“Performance outcome evaluation of accelerators with university links”

A case study on the Science Park Jönköping accelerator

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Abstract

Purpose

The purpose of this thesis is to identify performance outcome criteria for accelerator programs with university links. Hereby, the study aims to extend the knowledge about important evaluation criteria and influencing factors on performance outcome and to close the gap between incubator and accelerator literature. The objective of the study was to investigate, (1) how participating persons evaluate the performance outcome of the accelerator program, (2) how the evaluation between accelerator and incubator differs and (3) why the evaluation differs.

Frame of references

Literature about science and technology parks, incubators, accelerators and performance evaluation was used to create the theoretical foundation for this thesis. A research gap about the performance outcome evaluation of accelerators was found, due to the newness of the model.

Method

The study followed an inductive approach and was of exploratory nature. A qualitative case study was chosen to investigate an accelerator within a science and technology park environment. Semi-structured interviews were used to collect the primary data and the methods of coding and categorizing were used to structure and analyse the data. Due to the inductive approach, literature was used to discuss the findings in the end.

Findings

Proposition 1: Accelerator performance outcome is mainly evaluated by subjective criteria: “goal realization”, “entrepreneurial motivation” and “entrepreneurial education”.

Proposition 2: The performance outcome gets influenced by micro level criteria like “practical experience”, “network support”, “personal development”, “program structure” and “individualization”.
# Table of Contents

1 Introduction ......................................................................................... 1  
   1.1 Background .............................................................................. 1  
   1.2 Problem .................................................................................... 3  
   1.3 Purpose .................................................................................... 3  

2 Literature review .................................................................................. 5  
   2.1 Science and Technology Parks .................................................... 5  
   2.1.1 Definition and Purpose ............................................................ 5  
   2.2 Incubators ................................................................................ 7  
   2.2.1 Definition and Purpose ............................................................ 7  
   2.2.2 First and second generation of BIs .......................................... 9  
   2.2.3 Third generation of BIs ............................................................ 10  
   2.2.4 Models .................................................................................. 10  
   2.2.5 Accelerator .......................................................................... 12  
   2.3 Performance evaluation ............................................................... 15  
   2.4 Conclusion ............................................................................... 19  
   2.5 Research Gap .......................................................................... 20  

3 Methodology and Method ..................................................................... 22  
   3.1 Research approach .................................................................... 22  
   3.2 Research Design ......................................................................... 23  
   3.3 Data Collection .......................................................................... 24  
   3.3.1 Choice of participants ............................................................. 24  
   3.3.2 Interview design .................................................................... 25  
   3.4 Data Analysis ............................................................................ 26  
   3.5 Quality and ethics ...................................................................... 26  

4 Empirical Findings and Analysis ........................................................... 28  
   4.1 Evaluation of a performance outcome ........................................ 28  
   4.1.1 Goal realization .................................................................... 28  
   4.1.2 Entrepreneurial motivation ..................................................... 32  
   4.1.3 Entrepreneurial education ....................................................... 37  
   4.1.3.1 Practical experience ............................................................. 37  
   4.1.3.2 Network support ................................................................. 39  
   4.1.3.3 Personal development ........................................................ 40  

5 Discussion ......................................................................................... 42  

6 Conclusion ......................................................................................... 47  

References ............................................................................................ 50  

Appendix ............................................................................................... 54  
   Appendix A Literature search criteria ............................................ 54  
   Appendix B Interview guide ............................................................. 55  
   Appendix C Coding structure .......................................................... 57
Tables

Table 1: Incubator model categories, adapted from (Bergek & Norrman 2008, p. 26) .......... 11
Table 2: Summary of differences, adapted from (Cohen and Hochberg 2014, p. 9) .......... 13
Table 3: Participant information ......................................................................................... 25
Table 4: First and second order goals .................................................................................. 29

Figures

Figure 1: Position of the business incubator (Aerts et al., 2007, p. 255).............................. 9
Figure 2: The two incubating models (Grimaldi & Grandi, 2005, p. 114)......................... 10
Figure 3: Accelerator elements (Pauwels et al. 2016, P. 17) ........................................... 14
Figure 4: Components Identified for Assessing and Managing UTBIs 1 (Mian 1997, p. 281) .................................................................................................................. 17
Figure 5: Evaluation Model (Bergek und Norrmann 2008, p. 22).................................... 18
Figure 6: Entrepreneurial motivation and influence factors ............................................... 32
Figure 7: Entrepreneurial education and influence factors ................................................ 37


I Introduction

1.1 Background

Since the late 1950’s years, the concept of science parks evolved in the USA. The first science park was built in Stanford followed by the Cambridge Science Park in England. Within Europe the concept became relevant during the 1980s and 1990s, where a significant number of science parks were established (Bakouros, Mardas, & Varsakelis, 2002). The most used term in the literature is Science and Technology Park (STP), which will be used during this thesis.

The initial concept of STPs was to create a property development to connect academia and industry. It was expected that this interaction would foster the commercialisation of research outputs by universities or other higher education establishments (Quintas, Wield, & Massey, 1992). By enabling the industry to gain access to knowledge, resources and network through interaction with universities or other research facilities, it was assumed that innovation and production gets encouraged (Westhead & Storey, 1995). A key principle of the STPs is the facilitation of this contacts within the STPs properties. In the beginning of this concept, that was the main motivation for companies to be located at the STPs (Löfsten & Lindelöf, 2002). Initially STPs offered following values:

- Enabling academics at local universities to develop and commercialise their research outputs in a convenient location
- Providing accommodation for businesses to profit from the near location of the facility to universities or research centres and to facilitate research links
- Providing managerial services to businesses located at the STP (Storey & Tether, 1998)
- Being actively involved in technology and knowledge transfer (Quintas et al., 1992)

Over the last decades, the concept of STPs changed according to the needs of modern businesses. STPs adjusted their value propositions by offering new services like mentoring and coaching programs, advanced networking opportunities and more specialized events. A new concept, which was quickly adapted by STPs to foster the creation and development of new technology based firms (NTBF) or start-ups, is the business incubator (BI) (Ratinho & Henriques, 2010). The BI tries to foster the process of venture creation towards a growing company. For that it offers development programs, courses and intensive support through experienced business developers (Aaboen, 2009). The incubator can either be a separate facility or be integrated in other institutions like STPs. It offers various essential resources to entrepreneurs like office space, marketing, management, networking, structure, goals and an opportunity to access financing (Bollingtoft, 2012). The concept of business incubators developed from a simple provider of working space to a complex environment to nurture the establishment and development of new ventures. By providing support to companies in their early stage development, the BI tries to increase the firms survival rate and maximize the
potential growth (Bøllingtoft, 2012). During the last decade, various versions and specializations of BIs developed. By adding services like intensive coaching and mentoring in their portfolio and further develop their initial values, the incubators became an important part in the process of venture creation (Bruneel, Ratinho, Clarysse, & Groen, 2012). The literature identified supporting links between STPs and BIs, which provide a platform for universities and industry to interact (Ratinho & Henriques, 2010).

Many studies investigated the positive or negative effects of BIs and also questioned their effectiveness. To evaluate the outcomes of successful incubator programs, researchers identified various factors and variables that influence the success of a BI program (Bakouros et al., 2002; Lindelöf & Löfsten, 2003; Mian, 1997; Smilor, 1987; Tötterman & Sten, 2005). Due to changing environmental requirements of NTBFs and start-ups, the concept of BIs further evolved to produce better outcomes and have a greater impact on business development.

During the mid-2000’s a new form of incubators developed, which slowly started to get recognized by researchers and the literature: The accelerator. Due to its novelty, the literature is not providing much literature on this form of incubators yet. There is no scientific consensus about how to define and separate accelerators from incubators (Cohen & Hochberg, 2014). The accelerator offers nearly all characteristics of an incubator but there are still significant differences. The main difference between the two models is the limited duration of several months for the accelerator program, compared to the long duration of an incubator program (Pauwels, Clarysse, Wright, & van Hove, 2016). The structural differences between the programs become evident, when looking more specific on the quality of provided services, e.g. the accelerator focuses more on mentoring companies on a constant level, providing workshops and close networking, whereas incubators provide ad-hoc coaching services, physical resources and sometimes pre-seed investments. The previous mentioned services of STPs can be used by accelerated or incubated companies, as they often get integrated in the STP network after finishing their program.

The assessment of performance and success became an intensively researched topic for BIs. Many researches defined various performance criteria, that influence the overall outcome of the programs. Factors for performance outcome like company growth and survival rate were established, other factors like R&D involvement were added. Setting this factors in context to the various incubation models became a task for the literature. Mian (1997) contributed a complex model for the evaluation of university technology business incubators, by building up on existing criteria, adjusting known criteria and adding new ones.

The evaluation of performance outcomes is an essential factor for the development of new models and to increase the effectiveness of old models. To address the need of fast changing markets and the raising popularity of NTBFs, the incubation model evolved into the acceleration model to keep up with the pace and address the needs of young and unexperienced ventures. The accelerator, as new incubation model is on the rise and until now thousands of accelerators got established worldwide (Cohen & Hochberg, 2014).
1.2 Problem

Given the newness of the accelerator model, limited research has been done on nearly all important factors, that were important for assessing the performance of BIs. However, established performance outcome criteria for BIs cannot be applied to accelerator without taking the structural differences into account. Therefore, new assessment models must be created to evaluate the performance outcome of accelerators and identify influencing factors. Nonetheless, existing research has not covered that topic yet. It is important to investigate the criteria for the accelerator model, as identifying and understanding the influencing factors is essential to adjust and manage the performance outcome of the accelerator. To ensure the further development and adjustment of BI and accelerator models, knowledge about influencing criteria has to be generated to foster entrepreneurship and regional growth more efficiently and successfully.

1.3 Purpose

I wanted to address the described problem, by contributing knowledge to the existing literature. To get familiar with the field of knowledge, I decided to combine 4 topics:

- Science and Technology Parks
- Incubators
- Accelerators
- Performance evaluation of incubators and accelerators

The reviewed literature led me to the following research questions:

- RQ 1: How is the performance outcome of the accelerator program evaluated by participating persons?
- RQ 2: How does the evaluation differ between accelerators and incubators?
- RQ 3: Why does the evaluation differ between accelerators and incubators?

Investigating this formulated research questions is of great concern to the scientific research community. As the accelerator model is becoming more popular over the last years and facilitators are experimenting with different accelerator models, it is necessary to understand the perception of performance outcome of tenants as well as facilitators to design more effective accelerator programs. Many researchers also plead to conduct comprehensive studies around accelerators, to fill the knowledge gaps.

The thesis starts with a literature review (chapter 2) about Science and Technology Parks, their definition, development and todays purpose. This will lead to the concept of BIs and accelerators, which are often part of STP’s. Furthermore, I will reflect on the way how literature evaluated the performance outcome of BIs and accelerators.

In chapter 3, I will explain the methodology behind this thesis and what research methods were used to generate findings. Research relevant information about the study object and participants will be provided and the underlying theoretical concepts and method choices will be explained. In the next part (chapter 4) I will present the findings and analyse the
collected data. Using the analysed data and insights, I will discuss the findings in chapter 5 by referring to existing literature and explain the connection between the new and existing knowledge.

Chapter 6 of the thesis will cover the conclusion, where my findings will be summarized and presented. The limitations of the study will be shown and recommendations for future research will be given.
2 Literature review

The theoretical framework for this thesis was built through a literature search on the Web of Science. I decided to start with a basic search about Science and Technology Parks, followed by a combination of the previous search term and “incubator”. To cover all aspects, the search was extended by including “business accelerator” and a combination of those terms with either “success”, “measure”, “evaluation”, “outcome” and “result” in the literature search. To limit the search, I chose the categories “management” and “business” and focused on the document type “articles”. By sorting the articles with the criteria “Times Cites – Highest to Lowest”, I ensured to include only articles with a high quality, the highest impact factor or written by influencing researchers on this topic. Relevant literature which laid the foundation for later research was also considered. I used 25 articles about “Science and Technology Parks”, 30 articles about incubators, 21 articles about accelerators and 35 articles about performance evaluation.

Detailed information about the literature search criteria and amount of chosen articles for the thesis can be found in the appendix.

Due to the lack of literature about business accelerators, I decided to consider new published literature without a significant impact factor to complete the literature research.

2.1 Science and Technology Parks

2.1.1 Definition and Purpose

Since the creation of the Science and Technology Park model during the 1950er years, many studies have been conducted and various terms were used by the scientific community to describe these facilities. There is no universally accepted definition, hence the term describes similar developments, such as “Innovation Centre”, “Business Park”, Technology Park”, “Science Park” and “Research park”, etc. (Colombo & Delmastro, 2002; Hansson, Husted, & Vestergaard, 2005; Löfsten & Lindelof, 2001; Löfsten & Lindelöf, 2002; Macdonald, 1987; Storey & Tether, 1998).

The initial motivation to develop the concept of science parks was the suggestion of many researchers, that firms located in associations are more likely to seek and trade information from outside sources such as universities, research institutes and other types of companies (Löfsten & Lindelöf, 2005).

Storey and Tether (1998) define the STP with following roles:

- Enabling commercialization of research ideas through academics at the local university
- Providing accommodation for well-established business, who want to profit from the near location to a university to facilitate research links with individuals or departments
• Providing high prestigious accommodation to new or established small businesses which develop elaborated technologies. Fostering the development of these companies by enable them to benefit from close interaction with the university, other businesses at the park or by using managerial services provided by the park (Storey & Tether, 1998).

Over the last 20 years, STPs developed into a place where companies, academics, students, business developers and experts from the industry get together, mingle and interact. This change also reflects in the newer definitions of STPs. According to Chan and Lau (2005) the term in past studies is interchangeably used for property based initiatives which:

• “has formal and operational links with university or other higher education institution or major centre of research;
• is designed to encourage the formation and growth of knowledge-based businesses and other organisations normally resident on site;
• has a management function which is actively engaged in the transfer of technology and business skills to the organisations on site.”(Chan & Lau, 2005, p. 1216)

The often-mentioned important link between companies and higher education institutes could include the transfer of human resource and transfer of knowledge or technologies.

