Modern research finds these differences in entrepreneurs to appear along the scale of needs, motivation, and satisfaction. According to researchers to transfer knowledge to these different entrepreneurs requires to consider the entrepreneurs type of business, the lifecycle of a business, personality style, culture, and gender. Furthermore, research agrees, that success factors of startups are not globally transferable and a focused and individual approach for single businesses, entrepreneurs and regions is required for effective conclusions.

Although there is a lot of research on incubation, studies do not agree on how to differentiate incubators from other entrepreneurial institutions. Furthermore, the effect of incubation on startups and environment seems questionable due to contradictory studies. A similar outcome can be concluded for research in incubation performance. Since studies have shown, that the process of supporting a startup and its company requires an individual approach along with characteristic, regional and business dimensions, the comparison of incubators is not an effective way of identifying their performance. Whenever studies agree on specific incubation factors to improve, there seem to be many other studies with contradictory results. Therefore, the researcher very rarely advances towards improving existing incubation frameworks with performance insights, which limits the applicability of existing performance research. The same can be concluded for improving knowledge transfer for entrepreneurs, which suffers from their individual needs, which are dependent on different dimensions like business, personality, and culture. Only recently research into entrepreneurial satisfaction has been identified as an important measure of incubation success and transfer into incubator frameworks is missing. Although the resource-based view of incubation has only been explored in a few cases, its conclusions support existing critique on incubation. As incubators strive to improve individual performance and trends like specialization or privatization gain more popularity, the resource-based view provides an approach for optimizing its service offering. The previous research proves the importance of changing the incubator offering according to entrepreneur, business and region. Hence, especially dynamic capabilities of incubators need to be explored for defining a resource-based framework of improving an incubators performance.

As a result of this, the literature review introduces a theoretical framework and suggests an abstraction of previously explored criticism of incubation towards six different propositions. These conclude into a performance model for incubation, which is internal and does not observe the success of companies beyond the incubator. Through the outlined methodology in the following chapters, this model will be suggested and verified through a case study of an incubator in Sweden.

3 Methodology

In the past, different methodologies have been used for the assessment of incubation performance. One of the most apparent approaches are quantitative research designs, which survey multiple incubators to improve our understanding of such environments. Many of those studies assess how specific incubation factors are verified in their influence on incubation effects (Lee, Osteryoung, 2004; Pena, 2004). Another common research design is case studies, which are often referred to as an ideal source of data for future quantitative research (Rothschild, Darr, 2005). Authors have assessed many kinds of incubators around the world based on common factors of incubation like networks, resources or knowledge. Finally, researchers also make use of qualitative research in the format of literature reviews to summarize insights of past research on incubation (Hausberg, Korreck, 2018). While it might be interesting to pursue less common research methodologies, their combination with a new perspective on an existing field might be too radical to provide reliable results. Hence, the following research approach will be very similar to the ones outlined in the past.

3.1 Research Approach

The research questions proposed in the introduction of this study clearly points towards a quantitative research approach. It would be an ideal scenario if the propositions of the previous literature review could be transformed into proper quantitative hypotheses and verified through various data sources and surveys. However, since those propositions include a different perspective on incubation it is very rare, that previous research delivers relevant data for this study. While previous case studies provide a lot of insights into previously assessed performance indicators like financial resources or networks, their theoretical and practical approach does not include any information on the perspective of resource-based models and capability theory. Hence, a proper quantitative study would first require a broad survey of incubators around the world resulting in multiple case studies on incubation with a focus on internal capabilities.

When testing a larger quantitative approach, the methodology resulted in an incubation response rate of around 2%. Unfortunately, due to this, the effort required for such an approach significantly outreaches the financial resources and time frame available for this study. Instead, the thesis will test the proposed case study approach for data collection on resource and capability theory based on VentureLab, a specific incubator in southern Sweden. The conducted qualitative interviews, for the purpose of providing information for the case, will be illustrated and extended by observatory reports from my past year in the same incubator. Furthermore, an interview with the incubation manager from Krakow Technology Incubator is used as a control element. This fits very well with qualitative designs, which are a commonly accepted methodology for research with the characteristics of a natural setting, researchers as key

instruments, the consideration of participants meanings, an emergent design, reflexivity and a holistic account of the problem (Creswell, 2018).

3.2 Research Design

The specific research design of this study is known as phenomenological research. This is a suitable approach, as it includes using lived experiences as a means of comparison with the propositions provided in the literature review of this study (Creswell, 2018). Those propositions were created, as they offer a simplistic and comprehensible method to summarize the findings of the literature review in a qualitative way. The purpose of the qualitative interviews is the data acquisition for either rejecting or supporting these individual propositions, similar to how quantitative data concludes into rejecting or supporting hypotheses. This method of data acquisition will be extended through observatory findings, which enables the reader to take a critical perspective on what the interviewees provide. Those practical insights from incubators will provide an opportunity to further refine the performance model, that was created based on past studies to better match the suggested research approach. It will be suitable to identify where practical reality and theoretical studies result in large gaps or contradictions, although this first study will not be large enough to generalize findings as individual reports from VentureLab might be biased or unique cases. These same challenges must be considered in minimizing bias in the provided observatory data since the target of this case study is an incubator at a Swedish university in which I spend a lot of time during the last year. To ensure less bias in assessing incubation environments, the case study on VentureLab is extended by qualitative data from Krakow Technology Incubator.

Furthermore, it should be noted, that my experience extends beyond the observed public incubator, as during my employment I also experienced private incubation environments. While the comparison between my experiences, might provide an interesting perspective it would go beyond the purpose of this study and will not be included in the observatory data. On the one hand, my experience with incubation will positively contribute to my ability to understand the interviewee's perspectives and simplify access to participants. On the other hand, I will have to make a best effort to reduce my own bias towards the analysis and findings of the interviews. Therefore, the text will be checked and reworked multiple times specifically targeting bias. Furthermore, for the avoidance of experimenter effects the interviews follow a detailed and clearly ordered interview script, which should minimize unconscious verbal cues in the settings. Although this study attempts to minimize bias and opinion in its data, it clearly belongs to the paradigm of post-positivism.

3.3 Data Collection and Data Analysis

For data collection, several different employees and stakeholder of VentureLab were interviewed. These include the office manager of the incubator, the commercial manager of the incubator, a business coach in the incubator and the overall manager of the incubator. To check findings and increase generalizability data was also collected from an incubation manager in

Krakow. The full list of interviewees and their roles can be found in Table 3. All interviewed candidates had significant experience in their required settings. The interviews themselves were conducted through Skype, a video calling tool, or in person at the incubator building and offices. In both cases, the data was recorded using a mobile phone app. Hence, the collected data will be in the format of qualitative audio or visual material, which is one of the most concrete forms of preserving the interview. In case the interview participant would have opposed recording software, the collected data would have been represented by a text, which would have summarized the interview based on the interviewer’s memory and his handwritten notes. Overall the data collection provides for more observatory data, as the interviewees can be physically observed in their reaction to the interviewer’s questions and responses. Overall none of the interviewee’s refused at least audio recording.

Table 1 Interviewed Incubation Staff

Organization:	Role:	Identification:
VentureLab Lund	Office Manager	Interviewee A
VentureLab Lund	Business Coach	Interviewee B
VentureLab Lund	Commercial Manager	Interviewee C
VentureLab Lund	Organizational Manager	Interviewee D
Krakow Technology Incubator	Incubation Manager	Interviewee X

For the purpose of analysis, the qualitative audio and visual data are transcribed into textual format utilizing the subtitling features of YouTube, which is an online platform for sharing videos (YouTube, 2019). This turned out to be a very time efficient method for turning the interviews into analyzable data. However, as automatic transcription is known to be prone to errors, it is followed by manual correction of all errors, that could be found during manual checks by full manual checks of the resulting text. These transcriptions are then coded in relation to the themes of the interview script and presented to the reader as a case study of incubation. The case studies based on VentureLab and Krakow Technology Incubator is extended by my observatory findings from my own experiences in the incubator.

