The influence of mentorship in accelerator programs to the start-ups' growth: A case study in a start-up accelerator company

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Acknowledgement

My motivation to study a master in Management of Technology was to learn more about how technology can be used for good purposes. I am glad that with the chosen thesis topic, I learned how start-ups from all over the world are willing to solve critical societal challenges with technological innovations. Additionally, my study allowed me to see how these new ventures can learn from mentors. I hope my study can motivate young entrepreneurs to learn from experienced professionals and senior entrepreneurs are welcome to contribute with their experience to the development of new ideas.

I would like to express my gratitude to several people and organizations that assisted me to complete this master thesis project. First, thanks to the professors that are part of the thesis committee of this project for their guidance and support. They have encouraged me to improve the quality of my work. Second, studying this master was possible thanks to the sponsorship of the Ecuadorian organization that promotes education, technology and innovation, “Secretaria de Educación Superior, Ciencia, Tecnología e Innovación”.

I am lucky that during all my life, I have had the support of my parents, brother and sister. Thanks for believing in me and your support during these two intense study years. I also want to recognize some friends that supported me during this master, Ana, Leonor, Katie, Marthita who were always there to give me an advice. Finally, I would like to express my gratitude to Ruben, he was my family in the Netherlands, he supported me every day, made feel at home and gave me unconditional love.

I feel very happy to complete this project to obtain the master degree in Management of Technology. This culminates a period of my life where I learned a lot; not only about technology development and management, but also from the experience of living in the Netherlands. I hope this is the beginning of a new adventure in my life!

Executive Summary

Start-ups are new firms that aim to bring a new product or service to the market. Bringing a new technology to the market is challenging due to market and technology uncertainties. It is uncertain if the innovation will be accepted in the market and work as expected. Additionally, start-ups teams may lack financial resources and entrepreneurial experience. Technology Business Incubators (TBI) are organizations that support ventures' growth, by providing to new firms, different types of resources; such as physical, technological, networking and organizational resources. An example of TBI are start-up accelerators.

Start-up accelerators support start-ups by offering them an attractive program package that includes entrepreneurial training, mentoring, working space and access to networking events to meet potential partners or clients. Accelerators can also offer funding to start-ups, in exchange of equity. Start-ups are admitted to the accelerator programs in cohorts and take part of the program for a limited time, typically 3 to 6 months.

Start-ups that participate in accelerators can acquire entrepreneurial skills through training and mentorship offered as part of the program. Part of the accelerator's network, is a group of mentors, experienced professionals that are willing to share their experience with the start-ups' teams. Previous research on accelerators has found that mentorship is beneficial to start-ups; however, it is not clear how mentors contribute to the start-ups' growth, nor how to improve the mentoring in accelerator programs. This thesis project has the objective to provide insights to accelerator managers to improve the contribution of mentorship to start-ups' growth in accelerator programs. The research objective was achieved by examining the perceived contribution of mentorship to positive conditions for a start-up's growth in an accelerator program.

The master thesis will be conducted at a start-up accelerator company located in western Europe. For confidentiality reasons, the accelerator company needs to be anonymized. A case study methodology was chosen to conduct the empirical research. The main advantage of using this research method was that it allowed to study the mentorship deeply with information collected from different sources. First, public information about the accelerator company, start-ups and mentors was collected. Second, details about the mentoring in the last accelerator program were gathered from interviews with accelerator's staff, start-up representatives and mentors.

The assessment of the mentorship contribution at the selected accelerator program was done by confronting the findings of the empirical research with a conceptual model based on two perspectives: resource-based and stage based model theories. First, from the resource-based perspective, new firms can acquire different types of resources from technology business incubation mechanisms. Second, according to stage-based model new firms develop in stages

and at each phase they need to overcome different problems and require specific resources and entrepreneurial competences.

The results of this case study are that mentorship in the studied accelerator program was perceived to contribute to start-ups' growth, as mentors helped start-ups to overcome obstacles and acquire entrepreneurial competences. It was found that the majority of obstacles faced by start-ups are market-related. For instance, ventures had difficulties to define a proper product-market fit, validate their products and access to potential customers or partners. Mentors provided advice for the market-related obstacles, feedback about the business propositions and in some cases connect start-ups to potential clients. Regarding management-related obstacles, start-ups may lack experience managing teams and maintaining team's commitment. Additionally, start-ups usually have limited staff and may become overloaded. It was found that mentors provided advice for team management and task prioritization. Other area where start-ups can face difficulties is finances. In this study, it was found that most start-ups had limited knowledge in financial management and mentors provided some advice in this aspect.

In the reviewed theory, it was found that start-ups need to acquire entrepreneurial competences such as opportunity refinement, leveraging and championing and that the sources to obtain these capabilities can be experienced industry experts. The case study allowed to confirm that experienced professionals as mentors can help start-ups to identify opportunities in the market, integrate its internal and external resources and also can contribute to develop management skills needed to champion the venture.

The studied accelerator program was characterized by a heterogeneous group of start-ups. Start-ups were from diverse stages of growth, industry types and start-up members came from different countries. The diversity of the cohort allowed to identify some differences in the perceived contribution of mentorship to start-ups' growth based on the start-ups' characteristics. For instance, start-ups in early growth stages experience more issues related to management than start-ups in more advanced phases. Market-related issues were found in start-ups from all growth stages. Start-ups that come from other countries to the accelerator program, get insights about the local market through their mentors.

Mentors in the studied accelerator program were also from different industry types and had different interest to participate in the accelerator program. In this study, it was found that mentors with an advanced management experience can provide more feedback to start-ups related to team commitment. Additionally, some benefits were found when mentors and start-ups working in similar industries work together. In these cases, mentors could assist start-ups to solve issues based on their expertise. It was found that mentors have different motivations to participate in accelerator programs; such as helping other entrepreneurs, learning from start-ups or find investment opportunities. One possible recommendation to

accelerator managers, given the diversity of start-ups and mentors could be to match them based on interests of mentors and start-ups. For instance, this study found that a good mentor-mentee match was a start-up interested in expanding its market with a mentor with business development experience.

The study of the mentorship at the accelerator also allowed to get more insights about the mentors and start-ups dynamics. To start, matching start-ups with mentors could be difficult given the diversity of start-ups and mentors. Even if the start-up needs are properly identified and the mentor can provide the needed support, there are factors that affect the mentor-mentee relationship. In accelerator programs, start-ups and mentors may have issues to set up regular meetings. It was found that the lack of continuity of the mentoring can demotivate mentors. It was also found that having different expectations, causes disappointment and misalignment between the accelerator staff, mentors and start-ups.

Based on the results of the case study, it can be recommended to accelerator managers to set clear expectations about mentoring for all the involved actors and establish some basic guidance about communication and mentoring meetings. Additionally, mentors and start-ups should be aware that the success of mentoring depends on their interaction.

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1. Introduction to the research project

1.1. Introduction

Nowadays, the term “start-ups” is extremely popular. Start-ups are new firms that emerge in an uncertain and changing environment that aim to bring new opportunities to the market (Radojevich-Kelley & Hoffman, 2012). There is a high potential in these new firms; start-ups can generate jobs, new markets and even contribute to solve critical societal problems. However, these new firms face several challenges; such as difficulties to find funding, inexperience in entrepreneurship, misunderstanding of the target market and difficulties to reach customers (S. Cohen & Hochberg, 2014). For start-ups, it is uncertain if the technology under development will work as expected, or if the new product or service will satisfy the market needs or who are going to be their competitors (Mohr, Sengupta, & Slater, 2009). As new firms, they lack resources; such as, funding for research and product development, entrepreneurial skills to deal with the uncertainties or lack of experience in the specific industry where they are developing the technology.

Technology Business Incubators (TBI) are organizations that emerged to support innovation and technology-oriented entrepreneurial growth (Mian, Lamine, & Fayolle, 2016). The first TBI, were science parks and incubators that appeared in the 1950s in United States (Mian et al., 2016). Since the early 1980s, the number of TBI increased significantly. This can be attributed to the interest on increasing the number of new-technology-based firms, as they are considered important sources for job creation (Phan, Siegel, & Wright, 2005).

It was found in the literature that start-up accelerators are a type of technology-business incubation mechanisms that emerged mid -2000s(Pauwels, Clarysse, Wright, & Van Hove, 2016). As other TBI, accelerators offer an environment where start-ups can develop, a working space, contacts with other new ventures and access to services needed by new companies(S. Cohen, 2013; S. Cohen & Hochberg, 2014; Pauwels et al., 2016; Radojevich-Kelley & Hoffman, 2012). There are some main differences between incubators and accelerators that can be understood as advantages over previous TBI models. Incubators allocate start-ups for longer periods than accelerators, usually start-ups leave incubators when they exit or fail (S. Cohen, 2013; S. Cohen & Hochberg, 2014). In contrast, accelerators offer limited-duration programs for start-ups, usually 3 to 6 months where the new ventures receive intense entrepreneurial training, access to networking events where they can meet potential clients and partners and they could also receive funding(S. Cohen, 2013; S. Cohen & Hochberg, 2014; Pauwels et al., 2016; Radojevich-Kelley & Hoffman, 2012). Second, start-ups in accelerator programs participate a part of a cohort of other start-ups(S. Cohen, 2013; S. Cohen & Hochberg, 2014) . Accelerator expect that start-ups keep in contact after they graduate and develop alumni relations (Pauwels et al., 2016).

An important characteristic of an accelerator program package is the intense mentorship provided to the participant start-ups(S. Cohen, 2013; Radojevich-Kelley & Hoffman, 2012). In the accelerators, start-ups match with mentors (Radojevich-Kelley & Hoffman, 2012), experienced entrepreneurs that can orient the start-up teams to define their business model(Pauwels et al., 2016) and help them to overcome entrepreneurial challenges. These mentors are selected based on their expertise, experience and motivation to help the start-ups (Radojevich-Kelley & Hoffman, 2012). During the accelerator program, start-up teams meet with mentors on a regular basis (S. Cohen, 2013).

1.2. Problem Statement

Mentorship is an important component of start-up accelerators and can be beneficial for start-ups. Previous research on start-up accelerators, has found that mentorship is one of the main motivations for start-ups to join accelerator programs(Christiansen, 2014; S. Cohen, 2013; Radojevich-Kelley & Hoffman, 2012; "The Accelerator Assembly Conference: what we learned and what's next?," 2014). In a qualitative research by Christiansen (2014), where 51 start-up founders were asked about their experience in accelerator programs, more than 80% of the founders reported that the main benefits of the accelerators are mentorship and coaching received in the program. Mentorship allows start-ups to get advice and feedback from experienced professionals. Start-up founders can learn from mentors and eventually use their advice to grow their companies (S. Cohen, 2013). Mentors can also benefit from positive experiences that can be brought by the entrepreneurial spirit of start-up teams (Cohen David, 2007). In some cases, the mentors could continue working with the start-ups after the graduation from the accelerator program (Cohen David, 2007) and could also turn into investors (S. Cohen & Hochberg, 2014; Radojevich-Kelley & Hoffman, 2012).

Despite the potential benefits of mentoring in an accelerator program, some drawbacks concerning mentoring are mentioned in the literature. From the start-ups' perspective, some of the issues are: overwhelming mentoring sessions, mentor's lack of domain-specific expertise in particular markets, too much focus on technical solutions, lack of clarity of which mentor to listen, distraction with the variety of opinions (Christiansen, 2014) and too generic or inconsistent mentorship ("The Accelerator Assembly Conference: what we learned and what's next?," 2014). Additionally, research on incubators found tenant firms do not take full advantage of the advice received from mentors (S. Cohen, 2013).

A best practice for accelerators is to provide a well-organized, strong and clear mentorship (Christiansen, 2014). Accelerators managers are in charge of organizing the mentorship, they need to select the mentors, define how they match them with start-ups, on-board the mentors in the program and follow up the progress of the mentorship. David Cohen founder and co-CEO of Techstars accelerator mentions in an article(2007) that meaningful engagement between mentors and start-ups contributes to the early success of new ventures and is a positive experience for the mentors. For Cohen, mentors and start-ups need regular and effective communication to achieve this engagement. Start-ups need to be proactive to meet with the mentors, ask regularly for feedback and use the mentors' advice to add value to their venture. The same author created a "Mentor Manifesto", where he lists some characteristics and behaviours expected from the mentors such as: be Socratic, direct, good listener, responsive, committed, do not control but let the start-up's teams take their decisions, communicate with other mentors, be optimistic, provide actionable advice and have empathy.

Accelerator managers might not have clear the mentoring dynamic in their organization and could also have issues to help mentors to effectively work with their mentees (Hathaway, 2016). Accelerator program managers need to organize mentorship in such a way that that the interaction between start-ups and mentors contributes positively the start-ups' growth. Thus, it is critical that accelerator managers know how mentoring can influence the growth of the start-ups and what difficulties need to be overcome in the mentorship process. With this information, accelerator managers could make improvements in the organization of mentoring; for instance; selecting mentors, matching the mentors with start-ups or creating activities to engage the mentors with start-ups.

Based on the reviewed literature about accelerators, it is not clear how the support provided by mentors in accelerator programs influences the start-ups to grow.

1.3. Research Objective

The research objective is to provide insights to accelerator managers to improve the contribution of mentorship to start-ups' growth in accelerator programs. The research objective will be achieved by studying the perceived contribution of mentorship to positive conditions for start-ups' growth in an accelerator program.

Managerial relevance

Since, one of the most important features about accelerators is the intense mentorship, it is important to explore recommendations to improve the influence of mentorship to start-up's growth in accelerator programs. A research on this topic, can bring insights to accelerator managers on how to improve the organization of mentoring in accelerator programs.

The results of the research can be used by accelerators' managers to create better procedures to on-board mentors, match them with start-up teams, the interaction with start-ups and mentors throughout the program and the evaluation of mentors in the accelerator. Additionally, with the proposed research, start-up teams can become aware of what can be offered by the mentors in the accelerator program and motivate them to interact with them and get useful feedback from their mentors.

Academic relevance

From an academic perspective, a study of mentorship in an accelerator program will be a contribution to the literature of Technology Business Incubation (TBI) mechanisms, specifically to the seed accelerator model. First, according to several authors, the accelerator model is relatively new, thus there is limited literature about this TBI mechanism (S. Cohen & Hochberg, 2014; Hathaway, 2016; Pauwels et al., 2016). Additionally, the lack of organized data sources about accelerators has complicated the research to explore the effectiveness of accelerator programs (S. Cohen & Hochberg, 2014; Hathaway, 2016).

It can be concluded that a master thesis project that studies the mentorship in an accelerator program can contribute to the literature of TBI and provide useful information to organizations supporting start-ups.

1.4. Research Framework

The research framework is a schematic representation of the steps to achieve the research objective. It allows to see the structure of the research plan and establish the theoretical background that includes key concepts, the theoretical framework and the conceptual model(Verschuren & Doorewaard, 2010).

The research framework can be represented with its three elements: research objective, research object and theoretical framework (Verschuren & Doorewaard, 2010). In this research, the objective is to provide recommendations to accelerator managers to improve the influence of mentors to the start-ups' growth in accelerator programs. This objective will be achieved by studying the mentorship of one accelerator program, which is the research object. The theoretical framework is the research perspective to study the research object. In a research project, the theoretical framework is confronted with the research object to

achieve the research objective (Verschuren & Doorewaard, 2010). In this thesis project, the empirical observations found in the mentorship at the accelerator program will be confronted with the theoretical framework to develop the recommendations.

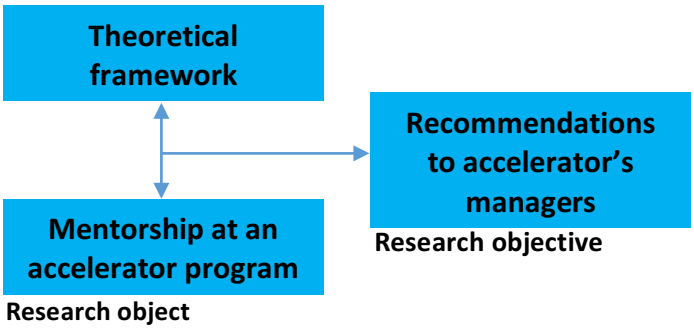

Figure 1 Thesis project research framework

The theoretical framework will be developed in Chapter 2: Theoretical Framework.

1.5. Research Questions

The research questions allow to obtain knowledge to achieve the research objective (Verschuren & Doorewaard, 2010). This project will focus on this main research question: how accelerator managers can improve the perceived contribution of mentorship to positive start-ups' conditions for growth in accelerator programs?

To answer this main question, the following central questions (1 to 3) with its corresponding sub-questions are needed:

1) What criteria can be used to assess the perceived contribution of mentorship to positive start-ups' conditions for growth in an accelerator program? As explained in the research framework, in order to study the research object, it is needed to confront it with some assessment criteria, that will be obtained by answering the following sub-questions:
   a) How start-ups grow and what obstacles do they face in their development?
   b) What are start-up accelerators?
   c) What are the objectives of mentorship in accelerator programs?
   d) How mentorship in start-up accelerator program can contribute to start-ups' growth?
   e) What type of problems can occur related to the mentorship in accelerator programs?

2) After defining the assessment criteria, it is possible to confront the research object, in this case the mentorship at the selected accelerator program with the research perspective. This will be done by answering this central question:
   How mentorship was perceived to contribute to positive start-ups' conditions for growth in the studied accelerator program?
   a) What are the objectives of mentorship in the studied accelerator program and how was mentorship organized to achieve these objectives?

b) What were the characteristics of the start-ups and mentors that participated in the accelerator program?
c) What obstacles to grow were faced by the start-ups that participated in the accelerator program? What type of support was provided by mentors to overcome these obstacles? What was start-up's reaction to this advice?
d) What type of problems were found concerning the mentorship at the accelerator program?
e) Which factors among start-ups and among mentors caused differences in the perceived contribution of mentorship to positive conditions for start-ups' growth?

3) What can be learned from assessing the perceived contribution of mentorship to positive conditions for start-ups' growth in the studied accelerator program to improve the organization of mentorship in accelerator programs?
   a) What do the empirical findings mean for the theories considered to create the conceptual model?
   b) What recommendations can be given to accelerator managers based on the problems reported related to mentorship?
   c) What recommendations can be given to accelerator managers based on the factors among start-up and among mentors that caused differences in the perceived contribution of mentorship to positive conditions for start-ups' growth?
   d) What were the limitations of the research project?
   e) What type of research could be done in the future related to this research?