The International Association of Science Parks (IASP) extends that definition by adding the focus on the environmental effects of STPs. The facilities also aim to increase the wealth of a community by fostering the innovation culture and competitiveness of on-site businesses and cooperating institutions, by stimulating knowledge and technology transfers between companies, universities, R&D institutions and markets.

By providing this value proposition a STP creates a territorial system of small and medium sized companies, building a cluster with opportunities to network, using new production technologies and local inter-firm linkages (Tan, 2006). For most STPs the objective is to provide a supportive infrastructure to young firms. New companies often encounter a resource gap and are in need of technical, logistical and administrative support to bridge that deficit. This measures enable young ventures to enter competitive markets and start to grow (Chan & Lau, 2005).

Since STPs exist, there is also the concern about the overall performance of these institutes. Several studies and researches tried to evaluate the STP concept. Substantial value promises as links between academia and local companies were often criticised in scientific literature. Other factors like the employment of academic personnel, research projects or cooperation with universities were not notable different between on- and off-side firms (Colombo & Delmastro, 2002). According to Bakouros et al. (2002) and the research on Greek STPs, the interaction, networking and synergy between on-side companies were limited and research synergies were not existing. An establishing role of networking relationship between researchers and STPs was not found in recent studies (Hansson et al., 2005).

The negative results of many studies can be explained by the fact that STPs have to take many different interests and needs of their stakeholders in consideration. Entrepreneurs are
looking for business support and mentoring, universities want to commercialize their research outcomes and large businesses try to use STPs for short-term project connections (Hansson et al., 2005). The only notable effect of STPs on on-side firms is the established informal contact between tenants and academic personnel, which results in the shared use of university facilities such as libraries, laboratories or conference rooms (Colombo & Delmastro, 2002).

The most used comparison to measure the effectiveness of STPs is to compare firms located at a STP and off-park firms. On the one hand, Westhead (1997) claimed the insignificant difference of new product or service launches to existing customers or new markets between on- and off-park firms. On the other hand, a research about park located companies in England showed a consistently higher growth rate than companies, that weren’t located at a STP (Westhead & Storey, 1995).

It can be concluded that the scientific community is divided about the effectiveness of Science and Technology Parks in enabling long-term linkages between different stakeholders. Phillimore (1999), who criticizes the evaluation of STP performance outcome with linear frameworks, suggests more complex frameworks for research. Due to the various researches on the performance of STPs, facilitators used that knowledge to increase the performance and adjust the value propositions. The various critic also led towards the development of new STP models, evaluation of performance factors and new programs to increase entrepreneurship are created.

2.2 Incubators

2.2.1 Definition and Purpose

Since the establishment of STPs during the 1950er years, the search for new models to foster innovation and development continued. Driven by a rapidly changing global business environment, new technology based firms (NTBF) became an important factor for economic growth in the world (Sung, Gibson, & Kang, 2003). These firms often experience a high failure risk in the early stages of the venture, because they don’t have access to resources they need to survive. According to the OECD (2002) the start-up failure rate is very high; every third start-up fails before the second year of existence. Up to 60% don’t survive until the seventh year. This so called “liability of newness” is a major reason for the development of business incubators (BI) (Schwartz, 2009). This challenge and opportunity is faced by BIs in taking investment risk, as well as entrepreneurial risk (Carayannis & Zedtwitz, 2005). The concept of BIs is considered to help young firms through the difficult early stages of their existence and to reduce the risk of failure. They provide an environment, designed to create and boost the development of companies (Aerts, Matthyssens, & Vandenbempt, 2007; Bruneel et al., 2012). BIs need to have developed programs, including courses and a defined process. Only a limited number of new ventures are accepted in a BI, so that the incubator staff can focus all resources on the most promising companies (Aaboen, 2009).
BIs support new ventures and help them to become self-sustaining, competitive and thriving companies. By offering valuable resources to young firms like physical working space, laboratories and research equipment etc., the BIs became widely popular during the 1980s (Bruneel et al., 2012). Their value proposition changed over time, when other barriers for new ventures were identified. In the following decade, many BIs added networking opportunities, business development and management services to their portfolio to also foster the learning process of new firms (Bruneel et al., 2012). Business developers or knowledge workers, which are employed by the BI, can provide support to the tenants. They have different backgrounds, specializations and experiences. The business developers can also give advice and guidance on strategical and operational level. The literature noticed a shift in BI activities over time, from a facility and administrative service focused approach to an amplified focus on business development and support (Bergek & Norrman, 2008). As active coaching in combination with training measures helps firms to avoid common errors and mistakes in the early stage of business creation, many BIs increased their effort in providing this services to tenants. This enables young firms to make more profound and faster decisions, resulting in better firm performance (Bruneel et al., 2012).

Besides other resources, a main factor for NTBFs failure is the limited access to finance. Banks are often reserved to give credit to new businesses, due to the lack of technical expertise to evaluate the business ideas in high-technology sectors. Also, banks fear the high risk of investment in NTBFs. BIs can close the financing gap due to their experience with complex technology projects and provide new ventures the necessary access to finance or support them with network to acquire their own investment (Colombo & Delmastro, 2002). Early stage investors like business angels or venture capitalists are often within the BIs network, which helps tenants in their search for capital. Venture capitalists play an important role in the professionalization of ventures, by supervising and influencing the firms they invested in (Bruneel et al., 2012).

How long a company stays in the incubator program, depends on the individual firm and their progress. After three to five years, the tenant companies are expected to leave the incubator (Schwartz & Hornych, 2008b). A difficult task for most tenant firms is to grow independent of the provided services by the BI. As they rely a long time on the support of others, the young firms have to mature and build their own credibility apart from the BI and be financially viable (Mas-Verdú, Ribeiro-Soriano, & Roig-Tierno, 2015; McAdam & McAdam, 2008).

However, Schwartz (2009) agrees with the critics of BIs, who state that the supporting mechanism of BIs to provide long-term survival, keeps companies alive that would have failed under market conditions otherwise. The effect of long-term survival can be seen in a study by the European Commission (2002). They identified a significantly increased survival rate of up to 90% until the fifth year of existence for business incubator tenant firms (Aerts et al., 2007). This is a result of over 900 BIs across Europe, which generate over 27,000 new jobs every year (Ratinho & Henriques, 2010).

Due to the similarities of the value propositions between BIs and STPs some researchers started to use both terms as synonymous and only differentiated between incubation stages
of the firm’s development (Löfsten & Lindelöf, 2005). Nonetheless, many researchers distinguished that BIs mostly focus on the early and middle development stage of a business and STPs mostly target mature and stable firms (Bergek & Norrman, 2008).

The incubation effect of STPs or BIs as shown in Figure 1 consists of the combination of technological expertise and management support. An BI provides both success factors for new ventures. In contrast, the STP usually only provides technological support structures and no management support. The predecessors of BIs often only focused either on the technological or the management aspect (Aerts et al., 2007). As BIs are defined by the mentioned aspects, they can take various forms and specializations.

2.2.2 First and second generation of BIs

As the research states, BIs have changed over time (Bollingtoft, 2012). The first wave of BIs (till 1980) started offering physical working spaces and offices to potential new firms, aiming for economical restructure and job creation. The BIs expanded their offered services to provide concrete soft skill training, as they realized that new firms lack experience and knowledge in areas as analysing and management (Bollingtoft, 2012; Mian, Lamine, & Fayolle, 2016; Soetanto & Jack, 2013).

It is not surprising that BIs and STPs in the first generation are mentioned in the same context, as their value proposition is very similar. Nonetheless, BIs target newly created ventures or facilitate the creation process as well as supporting them throughout the early stage of business existence, while STPs aggregate ventures in their facilities and offer supporting business services. The synergy between both types of initiatives lead to a close cooperation, as BIs potentially incubate new firms for the STPs (Bruneel et al., 2012; Ratinho & Henriques, 2010). Studies showed that tenant firms of first and second generation were mostly mature and stable companies with a constant revenue stream. This was due to the initial business model by STPs and BI of hosting firms who could afford the charged rental fees (Bruneel et al., 2012).
2.2.3 Third generation of BIs

Throughout the last decade, third generation BIs developed and adjusted to the new demands of companies. The new generation started in the late 1990’s and was mainly focused on companies in the information and communication technology branch. (Bøllingtoft, 2012) Tenants in third generation BIs are younger, smaller and often have no stable revenue stream, in contrast to first and second generation BIs. These findings suggest a change in the selection criteria of modern BIs. It shows also the stronger focus on starting up new ventures within the BI (Bruneel et al., 2012).

2.2.4 Models

The literature about BIs provides many ways of characterizing and defining incubator models. Researcher have not provided a consistent and generally accepted definition of different incubation models yet. The classification is also depending on geography, as literature about incubators in the United States differs from incubators in Europe (Barbero, Casillas, Ramos, & Guitar, 2012). For example, in Germany exists an own model called “Technologie- und Gründerzentrum”, combining different incubation models but is nowhere else found (Schwartz & Hornych, 2008b). This discrepancy shows how BIs can differ, as every BI is unique in its own ways. Still there are certain characteristics which can be applied to most BIs.

According to Grimaldi and Grandi (2005) there exist four different groups of BIs: “Business Incubation Centers (BICs), University Business Incubators (UBIs), Independent Private Incubators (IPIs), and Corporate Private Incubators (CPIs).” (Grimaldi & Grandi, 2005, p. 111). Non-profit incubators (BICs, UBIs) are set up by governmental authorities for regional development. Profit-oriented incubators (CPIs, IPIs) work towards the goal of generating profit with the tenant firms incubated in the institution.

The author groups the different BIs in two models. On the one hand (model 1), BIs focus their services on providing tangible assets and goods. On the other hand (model 2), private incubators direct their services towards provision of finance and high value assets, which are short-term oriented. UBIs often show characteristics of both models and can be seen as a hybrid (Grimaldi & Grandi, 2005). Alternativ Zedtwitz (2003) suggested five categories of
incubators, that are based on different criteria: Independent commercial, regional business, university, company-internal and virtual incubators.

The literature identified factors that can help to explain differences between incubation models. Factors like the incubation period reflect on the period of time a BI is able or willing to host its tenant firms. Criteria like source of revenue, offered services and management teams can be used to differentiate between the BIs (Grimaldi & Grandi, 2005). This variety of different definitions for incubator models, explains the struggle of many researchers to develop a generally accepted framework for BIs. The already mentioned definitions where based on factors like their finance structure, provision of assets or their field of action. The following figure by Bergek and Norrman (2008) categorizes incubators by their internal factors like the selection process of tenant firms.

<table>
<thead>
<tr>
<th>Model categories</th>
<th>Selection</th>
<th>Business support</th>
<th>Mediation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>Idea and picking-the-winners</td>
<td>Major involvement (shares and/or participation in board)</td>
<td>Technological innovation system</td>
</tr>
<tr>
<td>Category 2a</td>
<td>Idea/entrepreneur and picking-the-winners</td>
<td>Programme based, incubator initiated</td>
<td>Regional innovation system</td>
</tr>
<tr>
<td>Category 2b</td>
<td>Entrepreneur and picking-the-winner</td>
<td>Programme based, incubator initiated</td>
<td>Regional innovation system</td>
</tr>
<tr>
<td>Category 3</td>
<td>Entrepreneur and picking-the-winner</td>
<td>Loose/on demand, entrepreneur initiated</td>
<td>Regional innovation system</td>
</tr>
<tr>
<td>Category 4</td>
<td>Idea and picking-the-winners</td>
<td>Programme based</td>
<td>Cluster</td>
</tr>
<tr>
<td>Category 5</td>
<td>Idea and survival-of-the-fittest</td>
<td>Loose, entrepreneur initiated</td>
<td>Local</td>
</tr>
</tbody>
</table>

Table 1: Incubator model categories, adapted from (Bergek & Norrman 2008, p. 26)

Bergrek and Norrman´s suggest to take different aspects into account to specify between BI models. It can be discussed if the factors “selection” and “business support” are applicable to distinguish BIs, as every BI is unique in its structure on resources. Therefore, I rather suggest to consider models, that take the BIs goal and business model into account, e.g. models by Grimaldi and Grandi (2005) or Zedtwitz (2003). For further specification and additional refinement can the model by Bergek and Norrman (2008) be used.

The literature showed that many BIs tend to specialize on certain technological fields. By doing that the facilities want to create a clusters with firms that have something in common
(Schwartz & Hornych, 2008b). This is also reflecting in many case studies by Chan and Lau (2005), which revealed that tenants must be selected carefully within a sector to enable the creation of knowledge and technical resource exchange and sharing. This fact matters for the literature, because many STPs integrated incubator programs in their facilities to create synergies of their network, their on-site companies and the incubator tenants to create knowledge clusters in certain sectors. The BI became for STPs a necessary tool to create linkages between their stakeholders, combine their value propositions to foster entrepreneurship and recruit incubator firms as new on-site companies (Löfsten & Lindelöf, 2005; McAdam & McAdam, 2008). For BIs the connection to STPs is beneficial as they have close connection to universities, which often host venture idea-, business plan competitions or other events aimed at students to foster engagement in venture creation and eventually get accepted in the BI. Incubators also actively involve students in early-stage idea creation, evaluation or business development (Lundqvist, 2014).

It can be concluded that now, in a time of the third wave of incubators, which roughly started in the 2000’s, a multi-purpose conglomerate emerged. It consists of STPs, specialised BIs, innovation centres and enhanced access to resources and accelerators, to expand the entrepreneurial ecosystem (Mian et al., 2016).