3.4 Validity and Reliability

For measures of validity researchers often mention the factors of trustworthiness, authenticity, and credibility (Creswell, 2018). To ensure credibility, the studies propositions are based on theoretical research and then either verified or rejected by practical insights from incubation managers creating a converging scheme. Furthermore, after the transcriptions of the interviews, results will be checked on with the participant to ensure their accuracy and trustworthiness. To add to the credibility of the study the interpretations of the interviews will be followed by discrepant observatory information, which might counter the presented theme. Also, my experience of different incubation settings has helped me to develop an in-depth understanding of the incubation managers findings and perspectives.

According to Creswell reliability refers mostly to the consistency of data (Creswell, 2018). The consistency of the observational data is ensured, as observations of several student entrepreneurs are integrated into the presentation of the result data. Furthermore, the interviewee's in VentureLab are spread across different perspectives to ensure a coherent and complete presentation of the incubator. Additionally, some of the questions of the interview script target internal consistency, where the interviewees are asked about important factors of incubation in different ways. Then, to ensure reliability, the interview transcripts are also manually checked for errors after transcription. Concerns about drifting definition of codes in team research can be neglected since the same person is coding all the work in this study (Creswell, 2018).

3.5 Limitations of the Methodology

The chosen research approach is limited across several dimensions. First, the case study approach limits the generalizability of findings in this study. Although a control interview with an incubator in Poland is integrated into the qualitative data, the data collection is too narrow to allow for generalization. This might also make it more difficult to understand more complex relationships within the data. Furthermore, the interview script was designed with the findings and order of the literature review in mind. In hindsight, it was not proactive enough at exploring relationships between the different propositions. Especially, its practical application shows opportunities for improvement. Nevertheless, the study serves its purpose as first indications and trends are identified. Furthermore, the study is limited towards the bias of the incubation staff, who might have a hard time to admit to anything, but a successful incubator. Hence, comments to the success of the actual incubator should be taken carefully. Furthermore, the propositions, which are created based on past research in the fields of incubation and entrepreneurship, are limited to our current understandings and perspectives. It is likely, that we will understand more about these complex environments in the future, which will likely lead to a change in the provided propositions. Additionally, the resource-based model and the performance optimization model as presented in this study does only considers factors within the incubation program and neglects external factors like number of applications or visibility of the incubator in the target region. Overall the study is limited especially in size and generalizability.

3.6 Summary

Even though a quantitative approach would be beneficial to the research questions, this study is bound to the methodology of qualitative research due to external restrictions. More precisely the qualitative approach will use a phenomenological approach with a worldview of post-positivism utilizing interviews and observatory findings to further analyze the suggested performance model. Those analytical elements are collected and analyzed through a thorough automated and partially manual process. Following this, the validity, reliability, and limitations of the research methodology are elaborated.

4 Analysis

The collection of qualitative data is necessary to further explore the theoretical performance model, which was suggested as a result of the literature review in this study. By utilizing the methodology as outlined in the previous chapter, it was possible to interview multiple employees of incubation environments. Their feedback will be used to shape and adjust the suggested performance model towards practical applications and verify whether dynamic capabilities are relevant in the observed case. First, the following sub-chapter will introduce the case-study environment consisting of VentureLab, which is an incubator in Sweden and a Technology Incubator in Krakow, Poland. As outlined in the methodology, the key focus of the case study is on VentureLab, whereas the case of the technology incubator in Krakow will be presented as a control element. This introduction is followed by a thorough presentation of the interviewee's perspectives, followed by a discussion on dynamic capabilities and incubation methodologies.

4.1 Introduction to VentureLab

4.1.1 Typology of VentureLab

VentureLab is an incubator at Lund University, that has been up and running since 2001 (Interviewee C). It's description and typology differ strongly depending on, who in the incubator you speak with. The office manager described the VentureLab as: "sort of the heart of Lund Universities start-up hub" consisting of free services, like a one-year long incubator program and facilities, for teams with at least one student at Lund University (Interviewee A). Similarly, the commercial manager described VentureLab as a service "that helps students to create a future by arranging various kinds of inspiring events, offerings, free business coaching, and an incubator, where they can work one year for free with their idea" (Interviewee C). Meanwhile, the business coach gave the description of "24-hour available office space for university students here in Lund, that have applied, got accepted and want to develop their ideas (Interviewee B). All of it is summarized by the organizational manager, who describes VentureLab to be "a space with low barriers for students, who want to develop early startup ideas." He also describes it as the student's brand for bringing ideas to market, in contrary to another internal organization, which is explicitly for researchers. This organizational manager is responsible for coordinating the VentureLab team, which explicitly consists of young people, that are newly graduated with two-year contracts, while the commercial manager "is the leader of VentureLab, who actually performs the work and executes the activities". (Interviewee D) The teams inside of the incubator are defined as university students from different faculties with many kinds of projects or ideas, that are not required to result in for-profit companies (Interviewee A). The ideas do not have to be developed, but the incubator invites students to gain an understanding of their idea inside of the incubator (Interviewee B). While there is no

specific niche of the student's ideas, there have been some indications of specific trends like the appearance of social projects or food projects (Interviewee D). The commercial manager even goes as far as describing the incubator as more of a pre-incubator space due to the lack of demands on the participants, specific niches and the pure appearance of learning students. The interviewee highlights, that the incubator looks to help those students experience how it is to be an entrepreneur and help them to navigate the startup scene. (Interviewee C)

4.1.2 Change in VentureLab

VentureLab seems to be one of the more flexible organizations, as most of the interviewee's rate the change levels of the incubator at a 6 to 8, where 0 is an incubator that never changes and 10 an incubator that changes daily. (Interviewee B, Interviewee C, Interviewee D) It is pointed out, that one of the core services in the incubator is a program, which is coordinated with other universities in the country and therefore very difficult to adjust after it has been aligned (Interviewee C). This is the reason, that the office manager chose a value of 3 on the scale, as he sees this as the major hurdle to increasing flexibility in the incubator (Interviewee A). Meanwhile, business coaching is reported as fully customized to individual entrepreneurs (Interviewee A). When being asked for examples of change, the office manager exemplifies the office movement of the incubator due to a reorganization within the university (Interviewee A). This change also resulted in the incubator gaining more reliable access to financial resources and in the entrepreneurs now being in a more open and social environment in comparison to early years (Interviewee A). The business coach reports changes in the incubator's processes of application, surveys, interviews and kick off. Furthermore, the coach reports of the coaching itself being quite new and mentions the coaching tooling to have changed in the last years. (Interviewee B) In comparison, the commercial manager talks more about activities like movie nights or game nights to change. "For example, one night, we tried a board game, that one of the persons in the incubator created." (Interviewee C) The organizational manager responds to the question of change by highlighting the dynamic incubator staff, that allows for testing new ideas in short time frames, but also mentions that especially the office space and the focus on the community or entrepreneur has been the same for many years (Interviewee D).