Problem	**Research objective**	**Research questions**
Improve the contribution of mentorship to start-ups' growth in accelerator programs	Provide insights to improve the contribution of mentorship to start-ups' growth in accelerator programs by assessing the perceived contribution of mentorship to positive conditions for start-ups' growth in an accelerator program	Main research question: how accelerator managers can improve the perceived contribution of mentorship to positive start-ups' conditions for growth in accelerator programs? Central questions: 1. What criteria can be used to assess the perceived contribution of mentorship to positive start-ups' conditions for growth in an accelerator program? 2. How mentorship was perceived to contribute to positive start-ups' conditions for growth in the studied accelerator program? 3. What can be learned from assessing the perceived contribution of mentorship to positive conditions for start-ups' growth in the studied accelerator program to improve the organization of mentorship in accelerator programs?

Figure 2 Research problem, research objective and research questions

1.6. Research design

The research design is the logic that connects the data to be collected and the conclusions to be derived from the research to the initial questions of the study (Yin, 2009).

The research strategy is the plan for achieving the research objectives and to answer the research questions (Sekaran & Bougie, 2016). The first central research question will be answered by conducting a literature review of the core concepts of this research project: start-ups, accelerator, mentors and mentorship and it will result in the theoretical framework of this research project. In the second central research question, the research object, mentorship at the studied accelerator will be confronted with the theoretical framework obtained in the first question. The third central question, will be answered based on the analysis of the results of the second research question.

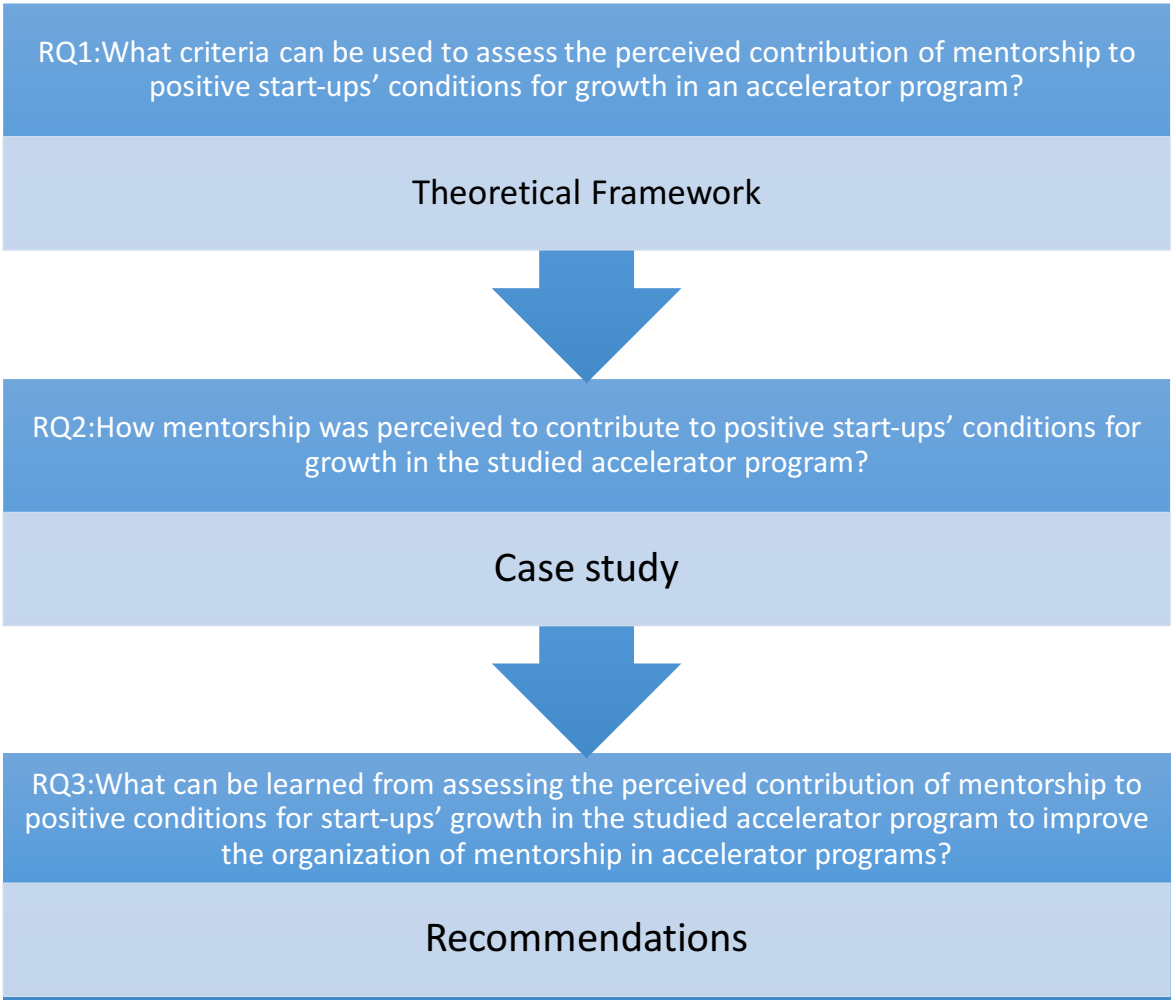

Figure 3 Research design

The case study strategy was chosen following the recommendation to select a research methodology by Yin (2009). According to this author, there are three conditions to choose a research strategy: the type of research questions, the needed control of the researcher over the studied phenomena and the focus of the study (whether it is a contemporary or historical phenomena). First, the main research question

for this master thesis proposal can be answered with a research method that allows exploration and see the problem from different angles**.** Second, in the proposed research, it is needed to gather information from the mentorship developed in the accelerator at its natural context, so the researcher does not need to interfere. Third, as discussed in the introduction, the accelerator is a relatively new incubation model; thus a research on one of its aspects is focused on a contemporary phenomenon.

The details about the research methodology are in Chapter 3 Research Methodology.

1.7. Structure of the thesis report

This thesis project is structured as follows. Chapter 1 contains and introduction to the thesis project including: introduction to the research, problem statement, research objective, research framework and an introduction to the research method. Chapter 2 includes the theoretical framework, which is needed to answer the core research question RQ2. Chapter 3 contains the details about the chosen research methodology. Chapter 4 contains the case study results of studying the mentorship at the selected accelerator program, which answers RQ3. Chapter 5 contains the answer for research question RQ4, thus includes the conclusions of the research project, recommendations to accelerator managers, limitations and future research.

2. Theoretical Framework

2.1. Introduction to the theoretical framework and conceptual model

In this chapter, the perspective to study the mentorship at a start-up accelerator program will be defined. Verschuren & Doorewaard (2010) propose three steps to develop the theoretical framework. In the first step, the nature of the research perspective needs to be defined; for instance; the nature could be: theory-developing, theory testing, problem-analysing, diagnostic research, designed oriented, intervention-oriented or evaluation research. In the second step, the researcher needs to determine the sources to derive the research perspective. Finally, in the third step, the researcher develops the research perspective itself. In the next sections, the steps followed to define the theoretical framework will be described.

After following the steps to build a theoretical framework, the result will be the conceptual model of the thesis project, which is a representation of the research perspective that is formed by a set of core concepts of the research project connected in causal relationships (Verschuren & Doorewaard, 2010).

Conceptual models can be used for quantitative and qualitative research. For both types of research, the researcher needs to conduct operationalisation, which is the process of translating the core concepts into sensory observations. In quantitative research, operationalisation can be done by selecting indicators, translating them into measurement instruments; for instance, a set of questions in a questionnaire. In qualitative research, operationalisation is conducted by selecting topics for interviews or systematic observations (Verschuren & Doorewaard, 2010).

2.1.1. Nature of the research perspective

It can be argued that this thesis project has an evaluation research nature. An assessment criterion is needed to analyse the contribution of mentorship to start-up's growth in an accelerator program. This criteria can be based on insights obtained from existing theories (Verschuren & Doorewaard, 2010).

It is important to clarify that by defining an assessment criterion to evaluate the contribution of mentorship to start-ups' growth in accelerator programs, the objective of this research is not to define the effectiveness of the mentorship at the studied accelerator program. The objective of this thesis is to provide recommendations based on the evaluation of mentorship.

2.1.2. Theories to determine the research perspective

In order to determine the research perspective, a literature review of academic articles about start-up needs, start-up accelerators and mentorship in accelerator programs was conducted. Figure 4 shows the complete research framework. First, part a) indicates that two main theories are used for this thesis project' research perspective: resource-based and stage-based theories. Second, in part b) the conceptual model of this thesis project will be developed based on these theories. Third, the research object (mentorship at the accelerator) shown in part c), will be confronted with the conceptual model. Fourth, in d) the recommendations to accelerator's managers will be obtained from the analysis developed in the previous step.

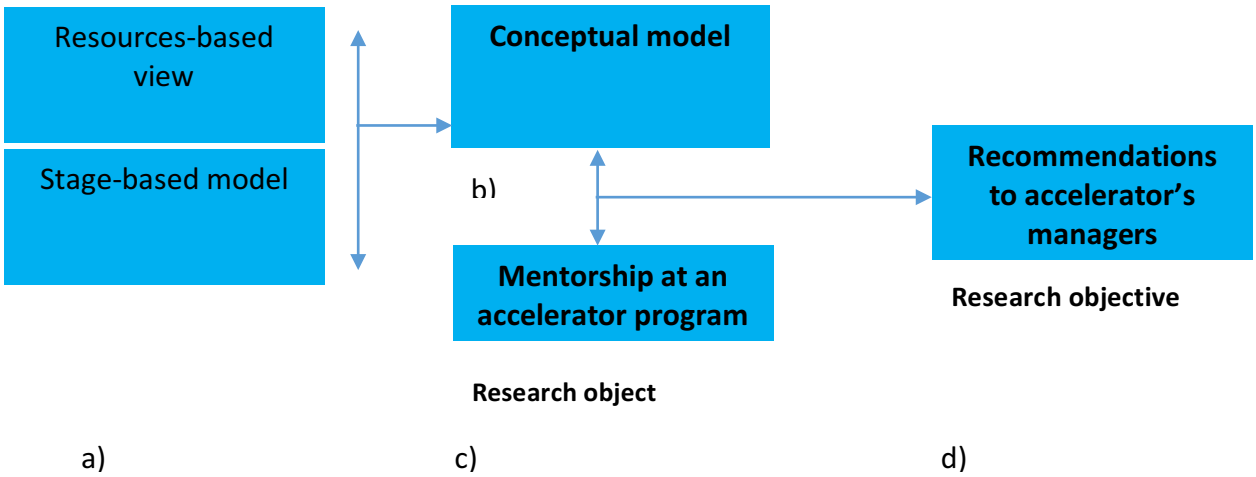

Figure 4 Research Framework including research perspective

The resources-based and stage-based perspectives are used to create the conceptual model. First, from the resource-based perspective, firms are collections of resources and capabilities(Mohr et al., 2009). Firms' resources include tangible and intangible resources. Tangible resources can be access to financial and human capital and intangible resources include employees, knowledge, experience and relationships (Rasmussen, Mosey, & Wright, 2011). Firms can use these resources to develop; in the case of start-ups, they need to acquire resources to convert an initial idea to a business proposition. As mentioned in the introduction of this research, accelerators can provide start-ups resources; such as financing, workspace, entrepreneurial training. These type of resources are needed to grow and overcome difficulties phased by new ventures.

Second, the stage-based models of new firms' development can help to understand how start-ups' grow, which is the main interest of start-ups and accelerators. Stage-based models suggest that firms develop in stages and there are different organizational characteristics within each phase of growth. In these models, entrepreneurs need to make changes in their practices or behaviour to go to the next stage (Vohora, Wright, & Lockett, 2004).

In this thesis project, the resources-based perspective and stage-based models will be used which resources are needed by start-ups, what resources can be provided by mentors in accelerator programs. Additionally, with a stage-based model it will be possible to determine how the start-ups can go to next phases of growth and how mentors can assist the new ventures in this process.

2.1.3. Core concepts

To construct the conceptual model, it is needed to unravel each of the core concepts of the research into dimensions, parts or classes (Verschuren & Doorewaard, 2010). Based on the problem statement and research objective, the core concepts identified in this research project are: start-ups, start-ups' growth, start-up accelerators, mentors at start-up accelerator and the mentorship in an accelerator. In this section, a brief definition of each core concept is provided and in later sections the concepts will be examined in detail.

Start-ups

Start-ups are defined as organizations created in an uncertain and volatile environment that aim to bring new products or services to the market (Radojevich-Kelley & Hoffman, 2012).

In the literature review to unravel the start-up concept, articles that study academic spin-offs were considered. Academic spin-offs are new companies spun out from universities or other research institutes that aim commercialize academic knowledge(Clarysse, Wright, Lockett, Van de Velde, & Vohora, 2005; Van Geenhuizen & Soetanto, 2009; Vohora et al., 2004). Spin-offs have the same characteristics of start-ups, except that start-ups do not necessarily spun out from academic organizations or companies.

Start-up's growth

In this study, start-ups' growth is the process that new ventures go from the idea generation to the the commercialization of the innovation.

Start-up accelerator

Cohen (2013) defines start-up accelerators as programs of limited duration that help cohorts of start-ups in the venture process by providing them an amount of seed capital, working space, networking opportunities, education and mentoring.

Mentors in accelerator programs

Mentors are experienced professionals, typically entrepreneurs matched to specific start-ups in accelerator programs that provide the start-ups advice, feedback based on their professional and real-world experience (Radojevich-Kelley & Hoffman, 2012).

Mentorship in start-up accelerator programs

Mentorship is a support activity offered to start-up in accelerator programs. There are two main actors involved in mentorship: mentors and mentees. In this study, mentors are the professionals that voluntarily join the accelerator programs to support start-ups. Mentees are the start-up team members that participate in the accelerator program and meet with the mentors.

2.2. Start-ups

2.2.1. Introduction to start-up challenges

From the definition of the start-up as new ventures that bring a new product or service to an uncertain and volatile environment; two challenges are identified, the uncertain environment and the newness of the firm. Firstly, the authors Mohr et al. (2009) explain this uncertain environment in three areas (See Figure 5 High Tech Marketing Uncertainties *(Mohr et al., 2009)*): market uncertainty, technology uncertainty and competitive volatility. First, market uncertainty refers to the uncertainty about what needs or problems the new product or service will solve, how these needs will evolve and how the market will adapt to the new technology. Second, technology uncertainty comes from not knowing if the new technology will work as promised, if the product development will take the expected time, if the technology has side effects and for how long will be the technology be needed before a new technology comes to the market. Third, competitive volatility refers to the intensity of degree of change in the competitive environment and uncertainty about the competitors and their strategies. It is uncertain, which are the companies that are going to be the future competitors, if new technologies could emerge from not expected industries and what market strategies will competitors apply (Mohr et al., 2009).

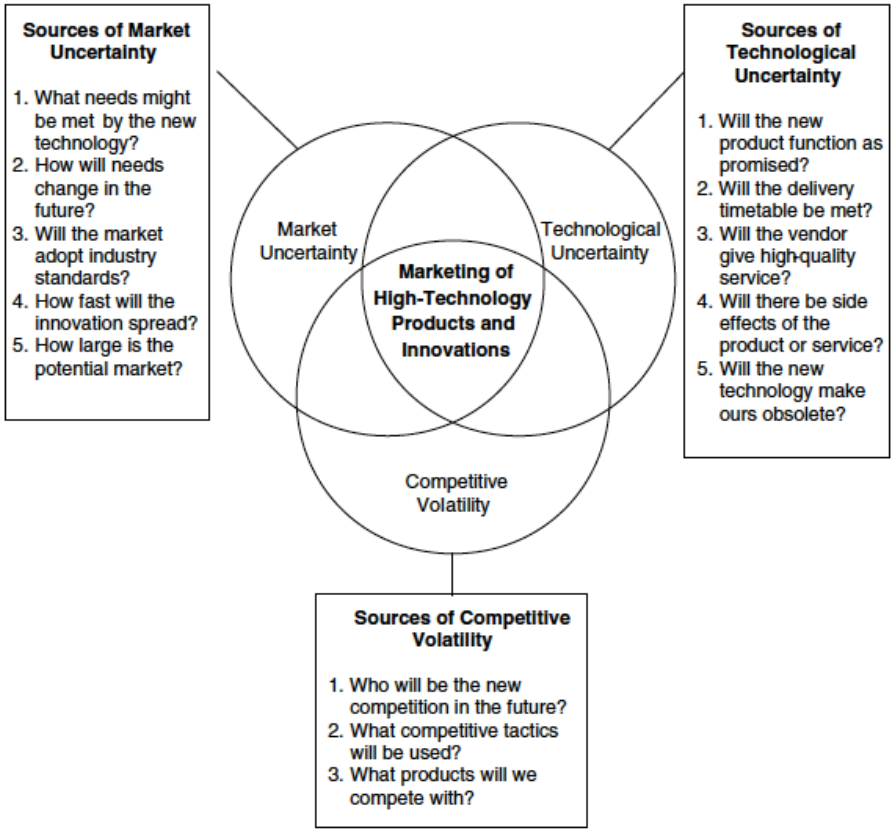

FIGURE 1.1 Characterizing High-Tech Marketing Environments

Figure 5 High Tech Marketing Uncertainties (Mohr et al., 2009)

Secondly, the characteristic of being new, called by some authors as ‘‘liability of newness’’ involves that the start-up has no market visibility and is not connected to a resource network (Phan et al., 2005). Additionally, the start-ups are generally composed by unexperienced team members that face difficulties to understand the target market (S. Cohen & Hochberg, 2014; Radojevich-Kelley & Hoffman, 2012). The “liability of newness” can also be an obstacle to find funding and reach customers (S. Cohen & Hochberg, 2014).

2.2.2. Start-ups’ growth

In order to analyse how mentorship contributes to the start-ups’ growth, it is needed to understand how these ventures develop. For this purpose, I will consider the stage-based model by Vohora, Wright and Lockett (2004). These authors investigated the development of university spinout companies and found that their development occurs in distinct phases and between these phases, there are interstices named by authors as “critical junctures”. The model by Vohora et. al (2009) shows that in each phase, these ventures face different challenges.

Vohora et al. (2014) identified four growth phases for spinouts are: research, opportunity framing, pre-organization, re-orientation and sustainable returns. The critical junctures refer to the resources and capabilities needed to go to the next phase and are: opportunity recognition, entrepreneurial commitment, threshold of credibility, threshold of sustainability. Figure 6 Critical junctures in the development of university spinout companies (Vohora et al., 2004) shows the growth process of start-ups and the junctures between them.