It can be seen, that the incubation concept further evolves and new models develop. Researchers found various ways of distinguishing between the models and try to take different aspects into consideration (Grimaldi & Grandi, 2005; Mian, 1994; Zedtwitz, 2003). By investigating the performance of this models, researchers found influencing factors on the outcome of the program, which resulted in the adaption of practices and creation of new models (Chan & Lau, 2005; Mian, 1997). By understanding the needs of stakeholders and assessing the concepts, the efficiency of this models increased and BIs got more successful.

2.2.5 Accelerator

As previously presented, BI models evolve constantly and will further change over the next decades. A new model, introduced 2005 in Cambridge, Massachusetts, is the “accelerator”. Under the name “Y Combinator” the first accelerator moved and established itself in Silicon Valley. Today, up to 2000 accelerator programs exist worldwide and the number is constantly growing. These programs have supported approximately over 3.800 ventures until the year 2013 (Pauwels et al., 2016). The accelerator is an institution that tries to accelerate the venture creation process by providing incubation services, as well as education and mentoring. The most significant difference to a normal BI is the limited duration of the accelerator program and the intensive mentoring of tenant firms. Instead of one to five years in a BI, the accelerator only offers two to six month programs (Cohen & Hochberg, 2014; Pauwels et al., 2016).
Accelerators not only differ from BIs by duration, as Table 2 shows, but also by the program structure. They offer the possibility for investment and create a competitive environment for tenants by building groups in co-working spaces. The mentoring of tenants gets intensified by scheduled seminars and meetings. Participating entrepreneurs generally are in the very early stage of their business creation and the program aims to foster the development process and accelerates it as much as possible.

The opportunity for new ventures to establish contacts to former entrepreneurs, angle investors, venture capitalists or corporate executives is an important service provided by accelerators. Furthermore, they prepare young entrepreneurs for public pitch events, where the tenants pitch in front of a large number of investors (Mian et al., 2016). Many accelerators provide small seed investments for their tenants in exchange for a minor equity stake (Kohler, 2016).

<table>
<thead>
<tr>
<th></th>
<th>Accelerators</th>
<th>Incubators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>3 months</td>
<td>1-5 yrs</td>
</tr>
<tr>
<td><strong>Cohorts</strong></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Business model</strong></td>
<td>Investment; non-profit</td>
<td>Rent; non-profit</td>
</tr>
<tr>
<td><strong>Selection frequency</strong></td>
<td>Competitive; cyclical</td>
<td>Non competitive</td>
</tr>
<tr>
<td><strong>Venture stage</strong></td>
<td>Early</td>
<td>Early, or late</td>
</tr>
<tr>
<td><strong>Education offered</strong></td>
<td>Seminars</td>
<td>Ad hoc, hr/legal</td>
</tr>
<tr>
<td><strong>Venture location</strong></td>
<td>Usually on-site</td>
<td>On-site</td>
</tr>
<tr>
<td><strong>Mentorship</strong></td>
<td>Intense, by self and others</td>
<td>Minimal, tactical</td>
</tr>
</tbody>
</table>

Table 2: Summary of differences, adapted from (Cohen and Hochberg 2014, p. 9)
Pauwels et al. (2016) provide a newly assessed model (figure 3) of a typical accelerator structure. The focus is mostly on providing mentoring services and training programs. The selection process is restrictive and the funding structure focuses on small investments. According to Pauwels et al. (2016), accelerators are less focused on connecting venture capitalists with their tenants but are more engaged with business angles and small-scale individual investors. Due to the sinking costs for experimentation and implementation of technological projects, early-stage start-ups are often in no need of extensive starting capital through venture capitalists. Pauwels et al. (2016) selected six characteristics to conduct their study about accelerator models. They identified the factors of upfront investment, time-limited support and intensive mentoring, a competitive application and selection process, grouping of start-ups in cohorts or batches, focus on small teams and periodic graduation with investor participation. The study identified three different types of accelerators:

- The “ecosystem builder”

This type is typically set up by corporations, that try to create an ecosystem around the company including all stakeholders. This accelerators often offer no investment to the tenant companies but help them by providing an exclusive network to get connected with potential customers (Pauwels et al., 2016).

- The “deal-flow maker”

This type of accelerator receives investment from business angels and venture capitalists, to identify promising investment opportunities. The accelerator offers small investments to its start-ups for small equity stakes. The selection criteria often prefers ventures, which already passed the early-stage development (Pauwels et al., 2016).
• The “welfare stimulator”

This accelerator is often under governmental ownership and its main purpose is to stimulate the start-up creation and foster the regional economic growth. The “welfare stimulator” selects ventures in a very early-stage development phase. These ventures require more extensive mentoring and workshop activities. The accelerator provides mentors with experience in business development or have expertise as consultants. The financing aspect often is optional for promising ventures (Pauwels et al., 2016).

Due to the limited timeframe, accelerators plan their programs often on certain themes rather than being generic (Pauwels et al., 2016). Nonetheless, accelerators have synergies with other institutions, such as STPs and their close connection to universities and research facilities deliver the platform to recruit young entrepreneurs to the accelerator programs. It is also possible to feed tenant ventures from the accelerator program into the BI program and from there into the STP facilities (Ratinho & Henriques, 2010). Today accelerators pass through the same development as incubators decades earlier. They have diversified into special industries, targeting different kind of ventures (Cohen & Hochberg, 2014). It becomes visible that the accelerator continues the same way of development as incubators.

When different models are discovered and described, researchers can start identifying influencing criteria for the performance of accelerators and set them into relation to the various characteristics.

2.3 Performance evaluation

From early on, it was important to identify different criteria to assess the performance, success or outcome of STPs or BIs. Many researchers conducted studies to identify various factors for performance outcome in this programs (Colombo & Delmastro, 2002; Mian, 1997; Schwartz & Hornych, 2008b; Smilor, 1987; Westhead, 1997). Smilor (1987) formulated ten factors for effective management of incubators: “on-site business expertise; access to financing and capitalization; in-kind financial support; community support; entrepreneurial network; entrepreneurial education; perception of success; selection process for tenants; tie to a university, and concise program milestones with clear policies and procedures.” (Smilor, 1987, p. 148).

For example, the identified factor of “entrepreneurial network” described the necessity for a complex and diverse network of relationships. Having a strong network increases the access to opportunities and ultimately lead to a greater chance of success for a new venture. The supporting network can be created by incubator tenants, consultants and other key individuals. “Entrepreneurial education” is seen as critical factor, as entrepreneurs have to become independent of the incubator at the end of the program. Therefore, they need relevant knowledge to deal with problems during the venture life. Education helps entrepreneurs to do successful business outside the protected environment of the BI. The educational contribution of BIs can be formal with a structured program or informal by interaction or discussions. Educational progress through peer interaction is closely linked to the “entrepreneurial network” and can be actively facilitated by the BI (Smilor, 1987).
The literature provides various other measures to identify the incubator performance outcome for tenants. Researchers formulated five categories to measure the performance of ventures in incubator programs. Sales growth, employment growth and employment generation cost are defined as the most noticeable factors (Siegel, Westhead, & Wright, 2003). Participation in R&D, input of R&D and output of R&D are also identified as variables for incubator performance. This factors are linked to number of patents, R&D spending and sales or the total number of researchers in the firm (Colombo & Delmastro, 2002; Westhead, 1997). Factors like efficient networking through R&D activities are also understood as performance outcome for the incubation process (McAdam & McAdam, 2008; Mian, 1997; Schwartz & Hornych, 2010).

The identified criteria can be grouped in complex models with a large scope, complex models based on R&D measures, simple models with several measures and one measure models (Barbero et al., 2012). Due to the BI variety, researchers concluded that general models are not valid for every BI, as they differ to much in different characteristics and specialisations. It was necessary to formulate different performance evaluation criteria for different incubator models. Main (1997) specified the overall success criteria in a framework for university technology business incubators (UTBI) more in detail. Literature states that UTBIs mostly contribute to the nurturing of NTBFs. Despite the controversy about the level of involvement, researchers agree on the important role that universities play in the creation of NTBFs (Mian, 1997). Therefore is the combination of incubators with STPs quite common, as they provide the linkage to universities and academic knowledge. The UTBI evaluation framework was created by using the existing BI literature, verifying the criteria and combine the knowledge with universities involvement in business development support. The model provides three different performance dimensions: “Program sustainability and growth”, “Tenant firms survival and growth” and “Contribution to the sponsoring university’s mission”.

1. Performance Outcomes

*Program Growth and Sustainability*
- Program profile (growth in budget, space, facilities, services, tenants and staff)
- Presence of a complementing research park facility (yes/no)
- Presence of a recognized advocate(s)/champion(s) (yes/no)
- Share of operational budget supported through internal sources (% share)
- Level of funding received from key donors including state, industry, university ($)

*Tenant Firm’s Survival and Growth*
- New firms created (graduation rate)
- Tenant firms’ survivability (ratio of survivors to discontinuances)
- Tenant firms’ sales growth (% annual growth during incubation)
- Tenant firms’ employment growth (% annual growth during incubation)

*Contributions to Sponsoring-University’s Mission*
- Salience of technology-based clientele (percent NTBFs)
- Impact on university’s teaching and research (negative or positive)
- Training in entrepreneurial skills—students, faculty (number)
- Students/graduates hired by tenants as employees (#, nature)
- Consulting relationships between university faculty and tenants (#, nature)
- Impact on university’s prestige/public image (media coverage, visitors)
- Impact on enrollments, donations, property value, equity/royalty income (#, $)
- Entrepreneurs originating from the university community (number)
- Tenant employees enrolled in courses/seminars at the university (number)
- Entrepreneurs serving as adjunct faculty/researchers (#, nature)
- Other: relationships with public econ dev agencies/business leaders, etc (qualitative)

*Community-Related Impacts*
- Tenants’ and graduates’ sales, revenues, taxes, export ($ value)
- Tenants’ and graduate’s employment (number, nature)
- Other: conglomeration effects, innovation environment etc. (qualitative)

Figure 4: Components Identified for Assessing and Managing UTBIs 1 (Mian 1997, p. 281)

The framework takes qualitative and quantitative measures into consideration to assess and manage the performance in UTBIs and increase the effectiveness and outcome of the programs. Nonetheless, the framework does not provide insights on the micro-level of the incubation process such as good communication, influences on motivation, teamwork and rivalry, decision making processes etc. and other social impacts (Mian, 1997).

Building upon that knowledge, newer studies revealed that trust building measures between BI tenants in the BI network is also a success factor for BIs (Schwartz & Hornych, 2008b; Tötterman & Sten, 2005). Chan and Lau (2005) found out, that tenants in specialized BIs are more likely to network and exchange knowledge. Schwartz and Hornych (2010) disagreed with that finding, as they couldn’t find evidence for an advantage of specialized BIs for internal networking.

For many researchers the criterium of firm survival became the most researched factor for performance outcome of incubator programs in the recent years (Aerts et al., 2007; Siegel et al., 2003). As it was stated, the main goal of BIs is to foster the venture development and create stability for this ventures. This makes long-term survival one of the most prominent performance outcome factors. Nonetheless, assessing a BI only with the criteria of tenant-survival rates, doesn’t consider the post-graduation phase of an BI (Schwartz, 2009). Becoming independent of the BI is a difficult task for many firms and their ability to survive without the support only shows over a certain period of time (McAdam & McAdam, 2008). That’s why the literature also extended the research on the post-graduation phase of ventures.
One of the most important but overlooked factor for the evaluation of the BI performance is the goal assessment (Lee & Osteryoung, 2004). All the defined criteria by the literature can only be assessed correctly if the initial goal of the incubator is considered. BI performance or success is depending on the correlation of expected outcome and actual outcome. The different models of BIs are therefore essential for evaluating the BI performance. Only a few studies have considered setting the outcomes into relation to the BI goals (Bergek & Norrman, 2008; Mian, 1997). The fact, that no BI is alike makes it especially difficult for researchers to draw conclusion which are applicable to other BIs, as every BI has its own agenda and long-term goals. As previously shown, factors like organisation, structure and business model are impacting the overall goals of a BI.

![Evaluation Model](image)

Figure 5: Evaluation Model (Bergek und Norrman 2008, p. 22)

A study by Barbero et al. (2012) showed that BI performance, using the known criteria, differs depending on the archetype, e.g. the ones introduced by Grimaldi and Grandi (2005). Therefore, it is worth discussing the validity of the mentioned criteria by the literature for all BIs. First, the literature showed that no BI is like another and various models and forms exist. Bergek and Norman (2008) concluded that regardless whether the incubator is profit or non-profit orientated, there are two main types of goals that apply for all incubators and were already mentioned in Chapter 2.2.4. BIs either foster the regional economic development by facilitating the start-up of new ventures, increasing their survival rate and train entrepreneurs or they stimulate NTBFs (Bergek & Norrman, 2008). This shows, that research on BIs performance outcome is still incomplete and changing models make it necessary to continuously review existing knowledge and contribute new insights to the literature.

How important the assessment of performance outcome for the development for BIs is, can be seen in different studies, e.g. the comparison of specialized and non-specialized BIs. Two benefits were found for sector specialized BIs compared to non-specialized by Schwartz and Hornych (2008a).

- “High quality of advisory services, premises and equipment, which benefited both the incubator (cost reduction) and the incubatees (quality of advice, tailored premises)
- Image effects of the location (media presence, positive word of mouth)” (Barbero et al., 2012, p. 889).

In understanding this critical success criteria, the researchers set a trend in the BI development and contributed to an increased shift towards specialized BIs that also resulted in better performance outcomes and finally in a stronger economic development.
I consider the model developed by Mian (1997) as one of the most complete and applicable frameworks for performance evaluation for UTBI’s, because it includes the most important criteria to assess the outcome. It gives a valid scope that can be used for most BIs with university links. Regardless, it doesn’t cover micro-level criteria that are essential to understand, manage and improve the incubation performance. The validity of other identified criteria in the literature is related to the specific BI as they cannot be applied to any BI without taking the archetype and initial goal of the program into consideration. New frameworks have to be developed and the various criteria must be assessed for each BI type.