4.1.3 Success of VentureLab

While there are strong differences in the characterization of the incubator, all interviewees agree, that the incubator in its current version is successful. However, when exploring the concept of success, many different causal explanations came up. The office manager at VentureLab highlights, that there have been a lot of discussions and different approaches towards measuring success and that the team hasn't come up with a fixed answer yet (Interviewee A). The interviewee explains, that the incubator tries to create the personality of entrepreneurs and that it is difficult to define, whether this was successful or not as some alumni move on to joining corporate companies, join other projects or pursue new ideas after the incubator (Interviewee A). Additionally, the interviewee mentions the revenue growth and employed personnel in the incubated companies but also criticizes this approach as not properly representing social innovations or non-profit companies. Then the interviewee provides the statistics, which are collected by their organization, that consist of how many students

VentureLab meets, how many business coaching meetings are booked and how many projects are incubated with the goal of improving year after year. (Interviewee A) This is supported by the business coach, who looks at success as quantitative improvements in received applications (Interviewee B). The commercial manager adds, that success is also about the quality and value, which students gain from the incubator and how satisfied they are with the execution of the services. The interviewee concludes that they seem to be doing good work, as the number of collaborations and interest from students is constantly increasing. (Interviewee C) From an organizational perspective, the manager adds, that VentureLab seems to be successful as projects move out from the incubator to more advanced incubators or accelerators (Interviewee D). However, all the interviewees agree, that the team can further improve and mention the recent issues of gender equality, where a lot of applications came from male participants (Interviewee D). The participants were also asked to expand on why they think VentureLab can perform at a successful level. The office manager once again mentioned the incubators focus on building the entrepreneur itself as one of the important factors, making them especially good with social innovations and cost driven innovations (Interviewee A). Both, the office manager and commercial manager agree, that the community of VentureLab is strongly responsible for its success because it lowers the barrier to enter the life of entrepreneurship (Interviewee A, Interviewee C). Furthermore, the VentureLab staff itself, who take responsibility for sourcing opportunities, and the incubators connection to the universities support organization, which provides business developers, test money, lawyers and connection to research is highlighted as important for its performance (Interviewee C). The business coach also mentioned the general startup program and the office space to be a reason for their success (Interviewee B).

4.1.4 Observations of VentureLab

During my time in the incubator, I was able to observe its regular operations. I agree mostly with the description provided by the organizational manager, who highlights the incubator to be a space with low entry barriers for students to develop their ideas, as this is what attracted me to the environment. In contrary, I should note, that there are some students in VentureLab with a background in social science, who did perceive it as very hard to join and reported to me, that they had to apply multiple times before they were able to join the incubator. Also, some students reported, that they see VentureLab as more of an office space and not so much of an incubation program. Something that sticks out to me until today, is that the actual incubator displays more characteristics of a place to hang out and make friends, than of a place where business is being made. While I valued the free and open office space to get work done for many hours beyond the regular working hours, I could also see many students making regular use of the business coaching offered by the staff. In the early months, where I did make use of these coaching services myself, I was assigned a business coach, who helped me define basic parts about my business using a custom business model tool. Although I was offered to always confront the coach with any questions or requests for support, I realized, that my business studies covered most of the required topics and that I would find more industry suitable business advice in specialized hubs in the region. The core incubation program of VentureLab, which consists of 3 workshops in coordination with other universities in the area, was always well visited during my time as some of the workshops were marketed as mandatory. More recently though, I was told critique by some students, that reported the workshops not being attended very well anymore. Regarding the community, I can confirm that it consists of students from

across the university and you can have an exchange with business students, social scientists, and technology fellows. It is necessary to mention, that for me it is impossible to consider the full network and community of VentureLab, as for the most time I was greeted by the same 10 to 15 people, who made regular use of the VentureLab office space. It is those few people, that greatly define the VentureLab community and therefore impact its success. It is necessary to note, that from my observation the program does not have a fixed length and many teams, including myself, overstayed inside of the office space. While this has some nice effects, like shared experiences and community building, newer students have reported feeling like not belonging to the community, as there was an existing group that conversed on a regular basis. Very recently though, the number of students making use of VentureLab is increasing. Similar numbers should be noted for the value-adding events in the incubator, where participation was usually lower, which likely results from students not being pushed into workshops, but instead given the opportunities for events, workshops or community activities on a weekly or bi-weekly basis. This also shapes the incubator as an open and easy space, as there are not a lot of rules or guidelines to follow.

As an incubated member of VentureLab, I could not perceive any changes myself. Something that should be highlighted though, was the setup of a small phone booth, which was supposed to allow people to make sales calls without disturbing others. To be fair, I was not able to observe many incubates make use of it. Furthermore, new partners were usually introduced through events, presentations or pitch meetings and did not truly change the incubation experience. Due to this, I would put VentureLab with a 4 on a scale, where a 0 is a very stable program and 10 is a program, that changes every day. From the perspective of success at VentureLab, it is very hard to provide observatory data as the metrics provided by the interviewee's cannot truly be assessed by me. It does not seem to be reasonable to assess the growth of an entrepreneur through a few conversations and as an incubatee I do not experience how VentureLab reaches out to other students or handles applications of new members. However, from satisfactory perspective some members of VentureLab, that I was able to observe on a regular basis, reported being happy with the offering of the incubator. In contrary, other participants reported to me, that they felt like they always met the same people in the incubator and that it really seems to be just an office space instead of an incubator. They then usually went on to indicate, that they were expecting a more guided and structured incubation experience. These people also wondered, why so few people of the core incubation program show up to the incubator space more often. I could also observe some new projects being created and a few companies moving out of the incubator into new startup environments. However, I must note that it's not possible to make conclusions about the many projects of people, that simply stop using the incubator space. Some incubatees suggested, that people underestimated the time effort of starting a company and this being the reason why people disappear. Finally, the staff must be noted as very active and always available for support. It is very easy to reach out to them and ask for support or advise. They actively engage with the community and create a positive impact. However, I was not able to observe too much interaction with VentureLab's support organization as an incubatee beyond the existence of shared events.

4.2 Introduction to Krakow Technology Incubator

The Krakow Technology Incubator belongs to the Krakow Technology Park and operates in the niche of technology or ICT companies, that are less than two years old and usually in the early stage or growing. The entrepreneurs, that are incubated, usually come with a prototype, an MVP or first customers. A special niche in the program can be identified as companies in the game sector and companies that analyze satellite data from Copernicus or Galileo due to programs from the European Commission. The program inside of the incubator is highly dependent on the stage of the participating companies, but always contains a lot of events like marketing, networking, boot camps or startup weekends. Hence, the incubator manager also finds the program to be "quite flexible". The incubator has around 10 years of experience. During the last years, there have been quite a few changes. To this the interviewee reports of how the incubator team changed from having general breakfast meetings in the technology park to having smaller events, that just focus on the founders of companies. Nowadays these events are very customized to the problems some of the founders might be currently experiencing. From around 150 companies, that finished the program, around 90% are still in business today. Recently the incubator has grown to around 10 times the size comparing to the size of 4 years prior to today. After completing the incubator, some companies move on to renting office space in the Krakow Technology Park. Due to these numbers, the interviewee would consider the incubator to be very successful. When asked about which of the services in the incubator are responsible for the incubator's success the interviewee responds: "We have a lot of services in our incubator. We can't say, that any of these make us specifically successful yet." Even though there is no clear understanding of the success of the incubator, the incubator manager does provide information on how their success is measured. This is explained as a formula consisting of the survival rate of companies, based on how much funding the incubatees receive and how international they become. This information is collected in bi-yearly interviews and in follow-ups with alumni. (Interviewee X)

4.3 Thoughts On Incubation Performance

4.3.1 Comparison between incubators

After providing a general introduction to their incubator, the interviewees were asked to give more information on their thoughts on incubation performance. As many previous studies used quantitative methods to compare incubators, they were first asked, what they think about such comparisons and whether they have used similar methods in the past to assess how well they are doing themselves. The office manager reported, that VentureLab has not done so because it is "hard to find someone, that has the same target group and the tries to achieve the same things". The interviewee connects this to the fact, that the incubator targets very early stage ideas in comparison to other institutions. (Interviewee A) This is further outlined by the business coach, who highlights that students in this incubator often do not have the capacity for full-time work next to their studies. However, the interviewee also mentions the friendly connections to other institutions and that sometimes the incubator staff looks at other start-up

environments for new useful ideas, which is more of a qualitative comparison. (Interviewee B) The organizational manager reports comparisons with other institutions being rather easy but admits that not much quantitative analysis beyond gender mix is done and that more value is put on the qualitative analysis (Interviewee D). Another perspective is provided by the commercial manager, who describes, that there are not many other incubators in the same country with similar structures and networks, but also states that comparisons are still possible. It is reported, that this is due to the large university in Lund. (Interviewee C) These findings seem to be supported by the Krakow Technology incubator, where the manager reports not taking other incubators as competition, but rather doing an informal qualitative analysis through meetings every other month (Interviewee X). From the observatory perspective, I can confirm this, as I did not experience quantitative measurements from other incubators. Furthermore, I experienced the quantitative data collection of VentureLab to be directly focused at their core incubation program and only recently a different survey on entrepreneurial satisfaction was sent out to the members in the office space.