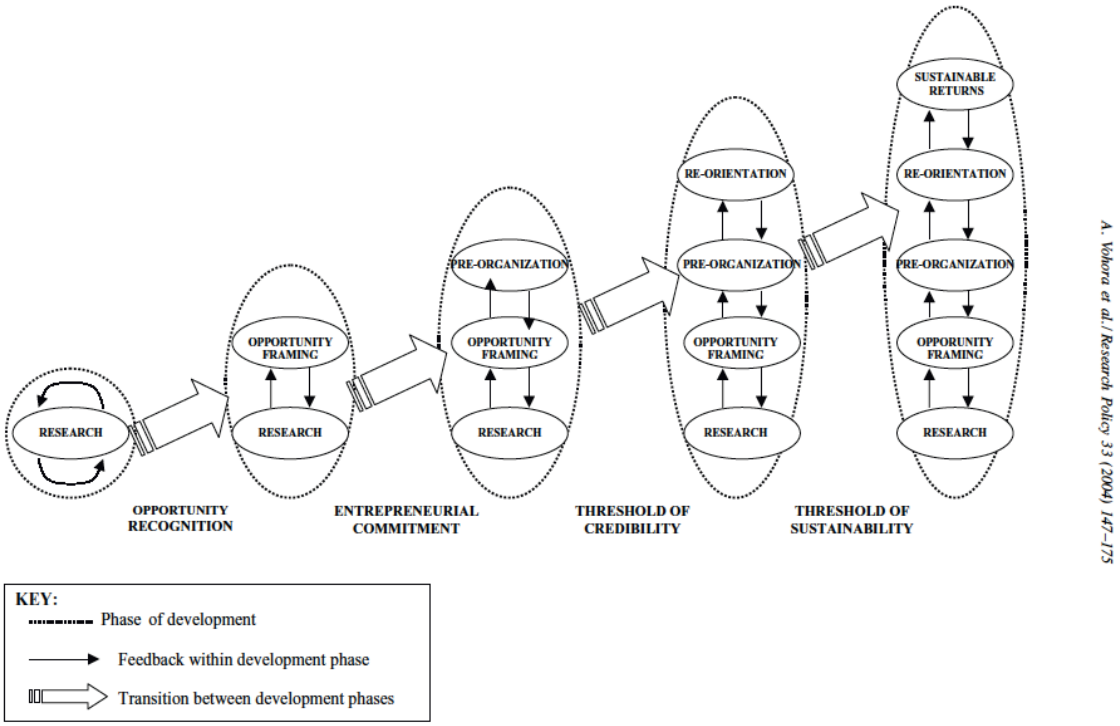

Figure 6 Critical junctures in the development of university spinout companies (Vohora et al., 2004)

2.2.2.1. Research phase

In the research phase spinouts find a technological discovery and develop their intellectual property that has the potential to be commercialized. To pass to the next phase, the entrepreneurial team needs to overcome the opportunity recognition juncture, which refers to the need to acquire the capability to synthetize scientific knowledge with an understanding of the market where it can be applied. This capability can be obtained from social capital resources outside the scientific research environment (Vohora et al., 2004).

2.2.2.2. Opportunity framing

Opportunity framing is the stage where the new venture finds the appropriate commercial proposition and identify the commercial resources that will be needed in later phases. For this phase, the spinout needs a team fully committed to the growth of the venture to overcome the entrepreneurial commitment juncture. In the academic environment, the lack of entrepreneurial orientation of the institution or the need of

academics to return to other research projects could hamper the advance to the next phase (Vohora et al., 2004).

2.2.2.3. Pre-organization phase

In the pre-organization phase the spinout has new information that allows to reframe the definition and scope of the opportunity and the feasibility of the business plan. In this phase the entrepreneurial team can start with their strategic plan, define its focus and the resources needed by the venture. To go to the next phase, the venture requires seed finance, for which sufficient credibility is needed by the spinout to transact with customers, suppliers, partners and investors(Vohora et al., 2004) .

2.2.2.4. Re-orientation phase

In the re-orientation phase the entrepreneurial team recognizes the needed resources, capabilities and networks to achieve sustainable returns and might find that existing configurations need to be changed. To pass this re-orientation phase, the spinout overcomes the threshold of sustainability juncture, which implies getting the ability to re-configure existing resources, recognize weakness in order to develop resource strengths, distinctive capabilities and generate returns (Vohora et al., 2004).

2.2.2.5. Sustainable returns phase

The sustainable returns phase is when the venture is able to get sustainable returns. The venture's objective at this phase is to access and re-configure resources. At this stage, the new firm is expected to have a precise business model (Vohora et al., 2004).

2.2.3. Start-up obstacles to grow

Van Geenhuizen & Soetanto (2009) studied the development of high-technology spin-offs at Delft University of Technology and explored the incidence and nature of obstacles that these new ventures phase to grow. This study considers the two theories: resource-based view and stage-based model of firm growth by Vohora et al. (2004) to understand the needs and growth of the new ventures. Obstacles faced by new firms are the scarcity or absence of resources or capabilities (Van Geenhuizen & Soetanto, 2009).

2.2.3.1. Categories of obstacles faced by new ventures

In their study, Van Geenhuizen and Soetano (2009) used different categories of obstacles faced by spin-offs, that are summarized in Table 1 Obstacles to grow faced by new ventures.

Table 1 Obstacles to grow faced by new ventures (Van Geenhuizen & Soetanto, 2009)

Category of obstacles	Examples
Market	• Misunderstanding of the target market • Lack of Marketing knowledge and/or experience • Lack of credibility in the market • Lack of Sales skills
Management	• Lack of management experience • Difficulties to take strategic decisions • Team management • Dealing with uncertainty • Overload
Finance	• Lack of Cash flow • Lack of investment capital • Lack of credibility
Physical	• Difficulties to find Accommodation, Infrastructure • Distance from suppliers
Government/Regulatory	• Bureaucratic barriers • Lack of knowledge about regulations needed to implement the new/technology and services

Next, a description of each category of obstacles faced by start-ups will be provided.

Market-related obstacles

The experience of the start-up team in the market place, helps to identify new opportunities for commercializing the research (Vohora et al., 2004). Some obstacles faced by start-ups related to market are: lack of marketing expertise, misunderstanding of the target market, difficulties to reach customers and lack of experience in the new venture's business (Radojevich-Kelley & Hoffman, 2012). Other difficulty for start-ups is to acquire credibility in the market and achieve a customer base (Van Geenhuizen & Soetanto, 2009). These difficulties are seen in start-ups that usually lack non-technical experience(Oakey, 2003). Marketing staff can help considerably when the start-up wants to bring an innovation for which there is no customer demand; in this case, these experts can create new markets that did not exist before (Oakey, 2003). Additionally, other skills needed in the area of market are sales skills, that can include communication and negotiation skills (Van Geenhuizen & Soetanto, 2009).

Management obstacles

Entrepreneurs, specially those with a technical background, may lack management skills to manage a start-up team and take strategic decision for the business growth(Oakey, 2003). Technical entrepreneurs frequently take over all the business functions such as marketing, fund raising, management and strategy. As the firm develops, these important important tasks need to be delegated to other start-up members or

external resources (Oakey, 2003). Entrepreneurial teams can evolve with the entry of new members, who can contribute with complementary competencies(Rasmussen et al., 2011); however, team heterogeneity can also bring conflicts (Phan et al., 2005). In this case, start-ups need management skills to delegate tasks and manage the team.

Financial obstacles

New ventures need to finance research and development (R&D) costs and production costs (Oakey, 2003). Traditional sources of funding are bootstrapping, family and friends, angel investors and venture capitalists (Falbe et al., 2011 as cited in (Radojevich-Kelley & Hoffman, 2012)). The lack of credibility makes it difficult for new ventures to access to resources (Vohora et al., 2004) and can result in lack of cash flow or lack of investment capital (Van Geenhuizen & Soetanto, 2009) .

Physical obstacles

Physical resources needed by firms are physical technology, firm's plant and equipment, geographic location, access to raw materials (Barney, 1991). New ventures could have limitations to find accommodation, access to equipment needed to develop its products or services or have difficulties to reach its suppliers (Van Geenhuizen & Soetanto, 2009).

Government or Regulation obstacles

New ventures may need to deal with bureaucratic barriers to access to resources (Van Geenhuizen & Soetanto, 2009). Spin-offs may need to determine if patents have already been registered for the technologies they are developing (Clarysse et al., 2005).

2.2.4. Resistance of obstacles to grow

The study by Van Geenhuizen & Soetano (2009) found two important insights about the obstacles faced by new ventures. First, the obstacles that tend to be the most resistant over time are market-related, followed by financial and management obstacles. Market-related difficulties are attributed to the lack of marketing skills, specially in academic entrepreneurs. Second, the resistance of obstacles that inhibit new venture's growth is different depending on the type of spin-off. Threes types of spin-offs were defined in the study: low, medium and highly innovative spin-offs. Highly innovative ventures are the ones that develop breakthrough innovations or a product or service new to the industry, and require high funding for R&D. The pattern found in the study is that highly-innovative spin-offs can pass the thresholds of credibility and sustainable growth faster that the less innovative ventures. One of the conclusions of this research is that organizations supporting new ventures should design their programs considering the type of start-up including: age, sector and innovation intensity.

2.3. Start-up accelerators as organizations that support start-ups

This section describes the elements and characteristics of the start-up accelerators. First, it starts with an overview of the history of Technology Business Incubators (TBI) to understand how accelerators emerged. Second, start-up accelerator's elements are explained using the model by Pauwels et al. (2016).

2.3.1. History of start-up accelerators

Start-up accelerators are a type of Technology Business Incubators (TBI). TBI are property-based organizations that support the growth of start-ups by providing them different types of resources such as as technological resources, office space, access to business and professional services, networking and capital(Mian et al., 2016). TBI have an identifiable administrative centre and their mission is to accelerate business of their tenant firms through knowledge agglomeration and resource sharing(Phan et al., 2005).

Mian et al.(2016) define three waves for Technology Business Incubation (TBI) models, this distinction is important to understand how start-up accelerators emerged (Figure 7 The Evolution of Technology Business Incubation Models (Adapted from Mian, 2014)). The first wave of TBI mechanisms is considered to be before 1980. During this first wave, TBI mechanisms were created to contribute to the economic development and restructuring by providing space and shared services to new ventures. At this stage, the first science park, Stanford Research Park, in California was established in 1951 and the first incubator was established in New York in 1959 (Mian et al., 2016).

The second wave of incubators is situated from 1980s to 1990s (Mian et al., 2016). In the early 1980s, the technological revolution in manufacturing processes and telecommunication brought the perception among scholars and policy makers that innovation leads to wealth creation at regional and national levels; this created an interest to increase the number of small high-technology firms, which caused an increase in public and private investment on science parks and business incubators (Phan et al., 2005). In the second wave of TBI mechanisms, the number of technology incubators and science parks increased significantly and it is observed that the incubator programs extended the offered services to include: mentoring, networking and skills enhancement.

The third wave of TBI models is considered to be after 2000, where multi-purpose research parks, specialized incubators and accelerators emerged with enhanced access to resources(Mian et al., 2016). TechStarts and Y Combinatory are both considered the two leading accelerators. Y Combinator, was launched in 2005 in Cambridge, Massachusetts, followed by TechStarts founded by start-up investors in Boulder, Colorado in 2006 (S. Cohen & Hochberg, 2014; Hathaway, 2016).

According to Pauwels et. al. (2016) earlier incubation models were mainly keeping tenants alive, in order to secure the rent and fill the incubator space. Start-up accelerators focus is not only to make sure the start-ups survive, but also scale. These authors also mention that accelerators can help to shorten the journey of the start-ups, that could take them to fail or succeed faster.

Radojevich-Kelley & Hoffman (2012) studied accelerator companies and found that their motivation is to help start-ups to grow and succeed by providing them capital to launch their business ideas in exchange of equity. For these authors, accelerators emerged as investment firms that fill the funding gap, left by the 2008 economic crisis, that caused difficulties for entrepreneurs to access to traditional sources of funding such as banks, angel investors and venture capitalists, that were reluctant to invest.

The number of accelerators has grown through time, they are located worldwide and are considered important players to scale up ventures. Additionally, accelerator programs have diversified into industry-vertical focused programs; for instance, accelerators that concentrate on energy start-ups or on health-care related ventures (S. Cohen & Hochberg, 2014).

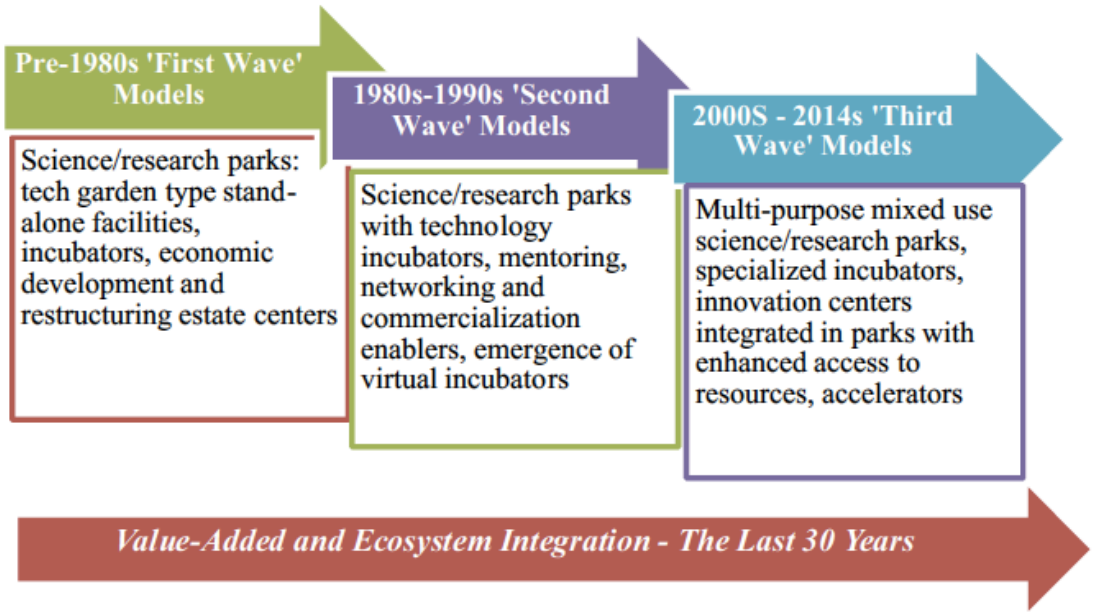

Figure 7 The Evolution of Technology Business Incubation Models (Adapted from Mian, 2014)

2.3.2. Start-up accelerator components

Pauwels et al. (2016) conducted a multiple case study, gathering qualitative data in 13 accelerators from Europe. By using a business model design approach, they determined the following design elements of the accelerator program: program package, strategic focus, selection process, funding structure and alumni relations (See Figure 8 Design elements and constructs to analyse incubation models *(Pauwels et al., 2016)*). The next subsections include a description of each accelerator element.

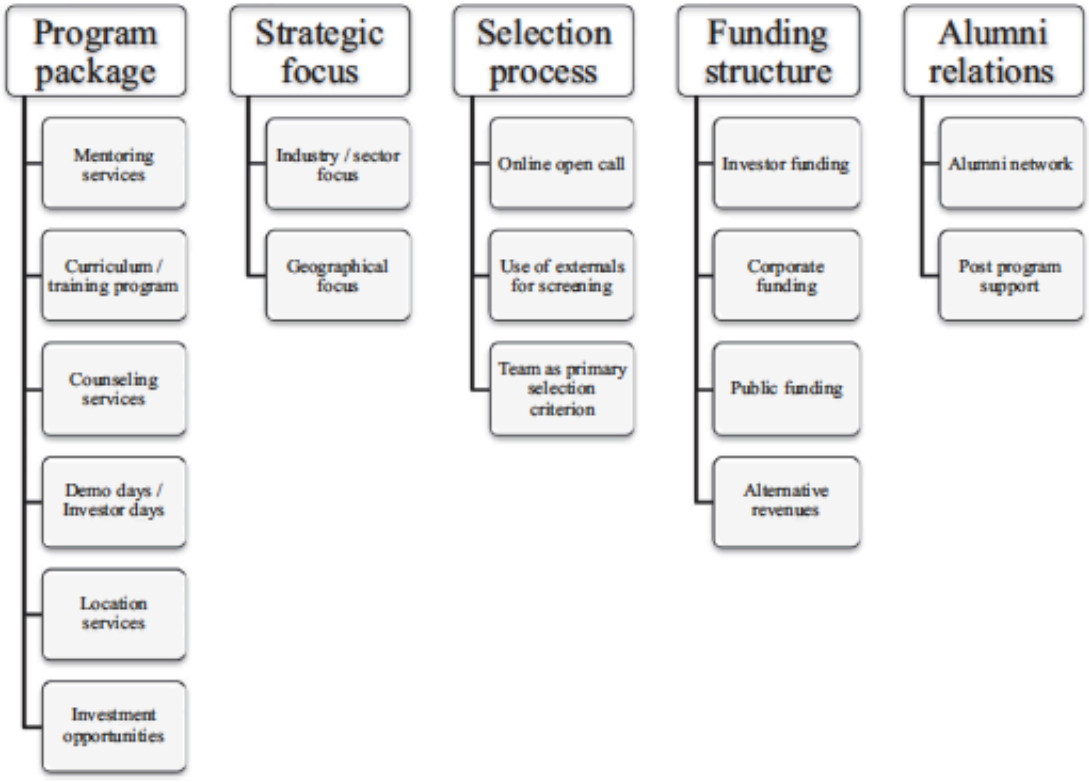

Fig. 1. Design elements and constructs.

Figure 8 Design elements and constructs to analyse incubation models *(Pauwels et al., 2016)*

2.3.2.1. Program package

The program package offered to start-ups that includes: training program, counselling, location services and investment opportunities (Pauwels et al., 2016). Mentoring will be discussed in detail in another section.

The training at start-up accelerators is provided by a series of intensive training workshops (boot-camp style) (Radojevich-Kelley & Hoffman, 2012) or seminars given by directors of the accelerator program, guest speakers or experts in entrepreneurial topics (S. Cohen, 2013). The training sessions can cover several topics needed by start-ups founders; such as, finance, marketing and management (Pauwels et al., 2016). The trainings style is intensive to speed up the learning cycle (Hathaway, 2016).

Accelerators provide counselling to start-ups. Managing directors at accelerators can guide start-ups to get and apply the knowledge obtained from the entrepreneurial training and mentorship (S. Cohen, 2013). Some accelerators help start-up founders with team formation; for instance, the accelerator assist the start-up to find the CTO(Pauwels et al., 2016).

Finally, the accelerator programs usually end with a “demo day” where the start-ups pitch to investors (S. Cohen, 2013). The literature on accelerators also point out that the accelerator program offers networking opportunities to start-ups founders, where founders have the chance to meet potential investors or clients(Radojevich-Kelley & Hoffman, 2012).