The accelerator is a new type of incubator model and is characterized by program structural differences and displays a new generation of BIs as described by Bruneel et al. (2012). Assessing the performance and outcome criteria for this new model is essential for the development and impact of this program. It is not only important to take already identified criteria of BIs and assess their validity for accelerators but also to set them into relation with identified accelerator types and goals. Due to the newness of the accelerator model, there are no relevant studies or researches about the evaluation of accelerator programs yet. We have seen that criteria for BIs can’t be applied for every BI, therefore it is unlikely that BI criteria can unhesitatingly be applied to the new accelerator concept. The accelerator model is likely to follow the development path of incubators, whereby the studies identified different criteria, which finally led towards the adjustment of program practice to foster the successful outcome and performance.

2.4 Conclusion

Entrepreneurship is the driving motor of modern economy and society. Changing markets create huge opportunities for companies and new ventures but also create obstacles. To meet the needs for new technology based companies, STPs created an environment for entrepreneurship and development by connecting research facilities and universities with local companies to foster the commercialization of research outcomes (Storey & Tether, 1998). A lack of resources and growing hurdles for new ventures to enter the market, led to the development of BIs. Most STPs included the concepts of BIs or accommodated incubation programs, to foster regional development and create growth-oriented firms. As STPs already set the groundwork to facilitate the creation of supporting structures for business creation, the synergy with incubators programs was evident (Chan & Lau, 2005).

Regardless the critic on the STP model, the combination of STPs and BIs is still applied in many countries and is growing in other parts of the world like China, Brazil and African countries. BIs with a focus on technology ventures became a crucial element in regional development of NTBFs. Studies on its effectiveness are not distinctive and further studies are recommended by the literature (Chan & Lau, 2005).

The BI is an effective instrument for regional development but according to experts the model is often unbalanced, only targeting already developed firms (Aerts et al., 2007). Addressing that issues, new incubation models are getting developed and tested. 2005, the Y Combinator introduced the first accelerator model, which is similar to the existing incubation models but has distinctive characteristics that are significantly changing the structure and
evaluation of that model. The main difference between accelerator and BI is the limited time of the accelerator program, which is between two to six months instead of two to five years (Cohen & Hochberg, 2014). Accelerators are promising programs for new ventures providing intensive mentoring, business support and play an important role in stimulating entrepreneurship. However, due to their newness research only started to investigate the distinctive features, strategies and operations (Pauwels et al., 2016).

Researchers identified many criteria for assessing the performance and overall outcome of BIs, e.g. firm growth, survivability rates, entrepreneurial network and education. Nonetheless, this identified factors had to be set into relation to the BI’s characteristics. Mian (1997) developed a complex framework for evaluating the success of UTBIs and laid the foundation for further assessment. Researchers added various success criteria, e.g. input and output of R&D activities (Colombo & Delmastro, 2002; Westhead, 1997). Researchers agree with the identified criteria but also question the validity of the factor of firm survival as evaluation criteria for programs, as introduced by Schwartz (2009), Siegel et al. (2003) and Aerts et al (2007). I suggest to identify the micro-level influences on firm survival to effectively assess the performance of a program.

As the literature already has shown, many authors argue that it is necessary to take specific features of incubators into account, when referring to performance or outcomes (Barbero et al., 2012). This is also valid when discussing these criteria for accelerators. Researchers recommend for future studies to investigate the characteristics and success criteria for the new incubation model, known as the accelerator. This helps to lead to a better understanding of influencing success factors and will in the long run improve the program management, which will result in an increased venture creation rate and regional growth.

2.5 Research Gap

Literature has shown that the accelerator, as new incubation model, is on the rise and until now thousands of accelerators got established worldwide. The accelerator development expresses the recent shift from long-term incubation of firms towards intangible, intensive mentoring and support over a short time period (Pauwels et al., 2016). Given the newness of the accelerator model, limited research has been done on nearly all important factors, as evaluation of performance, effectiveness of the program structure, cooperation between tenants and other companies, etc. Through the literature review and taking the contrary findings of many researchers into account, it can be said that identified criteria and in-depth insights about incubation models cannot simply be applied to accelerators. The accelerator model presents a new program structure for entrepreneurs (Pauwels et al., 2016).

Literature about accelerators is incomplete but researchers started to identify different accelerator characteristics, which led to the definition of different acceleration models (Cohen & Hochberg, 2014; Kohler, 2016; Mian et al., 2016; Pauwels et al., 2016). I identified the research gap about performance and outcome evaluation in the accelerator literature. It is important to investigate the influencing criteria for the accelerator model, as identification and understanding of critical factors is essential to adjust and manage the performance of the program. The literature for incubators has shown the impact of this studies and how
beneficial the results have been for further development of the models (Schwartz & Hornych, 2008a). Therefore, a study about accelerator performance outcome criteria can be beneficial for future research and a contribution to the theory.

As Cohen and Hochberg (2014) state, the accelerator provides an interesting research field for further exploration. Furthermore, Pauwels et al. (2016) state that their research findings can serve as basis for evaluation of accelerator performance and creation of suitable success metrics.
3 Methodology and Method

This chapter introduces the methodology and method used in the thesis. It shall provide an overview on the used methods and why I used them, also it shows how the data collection and analysis was conducted.

3.1 Research approach

The aim of this thesis is to get insights in the perception of tenants and facilitators on the performance outcomes of the accelerator program that is located in a science and technology park.

I aim to explore a phenomenon, the accelerator, that is not yet examined in the literature. The literature provides two main views of how research can be conducted. The first and most used approach is positivism. As a philosophy, positivism wants to get trustworthy data by using observation, measurement and numbers. Human interest doesn’t affect the research and the researcher is independent to its study object, wherefore the researcher focuses on facts (Easterby-Smith, Thorpe, & Jackson, 2015; Saunders, Lewis, & Thornhill, 2009). In contrast, I chose the approach of constructionism for my study. This follows the interpretivist philosophy, that enabled me to investigate meanings, motivations and thoughts behind actions. I tried to understand the subjective reality of the research object to come to my findings (Saunders et al., 2009).

After reviewing the literature, I decided to follow the inductive research approach. The inductive reasoning tries to gain an understanding of meanings that humans connect to events. I did not start to develop my research design by following predetermined theories or conceptual frameworks. I chose to approach my study by collecting data, which I then relate to the theory. A problem with the inductive approach is, that the research outcomes are often not generalizable (Saunders et al., 2009).

Based on that knowledge I had to decide on a study type. The exploratory study tries to gain deeper understanding or clarification of a problem and is flexible in changing the research direction, if new insights occur. The descriptive study wants to explain specific persons, events or situations. Nonetheless, the “what” is often less relevant without the “how” and therefore descriptive studies adapt aspects of exploratory or explanatory studies. Explanatory studies are focusing on relationships between variables and try to explain them (Saunders et al., 2009). In regards to the research questions, I wanted to focus my study on the “how” and “why”, wherefore the exploratory study was mostly suited.

Depending on the research philosophy and the chosen research type, the study can be conducted with either a qualitative or quantitative research approach, regarding the type and depth of information the researcher tries to gather. For my study it is necessary to conduct qualitative research for in-depth knowledge about the research object, as described by Easterby-Smith et al. (2015). I decided to focus on the unique opinions, experiences and information that can be provided by the interviewed persons. A quantitative approach would fail to provide the necessary data about the “how” and “why” of the research topic. However,
also the qualitative research has its drawbacks. Due to the fact, that interview data is not standardized and subjective, a correlation between the datasets can be problematic (Easterby-Smith et al., 2015).

In-depth interviews can be either standardized, semi-structured or unstructured. I decided to conduct semi-structured interviews, because I had more flexibility as a researcher to address new aspects during an interview. Being able to flexibly ask questions in an interview can be useful for investigating topics I haven’t thought about before but still provides a guideline to structure my interviews with key-questions (Sreejesh, Mohapatra, & Anusree, 2014). As the focus of the study was focused on gaining in-depth knowledge about the chosen topic, I used the approach of conducting a qualitative research through interviews.

To follow the research design, I decided to conduct a case study. I chose the Science Park Jönköping (SPJ) accelerator as study object. During my study, I acted as participant observer, which is a method for collecting data in qualitative research studies. Using this method enabled me to get insights in how participants in the accelerator communicate, investigate nonverbal expression of feelings and be part of accelerator events to gather information.

### 3.2 Research Design

As there are many different definitions of case studies, the qualitative case study allows the researcher to investigate a research object or phenomenon within its context. The method looks in-depth at a single or small number of institutions, organizations, events or individuals (Easterby-Smith et al., 2015).

"Doing Case study research would be the preferred method, compared to the others, in situations when (1) the main research questions are "how” and "why” questions; (2) a researcher has little or no control over behavioural events; (3) the focus of study is a contemporary (as opposed to entirely historical) phenomenon." (Yin, 2014). As Yin (2014) stated, the case study allows to collect data about a specific research object and gain in-depth knowledge that helps to understand how people think and feel a certain way, as well as to understand why people think or feel that way.

For the research it was important to investigate the concept "accelerator" in a real-world context and get in close contact with the participants. The case study also allows to use different methods for data collection (Yin, 2014). Therefore, the single-case study was the method of choice, as I wanted to concentrate on one institution and get better understanding. As the case of a science park accelerator is a common combination of institutions, the findings of this thesis can contribute to the theory or provide insights for a certain type of accelerator. The rising popularity of STP accelerators displays the need for deeper understanding of the phenomenon, which can be informative and helpful to the scientific community. Based on the similarities between STPs, the outcome of my study can provide generalization in the specific context of the case. This contributes to the existing pool of scientific knowledge and provides a base for further research.
3.3 Data Collection

I collected primary data, mostly in form of qualitative interviews. This represents the original data, collected by the researcher to answer the research questions. I started by conducting a literature review to get an overview about existing knowledge. This knowledge foundation was used to design my study but I did not follow an existing theory or framework. Information from the internet were used, for example the web-page of the Science Park Jönköping and its specific activities, programs or events. This knowledge helped to frame the case and set the study into context. To ensure the quality of the study, data from multiple sources was gathered to include different perspectives on the research topic. I collected 10 qualitative interviews with 10 different persons that are connected to the accelerator program. The interview length varied between 31 and 50 minutes.

3.3.1 Choice of participants

As the research questions required to investigate different perspectives of the participants of the STP accelerator, I decided to divide the interviewees in three groups:

1. Facilitator of the accelerator program and employee of the STP (2 interviews)
2. Current participant of the accelerator program within the STP (7 interviews)
3. Former participant of the accelerator program within the STP (1 interview)

I chose to interview participants, who started to work on their projects within the accelerator program, a former participant that already finished the program, as well as the facilitators who are responsible for the program. Due to my personal network, I managed to interview the participants and facilitators by arranging appointments for interviews within the STP. To get access to the former participant of the accelerator program, I contacted the facilitators to get the contact details.

The choice of the participants was supposed to provide a complete perspective of all stakeholders, that actively shape the accelerator program. The participating tenants were supposed to deliver information about what they expected from the program, the former participant reflected on impressions and experiences, gathered during the program and the facilitators were supposed to provide insights and what they perceive as performance outcome for the accelerator program.

Table 3 shows an overview of the participating interviewees. Before every interview, the interviewee received information about the study. I informed the interviewee about the purpose of the research, the connected risks and guaranteed anonymity. Therefore I also ensured the protection of sensible data and information given by the individuals, to prevent harm for the interviewee (Easterby-Smith et al., 2015).
<table>
<thead>
<tr>
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<th>Position</th>
<th>Interview Duration</th>
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<tbody>
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<td>Current participant</td>
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</tr>
<tr>
<td>CP2</td>
<td>Entrepreneur</td>
<td>Current participant</td>
<td>30 min</td>
</tr>
<tr>
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<td>Current participant</td>
<td>49 min</td>
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<td>Current participant</td>
<td>33 min</td>
</tr>
<tr>
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<td>Entrepreneur</td>
<td>Current participant</td>
<td>31 min</td>
</tr>
<tr>
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<td>Entrepreneur</td>
<td>Current participant</td>
<td>32 min</td>
</tr>
<tr>
<td>CP7</td>
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<td>Current participant</td>
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</tr>
<tr>
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<td>Facilitator</td>
<td>44 min</td>
</tr>
<tr>
<td>F2</td>
<td>Science Park Employee</td>
<td>Facilitator</td>
<td>32 min</td>
</tr>
</tbody>
</table>

Table 3: Participant information

### 3.3.2 Interview design

As I managed to get access to the facilities of the Science Park Jönköping, it was appropriate to conduct face-to-face interviews with the participants. This method also gets recommended by the literature, as the personal connection to the interviewee can support the dynamic of an interview and help to understand in-depth and non-verbal communication. (Easterby-Smith et al., 2015)

In preparation of the interviews, I created an interview guide (appendix) that was built upon predefined topics. The guide included mostly open interview questions but got complemented during the interview through individual questions related to the content of the interview. The questions for current and former participants slightly differed, as the experience of the former participant was considered. Facilitators also received an individual interview guide to investigate the motivation and criteria set by the STP. Before starting the interviews, I introduced the thesis topic and explained my personal motivation for the interview to the interviewees. To follow the research design, I asked semi-structured open questions, starting with the question about the accelerator program in general to “break the ice” between interviewer and interviewee. The following questions supported the interviewee to reflect and
realize own opinions on the program and its outcome. Therefore, I started with broad questions and continued by getting more specific towards the research topic.

### 3.4 Data Analysis

Qualitative data has distinctive differences to quantitative data. First of all is qualitative data based on meanings and expressions through words. The collection of data resulted in non-standardized data, which required classification and sorting into categories. The analysis is mostly conducted through the use of conceptualisation (Saunders et al., 2009).