4.3.2 Key factors for incubation performance

The interviewees also talked about, what factors they consider the most important for their incubator's performance. According to the office manager of VentureLab, the most important thing is, that the people inside of the incubator feel empowered to become better entrepreneur's through the incubation program. The interviewee mentions, that it is specifically hard to define any more detailed criteria because in VentureLab you can "start a consultancy firm, you can start an NGO and basically any kind of project, that you want. So, we need to find a way to measure them equally, which is the difficult part because there are good models for making a revenue statistic." (Interviewee A) The business coach takes a different approach and highlights the testing and change process within the workshops, the incubation program, the office space and the partnerships inside of the incubator as very important. The interviewee highlights, how the incubator needs to evaluate its progress and how to improve itself every cycle, which also puts a lot of attention on the team, that is executing on the change. (Interviewee B) In comparison, the commercial manager highlights the interest of the students in incubation as the most important for performance. This matters, "especially if you are running a public incubator since you don't have to make any return". (Interviewee C) Meanwhile, the organizational manager considers the community of the incubator and the exchange between entrepreneurs as important for an incubator's performance (Interviewee D). The manager of the Krakow Technology Incubator did not give an answer to this question, but rather stated, that especially for the game and satellite sector "right now we are still in the middle of the process of experimenting, what is important for our sector, what is not" (Interviewee X).

I can confirm the information from the office manager and the commercial manager of VentureLab. There are many different projects in VentureLab, some of which cannot properly be measured through revenue growth or similar statistics. For example, there are entrepreneurs looking to create a blog on sustainability to inform the public about social issues. Meanwhile, I could observe how important interest in incubation is, because anyone that does not really value the program, will not show up to the events or even work on their idea after submission. It is more difficult to provide observatory findings for the interaction between entrepreneurs, as my interactions remained on the social level and did very rarely provide any input relevant to

my business. However, there were also instances, where very early ideas got feedback from other incubatees. My observations also align well with the statements of the Krakow incubation manager, as most of the different projects inside of VentureLab were dealing with very different problems and therefore perceived different elements of VentureLab as important. For example, one of the incubatees was working with food based on insects, which is currently in a legal grey zone and therefore valued an increased amount of legal support and assistance.

4.3.3 Difficulties in meeting entrepreneurs needs

The interviewees were also asked about their difficulties at adjusting their incubation program to the containing entrepreneurs. The office managers perceived the factors of financial shortages and participation rates as the most hindering. The interviewee explained, that it is hard to know whether the students to not show up to events due to missing interest or due to being too busy with their studies, which might even result in "a waste of time to put a lot of money and effort into a workshop, where eventually only three people show up". Furthermore, more financial resources are required to make the incubation program more efficient, match the incubator environment to the entrepreneur's requirements for quiet space and allow students to work full time on their studies for university credits. (Interviewee A). Also, from the perspective of the business coach, the university environment is perceived as slowing down changes, that might benefit entrepreneurs. Additionally, the interviewee perceives it as hard to find the right people, with the right knowledge to present content to the entrepreneurs (Interviewee B). The commercial manager agrees, that it is very hard to meet entrepreneurs needs because VentureLab "markets itself forward to all students at the University" and it is hard to "put everything under our roof" (Interviewee C). In comparison, the manager from the Krakow Technology Incubator mentions, that it is not too difficult for him to adjust, because he has a great team and great communications with the containing entrepreneurs. However, sometimes it is hard for the manager to match the working hours of the entrepreneurs, who request support during the weekend, holidays or off hours and sometimes there are stakeholders, that do not support certain changes or activities and therefore do not cooperate well. (Interviewee X)

My observations align well with the responses of the incubation staff. Especially attendance rates of events and workshops were usually quite limited. This is difficult as it is impossible to predict, who will join a workshop and whether it is worth organizing them for specific students. On the other hand, the core members in the office space are generally quite consistent and should allow for more of a personalization. Unfortunately, I cannot provide any observation on the financial resources of the incubator or longer processes within the university environment. However, I remember many instances, where I was looking for support in a very specific business area and was not able to get a good touchpoint within the organization of the university, which supports the critique of the business coach. When talking to other students, I was reported similar findings, so it really seems to be a hurdle to provide the right knowledgeable contacts to every person in the incubator, as their projects and backgrounds are strongly diverse. Furthermore, I agree with the difficulty of working hours and timing. While I was very busy with studying, I often found myself coming into the incubator after regular working hours, with everyone being gone. That made it very hard to actually benefit from the incubators offering and community. This is why I would say, it is hard for the managers to understand those students, that work on the company, while no one from the staff is actually inside of

VentureLab. Additionally, most of the workshops, meetings or coaching events were set during university hours, that further limits the attendance rates of incubatees.

4.4 Exploration of Dynamic Capabilities

4.4.1 Satisfaction of entrepreneurs

The interviewees were able to tell me about how VentureLab collects information on the satisfaction of the entrepreneurs. The office manager reported, that these activities started in the last two years and that the staff is not yet sure about the best way to collect data from the incubatees. So far the team has used self-efficacy survey for students participating in the core incubation program, but recently also started sending these out to students in the office space and hope to do so twice a year. In this survey, the students answer a few questions about their experience and can comment on things they dislike. The results are then coded and presented to the rest of the team to discuss, "what has to be changed and what might have been miscommunicated". (Interviewee A) To this, the business coach adds, that often there is also informal feedback through conversations with the incubatees, which is collected. The interviewee also extends on the issue, that often the people who did not engage with the program or disliked it, might also be the ones, which do not fill out the survey. (Interviewee B) The commercial manager adds, that sometimes this is also done for specific events at the incubator or that these surveys are also sent out to alumni (Interviewee C). The organizational manager is mostly involved in the resulting discussions and acts as a support for the commercial manager in the incubator to conclude for changes depending on the collected data. This interviewee is also the one concluding, that this feedback loop for entrepreneurial satisfaction is really important, because "if there are no people in the incubator, then there is low energy and low activity" and remarks, that it's also common for the staff to talk and listen to the incubatees (Interviewee D).

The Krakow Technology Incubator employs similar methods, where a survey is being sent out two times per year, which is augmented by yearly face to face meetings with incubated companies looking for qualitative insights. The incubation manager also considers it important to use opportunities for asking questions about the program to the incubatees. (Interviewee X) My observations definitely confirm that these surveys are being sent out to the companies and teams within VentureLab. However, it was also possible for me to observe the limits of this methodology. Some students complained to me, that they highlighted specific things within their survey and never received any feedback or changes based on them. I can say myself, that I did not always honestly fill out the survey in a way that represented the truth, as in busy times I crossed random options or filled out options as the VentureLab team would expect them, simply because I was short on time and trying to avoid any friction. Finally, my observations confirm, that the staff is usually very talkative and tries to understand whether events or activities are relevant for the incubatees. All of the interviewed staff could regularly be found in the incubator talking with the entrepreneurs. However, due to this I also experienced a social hurdle for providing feedback, because I did not want to hurt the relationship with the incubator, as it is an important resource for me. I could verify this behavior with several of the students within the incubator during dialogues.