2.3.2.2. Strategic focus

The second construct of the accelerator model is the strategic focus (Pauwels et al., 2016). Accelerators focus on providing to start-ups intangible, knowledge intensive, support services and typically offer pre-seed investment to participant start-ups in exchange of equity (Pauwels et al., 2016). The interest of accelerators is to develop start-ups into business ready for investment (S. Cohen, 2013). The results of the accelerator program is that start-ups either grow or fail faster (Hathaway, 2016).

Pauwels et. al (2016) found three different types of accelerators, each one with a different strategic focus. First, "ecosystem builder" type, includes accelerators that are set by corporate companies with the intention to develop an ecosystem for start-ups and a network of customers and stakeholders. For instance, Microsoft Ventures Accelerator aims to connect lead customers to promising ventures to enrich the ecosystem around them. "Ecosystem builder" accelerators have no profit orientation nor invest on start-ups. However, these corporate accelerators help start-ups to connect to potential customers. The second type of accelerators, "deal-flow maker" aims connect investors with ventures with potential to grow. The funding comes from business angels, venture capitalists, corporate venture capital. "Deal maker" accelerators provide see-funding to the start-ups in exchange of equity. The third type of accelerator, "welfare simulator" has a government entity as main stakeholder and aims to support ventures that can contribute to economic growth to a specific region or technology domain (Pauwels et al., 2016).

2.3.2.3. Selection process

The third construct of the accelerator model is the selection process. The accelerator programs accept ventures in batches(S. Cohen, 2013). Before the program starts, accelerator managers conduct a a screening process to select start-ups (Pauwels et al., 2016). The criteria to select start-ups for start-up accelerators is usually: having strong team, willingness to adapt their business idea, and a business proposition that solves a real-world problem. A working prototype and technical expertise also considered in the selection (Radojevich-Kelley & Hoffman, 2012).

Accelerators typically select early-stage start-ups (Hathaway, 2016; Pauwels et al., 2016), for which the cost of experimentation has dropped in the last decade rather than in capital-intensive start-ups(Pauwels et al., 2016). Most accelerator companies prefer technology based business concepts, more than no-technological and also want concepts that have potential to scale up and meet national and global demand (Radojevich-Kelley & Hoffman, 2012).

Pauwels et al. (2016) found that depending on the type of accelerator, accelerator managers can involve other actors; such as corporates, investors, or public agencies to the selection process. The "ecosystem builder" type of accelerators usually involve corporate stakeholders who choose start-ups with the potential to improve the corporate's ecosystem. "Deal-flow maker" start-up accelerator may involve investors in the selection process. "Welfare simulator" type of accelerators can involve public agencies to choose start-ups with the potential to contribute to economic growth or welfare creation.

2.3.2.4. Funding structure

The fourth construct of the accelerator model is funding. Accelerators usually receive the majority of the working capital from shareholders that can be private investors, companies or public authorities (Pauwels

et al., 2016) . Additionally, in some cases, the accelerator managers are also angel investors that provide financing to some of the ventures, in this case they have additional incentives to support the start-ups(S. Cohen, 2013).

2.3.2.5. Alumni relations

The fifth element in the accelerator model found by Pauwels et al. (2016) is the alumni relations. In the accelerator program the start-ups enter and exit in cohorts and collaboration between the start-ups founders is encouraged. This structure allows the start-ups to develop a communal identity and bonds with the other start-up teams (S. Cohen, 2013). Additionally, the accelerators maintain active relations with the graduate start-ups, which can become important mentors or investors in the program (Pauwels et al., 2016).

2.4. Mentorship at start-up accelerators

One of the core services of accelerators is a well-elaborated and carefully planned mentoring (Pauwels et al., 2016). In accelerator programs, accelerator managers have the role to set up the objectives of mentoring, select mentors, match mentors with start-ups, follow un the mentorship and evaluate it so that improvements can be implemented in next programs. The activities conducted in regards to mentorship are shown in Figure 9 Organisation of mentoring at accelerator programs.

Figure 9 Organisation of mentoring at accelerator programs

Objectives of mentorship in accelerators

The objective of mentoring in accelerator programs is that experienced professionals can provide advice or feedback to start-ups. The advice or feedback could be about the market, idea, technology or industry and is based on mentors' professional and personal experience(Radojevich-Kelley & Hoffman, 2012).

As mentioned in previous sections, there are three themes of accelerators found by Pauwels et al. (2016) and for each one, there might be specific objectives for mentoring. In the first theme, "ecosystem builder", the objective of mentorship can be that the corporations interact with entrepreneurs. In the second theme, "deal-flow maker", mentors can investors and in this case, one of the objectives of mentorship could be to connect investors with ventures with potential to grow. Finally, in the third theme, "welfare simulator", the objective of mentoring can also be to connect serial entrepreneurs and business developers to work with entrepreneurs that are working in solutions with social impact.

Mentors selection

Mentors are professionals selected by the start-up accelerators to work with start-up founders and provide them feedback, advice or support based on their experience on market, technology or industry. Mentors meet with start-up founders regularly during the accelerator program to provide them advice and feedback about the start-up's business idea, technology or industry; from the business idea, prototype through

product development(Radojevich-Kelley & Hoffman, 2012). Additionally, mentors can connect the start-ups with potential customers or investors (Pauwels et al., 2016; Radojevich-Kelley & Hoffman, 2012).

Accelerators can select mentors based on their level of expertise, experience and motivation to help entrepreneurs (Radojevich-Kelley & Hoffman, 2012). There might be different types of mentors' profiles, as they could be entrepreneurs, program graduates, venture capitalists, angel investors or corporate executives (S. Cohen, 2013).

In regards to mentors' selection (Pauwels et al., 2016) found that there are different types of mentor profiles per start-up accelerator type. In the "ecosystem builder" mentors can be internal coaches from corporates. In "deal-flow maker" accelerator, mentors can be serial entrepreneurs or business angels. Mentors in "welfare simulator" accelerators could be consultants or business developers that can provide more intensive training sessions to the start-ups. These professionals might have the interest to find customers or get if they help to commercialize the technology.

In the selection of mentors to start-up accelerator programs, personal traits could also be considered. For instance, TechStars accelerator created a mentor' manifest where it states some characteristics of a good mentor such as: being Socratic, good listener, responsive, being able to separate opinions from facts, hold confidence, guide don't control, optimistic, actionable advice, have empathy (D. Cohen, 2011).

Matching start-ups with mentors

There are different ways to conduct the matching of start-ups with mentors in accelerator programs. In some cases, matching is based upon match-making events or in a speed dating format(Pauwels et al., 2016). Other accelerators may make introductions to mentors on as-needed basis or providing a list of mentors that can be contacted (S. Cohen, 2013) .

Follow-up mentorship

In accelerator programs, start-ups meet with mentors on a regular basis (S. Cohen, 2013). In the mentoring sessions, mentors are intended to help the start-ups to define their business model and/or connect them with customers or investors (Pauwels et al., 2016). In the literature review about start-up accelerators it was found that accelerator managers can define best practices for mentorship and they could evaluate the mentors in the accelerator program(Pauwels et al., 2016). An evaluation of mentorship might lead to define improvements for the next accelerator programs

2.4.1. Benefits of mentoring for new ventures

Mentorship is cited in several articles as a valuable aspect of accelerator programs and found in some research as the primary reason for entrepreneurs to join accelerator programs (S. Cohen, 2013) From the resource-view perspective, mentorship in accelerator programs is a resource that adds value to the accelerator program. Mentors can be seen as external resources to start-ups provide external validation about the business idea(Radojevich-Kelley & Hoffman, 2012).

In an article by David Cohen (2007), founder and co-CEO of the Techstars accelerator , he mentions that early success of ventures is linked with mentor engagement with start-ups. He states that meaningful engagement can be achieved when start-ups are proactive to meet with the mentors and react on the given advice to add value to their ventures. Additionally, mentors and mentees can be successfully engaged with a regular and effective communication between them. Cohen (2007) also mentions that start-ups can provide positive experiences to their mentors with their entrepreneurial enthusiasm, innovative product or skills.

Some academic papers study the benefits of mentoring in the incubator model (Lundqvist, 2014; Xiao & North, 2016). One example is the work by Xiao and North (2016) who conducted a quantitative research on the effects of TBI's services (funding, technical support and mentoring) on the graduation performance of tenant firms. These authors analysed survey data from new technology-based firms in several cities in China (grouped in 3 tiers, according to the city's level of development). In this study, the dependent variable is the total number of firms that met the graduation criteria and left the incubator; this number is considered an indicator of success of the TBI. The authors argue that TBI managers can evaluate if a tenant firm is ready to graduate based on different indicators such as sales turnover, profit, asset size and could apply certain criteria depending on the industrial sector. One of the independent variables in this research is the level of entrepreneurial mentoring measured by the total number of experienced entrepreneurs playing a mentor role in the tenant firms. This study found that entrepreneurial mentoring and technical support services speed up the early development of the analysed tenant firms to the point they meet the criteria to graduate from the incubators (Xiao & North, 2016).

Ludqvist (2014) studied the performance of technology ventures incubated in Swedish universities in terms of growth and revenue and found that the performance of ventures is significantly better in firms with surrogate entrepreneurs than in non-surrogated firms. Surrogate entrepreneurs are entrepreneurs involved in the development of the venture, but not part of the founders. Previous studies have found that surrogate entrepreneurs need to be recruited to overcome some fallacies of academic entrepreneurs in universities, such as, not having business oriented market and managerial competences (Vohora et al., 2004). It can be argued that mentors in accelerator programs match the role of surrogate entrepreneurs, since mentors are not part of the start-up founders and have entrepreneurial experience. Therefore, mentors could also influence the performance of start-ups in an accelerator.

2.4.2. Problems found in mentoring at start-up accelerators

From the start-ups' perspective, some of the issues are: overwhelming mentoring sessions, mentor's lack of domain-specific expertise in particular markets, too much focus on technical solutions, lack of clarity of which mentor to listen, distraction with the variety of opinions (Christiansen, 2014) and generic or inconsistent mentorship ("The Accelerator Assembly Conference: what we learned and what's next?," 2014).

2.5. Relation between start-ups, start-ups' growth, accelerators and mentors in accelerators

In order to complete the conceptual model, it is needed to find the relationship between the core concepts. From the resource-based perspective, accelerators provide resources to start-ups and mentorship is a service that allows start-up to obtain advice from experienced professionals. To analyse what type of resources can be provided by accelerator programs and mentors in these programs to start-ups, two studies were considered. First, a study about the typology of incubation strategies developed by Clarysse et al.

(2005) and an academic article about how new ventures can acquire entrepreneurial competences by Rasmussen et al. (2011). The next sections provide information about these two studies.

2.5.1. Resources provided to new ventures in TBI

A study by Clarysse et al. (2005) identified a typology of incubation strategies. These authors examined Research Institutes (RI) in Europe that promote spinning-out companies. The result is three incubator models: low selective model, supportive model and incubator model; in each one they identified different support activities and resources provided to new ventures.

For support activities, the study considered different types of activities to support ventures in different areas; such as market, business strategies and financial funding. Table 2 Support activities by the different incubation models adapted from *(Clarysse et al., 2005)* shows the support activities per incubation model. Additionally, this study also found that in each model the RI provide different types of resources to new ventures; such as organizational, technological, physical, financial and networking resources. Table 3 Resources provided in different incubation models adapted from *(Clarysse et al., 2005)* summarizes the resources provided in each model.

Table 2 Support activities by the different incubation models adapted from (Clarysse et al., 2005)

Support Activities	Low selective	Supportive	Incubator
Opportunity search and awareness creation	Passive	Passive	Active
Strategic choice to commercialize R&D	Low Selection criteria	Selection criteria includes growth orientation.	Resemble Venture capitalist' criteria
Intellectual property assessment	Aim to apply to patents to commercialize the technology	Support in patenting and licensing	Conducted by the TTO
Incubation and business plan development	Space at RI offered.	Incubation facilities Access to equipment Assistance to write a business plan Includes: business advice and coaching	High-level Incubation support
Funding process	Under the form of public grants	Public private equity fund	Venture capital money

Table 3 Resources provided in different incubation models adapted from (Clarysse et al., 2005)

Resources	Low selective	Supportive	Incubator
Organizational (human resources)	Small team linked to public sector.	Multi-disciplinary team with links to financial world.	Experienced professionals, specialist
Technological	No specialism	Applied research	Focus on particular specialism
Physical	Facilities in universities	Office space at market price	Office space and access to infrastructure for free
Financial	Public money	Funds obtained from associations with public/private partners	Private investment Possible own VC fund
Networking	Entrepreneurial environment in universities and public agencies.	Established network with links to the industry, specialists and VC community.	Entrepreneurial context not important as the organizations are self-sufficient.

2.5.1.1. Description of the incubation strategies

First, in the low selective model, the authors located RI that are less selective to choose ventures to support, lack a technological focus or specialism and the supported ventures are characterized by low level capitalization. In this model, the organizational resources are public organizations linked with universities, with small administrative team that have the objective to maximize the number of ventures. The

organizations in the low selective model need the lowest number of resources comparing to the other models, except for public financial means needed to support the incubation facilities within the universities (Clarysse et al., 2005).

Second, in the supportive model, the RI are oriented to the generation of profit-oriented spin-outs with the potential to grow. As in the low selective model, these institutes offer to the ventures, office space and infrastructure in the incubation centre at market prices; but they also offer resources like coaching to start-up a company and help to find funding. RI in the supportive model operate with a multidisciplinary team with commercial experience and linked to the financial world that can help the ventures to look for financial means and have contacts with experts, business entrepreneurs and consultants. These RI are also associated with public and private partners (Clarysse et al., 2005).

Third, in the incubator model, the RI support the spin-outs that are "exit-oriented", meaning that the exit possibilities of the spin-offs provide financial opportunities. These RI offer a research space and infrastructure for free. The ventures supported in the incubator model are characterized by a cutting-edge technology focused on particular specialism and require higher amount of funding than the other models. The start-ups receive private investment and the technology transfer office in the RI may have its own venture capital fund. Other important remark of the incubator model is that they operate with experienced staff and are linked to industry and are oriented to the early detection of promising technology platforms(Clarysse et al., 2005).

2.5.1.2. Incubation strategies in the accelerator model

The accelerator model presents characteristic of two of the incubator strategies supportive and incubator. First, as in the supportive and incubator model, accelerators offer start-ups support to develop their business plan through the entrepreneurial training. The organizational resources in start-up accelerators are the accelerator management team and the experts that offer the training sessions. The business advice and coaching is offered by the accelerator managers and mentors. Second, the accelerators have a selection criteria choose the ventures that match their strategic focus, as in the supportive or incubator model. Third, they provide financial resources to the ventures as in the supportive or incubator model with an investment orientation; in some accelerators they provide funding to start-ups in exchange of equity or can connect them to business angels or venture capitalists. Fourth, accelerators offer office space as in the incubation model. Finally, accelerators can offer networking resources, as in the supportive model, they have links with partners from different industries and/or venture capitalists.

2.5.2. Entrepreneurship competences needed by new ventures

Rasmussen, Mosey and Wright (2011) studied how new ventures overcome competency deficiencies, by examining university spin-offs in a longitudinal multiple case study. The case study included spin-offs from different national, university, and industry/market context. They consider an evolutionary perspective for acquiring competencies over time and in line with Vohora et al.(2004), these authors contemplate that new firms need to overcome a credibility threshold. In this study, three basic entrepreneurship competences needed by university spin-offs were identified: opportunity refinement, leveraging and championing. For each competence, they mentioned which type of actors can provide them.

First, opportunity refinement is the competence related with discovering business based on scientific research. This competence includes the ability to look for improvements in the business opportunity, according to new insights. Opportunity refinement can be developed with business experience, commercial skills and industry/market knowledge. In case academic entrepreneurs lack business experience and commercial skills, they can obtain the opportunity refinement components from interactions with industry partners and customers(Rasmussen et al., 2011).

Second, leveraging is the competency that allows to integrate internal and external resources to develop the spin-off. The liability of newness makes it difficult for spin-offs to gain have credibility and access resources such as funding. The leveraging competence can be obtained with the interaction with external resources; such as, investors, industry partners or customers. In the university context, leveraging is achieved with the help of the university transfer office (TTO) that can help to access public funding source. Additionally, it was found that adding new members with prior entrepreneurial experience helped the ventures to gain credibility among external investors (Rasmussen et al., 2011).

Third, championing competence is the ability to make the entrepreneurial team to identify with the venture and commit to its growth. Championing can be achieved by individuals that provide emotional meaning to the venture. It was found that the championing change through the venture's development. Academic researchers can be critical champions at the research phase of the spin-off, but during the commercialization phase external individuals, such as industrial partners might become champions(Rasmussen et al., 2011).

Table 4 Entrepreneurial competences needed by new ventures based on (Rasmussen et al., 2011) shows for each entrepreneurial competence, the skills or experience to develop it and the sources(internal or external) to obtain these competences .

Table 4 Entrepreneurial competences needed by new ventures based on (Rasmussen et al., 2011)

Entrepreneurial Competences	Skills/experience needed	Sources
Opportunity refinement: discovering opportunities based on scientific research and later on convert them in business	Business experience Commercial skills Industry/market knowledge	industry partners
Leveraging: integrate internal and external resources to develop the venture	Entrepreneurial experience credibility	TTO at universities can help to connect to: Investors, industry partners, clients
Championing: making the team to identify with the venture and collaborate on its development	motivational	Internal champions external champions found in industry partners or other resource providers

One of the contributions of Rasmussen et al. (2011) is that they indicated that external individuals that have specific skills or experience are needed for the development of the entrepreneurial competences. In the case

of accelerators, mentors can contribute with their knowledge, experience and business network to develop competencies needed by start-ups.

2.6. Conclusions about the literature review

According to the article about incubation strategies by Clarysse et al. (2005), technology business incubators can provide different types of resources and support activities to new ventures. Start-up accelerators offer programs where start-ups receive financial, networking and physical (workspace) resources. Additionally, accelerators provide support through different activities such as entrepreneurial training and mentoring. Thus, start-up accelerators also provide human and organizational resources through the accelerator's staff and mentors.

Pauwels et al. (2016) defined the components of the accelerator model. These authors found that depending on the accelerator's strategic focus, they can select different types of start-ups and mentors. For instance, accelerators can support start-ups in a specific industry and geographic location. Additionally, depending on the strategic focus the selected mentors could be serial entrepreneurs, business angels, consultants or business developers. The objective that is common to all accelerators is to help start-ups to grow. According to the stage-based model by Vohora et al. (2004), start-ups go through different development phases: research, opportunity framing, pre-organization, re-orientation and sustainable returns. The new ventures need to pass critical junctures (opportunity recognition, entrepreneurial commitment, threshold of credibility and threshold of sustainability) to go from the current phase to the next phase. Additionally, the article allowed to see that start-ups face obstacles to grow that can be categorized by different areas: market, management, finances, physical, government and regulatory(Van Geenhuizen & Soetanto, 2009).