The audio-recorded data was transcribed by writing down the actual words that were said during the interview. Yin (2014) and Easterby-Smith et al. (2015) recommend to use data management and different tools to ensure the quality of the analysis. A well-prepared data arrangement helps the researcher to keep track of his collected data and saves the researcher time in sorting the findings. For that purpose, I used a Microsoft Excel document to sort and store my data. To prepare the data for the processing, I listed the interview questions in Microsoft Excel and sorted answers by the interviewees to the questions. I also considered answers that were covering the question in the sense of the intention of the interviewee. I continued by coding the transcribed phrases and grouping the codes to concepts. After the first round of coding I reassessed my codes and created the second order coding. I found codes like “creating mvp”, “user testing” or “iteration” that were sorted to the category “practical experience”. The category “network support” e.g. was built from codes like “knowledge exchange”, “evaluation” or “critical feedback”. Together with the category “personal development” I merged these sub-categories into the category of “entrepreneurial education”. This main category, together with “entrepreneurial motivation” and “goal realization”, were the final categories I identified. The coding diagram can be found in the appendix.

The data analysis consists, according to Yin (2014), out of examining, categorizing, tabulating, testing and recombining. By finding patterns, insights or concepts the researcher can produce empirically based findings. As the aim of the thesis is to identify the feelings and underlying opinions of the interviewees, I focused on identifying codes and patterns based on the interview material by interpreting the recorded words in the context of the case. Afterwards the codes were used to create categories, which were the foundation for my findings and contribution. To ensure the quality aspect of the thesis, an independent person also coded the interviews, to implement another perspective to the final coding and the creation of categories. After finding links or discrepancies I described my findings in relation to existing theory. In the end, I concluded my thesis by presenting my outcomes and contributing to existing literature.

### 3.5 Quality and ethics

Researchers defined different paradigms of quality for various research methods and philosophies. As the inquiry aim of a study with constructivism approach is understanding and reconstruction, the quality criteria is based on “trustworthiness” and “authenticity” (Denzin & Lincoln, 1994). The concept of “trustworthiness”, introduced by Lincoln and Guba (1985), consists of four criteria. Credibility is the confidence in the “truth” of the findings,
transferability shows that the findings can be applied in other contexts, dependability is showing a consistency of the data and confirmability displays the degree of neutrality to which the findings are shaped by the respondent and not by the researcher (Lincoln & Guba, 1985).

I used the method of participant observer to collect my data. Using this method increased the validity of my study, as the observation of the program helped me to have a better understanding of the context and case of my study. By proceeding with this method and based on my research design I followed the concepts of credibility and confirmability. As research object, I chose the accelerator of the Science Park Jönköping. The same and similar concepts of STPs can be found in various other cities in Sweden and all over the world. I enable the readers to evaluate my conclusions in different settings (Lincoln & Guba, 1985). These methods ensured the transferability of my findings. To establish dependability, the process of writing this thesis was supported by monthly meetings of researchers to discuss and evaluate the progress. I also attempted to analyse the data in a neutral way and to present the outcome with transparency. By applying the criteria of quality, as defined by (Lincoln & Guba, 1985), the study fulfils the requirements of modern scientific research.

It is essential to the researcher to prevent the study participants, institutions or companies from harm that can be caused by handling the collected data without care (Easterby-Smith et al., 2015). General key ethical factors are the privacy of participants, ethical consents of participants, maintaining the confidentiality of data and the way the researcher gained access to the data (Saunders et al., 2009). I tried to follow these principles conscientious throughout the thesis by informing the participants about privacy terms and handling the collected data with care. I decided to provide anonymity to the individuals, so they can express their thoughts without worrying of consequences.
4 Empirical Findings and Analysis

JSP, which is partly financed by the University Jönköping, the Swedish government and the municipality, was founded in 2001 and supports companies and start-ups in five main areas: Entrepreneurship, Innovation, Funding, Matchmaking, and Internationalization. SPJ provides an incubator for new ventures, where companies receive resources and business development services. Since 2016, SPJ also offers an accelerator program for entrepreneurs who want to accelerate their early-stage business ideas. For eight weeks, the participants are getting intensive mentoring, educational workshops and expert advice. The program concludes with a demo-day, where participants will pitch their business ideas in front of a jury of private and institutional investors. The accelerator program focuses on a specific business segment to provide specific support and resources. This study is addressing the accelerator program with the topic “digital business model”. The SPJ accelerator can be classified as a “welfare-stimulator” as introduced by Pauwels et al. (2016), therefore it wants to foster local entrepreneurial activities and starting up of new ventures.

4.1 Evaluation of a performance outcome

4.1.1 Goal realization

The interviews with the entrepreneurs and participants of the accelerator showed that a crucial factor for the evaluation of a successful accelerator outcome is the achievement of set goals. On the question, how the individual would define a successful outcome of the accelerator program many participants answered, that reaching a defined goal would be considered as a valuable outcome for the individual.

This finding gets displayed by the participants who answered following:

“First of all, if you review the goal that we set up in the beginning and we see how we accomplished those, that would be a huge success.” (CP7).

“When we joined, the goal was to create a running MVP […] If you manage to reach your goal it would be a success and to see the progress in the idea.” (CP6).

“If you manage to reach your goals then you are really motivated to pursue them.” (CP4).

This opinion was shared by many other interviewees like CP2, CP3 and also FP1.

Nonetheless, the questioned individuals weren’t aware of that important measure in the beginning of the accelerator program. They applied without having an end-goal in mind until the business coaches of the accelerator defined an overall goal with the participating teams.

“We went through something in the first week with the business coach, where we defined a concrete goal for the program. We wanted to have a beta-version of the project, up and running. Before joining the program, we had no expectations about the outcome. For us it was just important to make progress faster.” (CP7).

CP7 also mentioned, that progress was the initial motivation of joining the accelerator program. The participant wasn’t aware of how the progress should look like. This factor was
also found by participant CP4, who started the accelerator without a clear goal in mind, which was set up afterwards by their individual mentor. “Actually, we got the idea after we joined the program, after we talked with our mentor. Because he told us what is possible. When we applied for the program, we just wanted to work on it and putting the idea into practice. We never thought about what we want to have after the accelerator, this actually came from the accelerator itself” (CP4). The accelerator helped the participant to reflect on their project and encouraged them to define an end-goal for the accelerator program.

Setting goals also enabled participants to reflect on their idea, clarify important questions and restructure their way of working towards the end-goal. “In the beginning I didn’t really had a lot expectations but after the first kick off meeting I set some goals and questions I would like to clear up during the accelerator. To have a goal to work for and to know where I like to go is really helpful.” (CP2). It can be said, that the accelerator helped the participants to realize the importance of goals and the expected outcome from the accelerator. CP2 showed appreciation for that measure and displayed a clear vision about the next steps of their project in the interview.

<table>
<thead>
<tr>
<th>First order goal</th>
<th>Create MVP (defined by participants and facilitators)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“I would like to have a working MVP [...]” (CP2)</td>
</tr>
<tr>
<td>Second order goals</td>
<td>Test product on market (defined by participants and facilitators)</td>
</tr>
<tr>
<td></td>
<td>“[…] enter the market or at least introduce [the product] to the market, see if the market likes it or not and iterate it.” (CP1)</td>
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<tr>
<td></td>
<td>Prepare for final pitch (defined by facilitators)</td>
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<tr>
<td></td>
<td>“Also the opportunity to pitch the idea and having the small events, where we can talk about the idea.” (CP6)</td>
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<tr>
<td></td>
<td>Workshop preparation (defined by facilitators)</td>
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<tr>
<td></td>
<td>“I really liked the workshop where we went through the process of creating mock-ups and prototypes[…].” (CP7)</td>
</tr>
<tr>
<td></td>
<td>Producing mock-ups and a prototype (defined by facilitators)</td>
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<td></td>
<td>“[…] at the end having something that you can use and test like a prototype or mock-up.” (CP1)</td>
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Table 4: First and second order goals

I found two different kinds of goals, the first order goal represents the final outcome of the program and is long-term goal. The second order goals are “milestones” on the way to achieve the first order goal. Some of these goals were set up by the facilitators and some were influenced by the participants. Table 4 displays the most important goals during the accelerator program.
As the accelerator influenced the expectations of the participants by setting up the goals for the program, nearly all individuals displayed the same expected accelerator outcome. The participants were all in the early stage of their projects and their first priority for the program was to create a working prototype of their product, the so-called minimal viable product (MVP). It represents the smallest and simplest version of a product concept, that already creates customer value and can be tested in real-life conditions. CP1 expressed the wish for concluding the program by testing the prototype and collecting customer feedback. “[…] we want to achieve the goal, to have a dynamic prototype that is already working and can be used in the market” (CP1). The expectation of a tangible output can also be seen for other individuals like CP2, CP3, CP4, CP6 and CP7. “[…] I would like to have a working MVP and then actually be ready to test it on the market. [… ] I want to see how far I came in the end” (CP2). For participant CP2 is the assessment of the actual outcome with the expectations necessary to evaluate the success of the project and the accelerator performance in general.

This goal can be considered as first order goal, because all participants considered it as successful performance outcome. The first order goal is hard to achieve and presents the long-term goal of the program. Second order goals like being prepared for the final pitch or demo-day at the end of the accelerator program are closely linked to the successful accomplishment of the first order goal of creating a MVP and are mostly short-term goals. “[…] also to have the opportunity in the end to sell the idea to maybe investors or to pitch in front of the investors to collect some money.” (CP1) and the quote from CP7 reflect the importance of the pitch for the participants. “[…] Also the pitch in front of the investors is a good part of the program.” (CP7). Second order goals lead towards the achievement of the first order goal and are perceived as necessary steps by the interviewees.

Setting a first order goal that is seen as unrealistic by the individual or to ambitious can cause anxiety and demotivation for the participant as seen in CP3’s answers. The accelerator program seems to stimulate the participants to question their capability of creating a business. The program gives the individuals an idea about the entrepreneurial challenges in real-life settings. The sources for that fear can either be external, as CP3 displayed by saying “[…] I ask myself if we can deliver what is expected from us.” (CP3) or internal: “I think the main part would be that failure, in the sense of personal failure, means that after the program I have to […] ask myself, did I really put the effort in it, as I expected it to do? […] I didn’t meet my expectations.” (CP1). The choice of the first order goal is essential for the performance outcome of the project but also effects the participant’s entrepreneurial motivation by creating pressure on the individual. On the question of who set the first order goal for CP3, the individual displayed a level of anxiety. “Our coach set us the goal of creating a functioning beta version, for me personally I ask myself if we can deliver what is expected from us. […] At some point, I was afraid to realize that I don’t have what it takes to be an entrepreneur. Maybe I realize that it is too hard for me and I realize that being an entrepreneur is nothing for me.” (CP3). CP3 showed signs of anxiety in relation to the goal realization. Achievability of the defined goals seems to be necessary for participants to keep their motivation up to reach the goal and not decrease their entrepreneurial motivation. These perceptions, displayed by the individuals, set the focus on the achievability of the defined goals. “On the one hand side, the outcome should be achievable for us. […] If you manage to reach your goals then you are really motivated to pursue them.” (CP4). The achievability and realism of the goals is important.
for the individuals. The failure of reaching the expectations can cause demotivation after the accelerator program and decrease entrepreneurial intentions, as shown by CP1 and CP3.

In addition to the current participants, the former participant FP1 confirmed the importance of a first order goal. “There were goals for every workshop over the weeks but there was no overall or ultimate goal in that sense.” (FP1). The former participant FP1 reported a different accelerator program structure, compared to the current one. This program structure didn’t lead to a first order goal development by the individuals and the internal motivation to do so was not created by the accelerator. FP1 also had contact to the current participants and received information about the new program structure. “People have the goal to pitch on a demo day and everyone is busy building mock-ups and prototypes, I mean we worked from workshop to workshop but they have an overall goal which is great.” (FP1). From the experience of FP1, external driven goals helped people in the accelerator to keep their motivation up and increase their chance of investment at the demo-day.

Nonetheless, the defined second order goals of participants are highly influenced by external factors, mostly by the program structure and the facilitators. Understanding the intentions of the mentors and the type of accelerator is necessary to frame the factor of goal creation. A main goal of the accelerator facilitators F1 and F2 is to find suitable cases for their incubator program. “Hopefully some of them could suite to be part of the incubator, its more to find the way of going from the idea to the incubator and not to have a big gap between.” (F1). For the facilitators it is important to find out, if the accelerator teams are working consistently and goal orientated. They also try to evaluate the scalability of the business venture and their value to the local region. Due to the fact, that the case study object of the Science Park Jönköping is a welfare-stimulator that creates growth in the region. As long term goal F1 mentioned: “The next step would be to scale the idea and make some money. For science park in the big perspective…of course we want to help out companies to grow, then we feel successful.” (F1) It can be seen, that also the accelerator goals are influenced by the stakeholders of the science park that are providing the financial structure for the program. “[…] the main thing is growth and get more people to work, that is what our financiers want to see.” (F1). F2 relativized that statement by adding: “If a company goes through the accelerator program, it is not necessary that it ends up in the incubator program. The main goal is to create more value to the region, creating more companies and more people getting employed.” (F2). A successful performance outcome for the facilitators also includes to enable “[…] people to network within the building. Mostly knowledge is the profit for the science park.” (F2).