4.4.2 Motivation of entrepreneurs

VentureLab mostly measures the motivation or drive of entrepreneurs during the entry interview into the incubator, although more integrations are experimented with through workshops on team building (Interviewee A). The business coach criticized the measurement of motivation to be a subjective metric (Interviewee B). From the perspective of the commercial managers, the information from the entry interviews is often enough to make first conclusions about the entrepreneur's motivation and concludes, that depending on this, "probably they need a different kind of events, contacts, and relations in the startup community". However, the interviewee also highlights, that no matter what motivation the students also require basic knowledge in understanding customers, business models, pitching and exploring markets. (Interviewee C) The organizational manager responds, that VentureLab does not assess the drive yet, likely due to a shortage of resources and not being sure how to use the metrics after measurement (Interviewee D). An interesting side comment was given by the commercial manager of VentureLab, indicating that the staff also finds it very important to look for motivation levels in entrepreneurs to pick the one that is more engaged to start their own project (Interviewee C). The interviewee from the Krakow Technology Incubator said, that they currently do not measure the motivation of entrepreneurs, however, considers it to be a good idea to find the ones, that want to do as much as they can (Interviewee X).

From the observatory perspective, I would agree with the previous statements from the interviewees. There does not seem to be any surveys or questions about your motivation to become an entrepreneur in VentureLab. During my time, I mostly met people with interest in being their own boss, having their own company, creating social change or pursuing their own project. I would say, that I did not come across pure financial motivation often. Considering this, the incubator is also unlikely to adjust it's offering to the motivators of the containing entrepreneurs. However, I would conclude, that most of the provided events and workshops within the incubator are not so much focused at financial or business topics, but rather inspirational, value-driven and social topics and therefore undergo a subconscious adaptation based on informal discussions within the incubator.

4.4.3 Personality of entrepreneurs

The assessment of personality measurement and adjustments within the incubator brought very similar results to the measurement of motivation. The office manager, the business coach, and the organizational manager all agreed, that there is no concrete personality measurement within VentureLab (Interviewee A, Interviewee B, Interviewee D). However, the organizational manager adds, that the personality characteristics do play a role in the selection process of entrepreneurs for the incubator, where there is a special focus on community thinking and drive (Interviewee D). The commercial manager and the business coach consider the personality measurement to be soft and something that is done during the interaction between the students and the staff (Interviewee B, Interviewee C). However, the commercial manager highlights, that most students share to be very driven and therefore involved in many activities like student nations or extra jobs, which should be considered in the incubation program (Interviewee C). The incubation manager from Krakow does not report any measurement of personality in the

incubator either but does refuse the idea of selecting incubatees based on personality traits, as he does not consider it to be a reliable measure of success (Interviewee X).

My observational data augments the position of VentureLab as personality factors seem to play a role in the selection of events and activities within the incubator. For example, their Nintendo console resonated very well with some of the founders within the incubator. Hence there are common after work activities revolving around the games on these devices as a core part of the interaction between the community. Another example would be the movie nights, which were attended by some of the entrepreneurs at VentureLab. These activities did result out of soft measurement and interaction between the VentureLab community, instead of hard methods like surveys. I could also observe a shortage of competitive or specifically business-focused events, which did not resonate well with the personalities in the community. For example, at a more recent local pitch event, only three projects from VentureLab actually joined the competition although it was strongly marketed to all incubatees and prize money was offered.

4.4.4 The psychological state of entrepreneurs

The assessment of psychological factors of entrepreneurs resulted in very different responses. The business coach and the office manager both considered the process of learning about the incubatees psychological state as a soft measurement, that is collected in interactions between the community (Interviewee A, Interviewee B). Especially the office manager highlights, that he can imagine less stress on entrepreneurs to have positive effects on their development (Interviewee A). Both of them agree, that for cases which indicate severe problems the staff would intervene. "There have been situations, where we feel like okay we need to have a talk with this entrepreneur" (Interviewee A, Interviewee B). The business coach points out the subjectivity of psychological measurement, where it's about thinking how the staff can help the incubatees (Interviewee B). In comparison, the commercial manager notes, that VentureLab actually lacks the required skills to help students cope with stress and support in psychological dimensions (Interviewee C). The organizational manager takes a very definitive state and argues, that "we don't believe this is our thing." The interviewee then argues, that it is up to the entrepreneur to manage workloads and levels of stress, which sometimes results in students dropping out of the incubator or dropping their studies. Also, the organizational manager concludes, that VentureLab "does not take this responsibility" and indicated that often psychological problems result in students not showing up to the incubator anymore. (Interviewee D) The incubation manager in Krakow concludes, that starting a company is always big stress and takes personal time to support the incubatees when something takes a "bad direction" (Interviewee X). From my observations, I could not experience any critical psychological situations or responses within VentureLab myself. In contrary, although some students were in quite stressful situations in a foreign country with a low amount of financial resources, at least from the external perspective most students seem to be able to handle the psychological challenges of starting a company quite well.

4.4.5 Resource needs of the entrepreneurs firm

The office manager of VentureLab reports, that most information about the incubated firm is collected within the application interview for the incubator and within the coaching program, although more regular methods to learn about the progress of the firm are experimented with. Collected information about the firm is either organizational or financial information. (Interviewee A) However, the incubator does not use this data to adjust its core incubation program because it is very fixed even though they would like to be more flexible (Interviewee C). Instead, VentureLab reacts to specific requests from students (Interviewee A). The business coach mentions, that often the coaching process does not really have the answers required by the students, but instead must look for the people, who can provide knowledge. However, there are issues with students "being up and down" in activity due to their studies, so sometimes the coaches have to be pushy for updates and meetings. (Interviewee B) Furthermore, the coaches also struggle with providing the right knowledge to the companies, because some students never really ask for support in their business (Interviewee C). Also, the coach hints towards the best way of transporting information to depend on the personality of the students (Interviewee B). In contrary the commercial manager mentions, that the program aims at providing broad knowledge in areas of management, team building and law instead of a more customized offering, while the organizational manager reports the goal is to provide knowledge all the way to the final product (Interviewee C, Interviewee D). Furthermore, the interviewee reports supporting incubatees with applying and using test money, which is provided by VentureLab (Interviewee C). The manager from the Krakow Technology Incubator reports being more opportunistic in his support methods. This interviewee looks first for opportunities the incubator is able to provide and checks afterwards whether any of incubatees can or should make use of the services. Additionally, there are regular soft interactions between the incubator and the staff, to talk about what resources the incubatees need or what hurdles they face. (Interviewee X)

From my observations at VentureLab, I recall surveys at the beginning of the incubation program, that were trying to assess the kind of business the incubatees are working on. This survey also aimed to understand, what kind of entrepreneurship skills I would like to improve to support me in starting the business. However, I perceived some of the options as confusing and sometimes not too clearly defined in interpretation. Additionally, many of the provided options were not actually improved through the incubation program. For example, one question asked me, how confident I am with hiring and managing people, while this was never touched on in my whole time at VentureLab. Because of this, the survey sets very high expectations on what the incubator is trying to achieve. My business was clearly assessed within the coaching meetings, where my assigned business coach tried to help and connect me with the right sources of knowledge using a specific business plan tool. I was definitely one of those people, that did not interact too much with the business coach, as most of the knowledge the coach was able to provide were resolved through my business studies. Beyond this, the coach did seem to have difficulties sourcing the right person to support me with my industry and business specific requests. Similar things have to be reported for the incubation staff in general questions, as when asking on how to start an economic association, I was referred to the Swedish website because no other resource was available. The VentureLab does work similar to how the Krakow Technology Incubator handles its opportunities. Instead of an assessment of your specific business, it is more of your responsibility to analyze and understand, whether some of the provided opportunities as in events, workshops or networking could provide any value to you.