Start-ups need to acquire entrepreneurial competences to pass the different growth phases. The study by Rasmussen et al.(2011) identified three basic competences needed by new ventures: opportunity refinement, leveraging and championing. It is possible to relate these three competences with the phases and junctures identified by Vohora et al. (2004). First, opportunity refinement competence can help start-ups to overcome the opportunity recognition juncture and pass the research or opportunity framing growth phases. Second, leveraging is a competence that is needed along the start-ups' journey to be able to reconfigure the firm's resources and get external resources. Third, championing is a competence needed to pass the entrepreneurial commitment juncture and helps the start-up through the whole development process.

In the reviewed literature, it was not found how the support activities conducted by mentors in start-up accelerators helps start-ups to acquire entrepreneurial competences and pass growth phases. However, based on the reviewed articles, it can be argued that the mentor's support activities can contribute to the development of the entrepreneurial competences and therefore contribute to the start-ups' growth. According to the study by Rasmussen et al.(2011), new ventures can acquire competences from their interaction with external actors; such as industry partners. In the case of mentors in accelerator programs, it was found that they interact with start-up members and provide them advice and feedback or in some accelerators, even provide financial resources to start-ups by becoming investors(Pauwels et al., 2016). In the scant literature about mentoring organization in start-up accelerators, it was found that the engagement between mentors and mentees can influence the early success of mentoring (Cohen David, 2007). Thus, besides analysing the support activities that influence positive conditions of start-ups' growth, it is also

needed to understand what problems arise in the interaction between mentors and start-ups. In the reviewed literature about start-up accelerators, it was found that some possible problems in the mentoring are perceived mismatch between mentors and start-up, lack of mentor's expertise to assist the start-ups or start-ups' distraction with the variety of opinions (Christiansen, 2014).

In the next section, the conceptual model will be developed based on the literature review.

2.7. Conceptual model

The research perspective can be represented in a conceptual model that contains the concepts of the research project connected with causal relationships (Verschuren & Doorewaard, 2010). The conceptual model for this thesis project is shown in
Figure 10 Conceptual model. It was created based on the literature review about the core concepts: start-ups, accelerators, mentors, mentorship and start-ups' growth. Following the guidance for creating conceptual models by Verschuren & Doorewaard (2010), the different variations or modalities, within each core concept were identified. Additionally, the researcher needs to choose which modalities will be selected. Each core concept is represented in a box and short labels are used for its corresponding modalities.

For start-up accelerator the selected modalities in the conceptual model are: strategic focus, support activities and resources provided to start-ups and the organisation of mentorship. For mentors, the chosen modalities are: industry type, professional experience and motivation to participate in the accelerator program. For the start-up core concept, the selected modalities are: industry type, age, current growth phase, motivation to join the accelerator program and obstacles to grow.

This study will not measure the start-ups' growth, but it will find out the contribution of mentorship to positive start-ups' conditions for growth perceived by the mentors and start-ups in an accelerator program. Therefore, I will consider the concepts: "mentors' support to start-ups" and "perceived start-ups' growth". In the mentors' support to start-ups, the different modalities considered for the conceptual model are the provided mentor's support (in the form of advice or feedback) to start-up per area of obstacles to grow, the start-ups' reaction over mentor's support and the problems that may arise in the mentor-mentee relationship. For the last core concept, "perceived start-ups' growth" the modality to be considered is the start-ups' acquired competences perceived by mentors and/or start-ups. For instance, the mentor's support can help the start-up's team to gain one of the entrepreneurial competences found in the literature review, opportunity refinement, leveraging or championing. These entrepreneurial competences are needed to overcome the critical junctures that need to be overcome by the start-ups to move to a more advanced phase of development.

The causal relationships between the core concepts are as follows. For this study, the dependent variable will be the "perceived start-ups' growth" and the independent variable will be the "mentors' support to start-ups" that can influence positively the perceived start-ups' growth. Next, the "mentor's support to start-ups" can vary depending on the type of mentors, type of start-ups that participate in the accelerator program and also by how the the accelerator organises the mentorship. Finally, the accelerator influences the type of start-ups and types of mentors selected in the accelerator programs. From the literature review, it is clear that the start-up's accelerator can influence the perceived start-up's growth; however, this relationship will not be considered in this study as the focus is to study the influence of mentors' support.

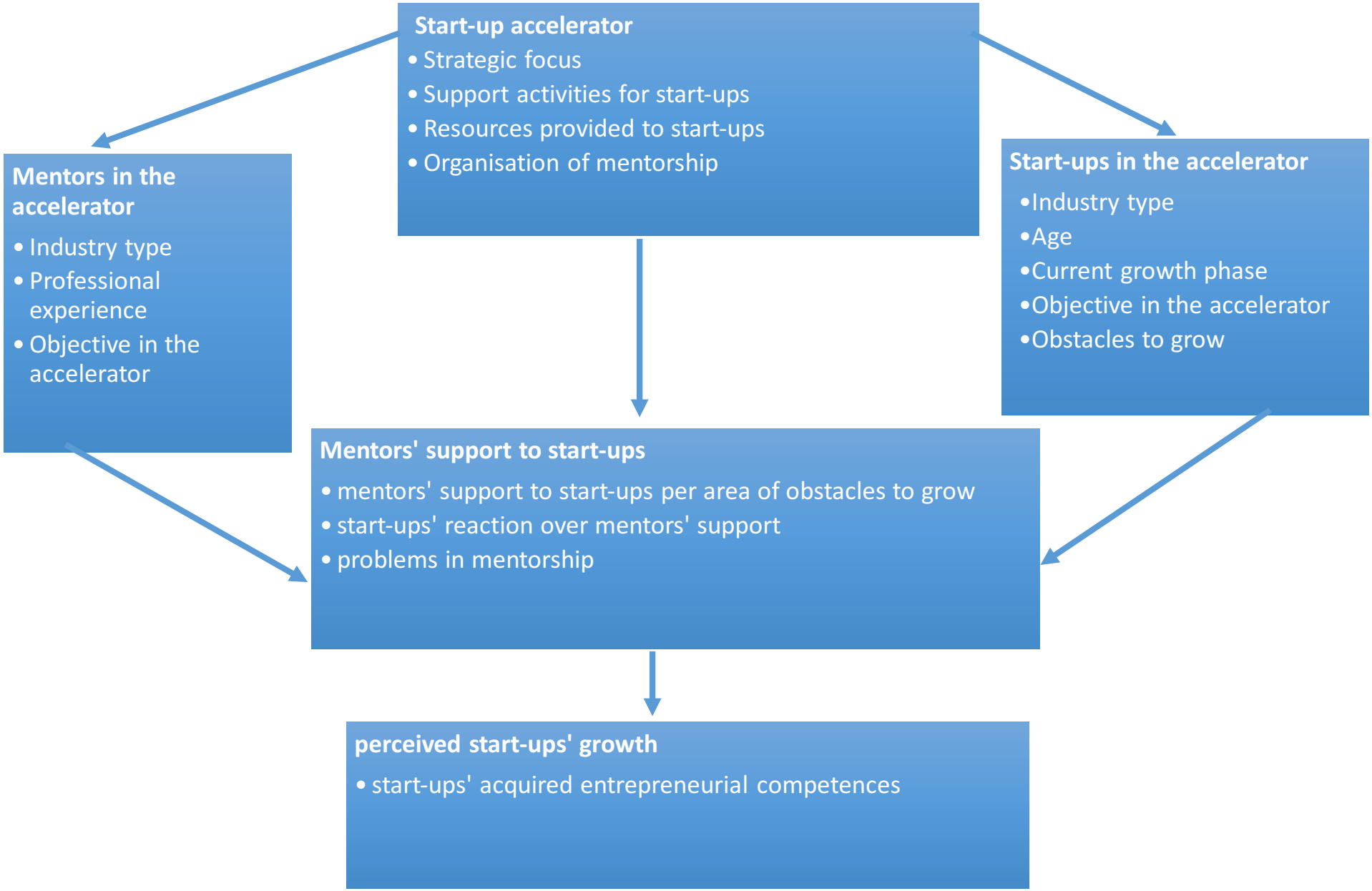

Figure 10 Conceptual model of the thesis project

3. Research Methodology

3.1. Case Study research method

The case study is a research method where the researcher conducts an empirical investigation of a contemporary event within a real-life context and there is little control over the events (Yin, 2009). Case studies are characterized by a small domain, higher level of depth than breadth, selectivity, assertion, open observation and use of quantitative and qualitative research methods (Verschuren & Doorewaard, 2010). Next, each characteristic of the case study research method will be explained.

First, the small domain is a characteristic of case studies, due to a small number of research units in this methodology, named *cases* where the emphasis is on comparing and interpreting data from the observation units (Verschuren & Doorewaard, 2010). Second, in case studies there is higher level of depth as various and intensive methods are used to generate data. The data collection methods used in case studies, such as interviews, observation and content analysis of textual and audio-visual materials allow to obtain higher level of depth (Verschuren & Doorewaard, 2010). Other research methods like surveys offer less level of depth(Verschuren & Doorewaard, 2010) and are useful to answer research questions that require more precise answers (in the line of inquiry of questions with what, who, what, where, how many, how much)(Yin, 2009). A third characteristic of the case study methodology is the selectivity. It uses strategic samples instead of random samples, as in surveys. When using the case study methodology, the researcher can select specific research units guided by a conceptual design or the information intended to obtain(Verschuren & Doorewaard, 2010). Fourth, the assertion characteristic of the case study means that is possible to see the study object as a whole, instead of loosened observation units and variables as in surveys(Verschuren & Doorewaard, 2010). Fifth, in case study methodology, the researchers can do an open observation of the studied event or conduct interviews at the location of the studied object(Verschuren & Doorewaard, 2010). At last but not least, qualitative data and quantitative research methods can be used with case study methodology (Verschuren & Doorewaard, 2010).

3.2. Selection of the case study

The master thesis will be based on a single-case study at a start-up accelerator located in western Europe company, that is interested on the results of the research to improve the mentorship of the next accelerator programs. For confidentiality reasons, the accelerator company needs to be anonymized. The chosen accelerator is a suitable study context, since the organization has facilitated access the researcher to interview the accelerator's staff,

mentors and start-ups representatives that participated in the last accelerator program that was completed in 2017.

This selection of the accelerator program is based on two aspects, the accessibility to interview mentors and start-ups and the time constraints of the master thesis (4 months). First, the accelerator program was completed recently (1 month before the research started) which facilitates contacting the mentors and start-ups and additionally these actors can provide the most recent information about the mentorship at the accelerator. Second, since the information about mentorship is planned to be obtained from interviews, it is needed to consider to have enough time to interview each start-up founder, the corresponding mentor and additionally accelerator's staff.

3.3. Advantages and limitations of the research method

The advantage of limiting the research domain to one accelerator is that the mentorship process can be analysed deeper and more insights can be collected from the process in this organization. The diversity of mentors and start-ups make can produce rich information, and the insights found in the research may apply to a larger number of accelerators.

The disadvantage is that the results of the study could be more difficult to apply to a broader population of interest or similar cases (Verschuren & Doorewaard, 2010). To respond to this disadvantage, Yin (2009) states that case studies as experiments are generalizable to theoretical propositions and not to populations or universes, in other words, this author states that the goal will be to expand theories and not enumerating frequencies.

3.4. Data collection methods

3.4.1. Secondary Data

The information about the accelerator program, participant start-ups and mentors can be collected from the accelerator's website and internal documents. The information about the professional experience of start-ups and mentors can be obtained from their LinkedIn public profiles and F6S, which is a web platform to enable start-up founders interact with investors, accelerators and incubators ("F6S Overview," 2017).

3.4.2. Primary Data

The interviews for this research will be semi-structured. There is a predetermined list of questions to be asked to the interviewees as in structured interviews(Sekaran & Bougie, 2016), however the researcher can also ask questions that are not predetermined if they are relevant to answer the research questions. In this research project, the conceptual model will be the base to select the topics for the interviews with start-ups, mentors and staff part of the accelerator program.

All interviewees were asked permission to record the conversation. The interviews were manually transcribed using the F5 software tool that allows to add timestamps to the transcribed text.

The three groups of interviewees in this research are: accelerator's staff, start-up's representatives and mentors that participated in the studied program. The list of questions asked to each group are detailed in

Appendix A: Interview questions. For confidentiality reasons the mentors and start-ups will be anonymized.

Interview to accelerator's staff

The selected interviewees in this group are: accelerator company's managers, the program manager and one person that worked organizing the mentoring in the last accelerator program. These interviews will allow to get information about the objectives and challenges regarding mentorship and how the mentoring is organized. For instance, it will be asked how mentors are on-boarded, matched with start-ups and how they report to the accelerator's manager and founders.

Interviews to start-ups

In this research project, 8 start-ups were considered and one representative of each start-up was interviewed.

Interviews to mentors

The ideal situation is to interview at least one mentor per start-up. However, this depended on the mentor's availability and willingness to participate in the research. It was possible to interview one mentor per start-up except in one case.

3.5. Data Analysis

The information collected in the thesis project includes the interview transcripts, notes, information about the studied accelerator company, the start-up companies, the start-up founders' profiles, mentors' profiles. To manage this qualitative data, a process that includes three steps will be used: data reduction, data display and drawing of conclusions(Sekaran & Bougie, 2016).

3.5.1. Data Reduction

In this step the researcher selects, assigns codes and categorizes the collected data. Codes are labels assigned to units of texts, which later on, can be grouped into categories. Coding and categorizing is usually an iterative process, as the researcher might have to return to the data several times to get a better understanding (Sekaran & Bougie, 2016).

To start data reduction a coding unit needs to be selected, which can be in the form of words, sentences, paragraphs or themes. Themes represent an expression of an idea and it can be a text of unit of any size as long it represents a single theme(Sekaran & Bougie, 2016). Next the "categorization is the process of organizing, arranging and classifying coding units". There are basically two ways to create the codes and categories. First, in situations where there is no

theory available, the codes and categories can be generated inductively from the collected data. This method is known as grounded theory. Second, if the codes and categories can be based on an existing theory and if needed revise them, change them or add new codes and categories inductively. When the researcher chooses to use existing codes and categories it helps to expand previous knowledge (Sekaran & Bougie, 2016).

For this thesis project, the interview transcripts were coded using the software tool ATLAS.ti. Paragraphs of texts were coded by the researcher using the modalities identified in the conceptual model. For example: accelerator's strategic focus, start-up's motivation to participate in the accelerator program, mentor's industry type, mentorship's advice to solve a market related obstacle.

3.5.2. Data Display

The qualitative data may be presented in different forms; such as: selection of quotes, a matrix, graph or charts that allow to illustrate patterns. This step helps to derive conclusions based on the reduced data (Sekaran & Bougie, 2016). The results of this research project are shown in tables and in some cases relevant quotes are listed.

3.5.3. Drawing conclusions

The data reduction and data display will allow to find patterns, relationships, making contrasts and comparisons (Sekaran & Bougie, 2016). This process allows to analyse the information and answer the research questions.

The result of data reduction is that the researcher finds patterns and relationships between data. There are cases when it is relevant to notice the number of times a theme occur, in that case it is possible to quantify the qualitative data and that can help to understand the relevance of the categories (Sekaran & Bougie, 2016). In this study, the patterns were manually find by creating tables with specific information.

4. Case study results

This chapter contains the results of the case study, that will allow to answer the second research question of the thesis project and its corresponding sub-questions. The first sub-section contains an overview of the accelerator company and a description of the organization of mentorship. The second-subsection contains an an overview of the start-ups and mentors that participated in the accelerator program, the modalities indicated in the conceptual model. The third sub-section contains an analysis of the obstacles faced by the start-ups during the accelerator program, what advice was received from the mentors to overcome these difficulties and the start-up's reaction over the advice. The fourth-subsection contains a categorization of the problems found in the mentorship at the accelerator program and a description of each type of issue. The fifth section contains an analysis of the factors among start-ups and mentors that caused differences in the perceived contribution of mentorship to start-ups' growth.

4.1. Accelerator's overview

4.1.1. Accelerator Program elements

This section contains a description of the studied accelerator elements using the model by Pauwels et al. (2016).

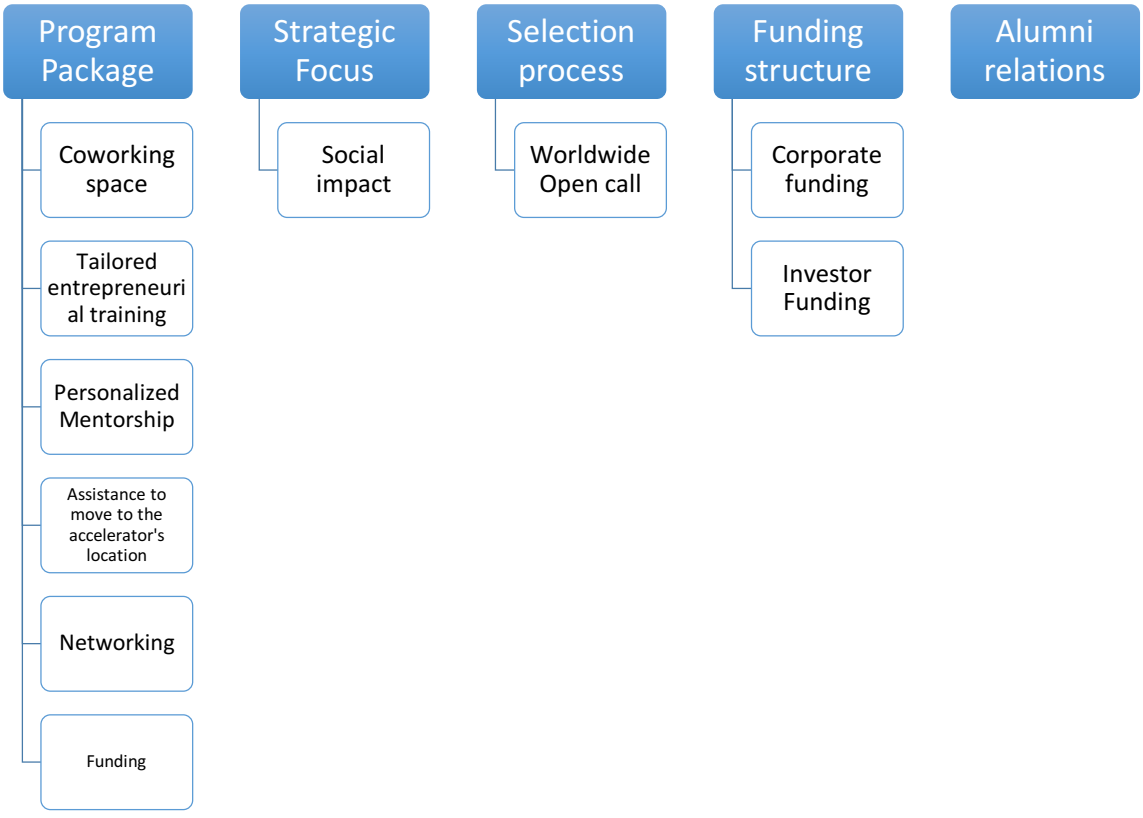

Figure 11 Start-up Accelerator Program elements

Adapted from (Pauwels et al., 2016)

Accelerator's Program Package

The studied accelerators' package includes access to a co-working space at the accelerator's company location, tailored entrepreneurial training, personalized mentorship, assistance to move to the country where the accelerator is located, networking opportunities and funding.