The facilitators of the program are the strongest influence on the second order goals of the participants, due to the program structure and personal mentoring. The first order goal is therefore dependent on the second order goals to be achievable for the participant. It is essential to combine the first order goal of the participants with the second order goals, which are influenced by the facilitators, to create a positive performance outcome.
4.1.2 Entreprenurial motivation

I found evidence that entrepreneurial motivation is a criteria for performance outcome of an accelerator program. Influencing factors on that criteria are the program structure and the individual structure. The higher the entrepreneurial motivation of a participant, the more likely is the realization of the set first order goal and therefore affects the perception of the successful outcome of the program. As entrepreneurial motivation is influenced by different aspects, the cause of increased or decreased motivation differs between participants. The interviewee’s entrepreneurial motivation within the accelerator program was affected by the personal mindset, the program structure and the definition of goals. Setting achievable first order goals requires a supporting structure, that enables the participants to follow a guideline that enhances the entrepreneurial process of the business creation.

```
resources
• mentor
• investment
• support
• workshops

Entrepreneurial motivation

program structure

individual structure

challenging weaknesses

theme
• heterogenous group
• homogenous topic

out of comfort zone
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Figure 6: Entrepreneurial motivation and influence factors

“Structure is also an important part. Normally we get most of the services from science park anyway but here in the program we also get more structure.” (CP2).

CP2 argued that the accelerator provides participants a structured way of working, to achieve the set goals. The collected data showed, that this factor is of huge importance to the individuals, as they have no experience in the process of business creation and are in need of guidance, to get the best outcome in the limited time of the accelerator program. The individuals answered on the interview question about the opportunities provided by the accelerator, that they were profiting from the structured processes, implemented by the facilitators.

“First of all [the accelerator] gives us some guide lines. We are really unexperienced in building a company or a start-up. Our mentors have some experience and knowledge about it and can support us on this journey. “
As CP4 stated, the provided structure compensates the inexperience of the participants in the process of creating a business. The matter of structure got mentioned by all participants as main factor for progress and motivation. The accelerator achieved that by giving milestones, in form of deadlines and workshops to the participants. CP6 mentioned that “[…] learning how to work with deadlines and how to achieve the deadline is useful. It’s more like a structure we learn. “ (CP6). CP7 added that they wanted their project “[…] to move faster forward.” (CP7). The accelerator helped them by “encourage us to work harder, not with pressure on ourselves but with an ‘outside’ pressure.” (CP7). The interviewee argued, that the accelerator pushed the entrepreneurial motivation by using deadlines and other measures to accelerate the project progress.

The importance of structure for accelerator performance outcome becomes evident by the answer of CP3: “as an unexperienced person or team, we could have had an approach that can harm your idea. […]By being in the accelerator, I realized that we have to put so much emphasis on how and what we are launching.” (CP3). The accelerator helped the participants to prepare, before launching a product to the market. It can be conjectured, that entrepreneurs without the suited structure to their project, take longer time to achieve their first order goal and eventually fail in reaching it. This finding gets supported by FP1, who described the importance of structure for the former participants. “[…] if you have an accelerator on tourism or traveling, then you can make a much more focused group of mentors. The accelerator should be really focused and make sure that everyone is in the same stage. […] I think that accelerators make only sense, if they are really focused.” (FP1). FP1 hinted during the interview how the structure of the accelerator influenced the whole accelerator performance outcome.

I found that the accelerator structure is mainly based on the theme of the program and the provided resources of the accelerator. FP1 mentioned the choice of mentors according to the accelerator theme, e.g. business coaches with experience in digital business for a digital business themed accelerator. The program facilitator F1 also agreed on that position and added the challenge of designing a suitable program for participants, if the program is unfocused. “The batch we had in the fall was a huge variation of ideas and a huge difference in the ideas and stages. It was good for the group dynamics, because they could help themselves out or come together with new ideas […] but it was hard for us to find a program that was suitable for all cases.” (F1). Therefore, the program structure affects also the performance outcome from the facilitators perspective. The significance of that factor is also displayed as the facilitators modified the internal accelerator process to create a better outcome of the program: “That’s why we focused on seven digital ideas now. In the fall we had huge differences with the companies and we had events that were important for some but not for all.” (F1). But only creating a program theme is not enough, as FP1 mentioned. Having homogenous projects in the themed accelerator is important but additionally are heterogenous group structures for the participants important. Having different professions, age-structures, gender and backgrounds is fostering the networking within the accelerator, according to FP1 and F1. The former participant reported that it “[…] didn’t feel like I get much inspiration from the group” and “I would have made the group more […] homogenous.” (FP1), when asked about the networking experience within the groups. Participants CP6 and CP7 state that “the more diverse a group is, the more you can learn.”(CP7). According to the group structure
CP7 shared: “[…] having the same topic is easier to share knowledge. There is more potential for synergies […]” (CP7).

That the development of structure is not only influencing factors like networking but also influences entrepreneurial motivation, shows the quote of CP7, that says: “It gives you more like an incentive to actual get more structure […] for me it’s more about getting structure in the business idea.” (CP7). CP6 mentioned that the “[…] personal motivation was to get better consistency in working on the project.” (CP6). The participants displayed a sense of commitment and internal motivation to get more structured and work towards the end-goal of the accelerator or “[…]pitch in front of the investors, which is a good part of the program.” (CP7). As previously shown are structural elements of the program, e.g. the final pitch, also influential on the entrepreneurial motivation of the participants. Participants mentioned the final pitch as a critical part to the program, as the participants get the opportunity to get in contact with investors and have the chance to convince them to invest money. From the facilitator’s side, the structure of the program is depending on the theme and resources the accelerator can offer. Having a themed accelerator helps the facilitators to tailor the resources towards a certain group and provide better service to the participants.

Besides investment opportunities and workshops, the participants identified the mentors as the most valuable resource in the accelerator. Participants perceived the mentor or coach as helpful for bridging the knowledge gap they had, to start up a company within a certain sector. “[…] I thought it’s a good opportunity to further work on the idea with mentoring and coaching, especially in the digital area, where I have no experience.” (CP2). The interviewee linked the coaching and experience of the mentor to a better outcome of the program, as it served as a substitute for the lack of own experience and displays the entrepreneurial motivation to learn from the coach. The access to mentors helped the participants to focus their business idea and work methodically to achieve the set goals, as the teams “met the coach and discussed the idea, where it is and where it should go.” (CP5).

CP4 added that “mentors have some experience and knowledge about [the project] and can support us in this journey. The second thing is also the motivation, which might be build up.” (CP4). Participants mostly related their progress within the accelerator program to the competence of the mentor, as CP7 stated: “I expected some good coaching from the mentors and developers of the science park […] Then I guess, having this kind of learning curve [is possible].” (CP7).

It can be seen, that the choice of mentors affects the entrepreneurial motivation, which is reported as an essential criterion for accelerator performance outcome. For the accelerator facilitators, this is a key element to be aware of, as F1 acknowledged. FP1 witnessed the impact of that factor, as “it comes all with the mentors and inviting different kind of people. For example, if you have an accelerator on tourism or traveling, then you can make a much more focused group of mentors as well.” (FP1). FP1’s perception is that mentors are the most valuable resource the accelerator has. The facilitators are aware of their big influence on new start-ups, as F1 showed: “Depending on what companies are in the program […] we work individually when we coach but try to find events that are useful to everyone. […] We think that every case that comes here is different and different how to coach them.” (F1). Individual support gets appreciated by participants, as individual expertise by the coaches compliment the projects, which got evident by the answer of FP1: “Every
business developer had several companies. But every developer was chosen to give the most value to the assigned project with his experience.“ (FP1). On the question, what additional benefit the participants get through the accelerator coaches, CP1, CP3, CP6 and CP7 answered that they “[…] are really happy with our mentor as be makes us good pressure. [The mentor] is really critical, which is really good.“ (CP6) and “To talk about how to proceed [with the mentor], that helps me to be on track and know what to do” (CP1). FP1 and CP3 added, that they also see the mentor in the role of a teacher in entrepreneurial thinking: “[…] If I really co-work with them I can adept and learn from them and implement their ideas in my way of working.” (CP3). Mentors influence therefore the structure, approach and way of thinking of the participants. This influences result in entrepreneurial motivation and is essential for the evaluation of accelerator performance outcome.

However, other resources offered by the accelerator are perceived as important but not with the same significance. As most of the teams set their first order goal to produce or create a tangible MVP, supporting resources are essential to reach that goal. CP4 mentioned the resource of supporting experts, in form of developers and designers, which compliments the theme of a “digital business” accelerator. CP4 rated the access and networking with this resource as highly valuable for the program. “The other thing is also the close connection to the developers, otherwise it would be hard to get in contact with someone like that. Otherwise it would be really hard and expensive for us. The resource is important.” (CP4). The accelerator has to make sure, that all resources that are required to reach the program goal, are provided by the facilitators to ensure the best accelerator outcome possible. F1 confirmed that finding, by stating that they “[…] introduce new stuff like the virus team.” (F1). The virus team is a group of programmers and designers. They solved technical related tasks for the entrepreneurs. Using this resource is necessary for the entrepreneurs to reach their set goal for the accelerator, as CP3 clarified: “The virus team for example helps the groups with coding and web pages, so you can use them for your tasks. This team can really help you, if you give them a roadmap […]. At the end, all parts get merged and then you can show investors how far you came.” (CP3).

Other resources like access to finance are perceived by the participants as valuable but were not set as end-goal for the program or defined as essential to a successful accelerator outcome. CP7 addressed the opportunity for investment as value adding: “Also the last pitching opportunity, where we can pitch for investment, will be really beneficial.“ (CP7). From all interviewees, only FP1 declared the final pitch event for investment as a first order goal for a successful accelerator outcome. Nonetheless, the other participants where having the pitch in mind as a structural element of the program. CP1 described the challenges of the program by referring to the “[…] final pitch event, where we all present our progress and how far we came. There we can get funding, so with this in mind you maybe [invest more time] for the idea.” (CP1). CP7 stated the motivational influence of the pitch event, as investors “[…] can invest money in the start-up… that’s a huge incentive for us.” (CP7). Also CP2, CP3 and CP 4 are mentioning the pitch as an instance, that is used to structure the program and influences the decision making and way of working during the program. In contrast, CP5 was also working towards the pitch event but answered on the question, if winning the pitch event is essential, by replying: “Of course it’s always nice to win something, but live goes on. I don’t think this is an issue for me.” (CP5).
Apparently, the pitch event is a huge entrepreneurial motivation for the participants and also influences the structure of the program but winning the investment is not perceived as essential for accelerator performance outcome.

FP1 addressed another influential factor for the entrepreneurial motivation. The former participant criticised the lack of individual adjustment of the program towards FP1’s individual needs. “Challenging my weaknesses more and getting me out of the comfort zone would have been nice. For example, most people had a problem with pitching, so they got out of their comfort zone, but I didn’t mind pitching. I felt that I wasn’t challenged in the same way as other people.” (FP1). The entrepreneurial motivation for participants is therefore also influenced by the individual orientation of the program towards the individual participant. FP1 communicated the wish for “[...] developing weaknesses or becoming better as an entrepreneur.” (FP1). The accelerator program is mainly based on individual mentoring regarding the development of the business venture but is obviously missing out on individual personal mentoring. This could be supported through the program structure, where individual elements address the deficits of the participants.

The aspect of entrepreneurial motivation is also displayed by the facilitators, as they want to increase the willingness to start-up businesses, unrelated to the success of the venture in the accelerator. “[...] people start their companies, some fail but they start working in another company and they have learned the process here [in the accelerator]. They maybe start their own company later and come back to the science park.” (F2). As entrepreneurial motivation also increases the chance of future growth and development of the region, it is considered as main goal for the accelerator.

It can be seen, that increased entrepreneurial motivation is a major criterion for the accelerator performance outcome. Entrepreneurial motivation is depending on influencing factors like the program structure, that is built upon the accelerator theme and the provided resources. The theme decides about the group structure and project diversity. Having homogenous project themes and heterogenous group structures is perceived as optimal for an enabling entrepreneurial setting. Resources provided by the accelerator have to match the program theme and project teams, as they are necessary to reach the first order goal. Individual elements are required to challenge participants and help them to grow as entrepreneurs and increase their entrepreneurial motivation.
4.1.3 Entrepreneurial education

I identified the criteria of “entrepreneurial education” as relevant for accelerator performance outcome. This criterion gets influenced by the factors “personal development”, “practical experience” and “network support”.

4.1.3.1 Practical experience

Participants of the accelerator program formulated long-term first order goals, that shall be reached within the time of the program. CP1 stated that having a prototype is not enough, but testing the product on the market and “[…] using it to get feedback. That’s my expectation.” (CP1). That opinion is shared by CP2: “I would like to have a working prototype and then actually test it on the market.” (CP2). CP3 and CP6 also mentioned this as a goal. They all set their goals towards the creation of a MVP version of their product and entering the market as fast as possible. Going through the process of the accelerator without reaching the defined goals and getting practical experience is not considered as a successful outcome by many participants, as CP1 clarified: “[…] it’s definitely not only experience, as I said, I want to have something in my hands, having a prototype or customers already.” (CP1).

Gaining enough practical knowledge to actually manage to reach the set goals, was a common concern for the participants. “[…] the goal was to have a platform or MVP running, where we can sell […] This is what we should do within the 8 weeks[…] I think we also can get there.” (CP6). Some participants as CP6, CP7 and CP2 where not concerned about the available time of 8 weeks but CP5 disagreed in mentioning that, “[…] the duration is to short… if you want to implement a product, that takes time. […] But I think it is not the main goal of the accelerator to have a product in the end, I think the goal is to show that you can [create a product]” (CP5). The participant felt that the first order goal was not realistically set and the focus should be more on learning and developing practical skills to reach the second order goals. CP5 also reported that the mentor
helped in creating the MVP during the process of “[...] breaking the overall idea down and say what points are the most important and what we want to start with” (CP5). The participant reported that step as the main challenge of the program, as it “was quite hard to do” (CP5). In contrast, CP3 showed high ambitions to “exploit the idea as soon as possible” (CP3). CP3’s increased entrepreneurial motivation resulted in the expectation of going through a learning process that would help them to exploit the idea and test it in the market. The participant expressed this by saying: “We want to exploit all the potential of the idea by using the accelerator. Also the motivation was the first success, this led to think further and think about having a future business. But I think the most successful outcome would be that I am more educated in the whole entrepreneurship field.” (CP3). The entrepreneurial education through practical knowledge was perceived as successful performance outcome and addition to the realization of the first order goal.