4.4.6 Stakeholder expectations

The office manager of VentureLab reports, that the incubator reports numbers and information back to its organizational support so that they can help the staff to improve their services (Interviewee A). This is based on an action plan with goals for student participation and reach, which the incubator has to "follow" during its operations. However, the commercial manager also notes, that VentureLab is part of the universities mission of "making sure, that knowledge gained at University goes back to society". Hence, VentureLab does not truly have any demands put onto them by its support organization or other parts of the university. (Interviewee C) In comparison, the organizational manager considers the university as the source of VentureLab's financial resources. Interactions are done through reports, meetings or informal means and mostly revolve around how many students VentureLab meets or serves, but not around the number of started companies. (Interviewee D) Furthermore, collaboration workshops are created with partner universities in the core incubation program, where evaluations and feedback from the students during the program is processed and reintegrated into the program of the next semester (Interviewee A). No information on stakeholder integration was given by the business coach (Interviewee B). Other startup institutions at universities or from the private sector, were only mentioned as other data sources although they should be categorized as stakeholders, where the organizational manager and the commercial manager note to have dialogues to understand what students should know to join them (Interviewee C, Interviewee D). The manager from Krakow Technology Incubator does not have a similar situation as their incubator belongs to a government company. This requires the interviewee to interact in managerial ways with other parts of the board and the CEO of the corresponding Technology Park. Exploration of stakeholder expectations is done in informal ways through plannings and meetings with the board at the end of the year, as the incubator has to balance financial and entrepreneurial support goals without any clearly defined performance indicators. The actual brainstorming for solutions is done without the stakeholders inside the incubator. However, this freedom might also be the result of the recent success of the incubator reducing the pressure from outside stakeholders. (Interviewee X) Unfortunately, the stakeholder perspective could not be properly observed as an incubatee. However, from the inside one can clearly see, that VentureLab is closely connected to the University and also to the Ideon Technology Park, where it hosts its current office.

4.5 Feedback on Dynamic Capabilities

4.5.1 The practicality of gathering data for dynamic capabilities

The office manager considers information about the previously assessed incubation factors as very important for a successful incubation program and highlights especially psychological aspects and entrepreneurial needs as important. However, the interviewee still criticizes the performance model to be based on maximizing the rate of started companies and would wish for a performance model, where also social or private projects are considered, to become more practical. (Interviewee A) The business coach confirms the relationship between the performance factors mentioned in the interview and the quality of the incubation program. This mentor also highlights, that being an incubator resolves around managing people so more

understanding on personality level could improve incubation experience. (Interviewee B) The commercial manager even considers them to be the “key factors” and mentions, that the incubator must ensure, that the community and incubated students are satisfied with its offering (Interviewee C). In contrary, the organizational managers consider the mentioned performance factors to be more important at the end of the incubation process as early workshops focus more on general experimentation of ideas, where the actual content of the ideas does not matter too much. The interviewee concludes, that too much analysis does not fit the concept of a pre-incubator. (Interviewee D) The incubation manager from Krakow considers the previous factors to be important and interesting except for psychological factors and personality aspects of the entrepreneurs. (Interviewee X) From my observations, it matters, even more, to focus on aspects like satisfaction, personality, psychology, motivation, needs and stakeholders in this pre-incubator environment, because for students it seems to be hard to understand themselves, what they need. I would agree with the organizational manager of VentureLab, who argues that it is not so much about the ideas, but about experimentation. However, due to the very early stage of ideas and lack of experience in students, most of them have a very hard time to understand, what they require to grow or become better entrepreneurs. The business coach and the incubator staff usually have more understanding of how a student might improve on his idea.

Hurdles to collecting the previous factors inside of the incubation program are mentioned as the subjectivity of personality, motivation and psychological state (Interviewee B). Furthermore, changes in the incubator are difficult, because the opinions of the staff sometimes don't align for how to react to information and therefore a very strong case is required before changes are adopted instead of experimentation (Interviewee A). The resource shortage is another issue as three persons in VentureLab must work with “eighty individuals”, which makes it hard to collect all required data (Interviewee C). The organizational manager also considers the effort for data collection to extend beyond the gained value (Interviewee D). The manager from the incubator in Krakow reports the difficulties for incubators to be, that entrepreneurs often don't know what they need while lacking basic business skills. According to the interviewee, this then results in programs where basic knowledge is provided to a broad audience, instead of information being collected from entrepreneurs. However, the manager agrees, that often after a few basic questions, it is quite easy to understand, what kind of resources the entrepreneur needs. (Interviewee X) My observations support the factors of resource shortage. The staff did regularly seem to be bound inside of their office in VentureLab and does not seem to have a lot of time to assess the entrepreneur's problems. However, mostly there are only a few people in the incubator itself so selective business interactions between the staff and the venture teams should be possible, although I did not experience them myself.

4.5.2 The practicality of dynamic capabilities

When confronted with the idea of using dynamic capabilities to design personalized or customized incubation programs for entrepreneurs, the office manager was concerned about the risk of flipping the current program and losing VentureLab's active community (Interviewee A). However, the interviewees also highlight, that it will be very difficult to match everyone's needs because ideas and topics are very different from each other and a lot of dispersed knowledge is required to help all the entrepreneurs (Interviewee A, Interviewee C, Interviewee D). Overall the office manager of VentureLab would not roll out a more customized program,

because it might cause damage for everyday business and might be more difficult to take over by a new office manager due to the short 2-year contract (Interviewee A). In contrary, the business coach considers it to be feasible to test a more personalized program for a small organization like VentureLab, as it matches the current business trend towards more customization in products and services (Interviewee B). The interviewee could imagine better results, but also highlights the danger of the program being harder to repeat, while the commercial manager suggests solving this through a program, which is partly customized and partly fixed (Interviewee B, Interviewee C). A positive view is also taken by the organizational manager of VentureLab, who considers customization to make sense and considers, that the support organization of VentureLab tried to take a similar direction many years ago (Interviewee D). In comparison to this, the incubation manager from Krakow Technology Incubator agrees with the complexity of a fully customized incubation program and would refer for such methodologies to acceleration programs (Interviewee X). The interviewee would not consider more effort in customization to be feasible in their incubator due to shortages in human resources, although it might be beneficial to performance. The observational perspective can confirm the complexity of such an effort as the incubator does host many different companies and entrepreneurs. However, when confronted with new ideas in the incubator the students are generally open and curious, so the danger of testing new concepts should be rather low.

4.6 Discussion & Analysis

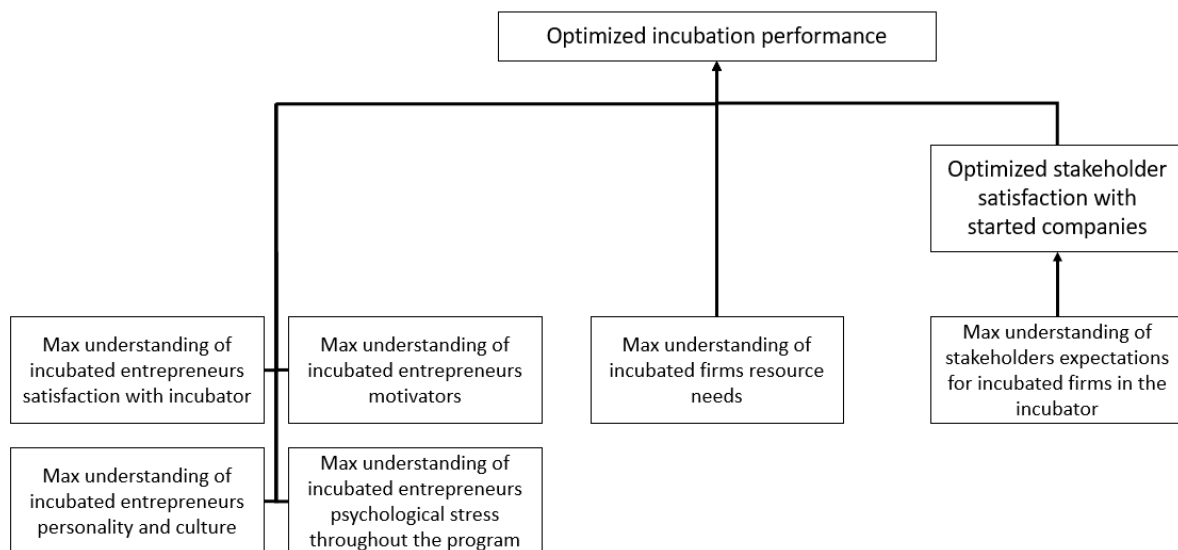
4.6.1 Dynamic capabilities

Overall the qualitative data of the study allows for first assumptions on the applicability of the suggested performance model in VentureLab. Unfortunately, the methodology was not able to explore causal relationships within the performance model. To consider broad applicability of the model within incubation environments more studies with larger data collection phases are required. However, the different interviewee's responded in various ways, when asked about the dynamic capabilities highlighted as the propositions within the literature review and provided their different perspectives on the topics.

In this way, the interviewee's supported the proposition of an increased understanding of entrepreneurial satisfaction to improve incubation performance when it's implemented as a dynamic capability. However, for the observed incubators, Proposition 1 can only be partially supported, because it's unclear whether entrepreneurial satisfaction increases the rate of started companies or affects the incubation program positively through other means. As chapter 4.4.1 presents, these dynamic capabilities are implemented as surveys or through informal communication with the venture teams in the observed environments. The second proposition found less support from the interviewee's as it is not implemented within VentureLab or Krakow Technology Incubator, although they consider a dynamic capability based on the exploration of entrepreneurial motivation to provide new insights into the participants of the incubator. More support for this proposition can be deducted from the observational data, which reports the dynamic capability to be implemented in very informal ways, where changes in the program might almost originate from subconscious perceptions of the VentureLab staff. While the effect on incubation performance through a better understanding of entrepreneurial

motivation was suggested by the interviewee's, no direct correlation to the number of started companies was found, as such measurements are not in place. No measurements in the incubation program were also reported for attributes of personality, skills or culture beyond the application interviews in VentureLab or Krakow Technology Incubator. However, it's importance for effects on incubation performance and the incubation program in the observed environment was supported by the interviewee's as reported in Chapter 4.4.3, especially as the observational data reports informal personality assessments and program adaptation through everyday communication. The link to the rate of started companies was not confirmed. An understanding of the entrepreneur's psychological stress as dynamic capability to improve incubation performance was partially supported by the interviewee's in Chapter 4.4.4, although most of them did not make any conclusion as they did not consider psychological support to be their responsibility. Also, the correlation to the number of started companies remains unclear. The fifth proposition finds strong support by the interviewee's, although no direct link to the quality of created companies can be made. All the interviewee's considered to try and understand, what kind of support might benefit the incubated entrepreneurs and implemented this dynamic capability through informal ways, coaching or meetings. Finally, the sixth proposition was supported by the staff members of VentureLab and Krakow Technology Incubator as presented in chapter 4.4.6 and the correlation between understanding of stakeholder expectations and stakeholder satisfaction was found. These stakeholder expectations are mostly collected through informal ways or action plans. Overall, the study enables the creation of a practical performance model for VentureLab. Although not enough data was collected for generalization of the model, the study does proof, that at least for VentureLab and Krakow Technology Incubator dynamic capabilities clearly affect incubation performance. The adapted schema can be found in Figure 5.

Figure 5 Practical model for optimizing incubation performance in VentureLab



Beyond better understanding the role of dynamic capabilities in incubation, the qualitative data also provides challenges, that need to be resolved to improve value gained from dynamic capabilities, which are largely presented in chapters 4.5.1 and 4.5.2. The biggest hurdle discussed by the interviewees is the limit of financial and human resources within incubation environments. Research must find economical solutions to allow for customization of

incubation environments with low resource requirements for incubators to adapt. Furthermore, a quantitative measurement of the impact of dynamic capabilities is required to understand how much such an approach can add to an incubator before a possible adaptation. The difficulty of this is increased as the interviewee's in VentureLab repeatedly reported, that their mission is not truly quantifiable due to not measuring started companies or revenue. Furthermore, the observational data from VentureLab points towards questionable results of data collection for quantitative surveys and might require the observation of new resource-efficient means of collecting data within incubators. Interviewee's of VentureLab also reported lower speed of change as programs depend on cooperation or collaboration with other stakeholders. For customization and personalization based on dynamic capabilities to take effect, this change process must significantly speed up and become second nature before effects should be observable. Finally, the biggest hurdle pointing against more customization or personalization within VentureLab is the low participation rate of the students in events, workshops or services. Due to this, effort on making services more personal and customized, result in resource wastage. Hence, before putting more focus on customization and personalization in VentureLab, high attendance rates must first be ensured.

4.6.2 Methodology

Beyond findings for incubation and dynamic capabilities, the qualitative results as presented in this study require a deeper discussion on methodologies for studies on incubation environments. The literature review already pointed out a critique of past authors on recent studies of incubation like difficulties in comparing incubators due to unclear and multidimensional typologies or the unclear differentiation between different entrepreneurial institutions like coworking spaces, incubators, and accelerators. (Aernoudt, 2004; Abetti, 2004) The responses of interviewees as presented in chapter 4.1.1 show, why there are so many difficulties in even these basic definitions. When asking 4 different staff members of VentureLab, the interviewee's provided 4 different descriptions for their incubator. These leaned either towards incubation, a coworking space or even a different institution like a network or hub. During the deep-dive on VentureLab, the interviewee's also reported to think about introducing a new category of entrepreneurial institutions. Hence, especially the organizational manager of VentureLab suggested the characterization of a pre-incubator, as a place which prepares the entrepreneurial personality and basic business skills by quickly experimenting with project ideas, which is presented in chapter 4.1.1. However, the case of VentureLab also questions the currently accepted definition of an incubator itself, as the staff repeatedly emphasized, that incubation for them extends beyond supporting the creation of startups or companies towards even social or private projects. This has to be considered since the complete staff of the incubator reports a positive outcome of incubation practices in chapter 4.1.3. Furthermore, the provided data also supports the case for multidimensional typologies, as moving discussions towards comparisons of VentureLab with other incubator's resulted in the interviewee's reporting difficulties due to observing differences in incubation mission and stakeholders to other student incubators in Sweden as presented in chapter 4.3.1. These issues in comparing incubators might invite researchers to revisit some of the quantitative studies of the past to explore, whether differences in performance findings might have stronger correlations to differences along the dimensions of typologies than in provided incubation resources. The problems in defining hard differences between entrepreneurial institutions or incubator typologies might point towards more of a soft

characterization based on multidimensional scales. Nonetheless, the complexity and interdependencies of effects in incubation environments are properly represented. This becomes especially clear when interviewing the VentureLab staff and the manager from Krakow Technology Incubator on success factors and key performance factors, as either none or very different answers were reported.

Beyond issues, in characteristics, typologies, definitions, and comparisons more findings must be considered in the collection of data from incubators. Throughout the interview, it is easy to identify large differences in responses of interviewee's. These can be followed throughout the whole study, but especially within the characterization of VentureLab and when considering the practicality of dynamic capabilities. These findings match previous research, criticising bias in performance research due to external measurement (Cheng, Schaeffer, 2011) A confirmation of this in larger studies could point towards the necessity of data collection in incubation, that is based on multiple staff members, which would question the validity of studies on incubators in the past. Furthermore, the study is able to showcase a large gap between the interview data and the observational data provided in this study. For example, large differences exist when assessing change within VentureLab or when looking into how the resource needs of entrepreneurs are collected. Whether this gap between interview and observatory data is correlated to a lack of dynamic capabilities or collecting entrepreneurial feedback remains to be verified through larger studies. However, these findings could point towards requiring a multidimensional data collection approach, which involves participants of the ongoing incubation programs for reliable and valid studies on incubation. Unfortunately, this study points towards even more difficulties in researching incubation environments, as both VentureLab and Krakow Technology Incubator report quickly changing and dynamic environments. If other studies confirm these findings across a larger number of incubators, this could indicate that an incubator must be observed across a long time scale to deduct correct conclusions from successful periods. This is necessary, as for example an incubator, which is assessed in 2019 based on its survival rate of the last five years, does not represent the actual incubation environment or staff during the incubation period of the observed companies. This synergizes well with the findings of researchers in the past. (Sentana, González, Gascó, Llopis, 2017) Overall, incubation proves to be a very complex research field, where many findings are to be discovered due to the difficulty of collecting valid and reliable data.