In addition to the entrepreneurial training and mentoring, start-ups can access to the accelerator's partners that are experts in various topics where new companies require assistance, such as taxes, subsides, patents, banking.

Entrepreneurial training

The studied accelerator offered the entrepreneurial training to the start-ups through group workshops and one-one sessions with experts. The training covered entrepreneurial topics related to market, team building, financial management. The program was organized in phases, the start-ups could choose which trainings to assist. In the initial phase they evaluated their main needs, objectives and goals in the accelerator program. In the last phase the start-ups were encouraged to look for strategic partners and investor leads.

Accelerator's Strategic Focus

The strategic focus of the studied accelerator is to support and invest in start-ups that are working on solutions that have a social impact. The strategic focus of the selected accelerator has characteristics of two types of accelerators found by Pauwels et al. (2016). "deal maker" accelerator, as the company aims to connect investors with start-ups private investors, partners and organizations that are willing to invest in the start-ups. Second, as the "welfare simulator" accelerator type, the studied accelerator aims to contribute to the economic growth of the region where the accelerator is located.

4.1.2. Organisation of Mentorship at the accelerator company

The information of mentorship at the accelerator company was obtained from interviews with the accelerator's staff and internal documents where it was explained how the mentorship at the program was organized.

Objectives of Mentorship

In several interviews with the accelerator's staff, it was mentioned that the role of the mentor is to ask questions, called by one of the interviewees as a "Socratic role" where mentors question start-ups about their assumptions, goals and ambitions. For the interaction between start-ups and mentors it was expected that both parts have an understanding of the start-up plan at the accelerator program. In this case, the mentor can also ask questions about the start-up progress. For the accelerator the start-up teams are responsible of their own plans and decisions, the mentors have a more independent and neutral participation. During the meetings the start-ups can expose to the mentors their challenges that can be in different

aspects (technical, sales, local culture) and the mentor can provide advice, help them to identify a need and possibly point out who else can provide the required help.

In summary, for the studied accelerator, the objective of mentoring was to provide support to start-ups in the accelerator program, so they can benefit from the experience of mentors. Accelerator managers expected that mentors and start-ups are both proactive so they organize and define the topics to be discussed in the mentorship meetings.

Selection of mentors

Accelerator managers invited experienced professionals from corporations and entrepreneurs to be mentors in the studied accelerator program. An important requirement to participate as mentor qs the availability to mentor start-ups during the whole duration of the program and also dedicate time to the mentees weekly. A member of the accelerator mentioned some personality traits that are desired in the mentors: being proactive, willing to listen others, enthusiasm, inspiring or have ability to influence others, ability to think about different scenarios, good communicator, agile.

Follow up and evaluate mentorship

Once the mentors and mentees were introduced, they were responsible to schedule meetings as often as needed and at least once a month. These meetings were open discussions and expected to be oriented to solutions.

Communication with mentors

The accelerator managers expected that mentors and start-ups provide a report of what was discussed in the mentoring sessions. Additionally, Through the program, the accelerator managers requested some meetings with the start-ups and the mentors to check how the mentorship was working.

4.2. Start-ups and mentors in the studied accelerator program

4.2.1. Start-ups

Table 5 Start-ups in the accelerator program shows the list of start-ups including the industry, origin, age, growth phase and motivation to participate in the accelerator program. The start-ups that participated in the studied accelerator program had diverse characteristics. First, the start-ups can be classified in different industries, the industry type was obtained from the start-ups' LinkedIn profile. Second, the start-ups came from different countries of origin; for confidentially reasons, only the continent of origin is shown in the table. In this study, the interviewed start-ups came from Europe or Asia. Third, the age of the start-ups varies from less than 1 year to two years. The age of the start-ups at the time they joined the accelerator program, was obtained using the foundation year from the companies' LinkedIn profiles. Fourth, the start-ups in this study can be located in distinct growth phases from the stage-based model by Vohora et al. (2004): research, opportunity framing, pre-organization, re-

organization and sustainable returns. The phase of development of each start-up was determined based on the interviews with start-ups' representatives and mentors. Fifth, the motivation to participate of each start-up was asked during the interviews with start-up representatives. In the next subsections, it will be explained how the start-ups were assigned to a specific growth phase and motivation in the accelerator.

Table 5 Start-ups in the accelerator program

ID	Industry Type	Origin	Age	Growth phase	Start-up motivation to participate in accelerator
S1	Electronic Manufacturing	Asia	2 years	Research	-Find a market -Get technology support
S2	Software/Leisure, Travel & Tourism	Europe	<1 year	Opportunity framing	-Find a market -Funding
S3	Software/ Health, Wellness and Fitness	Europe	<1 year	Pre-organization	-Find a market
S4	Consumer electronics	Asia	<1 year	Pre-organization	-Expand market -Networking opportunities -Entrepreneurial training
S5	Software/ Social Media and Online Marketing	Europe	<1 year	Opportunity framing	-Find Market -Entrepreneurial training
S6	Software/Logistics and Supply Chain	Europe	2 years	Re-orientation phase	-Expand market -Funding
S7	Electronic Manufacturing	Asia	1 year	Re-orientation phase	-Expand Market
S8	Software/Health, Internet of things, and Big data	Asia	2 years	Sustainable returns	-Funding -Expand market

Start-ups' Growth phase

Start-up, S1 is located in the research phase as during the interviews with the mentors and the start-up's representative, it was found that the start-up was still exploring how the initial idea can be commercialized and doing more research. This start-up still needed to overcome the opportunity recognition juncture. S2 and S5 are considered to be in opportunity framing phase as they had identified a commercial proposition but were still doing some improvements to it. Additionally, it was found in the interviews with mentors or start-ups that these start-ups needed to gain entrepreneurial commitment, that is a characteristic of start-ups in the opportunity framing stage. Next, the start-ups assigned to the pre-organization phase, S3 and S4, are the ones that were reframing the definition and scope of the opportunity and feasibility of the business plan. In the interviews, it was also found that these start-ups were trying to overcome the threshold of credibility. Two start-ups, S6 and S7 are located in the re-orientation phase, as during the interviews with start-ups or mentors it was found that they needed to change existing configurations, adapt their business proposition. Actually these two start-ups changed their initial idea. Finally, S8 is assigned to the sustainable returns phase, as it was found in the interviews that the company had a stable business model and was able to get sustainable returns.

Start-ups' motivation to participate in the accelerator program

The motivation to participate in the start-up accelerator was asked during the interviews with start-up's representatives. After analysing the interviews, different categories for motivation to participate were identified. The categories found In the reviewed literature were: "Funding", "Networking" and "Entrepreneurial training"(Christiansen, 2014; S. Cohen, 2013; Radojevich-Kelley & Hoffman, 2012; "The Accelerator Assembly Conference: what we learned and what's next?," 2014).Previous research found that mentoring is one of the main reasons to join an accelerator program. Nevertheless, in this study, only one start-up mentioned that entrepreneurial training, that is related with mentoring was a reason to participate in the program.

Some start-ups reported they applied to the program to look for market, find customer segments or validate their business idea; in these cases, the start-up' objective was categorized as "Find market". Other start-ups were interested in the business growth, by increasing their clients or expanding to new markets; in which cases objective category corresponds to "Expand market". Other motivations found in the study are: get technical support in which case the corresponding category is "Get Technology support".

In this case study, all of the start-ups had the objective to find or expand the market. It can be observed that start-ups in the initial growth phases (research, opportunity framing and pre-organization) were motivated to find a market; while start-ups in more advanced phases (re-orientation and sustainable returns) were motivated to expand the existing market. For instance, S8 located at sustainable returns stage already had clients in different markets and

their purpose to join the accelerator program was to expand to a new market where the accelerator can help the firm to connect to potential clients.

4.2.2. Mentors in the accelerator program

Mentors in the studied accelerator program had diverse characteristics, as shown in Table 6 Mentors in the accelerator program. The industry expertise, areas of professional experience, and current role of each mentor was obtained from the mentors' LinkedIn profiles and confirmed in the individual interviews. The mentors' characteristics found in studied accelerator program match with the findings by Pauwels et al. (2016). These authors found that mentors can be internal coaches from companies, investors or business developers.

Different categories of motivation were identified in the interviews with mentors: "learn from start-ups", "altruistic", "work with a start-up team", "investment opportunities". First, 7 out of the eight interviewed mentors mentioned they wanted to "learn from start-ups". One of the mentors that had this motivation, said that he was willing to learn how innovation is developed outside corporations and what can be learned from this; for instance, start-ups can adapt to changes faster than big corporations. Second, the "altruistic" motivation category is assigned to mentors that mentioned that they wanted to share their experience and help others to achieve their objectives. In this study, 4 of 8 mentors had an altruistic motivation. Third, the motivation theme "work with a start-up team" was assigned to two mentors that were motivated to participate in the accelerator program to be part of a start-up team. M6 mentioned that being a mentor could be fun and different from what he is used to in the corporate world. M7 said that he wanted to be involved with a start-up to participate in the innovation scene. Fourth, mentors with the "investment opportunities" motivation theme (M1 and M4), said that one of the reasons to participate in the accelerator program was to meet potential start-ups to invest on.

Table 6 Mentors in the accelerator program

Mentor ID	Industry expertise	Areas of professional experience	Current role	Mentor's motivation/objective in the accelerator
M1	Environmental solutions	Sales and marketing Management Business strategy Product innovation	Managing Director	• Learn from start-ups • Investment opportunities
M2	Consultancy services	Business strategy Entrepreneur Management	Innovation consultant	• Learn from start-ups • Altruistic
M3	Investment	Entrepreneurship Investment	Entrepreneur, mentor, investor	• Learn from start-ups • Investment opportunities
M4	Marketing	Entrepreneurship Online Marketing Business Strategy Software development	Partner manager	• Altruistic • Learn from start-ups • Investment opportunities
M5	Investment Renewable energy	international Management Finances Mergers and acquisitions Business strategy	CEO	• Altruistic • Learn from start-ups
M6	Finances	Financial management Risk management Governance and Appliance	Head of Finance	• Work with a start-up team
M7	Healthcare	Business development	Business development	• Altruistic • Learn from start-ups • Work with a start-up team
M8	Insurance, Finances	Business development	Managing Director	Learn from start-ups

4.2.3. Matching start-ups with mentors

At the beginning of the studied accelerator program, the start-ups evaluated their needs. A member of the accelerator's staff matched the start-ups with two mentors that could satisfy one of the start-up's needs, based on the mentor's professional experience.

In the literature review it was found that other accelerators can let the start-ups and mentors to conduct the matching by themselves. In the interviews with the accelerator's staff, it was found that in a previous accelerator program there was a match-making event to let the mentors and start-ups match by themselves. During this program, each start-up worked with only one mentor; which had the risk that if the mentor decides to leave, the start-up would not have a mentor. To avoid this risk, in the studied program they assigned 2 mentors per start-up. Additionally, mentors could be matched with 1 or 2 start-ups.

Table 7 Matching of mentors and start-ups shows the matching of the start-ups and mentors considered in this study. The table shows each mentor's industry and role and their assigned start-ups with industry type.

Table 7 Matching of mentors and start-ups

Interviewed mentor ID	Industry	Role	Mentee 1	Mentee 2
M1	Environmental solutions	Managing Director	S1 Electrical/Electronic Manufacturing	
M2	Consultancy services	Innovation consultant	S7 Electrical/Electronic Manufacturing	
M3	Investment	entrepreneur, mentor, investor	S5 Software/ Social Media and Online Marketing	
M4	Marketing	Managing Partner	S2 Leisure, Travel & Tourism	S3 Software/ Health, Wellness and Fitness
M5	Investment Renewable energy	CEO	S5 Software/ Social Media and Online Marketing	S6 Logistics and Supply Chain
M6	Finances	Head of Finance	S2 Leisure, Travel & Tourism	
M7	Healthcare	Business development	S8 Health, Internet of things, and Big data	
M8	Insurance, Finances, Innovation	Managing Director	S6 Logistics and Supply Chain	

4.3. Perceived mentors' support to positive start-ups' conditions for growth

During the interviews with start-ups and mentors, it was asked what obstacles were faced by the start-ups, what advice was provided by the mentors in these aspects and what action was taken by the start-ups based on the mentors' support. The categories of obstacles shown in Table 1 Obstacles to grow faced by new ventures (Van Geenhuizen & Soetanto, 2009) was used in the interviews with mentors and start-ups; it was useful to help the interviewees to remember the conversations that they had during the mentoring sessions.

The next sections describe the obstacles to grow faced by start-ups by category.

Mentor's support to overcome market related obstacles

All start-ups and mentors in this study reported that start-ups in the accelerator program faced market-related obstacles. Table 8 Mentors' support to overcome market-related obstacles shows a detail of the market-related obstacle, the mentor's support received and the start-up reaction over this support.

For start-ups that did not have a clear value proposition (S1 and S5), their mentors asked about the assumptions made for the business idea, the added value of the product and provided feedback about the feasibility of their initial value proposition. The start-ups had a different reaction over the mentors' feedback. S1 did additional research to find a proper value proposition, whereas S5 considered that their value proposition was already clear.

The studied accelerator offered a training session for creating the business plan, but still several start-ups (S1, S2, S4 and S5) mentioned it was challenging to complete it and mentors provided assistance. Several mentors mentioned that the start-up business model was weak and needed improvement. In the case of S2, a mentor took his time to teach the start-up to build the business model.

Start-ups (S2, S6, S7) had difficulties to define the product-market fit. In these cases, mentors provided insights about the local market where start-ups wanted to commercialize their products. S6 and S7 reacted on the mentor's support by changing their products to fit the needs of the local market.

Three start-ups (S2, S3 and S5) needed to validate their products with real clients. S2 received feedback from his mentor about the risk and pitfalls of the product. For S3, the mentor recommended a company to test their product. In the case of S5, the mentor mentioned that he provided contacts to test the start-ups' products and the start-up was able to get a client. For S6, mentors also provided contacts of potential partners or clients.

S4 and S8 received support from their mentors to generate sales in the local market. S4's representative mentioned that he lacked experience on sales and his mentor taught him about the sales funnel, which helped the start-up to create a sales plan. For S8 start-up, the mentor was able to provide advice in regards to sales and business development in the local market. Additionally, S8's mentor provided feedback on the business development strategies to expand the start-up's market market and also provided assistance to define the price of the product in the new market. In this specific case, the mentor had knowledge about the local market and industry where the start-up wanted to expand.

A final remark is that for some obstacles in the market area, the accelerator's staff provided some assistance to specific start-ups.

Table 8 Mentors' support to overcome market-related obstacles

Start-up	Interviewed Mentors	Market related obstacles	Mentor's Contribution	Start-up's reaction
S1	M1	Value proposition not clear	-Give feedback about feasibility of the value proposition. - Provide advice to think from the customer side	"We moved from our product and starting researching around products available in the market, which were easier to install than ours." - Used the insights to pivot the product
		Lack of experience to create a Business plan	-Point out the importance of the business plan as starting point	
S2	M4, M6	Find product-Market fit	- Provide advice to find market channels and partners. M4 mentioned: "We tried to see companies similar to S2, so we discuss this. To look those platforms and try to get people from those platforms that maybe know that similar type of activities." - Provide information about the local market.	Look for new market segments
		Product validation	- Provide feedback of the product: pitfalls and risks of the product	Update the product's assumptions.

		Lack of experience to create a Business plan	Teach how to build a business case (the type of assumptions, variables, revenue model)	
S3	M4	Product validation	- Connect the start-up to a company that can have pilot project	Set up a pilot project with a company
S4	*interview with mentor not possible	Lack of experience in sales in the local market	- Teach how to create the sales funnel	- Create the sales plan with the mentor's support. S4 said about his mentor's support: "..helping me to understand the whole sales system, figuring out how the sales funnel channel works, he explained me that on a very one-one basis"
		Develop business strategy	*Assistance to develop a business strategy was provided by accelerator's staff.	
S5	M3, M5	Value proposition not clear for the mentors	- Give feedback and question the business proposition (why are you bringing this idea to the market?)	The start-up considered that they already validated the value proposition.
		Lack of experience to create a Business plan	Assist to create the business plan	Used the mentor's insights to create the business plan.

		Product validation	- Provide basic concepts about how to make a market study- -- Introduce potential companies to test the product (pilots) M5 mentioned: “He needed to test the basic model on a couple of customers and I gave them a couple of addresses. He is still working with one of them.”	Find clients
S6	M5, M8	Find a proper product-market fit	-Provide guidance about the local market.	- Used the mentors’ insights to make the decision to pivot the product.
		Finding clients	- Give contacts of potential partners or clients. M5 mentioned: “We(the mentors) were looking for contacts. The other mentor and I found 1 or 2 leads.”.	
S7	M2	Product-market fit specifically in the local market	- Provide guidance about the local market, value proposition of the product in the local market - Assist to identify potential market * Support also provided by accelerator’s staff and partners	- Used the mentors’ insights to make the decision to pivot the product for the local market.

S8	M7	Business development	- Contribute to create a strategic business plan to expand the market	Start-up contacted potential clients in the local market.
		Pricing	- Assist to define the price for the product (product premium)	

Mentor's support to overcome management obstacles

The accelerator program offered training sessions related with team management and coaching. Nevertheless, start-ups also received advice related with management from their mentors. Table 9 Mentors' support to overcome management related obstacles shows the management related issues reported by mentors or start-ups, the mentor's advice for each obstacle and the start-up's reaction.