The facilitators of the program implemented that knowledge about the wish for tangible outcomes, to adjust their accelerator process to foster the practical part of the program and encourage the participants to also aim for achieving that outcome. F1 and F2 stated that they put “[...] more focus on prototyping and building things from day one and testing it on the market. [...] Last year we worked a lot with iteration but had nothing to show to the market, now we want to continue working with iteration and the market but we also want to add the value of having some real product to test on.” (F2). The facilitators reported that the program structure in previous accelerator versions was also including the creation of tangible products but introducing the product to the market and getting customer feedback was not part of it. Enabling participants to iterate the concept by testing the product on the market became more apparent as critical influence for entrepreneurial education.

That practical knowledge is also important for the facilitators was displayed by F1, who mentioned that “It’s hard to start big, to find a real MVP or start to test stuff… I think we are quite good now, learning from some cases last year.” (F1). Collecting practical knowledge is therefore important for participants as well as the facilitators. Facilitators need the experience through the participants to continuously improve their processes and learning. The facilitator F2 explained why practical experience and product creation is so essential for participants within the early stage of their businesses. Since the program is time-limited to 8 weeks, participants have to realize the need of fast progress and actually creating measurable outcomes, that can be presented to possible investors and venture capitalists. “[...] it is not only hard for us but it is hard for the start-ups themselves, as they have nothing in the moment that’s measurable. We try to educate people to collect measurable KPI’s (Key Performance Indicator) and also use that information to iterate our process.” (F2).

By implication it can be said, that creating practical experience for the participants also affects the entrepreneurial motivation. CP1 explained that factor directly: “I want to see progress, because that progress also boost the motivation more and more.” (CP1). Practical experience is therefore influencing the entrepreneurial education and partly the entrepreneurial motivation. It can be seen, that all these factors are closely connected.
### Network support

In case of getting feedback to the venture ideas, not only the customer feedback is important but also the opinion of peers and experts within the accelerator environment. CP2 described the interaction with other teams as following: "We exchange knowledge and experiences and help each other out finding information and websites." (CP2). The network between the teams within the accelerator was supporting and fostered the individual development of participants. Communication seemed to be vital for progress in the accelerator as FP1 stated: "For me it was important to get in touch with people that help me to shape the idea and to work on it and get insights. […] also seeing the other teams in the accelerator. Seeing what they do and what they think was really helpful." (FP1). Networking is therefore influencing the learning experience, as knowledge gets exchanged, tips are provided and strategies are discussed. For CP1, CP3 and CP4 the network support also extended to evaluate the venture ideas in an entrepreneurial context. CP4 mentioned that "[…] it is really vital for all of us to get in touch with other teams, where we can help others and other help us. […] Because if you work on your idea, you might think it’s good but others have other thoughts about it and give you better ideas to adjust things." (CP4). FP1 even described the long-lasting bond between groups and explained how the network is used even after the accelerator program has ended. "I tell them [former participants] from now and then about my progress and to get feedback." (FP1). Getting feedback is essential for participants to critically evaluate their concepts and create a better product. This will eventually influence the evaluation of a successful accelerator program from a participant and facilitator perspective.

The participants felt that the external network support is an important criterion for them, e.g. exchanging knowledge and learning, as they "[…] meet people that we didn’t know before and see inspiring ideas, which is really valuable for us, as we get different perspectives" (CP6). FP1 gave insights on the effect of feedback from peers onto entrepreneurial motivation of participants and the overall successful outcome of the program. FP1 recapitulated that the amount and quality of feedback influenced the entrepreneurial motivation of FP1’s former program participants. "I think for them this was a reason not to go for the idea because they maybe didn’t felt the appreciation for their project." (FP1). Negative feedback demotivated participants and influenced the decision if the entrepreneur decides to follow up on the idea and create a company. Nonetheless, getting critical and thoughtful feedback can also elevate the motivation of the entrepreneur, as FP1 stated: "[…] I also got critical feedback which was helpful. I always thought it is a good project but other people are addressing the problems you never thought of. Their feedback was the most valuable thing for me." (FP1).

Asked about the interaction between participants in the current accelerator program, participants CP3, CP4, CP6 and CP7 criticized the lack of communication and interaction between the teams. CP4 expressed the issue as follows. "I think at the moment we don’t really interact much or discussing. At the moment everyone is doing their stuff and maybe someone is answering about something." (CP4). CP5 added that "there is not a lot of communication between the groups right now, with the co-working space we have the possibility but there is no interaction right now." (CP5). It can be seen, that giving teams the opportunity to mingle, doesn’t necessary result in closer interaction and exchange. The facilitators provided a co-working space, that should have encouraged to communicate but participants were not using that opportunity. The participants reported a
stronger focus on connecting with the accelerator network, instead of the participant network. CP7 reasoned that the contacts to the mentors and experts are more valuable, as they have more experience and knowledge than other participants. “I was expecting more interaction between the teams, because we met the first three weeks regularly but lately we haven’t seen them much. So for us the network to the science park is more important than to the other teams.” (CP7). This finding got also displayed by CP5, who stated that “[…] people working in the accelerator are more useful as network than other tenants working in the accelerator. Because people working within the accelerator have the background and experience, that’s more valuable.” (CP5).

Also the facilitators recognized that issue but couldn’t name the reason for it. “I think it was more team work last year, there was a lot of help within the accelerator. I don’t know if it is the same today, but that is something that I have recognized.” (F2). CP5 recommended to foster the interaction between the teams by having “[…]a session maybe once a week, where all teams come together and not really pitch the idea but talk about it in a relaxed atmosphere.” (CP5). CP7 suggested also to have “more regular meetings every weeks, because it’s a good opportunity to get together. […] I would like to see more interactive workshops […]” (CP7).

Nonetheless, the lack of interaction was reported by participants that were in a homogenous group structure of tenants with the same professional backgrounds, similar age and gender. This leads to the assumption, that a homogenous group structure in a specialized accelerator does not lead to increased interaction between the participants. The former participant FP1 reported a heterogenous group structure in a heterogenous accelerator program without specialization. The facilitators F1 and F2 reported a better group dynamic and exchange between the teams in the former participant group. Obviously, having a specialized accelerator is not enough to foster the communication and exchange between teams but is also depending on the diversity of the group participants. The lack of interaction could therefore be a structural problem of the accelerator. Referring to a heterogenous group structure, F1 attested a good group dynamic as they “could help themselves out or come together with new ideas.” (F1).

Concluding it can be said, that the network support, either through the accelerator or tenant network, is an influencing factor for entrepreneurial education of the participants. Using this network support to get feedback, discuss, evaluate, exchange ideas and adapt is highly beneficial for accelerator participants.

4.1.3.3 Personal development

Another factor of people joining the accelerator program is the personal development aspect. This incentive is not as strong for participants as network support or practical experience but is still relevant to most. CP1 mentioned that the aspect of personal development was the initial motivation to join the accelerator program. Also CP1 appreciated the fact that the accelerator forms the skillset of the participants by being part of the program: “It is about going through the steps, experiencing the actual process of creating a business in a very short amount of time.” (CP1). Other participants even acknowledged the personal development aspect as part of the performance outcome, independent of the realization of the first order goal, as CP2 displayed. “Even if my product doesn’t make it to the market, I think the things we learned here are beneficial
for future ideas.” (CP2). The participant linked the aspect of education directly to the performance outcome by saying “[...] that it depends on your self-motivation. If you really push your idea then there is a lot support for you.” (CP2). This opinion is shared by CP3, who added: “I could learn a lot by participating in a really short amount of time and in the early stage of the project. [...] I could really use that [knowledge] to solve the tasks they gave us.” (CP3). Despite the previously displayed fear of failure by CP3, the participant rated the provided knowledge highly and also showed a link between personal development and entrepreneurial motivation.

On the question, what kind of learning the participants expected to receive, CP4 answered: “[...] we really learned how to have a good time management which will help with everything in the future. Also the persistence [to follow the idea].” (CP4), while referring to time-issues within the program for participants. CP4 mentioned personal factors, e.g. learning entrepreneurial skills of time management, professionalism, patience and persistence. These abilities are useful as they can get transferred to “[...] a normal job environment, where you need this ability[...]” (CP4). Their acquisition is perceived by the participant as entrepreneurial education and part of the performance outcome of the accelerator.

The transferability of knowledge is also rated as critical for the participants CP2 and CP5, who stated that if “[...] you have another idea in the IT-context, then you can do it on your own. You know what to do first and then you take this steps in the right direction.”(CP5). It is obvious that the personal development highly depends on the provided structure by the facilitators. As previously mentioned, the structure consists of resources, theme of the program and individual structure, which directly and indirectly influence the content of knowledge that participants will be able to learn.

FP1 and CP5 stated that the entrepreneurial education is closely connected to the performance outcome: “For me was learning a big part and sharpening the idea. It got more clear over the time and by preparing for the pitch.” (CP5). Other participants didn’t approve that opinion as they mentioned entrepreneurial education and personal development related factors as important but not sufficient for a successful program, as described above. For the facilitators is the educational aspect an essential goal and motivation to evaluate their program. “[...] for me personally its [a success] that we can do a difference for you.” (F1) and “It’s due to the close connection to the University, that we want to educate as many people as possible.” (F2). The facilitators acknowledged the importance of providing a learning opportunities for participants, due to their close link to the university and defined that as a critical factor for accelerator performance outcome.
5 Discussion

The relevant literature about incubator’s performance and outcome evaluation is widely discussed as there is no clear consents (Colombo & Delmastro, 2002; Mian, 1997; Schwartz & Hornych, 2008b; Smilor, 1987; Westhead, 1997). The accelerator, as new and specialized form of the incubator, requires to reassess existing and discuss new measures to evaluate the performance outcome.

The three main elements that were found in this study, which influence the perception of performance outcome of an accelerator program by participants and facilitators are: “entrepreneurial motivation”, “goal realization” and “entrepreneurial education”.

Goal realization

Performance and outcome evaluation in the incubator literature often refers to goal creation and attainment (Bergek & Norrman, 2008; Mian, 1997). The creation and achievement of goals is also a key element that affects the evaluation of the accelerator performance. Accelerator participants defined an overall goal for the program, for example to create a tangible outcome in form of a MVP. The definition of the first order goal was affected mostly by external factors, e.g. the accelerator mentors or the program structure. As the accelerator program only covers a small-time frame, the factor of goal achievability became relevant for participants. The non-achievement of the set first order goal would be considered as negative outcome of the program.

Similar to the goal model for incubators with university links, as described by Mian (1997), gets the performance of a program measured to the extend it accomplished the set objectives. Both, incubator and accelerator, seem to be similar in the use of goals to evaluate the performance outcome. Bergek & Norrman (2008) introduced the idea of setting the performance outcome in relation to the institutional goals. My study findings suggest that this also applies to the accelerator. Every accelerator or incubator is unique in its individual goals, depending on the accelerator or incubator type. It is necessary to take the goals of the accelerators into account, as they mainly influence the second order goal definition of participating companies. These criteria may be even more relevant for accelerators than incubators, because the accelerator takes more direct influence on the participants. It can be argued that accelerator mentors are the most influential factors for the first order goal definition, as they decide over the program structure, the theme and also influence participants directly by their coaching. The performance outcome “goal realization” is therefore mostly depending on the mentors. They are more influential than in BIs, where mentors only play a peripheral role (Cohen & Hochberg, 2014). Accelerator participants are mostly in in their early-stage of business creation and often don’t have much experience. They are in need of direction and structure, as the case study has shown. Hence, it’s important that accelerators are fostering the process of second and first order goal creation to help participants towards a successful outcome. Nonetheless, the simple realization of only second order goals is not sufficient for the accelerator program.
Many authors argue that it is necessary to take incubator specifications into account to assess the overall performance and outcome (Barbero et al., 2012). Therefore, it is also necessary to apply the criteria of categorization to the accelerator, to set the evaluation criteria into relation to the institutional context. From an institutional point of view have accelerator and incubator the same purpose: to foster entrepreneurship and create businesses. The accelerator also tries to deliver the expectations of the participants by setting objectives, creating a strategy and structuring the program towards the goal realization. As the accelerator of the Science Park Jönköping is a non-profit program and categorized as welfare-stimulator (Pauwels et al., 2016), the performance outcome of the program should result in regional growth and employment. In contrast to the BI, this objective leads to more flexibility in the accelerator program structure and the creation of second order goals, as the accelerator doesn’t rely on the financial return of shares. So, there is no need to push participating companies towards quick profit and they can invest more time to let companies develop.

Incubator literature doesn’t provide a differentiation between goals but I found a different valuation of goals for accelerators. First and second order goals seem to be highly relevant for the accelerator performance outcome but are probably not as essential for BIs. This can be due to the time-limited and structured program of the accelerator. Incubators are not in need of such a detailed structure and goal setting, as the program can take up to five years.

Entrepreneurial education

My study has shown, that participants rate the educational aspect within the accelerator program high. Experiences, as the validation of the business ideas or participation in the business creation process is for most interviewees a critical factor, to assess the performance outcome of the program. It has to be mentioned that literature about BIs also recognizes that factor for incubators with close connection to universities and classify it as contribution to the universities mission (Mian, 1997). Nonetheless it can be discussed if that factor is more relevant for accelerators. Through the focus on short term results and intensive mentoring, the accelerator of the case study has the educational aspect clearly defined as main goal, instead of by-product to other activities. The accelerator of the case study mostly contributes to the major goal of regional growth with structural and entrepreneurial education, as my interviews with facilitators have shown. This is mostly down to the fact that accelerators are providing their services in a limited amount of time and can’t set long-term goals, related to the business growth and survive rate of participating companies. This certainly applies to accelerators with close links to universities and strong relation to educational values, as the Science Park Jönköping accelerator. The facilitator’s goal is to educate participants by providing practical experience, network support and personal development opportunities to early stage business participants. It can be seen that the practical experience is the most important factor for participants, as it is necessary to reach the set first order goal. Incubators on the other hand use measurable factors according to economic and financial criteria. Factors like personal development are not seen as important by the incubator literature but it is more relevant for accelerators.