4.7 Summary

The VentureLab Incubator and the Krakow Technology Incubator were presented as case studies for dynamic capabilities in incubation. The qualitative methodology of combining interviews with observational resources resulted in close insights into the different incubation environments. In broad terms, the performance model as suggested in this study was confirmed. However, a modified version was provided to better match practical environments based on the collected data. Unfortunately, more detailed interrelations or causal relationships in incubation are yet to be confirmed through larger studies in the future. The discussion and analysis of the research data were also able to result in methodological findings for future studies on incubation, which show the difficulty of collecting reliable data in incubators. Overall findings of the study were presented in the final discussions of the interviews.

5 Conclusion

5.1 Research Aims

Since prior performance research on incubation has found many critiques in recent work, this study tests a fresh theoretical approach to incubation. By creating a theoretical resource-based framework with a lens on dynamic capabilities, the study can check various propositions of incubation performance for their relevance in incubation. The resulting performance model puts special effort on understanding the factors of entrepreneurial satisfaction, motivation, personality, psychological state, resource needs and stakeholders expectation to suggest their implementation as dynamic capabilities within incubators. After verification with data through the qualitative case study, the thesis can create first support and confirmation, that dynamic capabilities are likely to play a significant role in incubation environments. Furthermore, the study points out possible hurdle's incubators might come across when trying to implement dynamic capabilities for increasing their performance, like resource shortage, data collection, data analysis, and change avoidance.

During the exploration of the research aims the study also points out how VentureLab and Krakow Technology Incubator use dynamic capabilities in formal and informal ways for modifying their incubation environment. While the information on certain factors like personality, motivation or psychological state during the incubation program were mostly collected through subconscious informal means, other factors like resource needs, stakeholder expectations, and entrepreneurial satisfaction have also been measured by using private coaching, private meetings or surveys. Those factors were then implemented through various means like team meetings and feedback loops, resulting in the dynamic capabilities of VentureLab and Krakow Technology Incubator. As hinted towards in the introduction and methodology section, the chosen research approach does not fully complete the purpose of the study. Based on the limited dataset it is not possible to create a reliable and generalizable performance model for incubation based on dynamic capabilities. Instead, the thesis adjusts the theoretical performance model to VentureLab and therefore provides an applicable and practical performance model for a single incubator in addition to the theoretical model, which allows for easy adaptation and further studies on other incubators or general incubation practices. Furthermore, the thesis can confirm past criticism on methodology when researching incubation on fields like definition, typologies, and characterization of incubators. Additionally, new findings like perception gaps between incubator staff and incubatees, large differences between perspectives of staff members and time dependency are presented.

5.2 Research Objectives

As pointed out in the methodology section, the studies objective is the utilization of a case study approach to explore the suggested propositions of the literature review on dynamic capabilities in VentureLab. The data was successfully collected in 4 interviews, with an additional control interview with an incubation manager in Krakow Technology Incubator. The case is thoroughly presented in the analysis chapter of the study and therefore easily accessible for future studies using more quantitative approaches to create a unique data set out of multiple case studies on dynamic capabilities in incubation environments. The results of the data collection allow for adaptation of the theoretical propositions towards practical applications in VentureLab. Furthermore, since there is strong support from the interviewee's for parts of the previously presented propositions, first trends for general performance models in incubation based on dynamic capabilities can be identified. It is, therefore, one of the first studies to fill the data gap to gain a generalized understanding of performance optimization based on dynamic capabilities in incubators and provides an entry point for future scholars looking to explore this perspective.

5.3 Theoretical Implications

Incubation is an important concept for the creation of economic markets and small or medium-sized business. Although incubation environments have been researched for many years, the complexity of the topic has not allowed for any dominant perspective on it to emerge. This study delivers a fresh economic perspective on incubation as requested by multiple scholars in the past. Through assessing the perspective of dynamic capabilities, the study opens new opportunities and approaches to gain more understanding of business incubation, but also points out more methodological issues in incubation research. Through its case approach, the study supports recent critique on incubation theory. Overall, the presented performance model provides an opportunity to expand the field of performance research beyond ranking resources in their importance. Finally, for economic researchers of incubation, making use of a similar approach, the study provides a thorough dataset for quantitative or qualitative research.

5.4 Practical Implications

Not even experienced staff of an incubator is able to fully comprehend and understand the complex relationships and causal dependencies in this environment. Unfortunately, the study raised too many new questions and perspectives to contribute to a full understanding of incubation. However, what it does provide is a new practical strategic framework based on dynamic capabilities incorporating recent critique on incubation to optimize the performance of incubators. Especially incubator's, that struggle with performance, might find this approach helpful to improve it's offering towards successful operations. Many practitioners and staff members will find themselves represented in the presented points and issues of VentureLab's case. Likely they will be able to adopt findings from the case to their own incubator or are at

least be inspired to experiment with new methods for improved incubation performance. Furthermore, the findings of this study might be an indicator for incubation staff to become more cautious about how they design incubation programs. The start-up community has looked down on technical product manager for falling in love with their products for many years now. The study shows, that managers of incubation programs must be careful to not become subject of similar feelings for their incubator and program. While the presented performance model seems promising, incubation managers should not forget, that there are other ways to improve incubation performance, which are external to the actual incubation program. For example, selection processes might turn out as an efficient tool in regions with many applications to filter for entrepreneurs, whose resource needs the incubator can serve.

5.5 Future Research

This study opens many opportunities for future research into incubation. First, future scholars might investigate research approaches, which are capable of generalizing findings for performance optimization based on dynamic capabilities in incubators. A suggestion for this could be a large mixed methods study, which makes use of quantitative methods to analyze a large set of qualitative case studies on dynamic capabilities from incubators around the world. Furthermore, scholars could be inspired to test and verify new incubation frameworks and processes, which are capable to overcome the hurdles for customized or personalized incubation programs in VentureLab or other incubators as presented in this study. An interesting approach to this could be a larger collaboration or partnership between national incubators, where knowledge responsibilities and niches are separated by regions or field of expertise. Researchers might also make use of an exploratory study, to better understand the causal relationship between factors within dynamic capabilities and why they lead to improved incubation performance, as causality between factors like incubation performance, number of started companies, quality of companies, understanding of entrepreneurial satisfaction and entrepreneurial resource needs could not be concluded based on the data in this case study. Furthermore, researchers could make use of findings on typology and definition of incubators to define a multidimensional scale for properly defining and differentiating different entrepreneurial institutions or typologies of incubators.

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Appendix A

List of questions for interviews with incubation manager

1. How would you characterize your incubator? Is it successful?
 2. What would you identify as the cause of success for your incubator?
 3. What metrics do you use to measure the success of your incubator?
 4. Have you ever attempted to compare your incubator to other similar programs?
 5. How would you characterize the teams and companies inside of your incubator?
 6. What kind of factors do you consider the most important for an incubator's performance?
 7. Would you consider your incubation program to be flexible and adjusted to the incubated entrepreneurs?
 8. What have you changed in your incubation programs in the last years?
 9. Do you experience difficulties in adjusting your incubation program to the incubated entrepreneurs?
 10. How did you measure the satisfaction level of entrepreneurs in the incubator and how do you use this data?
 11. How did you measure the motivation of entrepreneurs in the incubator and how do you use this data?
 12. How did you assess the entrepreneur's personality in the incubator and how do you use this data?
 13. How did you assess the entrepreneur's psychological situation in the incubator and how do you use this data?
 14. How do you assess the entrepreneur's firm and its resource needs and how do you use this data?
 15. How do you assess your stakeholders' expectations and how do you use this data? Who are your stakeholders?
 16. What other sources of data have affected you to adjust your incubation program?
 17. Would you consider the previously mentioned factors as important to understand for a successful incubation program?
 18. What hurdles do you see to assessing these factors in incubation programs?
 19. What challenges do you see in flexible or customized incubation programs?
 20. Would you be open to rolling out such a flexible program in the next batch?
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