From the interviews with the start-ups, it was found that some start-up's members may become overloaded during the accelerator program; this was the case for S2, S4 and S7. In general, one or two members of the start-up were fully dedicated to the the accelerator program, while the rest of the start-up's team continued to work in the development of the product or service. The members that participated in the accelerator program needed to organize their time to participate in the program trainings, networking events and meetings with the mentors while keep working with the rest of their team.

When participating in an accelerator program which has a limited time, start-ups need to **set priorities**. S7's representative mentioned that he had very limited time, as he was not able to come from the start or the program. His mentor was able to help him to prioritize his activities. Other start-up member mentioned that he became overloaded with the amount of tasks assigned to him and the mentors gave him advice to manage his team.

When analysing the interviews with mentors, managerial issues related with the start-up teams were found. In general, mentors were meeting with one or two start-up's representatives, so they could not know the whole start-up team, but still reported some issues such as not organized team, not enough commitment from all start-up team members and wrong priorities. In terms of team organization, a mentor reported that the start-up was constantly changing direction, so not stable. In regards to the team commitment, a mentor mentioned that one team member was overloaded while the others had limited availability. This mentor pointed out that the lack of commitment of all team members can slow down the growth of the start-up. Additionally, he mentioned that start-ups needed to improve their entrepreneurial attitude, for instance be more perseverant. Other important issue found by the mentors in regards to team management, was that start-up members were focusing too much on the product development and not in the market development, while these two activities need to be balanced to find a proper product-market fit.

To summarize, in the area of team management, mentors can provide their views about the team organization, prioritization and provide a direction to next steps based on their experience. They can also show the start-ups potential risks such as team's continuity.

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Table 9 Mentors' support to overcome management related obstacles

Start-up	Interviewed Mentors	Management related obstacles	Mentor's support	Start-up's reaction
S1	M1	Team management issues	*advice received from accelerator managers	
		Team motivation issues	*advice received from accelerator managers	
S2	M4, M6	Team management issues	- Point out Risks about continuity of the company due to the current composition of the team. - Advice on continuity of the team. i.e. add more members to the team. * also received advice from accelerator's managers	
		Team commitment issues	Advice on team commitment.	The start-up's CEO used the advice to manage the team.
		Start-up member feel overloaded		
S3	M4	Team more focused on product development than market.	- Advice to add an expert in market.	Later on the start-up added an expert in marketing.

S4	*interview with mentor not possible	Start-up team member overloaded		
S5	M3, M5	Tasks prioritization	Advice provided by mentors: too much focus on the product development and not in the business plan.	
		Team commitment	- Advice to have more team commitment	
S6	M5, M8	Team adaptation to a new environment.		
S7	M2	Tasks prioritization (limited time) S7's representative mentioned: "you need to really prioritize, specially when you have few months of program, so you have to prioritize your focus."	- Help on defining the priorities while the start-up is part of the program	S7's representative said: "M2 really helped me, he helped to know what should the priorities be."
S8	M7	not reported		

Mentor's support to overcome financial obstacles

In this case study, start-ups and mentors reported that during the mentoring sessions they had less discussions about financial related obstacles, compared to market or management obstacles. Several start-ups and mentors mentioned that the start-up was not in the stage to work on the financial aspects. In other cases, the start-up's representative said that the mentor was not on the finances industry to ask for financial advice. Additionally, a mentor stated that financial management is not his area of expertise, so that is why he provided less advice in this area.

Table 10 Mentors' support to overcome financial related obstacles shows a detail of the financial-related obstacles, the mentor's support received and the start-up reaction over this support.Some start-ups (S2, S5 and S6) mentioned they lack knowledge and experience in financial management. In one case, the start-up mentioned that mentors assisted him to develop the financial part of the business plan. Other start-up requested help to his mentor to do a financial forecast. A mentor mentioned that he provided guidance to work on basic financial elements of the financial plan such as setting up a budget, cash flow, balance sheet, estimate returns.

Table 10 Mentors' support to overcome financial related obstacles

Start-up	Interviewed Mentors	Financial Management obstacles	Mentor's Support	Start-up's reaction
S1	M1	not reported		
S2	M4, M6	Lack of experience in Financial management	financial forecast provided by one of the mentors.	
S3	M4	Financial management issues that came from technology challenges	some assistance regarding financial management was provided	
S4	*interview with mentor not possible	Sales were needed	Assistance to understand how to meet financial targets. i.e. how many clients do you need to actually meet financial targets.	Used mentors' support to develop the sales plan.
S5	M3, M5	Lack of knowledge about financial management	-Assistance to create financial plan including aspects like: budget, cash flow, balance sheet, pricing	Used mentors' support to develop the financial plan.
S6	M5, M8	Lack of experience on investment management	- Advice on how to manage investment.	
S7	M2	not reported	not reported	
S8	M7	not reported	not reported	

Mentor's support to overcome physical obstacles

Physical obstacles for start-ups growth could be difficulties to find accommodation, infrastructure or access to suppliers. The studied accelerator provided office space and assistance to find accommodation and to move to the accelerator's location. The only physical obstacles were related with the development of the technology. During the interviews with start-ups, only two start-ups (S1 and S3) reported challenges on this aspect. S3 found some assistance and advice from one of their mentor, who was working in the same industry (software) as the start-up. S3 also mentioned that technology challenges could affect the efforts to show their product to potential clients or investors.

In the interviews with mentors, it was found that start-ups that pivot their product, need to make technological changes and that is a challenge for the team. One of the mentors mentioned that he could provide some feedback about the minimum viable product that the start-up was developing. S3's mentor mentioned that he gave advice on the sequence of the development of product features.

Table 11 Mentors' support to overcome technology related obstacles

Start-up	Interviewed Mentors	Technology related obstacles	Mentor's Support	Start-up's reaction
S1	M1	Hardware expertise required	specific expertise needed was not found in the accelerator program.	
S2	M4, M6	not reported	not reported	
S3	M4	blocker issues in the development of the product	Technical advice provided by a mentor coming from the same industry.	Later on, the start-up was able to solve the technical issues.
S4	*interview with mentor not possible	start-up had a team working on technology, no issues reported	not reported	
S5	M3, M5	not reported	not reported	
S6	M5, M8	not reported	not reported	
S7	M2	not reported	not reported	
S8	M7	not reported	not reported	

Mentor's support to overcome Government or regulatory obstacles

The studied accelerator provided assistance to start-ups to meet the legal requirements needed to move to the accelerator's location, set up local bank accounts and register the companies. Thus, start-ups did not request assistance from their mentors to solve government or regulatory issues. However, it was found that issues related with moving to a new location could affect the mentorship. For instance, if the start-up arrived late to the program, it had reduced time to meet with the mentors.

Finally, in regard to patents or intellectual property, S8 discussed very briefly with the mentors the possibility to patent their product, but no action was taken.

4.4. Mentorship problems

From the literature review, it was found that start-ups in accelerator programs have reported some issues about mentoring. However, in the studied articles, the issues concerning mentoring were not seen from the other actors' perspective. In this research project, all interviewees; the accelerator's staff, mentors and start-ups were asked about the issues they faced during the programs regarding mentorship. The accelerator's staff reported issues about organizing and evaluation of mentorship. Start-ups and mentors provided information about their mentor-mentee specific relationship. Next sections contain the results of the analysis of the interviews.

Matching start-ups with mentors

All interviewees from the accelerator's staff mentioned that matching start-ups with mentors is challenging. Mentors and start-ups in the studied cohort are diverse. Start-ups are from different countries, are at a different growth stage and present specific challenges. Mentors come from different industries and additionally they could also have different time availability. In the studied accelerator, mentors and start-ups were matched based on the decision of an accelerator's manager. At the beginning of the program, the start-ups analysed their needs and provided this information to the accelerator. The manager aimed to match the start-ups with a mentor that could help them, according to the mentor's professional experience on a specific industry. In the interviews with start-ups and mentors, in one specific case, the start-up (S5) and the mentors (M3, M5) found that the matching could have been better. The start-up reported that it was difficult to explain the business proposition to the mentors, as the mentors were in a different industry. In addition, one of the mentors mentioned that he was not able to offer advice about the product-market fit, as he did not know that specific industry.

Nevertheless, matching the start-up needs with the mentor's expertise or industry does not guarantee a good relationship. Once the start-up and mentor were matched, their interaction relied on them, not in the accelerator. The mentors and mentees were in charge to schedule the meetings, develop the relationship and decide the content of the meetings. One of the accelerator's interviewees mentioned that affinity between mentors and mentees is also needed.

Maintaining Mentor's commitment and motivation

According to the interviews with the accelerator's staff, maintaining mentor's commitment is a challenge for the accelerator managers. During a previous accelerator program, it was found that mentors can drop the program. To overcome this issue, in the next program, the studied accelerator asked the mentors to sign a contract and also start-ups were assigned two mentors, so they have more than one option if one mentor leaves the program.

Based on the interviews, there are some factors that affect mentor's commitment and motivation. In one of the interviews with accelerator's staff, it was mentioned that mentors' motivation could be affected if he/she finds low potential in the assigned start-up.

In the interviews with mentors, it was found that mentors can become demotivated if they do not see progress from one session with the start-up to the next one. In several cases, mentors mentioned that they do not know what start-ups are doing with their advice. Other factor that affect the mentor's motivation is the regularity of meetings with start-ups. Some mentors reported that start-ups were not contacting them regularly and this made it difficult to follow the progress of the start-up.

Communication between mentors and start-ups

In the interviews with start-ups and mentors, it was found that mentors and mentees were using different means of communication: meetings in person, conferences via Skype, email, messaging (WhatsApp). In some cases, start-ups reported that scheduling meetings with the mentors was challenging. Start-ups needed to request the meetings with mentors. Some start-ups find difficulties to coordinate the schedules of the two assigned mentors. In several cases the start-ups contacted only one of the assigned mentors.

Other challenge regarding communication, mentioned by the accelerator's staff and mentors is that there was no reporting system set. Some mentors mentioned that a system could help them to see the progress of the start-up, understand why the start-up is taking a specific direction (maybe caused by conversations with accelerator's staff). For the accelerator's managers, the lack of reports of mentoring make it difficult to follow the progress of the start-ups and mentorship.

Follow up the mentorship

Other challenge reported by accelerator's staff is to follow up the mentorship as, it takes a lot of communication with mentors and start-ups. A member from the accelerator mentioned that It is difficult to schedule meetings with start-ups that are busy with the accelerator program and with mentors that have their own professional lives. The accelerator management team was able to schedule few meetings with start-ups and mentors to talk about the progress of the start-ups with the mentors and the start-up teams. It was mentioned that information obtained from mentors was useful to detect start-up needs that can be satisfied by the accelerator.

Evaluation of mentorship

In the interviews with the accelerator's staff, it was mentioned that is difficult to evaluate mentorship as it is subjective what aspects should be evaluated? One start-up can value the mentoring based on the mentor's availability while other based on the connections provided by the mentor.

Alignment of expectations

It is possible that the start-ups' team members, mentors and accelerator's staff are not aligned, due to different expectations from each group. In the interviews with start-ups, it was found that most of them did not have clear what can be obtained from mentoring and they do not know their mentor's profile and expertise.

In the interviews with mentors it was found that they can have expectations about the start-ups; for instance, about the start-up level. In an interview with an accelerator's employee, it was mentioned that mentors can expect that the start-up are proactive and asks the right questions; but also, the accelerator managers expect that mentors ask the right questions to the start-ups.

The accelerator managers also expected that the mentors are informed about the entrepreneurial training program, however it was found that mentors did not know about details of the training, nor provided direction in which trainings start-ups should assist.

External factors

There are some external factors that can affect the mentorship. If the team is not able to start the program on time, this can delay the initial meetings with the mentor, reduce the mentoring time. A change of start-up representative in the program, can also affect the mentor-mentee, relationship.

4.5. Influence of diverse characteristics of start-ups and mentors

In this section, contains an analysis on how the different characteristics of start-ups and mentors can influence the perceived contribution of mentorship to positive conditions for start-ups' growth. In other words, this section will describe the patterns found in the case study related with start-ups' and mentors' modalities. Appendix B: contains two tables that allowed to manually find these patterns. The first table contains the details about start-ups, their reaction over the mentors' support and the entrepreneurial competences that were acquired. The second table shows the characteristics of each mentor and the advice they provided to their mentees.

4.5.1. Start-ups' factors

Table 12 shows the patterns found per start-ups' factors and important remarks that can be considered by accelerator managers. Some patterns were found for these start-ups' characteristics: growth phase, industry type, obstacles to grow, origin, objective in the accelerator program. A brief description of each pattern is detailed below and the remarks for accelerator managers will be discussed in the Conclusions chapter.

Table 12 Start-up factors and differences in the perceived contribution of mentorship to start-ups' growth

Start-up factors	Differences in the perceived contribution of mentorship to conditions for start-up's growth	Important remarks for accelerator managers
Growth phase	1) Start-ups' growth phase influences the area of obstacles to grow: • Market obstacles found in all studied start-ups • Management obstacles found in start-ups in early stage phases (S1, S2, S3) • Financial management found in start-ups in early stage phases (S2, S4, S5) • Technical obstacles found in start-up in early stage phase (S1, S3) 2) Growth phase influenced the entrepreneurial competences acquired through mentoring. • Research(S1): opportunity refinement • Opportunity framing(S2,S5): opportunity refinement, championing, leveraging • Pre-organization(S3,S4): leveraging • Re-orientation(S6, S7): opportunity refinement, leveraging • Sustainable returns(S8): leveraging	1) Start-ups in early stages could experience more issues in management, financial management areas. 2) Market related issues can exist for all types of start-ups. 3) Start-ups in research, and Opportunity Framing need more support to get opportunity refinement and championing competences. 4) Start-ups in pre-organization need more support to get leveraging competences. 5) Start-ups in re-orientation phase need more support to get opportunity refinement and leveraging competences. 6) Start-ups in sustainable returns need more support for business development.
Industry type	Match with start-up and mentor's industry type helped to solve issues - S3 (Software) and M4(Software development) - S8 (Health) and M7(Healthcare)	Matching start-ups and mentors within the same industry could be beneficial to solve market-related issues.
Origin	Non-local start-ups learned about the local market and in some cases change the business proposition to meet the local market needs.	Non-local start-ups require advice about local market and cultural differences.
Objective in the accelerator program	Start-ups with the objective to "Find a market" or "Expand market" received and reacted on the support to solve market related issues	Start-ups interested to find/expand market could request more support to overcome market-related issues.

First, it was found that the start-up's growth stage influences the types of issues that start-ups can experience. Start-ups in early growth phases were found to experience more issues related to management compared to start-ups in more advanced stages. Other important remark is that start-ups located in all stages can experience issues related with market. This is aligned with the findings by Van Geenhuizen & Soetano(2009) that found that market-related obstacles tend to be more resistant over time. Other finding regarding the start-up's growth phase is that this modality also influences the type of entrepreneurial competences acquired through mentoring. For instance, opportunity refinement is a competence that start-ups in research, opportunity framing and re-orientation need to acquire. Leveraging is a competence specially needed for start-ups that have overcome the research phase. The start-ups in sustainable growth phase was found to require more assistance on business development than the rest of start-ups.

Second, the industry type of the start-ups in the studied accelerator program were very diverse. It was not possible to find a specific pattern. However, an interesting finding is that in two cases the mentors and start-ups were working on similar industries and the mentor's experience was an important contribution to solve some reported issues.

Third, in the studied accelerator program it is possible to distinguish two groups of start-ups local and non-local based on the start-up's origin. Most start-ups were non-local, which means that they did not live in the country where the accelerator is located. As expected, start-ups from other countries were found to need more assistance on questions related with local market. Mentors also reported that they provided advice on the local culture to approach potential clients or partners.

Fourth, in the studied accelerator, the start-ups' objective to participate in the accelerator is related with the type of advice requested to their mentors. All the start-ups have the objective to either find a market or expand it; thus it was expected that during the mentoring sessions involve talks about market-related issues.

4.5.2. Mentors' factors

Table 13 shows the patterns found per mentor' factors and important remarks that can be considered by accelerator managers. First, It was found that the mentor's industry expertise and areas of professional experience can influence the advice provided to start-ups. Mentors that have a very high level of management experience with roles such as CEO or managing director gave more feedback about team management and commitment compared to mentors focused in other areas. Second, an expected fining is that mentor with investment experience and interested in investing in start-up can provide advice to start-ups about investor readiness. Third, mentor's business development experience can positively contribute to mentors helping start-ups to solve market related issues. Finally, it was found

that the mentor's objective in the accelerator program can influence the mentoring. Mentors with the interest to work with start-ups could dedicate more time to the mentorship

The remarks for accelerator managers will be discussed in the Conclusions chapter.

Table 13 Mentors' factors and differences in the perceived contribution of mentorship to start-ups' growth

Mentor factors	Differences in the perceived contribution of mentorship to conditions for start-up's growth	Important remarks for accelerator managers
industry expertise, areas of professional experience, current position	Mentors with more experience in management (M1, M5, M6) provided more advice on issues related with entrepreneurial commitment and team management. Investment experience(M3) contributes to provide advice on investor readiness Business development expertise (M7) fit the start-up with the start-up's objective to expand the market	1) Mentors with management experience can contribute to solve management issues 2) Mentors with investment experience can provide advice about a start-up being ready for investors 3) Mentors with experience in business development can be a good match to start-ups willing to expand its market.
Motivation to participate in the accelerator	Interest to invest in start-ups (M3) can motivate mentors to provide advice on investor readiness. Motivation to work with start-up team(M7) can encourage mentors to spend more time with start-ups/.	Matching mentors with start-ups could consider the mentors' and start-ups' motivation to participate in the accelerator.

4.6. Conclusions of the case study

To study the contribution of mentorship to the start-ups growth in this accelerator program it was analysed which obstacles were faced by the new firms and what advice mentors provided and how start-ups reacted on the received advice. The start-ups' obstacles to grow were obtained from interviews with start-up and mentors. The categories of obstacles considered in this study were: market, management, financial, physical specifically technological obstacles and government or regulatory related.

In the area of market, mentors provided feedback, insights and asked questions about the start-up's value proposition, business plan, product-market fit and business development strategies. Several start-ups reported that the discussions with mentors provided valuable information to adapt their products to fit the market needs. Additionally, some mentors can connect start-ups with potential clients, partners and experts. This is a high contribution, considering that start-ups are new and find difficult to make connections in a new market. Mentors' support activities to overcome market-related challenges in the studied accelerator are: provide feedback about the start-up's business proposition, give insights about finding a

proper product-market-fit, assist start-ups to create a business plan, connect the start-ups to potential clients. Start-up's reactions to the advice received related with market-related issues are: update the start-up's business idea (pivot the product to satisfy the market's needs), reconsider the initial assumptions, create or update the business plan and contact potential partners or clients. With the mentor's support received to overcome the market-related issues, some of the start-ups in this study developed opportunity refinement and leveraging competences.

Other area where mentors made a contribution to start-ups is management. Start-ups have limited time in accelerator programs, it is challenging for them to define where to focus their efforts. In this aspect, mentors can provide orientation on what should be prioritized and provide feedback in case the start-ups are overloaded. In the interviews with mentors it was found that start-ups may dedicate most of their resources to the product development, in contrast with resources dedicated to market which as a critical area for new ventures. It can be concluded that in the management area, start-ups need to prioritize tasks at team and individual level. In the area of management, the support actions conducted by mentors to start-ups in this accelerator program are: provide advice about team's organization, give feedback about team's commitment and assist start-ups to prioritize tasks. In the studied accelerator, the start-ups reported that the reactions to mentors' advice in the area of management were to use mentor's assistance to define the firm's priorities and do changes to their team; such as adding a new member. The acquired entrepreneurial competences in the area of management are leveraging and championing.

In this case study, the mentor's support in the area of finances was mainly by providing advice about financial management. Several start-ups had a technical background and lacked experience in finances. In the area of financial management, it can be concluded that start-ups can benefit from the financial experience of mentors. Even if mentors do not have a financial background, they can orient the start-ups on which financial concepts are needed to be understand to develop the venture. Some start-ups used the mentor's support to develop a sales plan or a financial plan. Since these start-ups were able to get assistance from external actors to develop their venture, it can be argued that they could acquire leveraging competency.

In this case study, it was found that mentors and start-ups focus on market and management issues phased by the start-up teams. Physical, government and regulatory obstacles were discussed minimally. Nevertheless, mentors can help start-ups to identify needs and connect them with experts from their network or from the accelerator program.

The empirical finding about the mentor's contribution in this accelerator program are aligned with the research by Rasmussen et al. (2011) that indicated that new ventures can acquire entrepreneurial competences from external actors such as industry partners (See Table 4). I

can conclude that the mentor's support to overcome obstacles to grow for start-ups in this accelerator program contributed to the start-ups' development of entrepreneurial competences: opportunity refinement, leveraging and championing.

In the studied accelerator program, the start-ups in the cohort were diverse in terms of growth phase, objective in the accelerator program and industry. The mentors in the accelerator program were also diverse, they had different industry expertise and distinct interests to participate in the accelerator program. Table 12 and 13 contain a summary of how the different characteristics of start-ups and mentors can influence the perceived contribution of mentorship to positive conditions for start-ups' growth.

Finally, in this study, it was found that for accelerator programs is challenging to follow up the mentoring but they found that it is beneficial for start-up team and mentors. Start-up teams can acquire skills and build a relationship with an experienced professional and in the other hand mentors, can expand their network and learn about new technologies. It can be concluded that mentorship at the studied accelerator program allowed start-ups to overcome obstacles to grow and acquire entrepreneurial competences needed to go to a more advanced stage. Finally, several factors that can affect the mentoring at accelerator programs were found: perceived mismatch between mentor and mentee, lack of communication, expectations (from accelerator managers, mentors, mentees) not aligned, irregular meetings.

5. Conclusions

5.1. Theoretical implications

Previous research on start-up accelerators has not included an analysis of the resources provided by mentors to start-ups and their influence on the start-up's growth. However, the finding of previous research about spin-offs incubators (Clarysse et al., 2005; Rasmussen et al., 2011; Van Geenhuizen & Soetanto, 2009) was applied to the accelerator model. The research perspective of the thesis project used resource-based theories and a stage-based models to explain how mentors in accelerator programs can provide resources to start-ups and start-up's growth, respectively. The model by Clarysse et al.(2005) was useful to understand what types of resources can be provided by mentors to start-ups in accelerator programs. When studying the mentorship of the selected accelerator program, it was found that mentors do not only provide advice and feedback to the start-ups' about several entrepreneurial challenges; but can also contribute with networking resources. For instance, mentors can introduce potential clients or partners to start-ups. Following the research of Van Geenhuizen & Soetano (2009), this study found that start-ups in accelerator programs face obstacles to grow in different areas such as: market, management, finances, physical or government. This categorization of resources facilitated the interviews to start-ups and mentors. Additionally, the results of the case study, confirmed that market related obstacles faced by new ventures are the most resistant over time, as found by Van Geenhuizen & Soetano (2009). Based on the theory by Rasmussen et al.(2011), this study also identified the entrepreneurial competences needed by start-ups to overcome obstacles and pass to a new stage of growth. It was found that mentorship at start-up accelerators can help start-ups to acquire the entrepreneurial competences such as; opportunity refinement, leveraging and championing. This study, complied with Rasmussen et. al (2011) that stated that industry partners (in this case, with the mentor role) can help ventures to acquire these competences. Mentors can provide advice or feedback about start-ups' business proposition, product-market fit, business model that can help start-ups to develop the opportunity refinement competence. It was found that mentors in start-up accelerator can orient the entrepreneurs to define which resources are needed and help start-ups to connect with external resources; as mentioned before with potential clients or partners. Thus, mentors can assist start-ups to acquire leveraging competence. It can also be argued that mentors help to develop championing competence. In this study, it was found that mentors provide feedback and advice related with team commitment and team management.

The literature of start-up accelerators is currently scant and the problems related with mentoring, listed in existing articles were reported by start-ups. For this study, three types of actors were interviewed: accelerator managers, start-ups and mentors; so more information was obtained about the problems that may arise when studying mentorship at accelerators.

In the next section, I provide some suggestions so that accelerator managers can tackle some of the problems reported about mentorship.

5.2. Recommendations to accelerator managers to overcome problems related with mentoring

In this thesis project it was found that mentorship at the start-up accelerator can contribute to the start-ups' growth; however, there are factors that affect the interaction between mentors and start-ups. In this section I will propose some actions that can be applied in the organization to improve the mentoring.

First, the objectives of mentorship and expectations of each actor (accelerator's staff, start-up teams and mentors) involved in the mentoring need to be clear. Accelerator managers can have the role to communicate the objectives and align the expectations about mentoring to all involved actors. Start-ups need to communicate clearly their objectives in the program and their limitations. Mentors should also communicate their motivation in the program; such as, learning from start-up teams, finding opportunities for investment or being part of a start-up team.

Second, mentors could participate in the decision to match start-ups with mentors. In the studied accelerator program, the managers conducted the matching based on the needs reported by the start-ups and the mentors' professional profile. However, start-ups might not be aware of the support they need. It is possible that mentors had an initial meeting with start-ups and detect specific needs.

Third, accelerator managers need to make it clear that the engagement between mentors and mentees depends on them. As stated in one of the interviews with the studied accelerator's staff, the alignment of start-up's needs with the mentor's expertise does not guarantee the success of mentoring. Mentorship requires that start-ups communicate to their mentors their needs, that mentors understand the need and provide an advice and that the start-ups react on the received support. Regular communication is needed, the accelerator can provide a proposed schedule for the meetings and start-ups and mentors can adapt it according to their needs. The mentoring sessions could have a pre-defined format that is solution oriented. For instance, at the beginning of the meeting the start-up's representatives mention what issues they are facing using the categories of obstacles used in this study. Next, the mentor provides advice based on his/her experience or in case it is not possible to provide assistance, point out external resources that can help the start-up. In case mentors cannot provide the support in a specific aspect, the start-up team communicates to the accelerator manager that it requires additional support. Regarding mentor-mentee engagement, it is also important that there is continuity between the meetings, so that the mentor can follow up the progress of the start-up and it is clear how the start-up is using his/her provided advice.

In conclusion, knowing what exactly is expected from the start-ups, mentors and accelerator's staff facilitates the dynamics and avoid disappointment. Accelerator managers can encourage the engagement between mentors and start-ups by setting some guidance about mentorship sessions that includes how often should the meetings be conducted and what are the basic topics to cover.

5.3. Recommendations to accelerator managers based on the found patterns

The studied accelerator program had a diversity of start-ups and mentors, which allowed to find how different characteristics of mentors and start-ups can influence the perceived contribution of mentors to the start-up's growth. The found patterns (listed in Table 12 and Table 13) can help accelerator managers to improve the organization of the mentoring.

First, start-up accelerator managers can select mentors or adapt the entrepreneurial training depending on the characteristics of the start-ups accepted in the program. This study found that start-ups in early growth stages need more advice to solve management-related issues than start-ups in later phases. If the program accepts start-ups in early stages, a recommendation is to select mentors that can provide feedback and advice related with team management and commitment. Other possibility is that these start-ups receive more training related with management. An interesting finding related with management, is that mentors with advance management experience can detect more issues related with team commitment and provide more advices on management related issues. It could be recommended to invite experienced professionals with broad management experience to provide management sessions.

Second, other finding about the start-ups' growth phases is that market-related issues can be experienced at any stage. In this case, a recommendation is that start-up accelerator managers reinforce training on business development. Additionally, accelerator managers could also provide a guidance to mentors to evaluate the start-ups' business proposition.

Third, this research found cases were matching start-ups and mentors with related industry brought positive results. As most of the start-up's obstacles to grow are in the area of market, the mentor's experience on the start-ups' industry is very useful. Additionally, working in similar industry types facilitates the communication between the mentor and mentee. It can be recommended that accelerator managers match start-ups and mentors from similar industry types.

Fourth, for matching start-ups and mentors it is important that start-up accelerator managers consider the motivation to participate in the accelerator program for both groups. For instance, a good match could be a mentor willing to find a potential venture to invest with a venture that is ready to commercialize its product and needs investment.

5.4. Limitations of the study

The particular accelerator program had heterogeneous groups of start-ups and mentors; this is not necessarily the case for other accelerator programs. Some of the problems related with mentoring could have developed specifically due to the diversity of start-ups and mentors. However, this diversity allowed to see different types of interactions between mentors and start-ups and allowed to provide more insights to accelerator managers.

The findings of the perceived contribution of mentorship to start-ups' growth relied on interviews with mentors and start-ups. It could be the case that certain bias existed. For instance, start-up representatives may not be inclined to share information about the obstacles faced during the program. Other issue is that mentors or start-ups may have forgotten what was discussed in the mentoring sessions, specially for mentors and start-ups that have a limited number of meetings.

For this thesis project it was possible to interview all involved start-up representatives; however, not all mentors were available for the interviews. Interviewing more mentors could have helped to find more insights about the start-ups' obstacles to growth and the contribution of mentoring in these areas.

A final reflection, is that the the interviews started with a different conceptual model. Therefore, there was information collected in the interviews that was not used at the end. Nevertheless, a significant time was invested to transcribe the interviews and codify the transcripts. If this research is replicated is recommended to revise the interview questions.

5.5. Future Research

The objective of this thesis project was to provide recommendations to improve the contribution of mentors to start-ups' growth in accelerator programs. The conceptual model used to evaluate the contribution can also be used to define a framework to evaluate the effectiveness of entrepreneurial mentoring.

Other possible future research is to investigate how other start-up and mentor's characteristics that can influence the contribution of mentorship to start-ups growth. For instance, the start-ups teams' experience that was omitted in this research due to time limitation.

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Appendix A: Interview questions

Interview Questions to accelerator's staff

General Part

1. Can you describe your role at the accelerator?
2. When did you join the accelerator company?
3. In which accelerator programs have you been involved at the accelerator company?

Mentorship

1. What are the objectives of mentoring at the accelerator program?
2. Do you know how were mentors selected for the accelerator programs?
    a. Did you participate in the selection?
    b. What were there requirements (skills or experience) to be a mentor at the accelerator program?
3. How were mentors introduced to the accelerator program?
4. How was the process to match the mentors with start-ups?
5. How would you evaluate the contribution of mentors to start-ups' development?
6. What are the main challenges faced by the accelerator company regarding mentorship?
7. Did you get any feedback from start-ups about their mentors?
8. Did you get any feedback from mentors about their interaction with start-ups in the accelerator program?
9. Based on your experience in the last accelerator program, what should be the requirements to be a mentor at the accelerator program?

Interview Questions to Start-ups

The following Information will be obtained from secondary resource and needs to be completed before the interview.

Start-up name:	
Country of origin:	
Foundation year:	
Industry:	
Development idea:	
Start-up team members:	indicate who came to the accelerator program and who will be interviewee
Mentors:	

Topics to be discussed in the interviews

I. Overview of the start-up and team characteristics

1. How <start-up name> started?
    a. What was the motivation to develop the idea, start the company?
2. What was the professional experience from the start-up team before working on the start-up?
3. What is the current status of the start-up?

II. Expectations about the accelerator program

1. Why did you apply to the accelerator program?
2. What were your expectations about the accelerator program?
3. What were your expectations about mentorship before the program started?

III. Mentorship experience during the accelerator program

1. Can you describe how a typical meeting with your mentor was?
    a. How often did you meet with your mentors?
    b. How did you approach to your mentors during the program?
    c. What type of topics (questions and/or issues) were discussed during the meetings with mentors?
2. What issues or challenges did your start-up team face when participating in the accelerator program?
    a. How mentors help to overcome these issues or challenges?

IV. Evaluation of mentorship for the start-up

1. What was the contribution of mentors to the development of your start-up?
2. Did you get any other type of assistance besides the items listed above?
3. What type of help did you miss at the accelerator program during the program?

Interview Questions to Mentors

The following Information will be obtained from secondary resource and needs to be completed before the interview:

Mentor	
Current company and position:	
Area of expertise:	
Company:	
Mentees	
Academic background	

Questions

I. **Overview of the mentor professional experience**

II. Motivation to participate as mentor in the accelerator program

1. What was your motivation to participate as a mentor in the accelerator program?
2. What can be your contribution to the start-up development?

III. Mentorship experience during the accelerator program

1. How were you introduced to the start-ups you were assigned?

2. How often did you meet with the assigned start-ups? Did the start-up request the meeting?

3. How was a typical meeting with the start-ups? What topics were discussed?

4. What were the main challenges that the start-up you mentored faced ?

IV. Evaluation of mentorship for the mentor

1. **From the literature, start-ups face obstacles to grow in different areas. Did you provide advice to the venture to overcome these obstacles? please provide an example**
2. What were the challenges for you as mentor?
3. In case you were participating in a next accelerator programs as mentor, what would you continue doing?
4. In case you were participating in a next accelerator programs as mentor, what would you do different?
5. What role did you expect the accelerator program to have during the accelerator program

Appendix B: Detail of mentors' support to start-ups and start-ups' reaction

Table 14 Start-ups' reaction over mentors' advice

Start-up	Growth phase	Age(years)	Industry	Start-up motivation to participate in accelerator	Origin	Start-ups' reaction about the received mentor's support to overcome:				
						market related obstacles	management related obstacles	financial related obstacles	other obstacles	Acquired Entrepreneurial competences
S1	Research	2 years	Consumer electronics	-Find a market -Get technology support	Asia	- insights to pivot the product				Opportunity refinement
S2	Opportunity framing	<1 year	Leisure, Travel & Tourism	-Find a market -Funding	Europe / non-local	- Find new market segments - Update the product's assumptions.	The start-up's CEO used the advice to manage the team.			Opportunity refinement Championing
S5	Opportunity framing	<1 year	Software/ Social Media and Online Marketing	-Find Market -Entrepreneurial training	Europe/local	Used the mentor's insights to create the business plan. Find clients from contacts provided by the mentors		Used mentors' support to develop the financial plan.		Leveraging
S3	Pre-organization	<1 year	Software/ Health, Wellness and Fitness	-Find a market	Europe / non-local	-Set up a pilot project with a company	-Later on the start-up added an		- Assistance to solve	Leveraging

							expert in marketing.		technical issues	
S4	Pre-organization	<1 year	Consumer electronics related with Smart building	-Expand market -Networking opportunities -Entrepreneurial training	Asia	- Create the sales plan with the mentor's support.		Used mentors' support to develop the sales plan.		Leveraging
S6	Re-orientation phase	2 years	Logistics and Supply chain	-Expand market -Funding	Europe / non-local	- Used the mentors' insights to make the decision to pivot the product.				Opportunity refinement Leveraging
S7	Re-orientation phase	1 year	Electrical/Electronic Manufacturing	-Expand Market	Asia	- Used the mentors' insights to make the decision to pivot the product for the local market.	define tasks priorities in the accelerator's program with the mentor's help			Opportunity refinement Leveraging
S8	Sustainable returns	2 years	Health, Internet of things, and Big data	-Funding -Expand market	Asia	Start-up contacted potential clients in the local market.				Leveraging

Table 15 Mentor's advice to overcome start-up's obstacles to grow

Mentor	Mentee	Industry expertise	Areas of professional experience	Mentor's position	Mentor's motivation to participate in accelerator	Advice/Feedback provided to overcome			
						market related obstacles	Management related obstacles	Financial related obstacles	Other obstacles
M1	S1	Environmental solutions	Sales and marketing Management Business strategy Product innovation	Managing Director	Learn from start-ups Investment opportunities	- feedback of business proposition - advice to start with the business plan, market research	Feedback on team's organization		
M2	S7	Consultancy services	Business strategy Entrepreneur Management	Innovation consultant	Learn from start-ups Altruistic	- Feedback on business proposition. - Insights about local market.	define tasks priorities in the accelerator's program with the mentor's help		
M3	S5	Investment	Entrepreneurship Investment	Entrepreneur, mentor, investor	Learn from start-ups Investment opportunities	Assist to create the business plan. Feedback on business idea and if the star-up is ready to talk with investors,			
M4	S2	Marketing	Entrepreneurship Online Marketing Business Strategy Software development	Partner manager	Altruistic Learn from start-ups Investment opportunities		-reported team management needed to be improved.		

M4	S3	Same as above	Same as above	Same as above	Altruistic Learn from start-ups Investment opportunities	-provided a contacts to potential clients to test the product	-feedback to add an expert on marketing		Assist to solve technical issues
M5	S5	Investment Renewable energy	international Management Finances Mergers and acquisitions Business strategy	CEO	Investment Renewable energy	Provide contacts of potential clients	Feedback on entrepreneurial commitment and team's organization		
M5	S6	Same as above	Same as above	Same as above	Same as above	Feedback on business proposition	Feedback on entrepreneurial commitment and team's organization		
M6	S2	Finances	Financial management Risk management Governance and Appliance	Head of Finance	Work with a start-up team	- provide insights of market segments - feedback on product's assumptions.	- feedback on team's management		
M7	S8	Healthcare	Business development	Business development	Altruistic Learn from start-ups Work with a start-up team	Contacted potential clients Provide insights about local market.			
M8	S6	Insurance, Finances	Business development	Managing Director	Learn from start-ups	Feedback on business proposition Insights about local market			