Apart from the similarities in goal realization, there is a clear discrepancy between incubators and accelerators in assessing the educational aspect. Education in incubators is seen by the literature as a by-product to reach the defined goals of fostering economic development by facilitating the creation of new ventures, increasing their survival rate and growth or stimulating technological ventures in the region (Bergek & Norrman, 2008). Through my study, it can be seen that entrepreneurial education is clearly defined by university linked accelerators as a major goal and is a valid factor to assess the performance outcome. Having the impact of educating entrepreneurs and passively strengthening regional growth, through better educated people, was seen as main factor for performance outcome by the interviewees and is clearly different to BIs in the same environment. Also, it became evident that some participants of the accelerator defined the educational opportunity as main incentive to join the program. This difference can be due to the structural build-up of the program. Accelerators, in comparison to incubators, are mostly targeting early staged ventures or teams before the venture creation (Cohen & Hochberg, 2014). This target group, combined with the limited timeframe of maximum 3 months, leads to increased importance of educational progress for participants, as they try to get as much knowledge from the program as possible. Therefore, the achievement of practical experience, in creating a product and introducing it to the market, is a major factor for the criteria of entrepreneurial education.

Network support of participants was identified as critical factor for the entrepreneurial education and also can be found in the evaluation of incubator performance. Lee and Osteryoung (2004) categorized institutional networking and networking of tenant firms as criteria. As research showed, is the network between tenants assessed as more critical towards the outcome than the tenant networking within incubators (Lee & Osteryoung, 2004). My findings showed the opposite. Participants rated the communication to the institutional resources, like mentors or investors, higher than the network to other tenants. This difference can be related to the structural design of the program. Incubators only provide mentoring or coaching in a small amount but accelerators are structured around intensive workshops and seminars and facilitate a close connection to the mentors (Cohen & Hochberg, 2014). Participants indicated a shift in the perception of network benefit between participating companies and rather prefer the accelerator network.

Another factor that is related to entrepreneurial education is the personal development of participants. Personal development is not connected to planned educational objectives as for example, entrepreneurial skills. Many participants considered the process of evaluating the business idea and practical experience as helpful to decide, if the business idea is worth proceeding. Participants appreciated the insight, that their venture idea may be a “failure”. Realizing that factor with the help of the accelerator is considered also as successful performance outcome by the participants. In contrast, incubator companies are more often in an advanced stage of the business creation or are already established as a business. Therefore is the factor of “failure” of the idea irrelevant for participants and the overall program evaluation.

It can be said, that entrepreneurial education is an essential element for accelerator programs. The insights from the interviewees led me to the conclusion, that the initial intention of entrepreneurs to join an accelerator program is different from incubator participants. The
accelerator participants expect high quality entrepreneurial education. It seemed that succeeding with a certain venture idea was less important for many participants then the actual experience of creating the venture. Having the knowledge to repeat the venture creation process, in case that an idea is not successful, is the main incentive for accelerator participants in my case. This differs significantly from incubators, where the educational aspect only plays a peripheral role.

**Entrepreneurial motivation**

The motivational factor found relevant for accelerator participants gets mainly influenced by the provided program structure of the accelerator and the individual structure towards the participants, as my study has shown. The participants of the accelerator stated that they wish for more individualized mentoring by receiving support in challenging personal weaknesses and getting participants out of the comfort zone to enable their individual development. This insight is highly relevant for accelerators, as their focus on mentoring and individual coaching is characteristic. Previous literature and studies of incubators have not recognized the need for personal individualization towards participants as influencing factor on performance outcome.

Another critical element is the program structure. The findings of my case study indicate that a themed or specialised accelerator increases the performance of participating individuals, as the resources of the accelerator can be better tailored towards a homogenous project group. This confirms studies by (Schwartz & Hornych, 2008b) and (Aerts et al., 2007), that have proven the benefits of specialised and themed incubators. Also, my findings suggest, that a themed structure leads to higher quality mentoring service, better preparation of resources and more effective design of workshops or events. Another structural factor that is not considered by the incubator literature is the factor of diversity within the group network. Nonetheless, my findings suggest that besides a homogenous project case structure also the group structure is influential on the participant motivation and outcome of the program and that heterogenous and diverse groups also lead to better networking and learning experiences by the participants. The structure of the accelerator program is also depending on the allocated resources of the program, as mentors, workshops, facilities, network and investment. Noticeable is the focus of participants in the accelerator on the provided service of mentors. Factors like facilities and investment are not perceived as main incentive by the interviewees. This confirms the increased dependence of participants on the expertise of the mentors in accelerators. For incubators however are the elements of tangible or financial support relevant, which results in evaluation criteria for R&D activities (Westhead, 1997) etc., that are not applicable for accelerators.

It can be concluded that an increased entrepreneurial motivation of the participants is considered as important performance outcome for accelerators. Similar to incubators, the accelerator performance outcome highly depends on the program structure. Having themed programs and diverse groups is beneficial for the entrepreneurial motivation and indirectly influences the goal realization and entrepreneurial education, as the entrepreneurial motivation
increases the willingness of participants to succeed. Contrary to incubators, I found the influence factor of individual structure. The accelerator is mainly based on individual coaching regarding the project, but fostering the personal development and entrepreneurial motivation through an individualized program structure was not considered by the literature yet.
6 Conclusion

The qualitative case study of the Science Park Jönköping accelerator revealed interesting insights and perceptions of participants and facilitators. The purpose of the thesis was to investigate and understand how people, that are involved in the accelerator program, evaluate the performance outcome of the program. Existing literature suggested that accelerators, as new generation of business incubators, have to be newly assessed, because existing models can’t be unhesitatingly applied to the accelerator model. This led me to the question, what differences in the perception of performance outcome between incubators and accelerator exist and why these perceptions differ.

My study showed that theoretical models for incubators, are partly valid for accelerators and can be helpful to assess accelerator programs, e.g. the factor of goal realization. Nonetheless, there are many evaluation criteria that are not applicable to accelerator programs and therefore can’t be used. Critical performance outcomes for BIs like business growth, employment rates, R&D, survivability, etc. are irrelevant for accelerators due to the short time frame of the program. Critical criteria like entrepreneurial motivation and entrepreneurial education are essential for accelerators but only play a peripheral role for incubators. Existing models therefore must be adjusted for the accelerator evaluation.

Proposition 1: Accelerator performance outcome is mainly evaluated by subjective criteria: “goal realization”, “entrepreneurial motivation” and “entrepreneurial education”.

As my study has shown, there are many evaluation criteria of existing incubator models related to measurable outcomes that can be assessed during the incubation time. Tangible or measurable outcomes are not suitable to assess the accelerator program, as often participants are not able to produce tangible outcomes in the short time frame, which are developed enough for meaningful measurement. The focus in evaluating the performance outcome has to shift towards subjective factors as “practical experience”, “personal development” or “individualization”. The accelerator focuses on individual coaching regarding the venture projects but is not considering the individual development of the participants. The program structure and educational content has to be individualized towards the needs of the participants. The short timeframe, venture creation stage and incentive of participants to join the accelerator, increases the necessity to shift to evaluation of performance outcomes from measurable criteria towards no-measurable criteria. It is therefore important to emphasize the focus on micro-level criteria to effectively assess and manage the accelerator program.

Proposition 2: The performance outcome gets influenced by micro level criteria like “practical experience”, “network support”, “personal development”, “program structure” and “individualization”.

Overall, the research questions can be answered with the presented findings and propositions. My research findings extend existing knowledge about accelerators and fill a research gap.
**Limitations**

Factors like the accelerator type, the accelerator environment and more specific limitations like study participants and selected research methods shaped the study outcomes. However, different limitations apply for my study and have to be taken into consideration, when validating my findings.

The first limitation of this study relates to the environment of the case study object. The chosen accelerator is embedded in the Science Park Jönköping environment, which has a close connection to the local university. This factor, as well as the individual persons that shape this environment, has to be considered by the reader, when assessing the study results.

Methodical limitation of the study are mostly related to the chosen research methods and analysis strategies. The choice of participants by the researcher may influence the study outcome but is not seen as a major problem, as I tried to include different perspectives by selecting a diverse group of research participants. Another limiting factor may be, that I acted in the role of a participating observer, which may influenced the interviewees unconsciously to answer differently, then they would have to an unknown person. Additionally, I as a researcher got mutually influenced by being part of the accelerator participants. As the case study is based on individual semi-structured interviews, the interpretation of the collected data depends first and foremost on the researcher’s style of empirical thinking. The coding of the data was done by myself and another independent person, to reduce the risk of one-sided perspective. Nonetheless the coding process was rather subjective, which may reflected in later stages of the analysis. The researcher has to be aware during the study that data can be interpreted differently depending on the personal mindset of the analyst (Yin, 2014).

The external validity is connected to the generalizability of the findings. The goal of the thesis was to find out how participating persons in an accelerator evaluate the performance outcome of the program. A statistical generalization of my findings is not the goal of the research design. As qualitative studies are not used for quantitative standardizations, my findings shouldn’t be used to make general assumptions. The Science Park Jönköping accelerator presents a common environment and model for accelerators around the world, therefore the external validity should be increased, as the case study object is not an isolated case that can’t be found anywhere else.

Nonetheless, it would have been interesting for the study to interview more participants from previous accelerator batches to get more diversity and to compare with the insights of current participants. The implementation of more interviews was hardly possible for me in the given time, due to time restrictions and available accelerator participants. A follow-up study on my propositions could be useful to create a generalizable contribution to the theory, wherefore a quantitative study with more accelerators and participants is recommended. Another limitation is also the identification of only three performance outcome criteria. It is likely that more relevant criteria can be found for accelerators, that were not covered in my collected data.
Based on my research findings, I propose the adjustment and extension of existing incubator models towards the mentioned aspects of accelerator performance outcomes. My findings can be seen as starting point for future research to fill the knowledge gaps and in the long-run to help accelerators to assess their performance outcomes more accurate to improve their programs and services. The literature can then be extended by offering new models and criteria, specialized for the accelerator models.

Based on the described limitations of my case study, I suggest to further investigate other accelerators with close connections to universities with quantitative methods to assess my findings in a broader sample. Additionally, it would be interesting to investigate the post-acceleration time of ventures with longitudinal studies, as my study only covered a short time period in the accelerator. Addressing my propositions of entrepreneurial motivation and entrepreneurial education, it would be useful to see how companies develop after leaving the accelerator program or if the gained experience in the program motivates and enables former participants to efficiently create ventures on their own. I further recommend to create new models on the evaluation of accelerators performance outcomes.

Overall, this thesis is a step towards understanding how evaluation criteria for performance outcome has to change from incubator towards accelerator. I hope that my contribution enables more researchers to build models and identify new requirements for accelerators to further improve the overall outcome and success of these programs.
References


Appendix

Appendix A Literature search criteria

Following the search history for the Web of Science is shown:

Search 1:
- Keywords: science technology park*
- Results: 214
- Screening: 25

Search 2:
- Keywords: science technology parks* AND “incubator***”
- Results: 74
- Screening: 30

Search 3:
- Keywords: business accelerator*
- Results: 21
- Screening: 21

Search 4:
- Keywords: TS=((incubator* AND success*) OR (incubator* AND measure*) OR (incubator* AND evaluat*) OR (incubator* AND outcome*) OR (incubator* AND result*) OR (accelerator* AND success*) OR (accelerator* AND measure*) OR (accelerator* AND evaluat*) OR (accelerator* AND outcome*) OR (accelerator* AND result*))
- Results: 183
- Screening: 35
Appendix B Interview guide

Interview guide for current tenants/(former tenants):

1. Can you please tell me about the accelerator program you´re in?
2. Why did you chose to apply for the accelerator program?
   a. Personal Motivation
   b. Initial goal of the participant
3. What are (were) your personal feelings and expectations about being part of the accelerator program?
   a. Project expectations?
   b. Just participating to learn?
4. Where do(did) you see challenges in taking part in the accelerator program?
   a. Are(Were) you concerned about some challenges within the accelerator?
   b. (How did you tackle these challenges?)
5. What opportunities do(did) you see for yourselfe in being part of the accelerator?
   a. What do(did) you expect to learn/gain?
   b. How is(was) the accelerator going to help you to reach your goal?
6. How would you personally define a successful outcome for the accelerator program?
   a. (Would you describe your program outcome as a success and why?)
7. (Which part of the program helped you the most? Which part was unefficient or not helpful?)
8. (How would you have changed the program to be more effective?)

Interview guide for facilitators:

1. Why did the Science Park decide to facilitate an accelerator program?
   a. What is the goal of the science park?
   b. Which long term goals does the science park have with the accelerator program?
2. Why did you decide to facilitate the accelerator program?
   a. What is your personal role within the accelerator program?
   b. How can you influence the structure of the accelerator?
3. What challenges do you see in facilitating the accelerator program?
   a. Where do you see flaws in the program structure?
   b. Where are obstacles that slow down the progress of the tenants?
4. Which opportunities do you see for the science park in facilitating the accelerator program?
   a. What can the science park learn from facilitating a new program like the accelerator?
   b. What can the science park learn from the participating tenants?
5. How would you define a successful outcome for the accelerator program?
   a. Would you describe the former program outcome as a success and why?
6. What changed between the last accelerator program and the current one?
a. How did you evaluate the former program?
b. How did you use the feedback to change the program structure?
Appendix C Coding structure

1st order coding: