6/24/2019

The impact of the pre-incubation program on competences of future entrepreneurs: Case study of a Dutch pre-incubator

Master Thesis Innovation & Entrepreneurship - Business Administration Nijmegen School of Management, Radboud University

Author:	Stan Custers (4472675)
Supervisor:	Dr. R.A.W. Kok (Robert)
Second examiner:	Dr. ir. N.G. Migchels (Nanne)
Organization:	Mercator Launch
Organization supervisor:	Britta Driessen MSc

Preface

After six months of sweat, tears and liters of coffee, I proudly present you my paper on the impact of the pre-incubation program on entrepreneurial competences. In its mission to enable entrepreneurship and innovation at the Heyendaal Campus Nijmegen, pre-incubator Mercator Launch was interested in the impact of its pre-incubation program. It was an excellent topic for my Master Thesis Innovation & Entrepreneurship since I was able to do research in a real-world setting with actual entrepreneurs. I want to thank Britta Driessen, Brechtje Vreenegoor and Rob Groenendaal for the opportunity to execute my Master Thesis at Mercator Launch and providing me the essential expertise and contacts needed during the research. Also, I want to thank Teja de Groot for providing access to StudentsInc and all her effort to connect me with Discovery program alumni. Furthermore, I want to thank all employees at Mercator Launch for their hospitality, support and expertise. I am especially grateful to all informants who dedicated their time and effort to help me gathering insightful information. I would like to thank my supervisors Robert Kok and Nanne Migchels for their excellent guidance and support during the process. Lastly, I wish to thank my girlfriend for reviewing this work and for all the motivation and support.

Abstract

Pre-incubators face the challenge of determining the impact its pre-incubation program has on the competences of future entrepreneurs. This paper aimed at providing insights on this topic by conducting a case study research on the pre-incubation programs of the two Dutch pre-incubators Mercator Launch and StudentsInc. A pre-interview questionnaire together with in-depth interviews with 12 pre-incubation participants has been conducted. The findings of this study show that the pre-incubation program has a substantial impact on entrepreneurial competences of its future entrepreneurs. It appears that 'going out' and talk to potential customers is the most valuable program element. Both programs have a positive impact on business skills, business knowledge and motivation of future entrepreneurs. In addition, communication skills, presentation skills and confidence are identified as additional competences that are impacted by the pre-incubation program.

Keywords: pre-incubation, entrepreneurial competences, future entrepreneurs, impact

Table of Contents

1. Introduction

It is widely acknowledged that business incubation serves as important instrument for new venture creation (Deutschmann, 2007; Wilson, 2008). The emergence of new organizations through an incubation program is considered to be a key factor of national and regional economic development (Albert & Gaynor, 2003; Harman & Read, 2003; Voisey, Jones & Thomas, 2013). Peters, Rice and Sundararajan (2004) broadly define an incubator as a "*support environment for start-up and fledgling companies*" (p.83). An incubator offers services to already existing (after birth) companies in their start-up phase. Otherwise, pre-incubators offer services to help nascent (before birth) companies that are in the planning phase, to set up a business (Wirsing et al., 2002; Dickson, 2004; Hannon, 2004; Kirby, 2004; Albert & Gaynor, 2006; Voisey et al., 2013). For a start-up to be born, it needs to generate its first turnover (Deutschmann, 2007). Pre-incubation is a relatively new phenomenon that received minimal scientific attention with regard to its impact on future entrepreneurs' competences (Voisey et al., 2013). This study is aimed at providing more insights into the impact of the pre-incubation program on competences of future entrepreneurs. This is done by means of a multiple case study at two Dutch pre-incubators Mercator Launch and StudentsInc.

The goal of a pre-incubator is not to spit out as much start-ups as possible, but rather to help future entrepreneurs develop essential competences to be able to set up a business successfully (Stephens & Onofrei, 2012). The problem that pre-incubators such as Mercator Launch experience, is to determine the impact its programs have on future entrepreneurs' competences and to find an appropriate way to measure this impact (Voisey et al., 2006; Stephens & Onofrei, 2012). Additionally, stakeholders that financially support the pre-incubator demand some kind of justification about the impact of the pre-incubation program. To measure these competences and track their impact over time, a more or less standardized and repeatable tool needs to be created. Consequently, using the results of this tool, the quality of the pre-incubation program can be assessed and improved. It is particularly relevant for Mercator Launch because they are still a very young organization (1 year old) so it is important for them to measure the quality of the program and continuously improve itself.

Stephens and Onofrei (2012) proposed a conceptual framework of hard and soft outcomes for each stage of the incubation process individually. They found a distinction in entrepreneurial performance outcomes between pre-incubation, incubation and post-

incubation. Within the pre-incubation stage they identified three hard and five soft measures. Hard measures are identified as successful feasibility study, potential customers/sales and potential sources of funding. Soft measures are identified as business skills, professionalism, innovativeness of the proposed business, commitment and client knowledge**.** This model has strong similarities with competences that Mercator Launch tries to teach its future entrepreneurs through its pre-pre-incubation program. In a study of Driessen and Zwart (2006), entrepreneurial competences were defined as skills, knowledge and motivation. Skills and knowledge are similar to the measures offered by Stephens and Onofrei, whereas motivation has strong overlap with commitment.

Although several researchers conducted research on the impact of pre-incubation programs on entrepreneurial competences (Stephens and Onofrei, 2012; Voisey et al., 2013; Martínez, Fernández-Laviada and Crespo, 2017). A gap in the literature has been observed about what specific program element has what kind of impact on entrepreneurial competences. As of now, no study specifically indicates what element in the pre-incubation program has an impact on the level of entrepreneurial competences as mentioned by Driessen and Zwart (2006). The question this paper aims to answer is: *What is the impact of the pre-incubation program on the level of competences of future entrepreneurs?*

This paper contributes to entrepreneurship literature and business incubation literature by filling the knowledge gap on the impact a pre-incubation program has on the entrepreneurial competences of future entrepreneurs. This is done by using the competences mentioned by Stephens and Onofrei (2012) and Driessen and Zwart (2006) and reflect them on the programs of the pre-incubators Mercator Launch and StudentsInc. The objective of this research is to create a tool for these pre-incubators to measure the impact of their pre-incubation program on the level of entrepreneurial competences.

1.2 Scope

This research focuses on the pre-incubators Mercator Launch and StudentsInc and the impact their programs have on entrepreneurial competences. A multiple case study on these two Dutch pre-incubation programs will be conducted. Since time and resources are limited, only two cases have been selected in this research. The first is the Improve program of pre-incubator Mercator Launch (Appendix 6). The second is the Discovery program of pre-incubator StudentsInc (Appendix 7). Mercator Launch is the main subject of investigation and StudentsInc will be used as a case for comparison. Although the pre-incubator as a whole is

important in order to measure the impact it has on future entrepreneurs, this research is focused on a specific program offered by the pre-incubator. The choice for investigating a specific incubation program is based on the limited timeframe and resources available. Nevertheless, the contextual factors are not excluded in this research but rather taken into account as control variables. Limiting the scope saves time and provides the opportunity to go in depth into one specific program the pre-incubator offers. Both cases will have a highly similar program outline to ensure that the results can be ascribed to the program itself. If the outcomes are the same for both programs, the framework provided by Stephens and Onofrei (2012) holds. If the outcomes are different between the programs, this could mean that either the framework is not valid or that there are contextual factors that influence the impact on future entrepreneurs. The results will be used to create a standardized and repeatable measurement tool to be used on a yearly basis. In the end, a recommendation will be provided on what Mercator Launch and StudentsInc can improve.

2. Theoretical background

In this section, a literature review is provided on incubation theories. First, pre-incubator definitions are reviewed to stress the difference between incubators and pre-incubators. Second, important entrepreneurial competences are explained. Thirdly, pre-incubation program elements are identified. Lastly, the impact of pre-incubation programs on entrepreneurial competences is explained.

2.1 Business Incubator

First of all, we need to delve deeper into the concept 'incubator' before we can specify how it differs from a 'pre-incubator'. A problem in current literature is the incorrect interchangeable usage of the concepts 'incubator' and 'incubation' (Hackett & Dilts, 2004a). Incubator refers to the physical space that includes the broader context of interplay between multiple stakeholders which support the process (incubation) of successful new business development. Consequently, incubation refers to the process itself in which entrepreneurs in an early stage are supported to set up a business (Hackett & Dilts, 2004a).

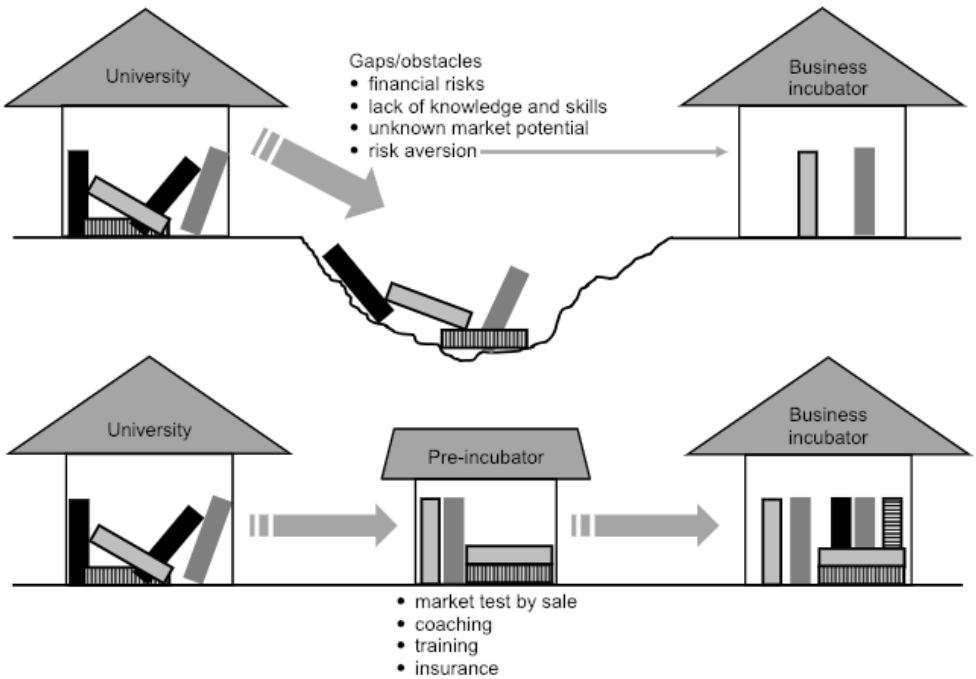
Furthermore, a broad range of incubator definitions have been mentioned in the literature. Allen and McClusky (1990) defined an incubator as *"a business development assistant in an environment conducive to new venture creation, survival, and early stage growth"* (p.1). Whereas Peters et al. (2004) define an incubator as *"a support environment for start-up and fledgling companies"* (p.83). Or, as Stephens and Onofrei (2012) put it, *"incubators are useful facilities where fledgling enterprises can survive and grow in a supportive environment"* (p.279). Hackett and Dilts (2004a) conducted an extensive literature review on incubator publications and offered the following definition: *"An incubator is a shared office-space facility that seeks to provide its incubatees (i.e. ''portfolio-'' or ''client-'' or ''tenant-companies'') with a strategic, value-adding intervention system (i.e. business incubation) of monitoring and business assistance. This system controls and links resources with the objective of facilitating the successful new venture development of the incubatees while simultaneously containing the cost of their potential failure"* (p.57). Important to note is that the incubator should be viewed in its totality, meaning that it is not just a shared office facility, but rather a network of organizations and individuals (Hackett & Dilts, 2004a). Incubators are designed to minimize the failure rate of start-up ventures by supporting emerging businesses with overcoming their shortcomings and providing a risk reduced environment where future

entrepreneurs can develop their business (Hackett & Dilts, 2004a; Patton & Marlow, 2011; Voisey et al., 2013).

2.2 Pre-incubator

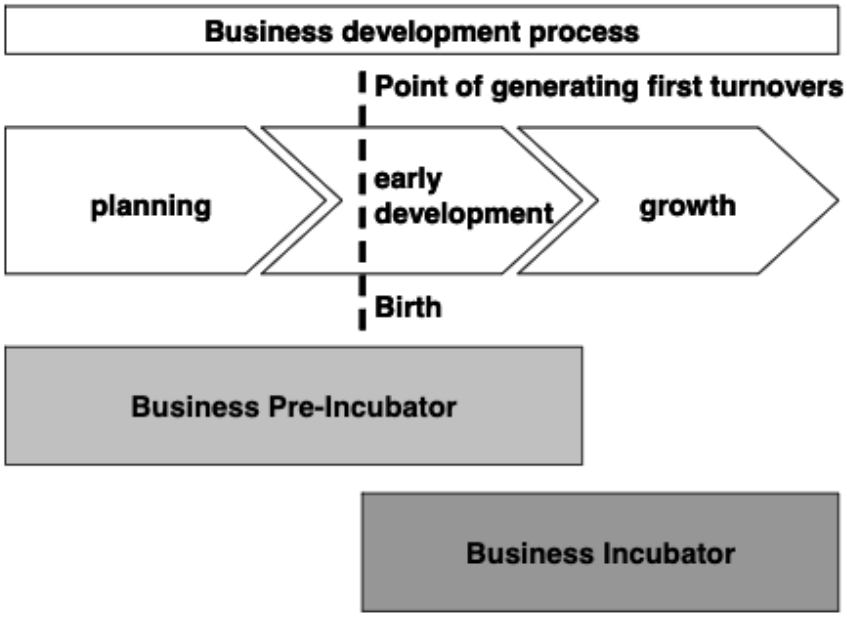
According to Voisey et al. (2013), there is a link between enterprise education, pre-incubation and incubation. It is a continuum from enterprise education leading to pre-incubation and eventually forming a start-up evolving to incubation, often linked together by the presence and support of universities (Dickson, 2004). For a future entrepreneur to access an incubator, he or she is expected to have the skills and knowledge to write a business plan, create a prototype and analyze the potential market (Voisey et al., 2013). But if the future entrepreneur is not in the possession of prior business expertise, standard incubators tend to fail in transferring these required competences (Voisey et al., 2013). Therefore, a pre-phase facility to fill this gap needed to be developed (Figure 1). This gap is filled by the pre-incubator.

Figure 1: Pre-incubator – filling the gap between enterprise education and the business incubator (Voisey et al., 2013, p.351)



Consequently, the difference between an incubator and pre-incubator is found in the stage of development the nascent business is in. An incubator in concerned with providing services to start-up companies that are already founded (after birth) and which are in their early development phase. A pre-incubator, on the other hand, provides services to nascent businesses (before birth) which find themselves in the planning phase (Wirsing et al., 2002; Hannon, 2004; Kirby, 2004; Deutschmann, 2007). The evolution from the pre-incubation phase to the incubation phase is fluent and therefore a pre-incubator often keeps offering services to businesses after they are born. This raises the question when a start-up is born. According to Deutschmann (2007), a start-up is born when it generates first turnover (Figure 2). The primary target group of a pre-incubator is students from business and engineering faculties. Next to that, important target groups are PhD students and university graduates (Deutschmann, 2007).

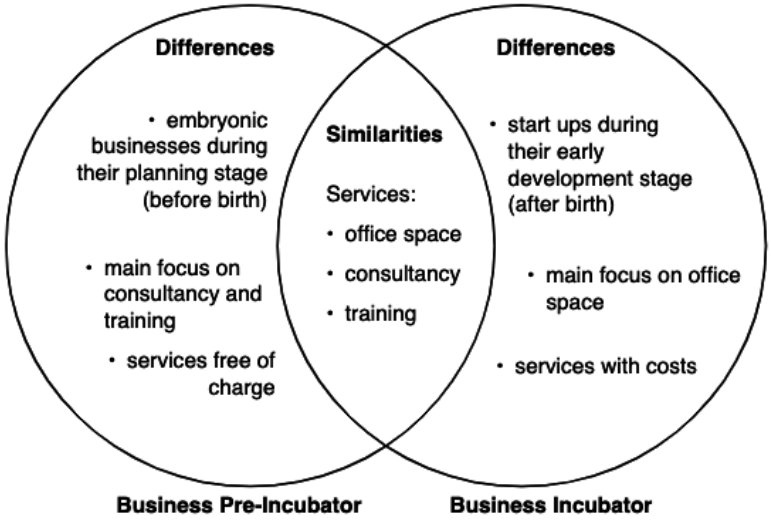
Figure 2: Entrepreneurial process-orientated classification of Incubators and Pre-incubators (Deutschmann, 2007, p.4)



Since they operate at a different stage of development, the intention of an incubator and pre-incubator differ. Where an incubator is concerned with growth and survival, a pre-incubator aims at closing the gap between the business idea and the actual founding of the start-up (Deutschmann, 2007). Pre-incubators are not concerned with hatching every business idea into a successful start-up, but rather value the entrepreneurial learning experience the future entrepreneur goes through (Hackett & Dilts, 2004a). If a future entrepreneur realizes that a

business idea is not feasible or needs massive adjustments and therefore decides to abandon the idea at an early stage where a minimum amount of money is invested, it is considered as a positive outcome (Hackett & Dilts, 2004a). Even though starting up a business has failed initially, the future entrepreneur has gained entrepreneurial skills and experience that increases the chance of succeeding at his next attempt (Hackett & Dilts, 2004a). A pre-incubator has as a 'risk mitigation strategy' (Voisey et al., 2013). The future entrepreneur is given the opportunity to develop their skills and test the business idea and test market viability in a risk reduced environment (Dickson, 2004). Since the support provided at the pre-incubator is at low cost, there is room to fail for the future entrepreneurs without causing significant damage (Hackett and Dilts, 2004a). The pre-incubation process offers the future entrepreneur with the essential support for the development of the business idea and plan. It provides the required resources to create a viable business and test the market (Voisey et al., 2013). Another difference is that services offered by a pre-incubator are usually free of charge whereas an incubator often charges money (Deutschmann, 2007). Nevertheless, incubators and pre-incubators also share similarities. They both provide a physical place to work and offer services like consultancy and training. But, since the pre-incubator is concerned with vulnerable nascent business in the planning phase, it emphasizes more on offering consultancy and training than on providing office space. A start-up at an incubator is assumed to be less vulnerable than a nascent business and, therefore, an incubator is more focused on providing office space and puts less emphasis on consultancy and training (Deutschmann, 2007) (Figure 3).

Figure 3: Differences and similarities of incubators and pre-incubators (Deutschmann, 2007, p.5)

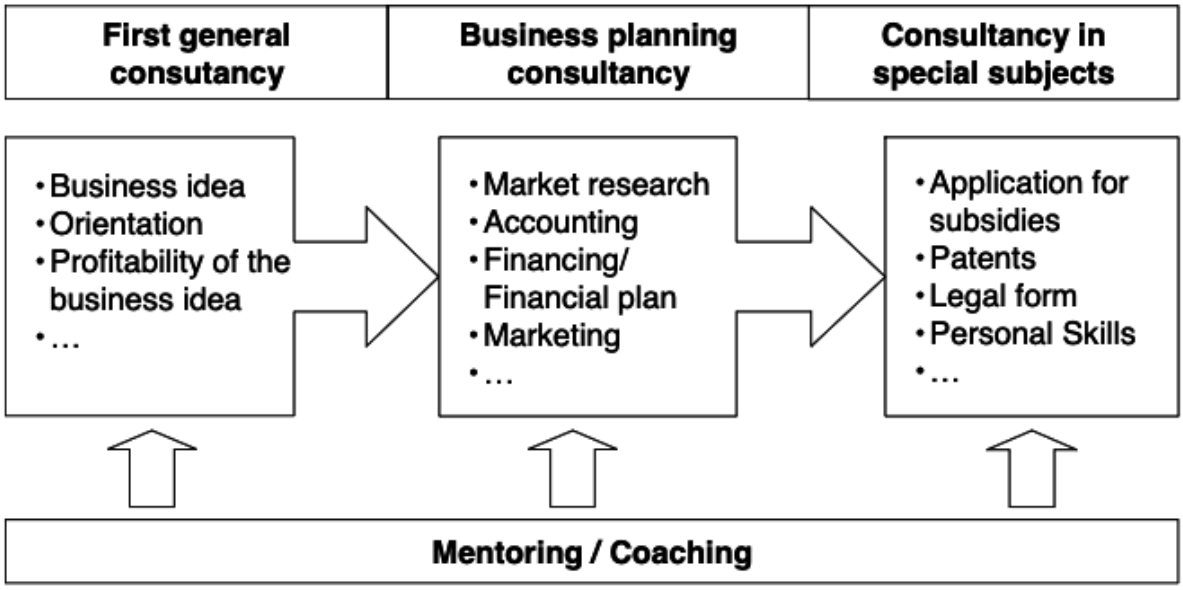


2.3 Pre-incubation program

Future entrepreneurs in a nascent business most of the time only have a business idea without a clear plan on how to develop this into a business (Deutschmann, 2007). Pre-incubation programs are designed to overcome this limitation. Although no pre-incubation program is exactly the same, typical services were identified by (Voisey et al., 2013). They mention a pre-incubator typically provides office facilities, business plan assistance including feasibility studies, practical guidance like connecting to the authorities, mentoring by entrepreneurs and experts, training (workshops, seminars), financial counselling, and networking through events and joint training and joint location. During the pre-incubation process, the future entrepreneur will acquire the skills necessary to manage a business successfully (Voisey et al., 2013). He or she also learns to execute a real market test including purchasing, production and sales to test and improve their business skills (Voisey et al., 2006; Voisey et al., 2013). Additionally, Kirby (2004) states that while participating in a pre-incubation program, future entrepreneurs learn how to make a proof of concept, develop a business plan, create a prototype, form a business team and make the nascent business market-ready. Deutschmann (2007) found that most pre-incubators demand a draft business plan from the future entrepreneur as a requirement for entering the pre-incubation program. If the future entrepreneur is accepted to the program, most pre-incubators set a time limit to the accessibility of their services (Deutschmann, 2007; Voisey et al., 2013). The average time spent in the pre-incubation process depends on the culture and operations of the pre-incubator and varies from a couple months to several years according to Dickson (2004) and between 6 to 18 months according to Deutschmann (2007). Some pre-incubators do not even set a time limit for the accessibility of their services (Deutschmann, 2007). Consultancy is one of the most important services pre-incubators offer to future entrepreneurs (Deutschmann, 2007). Deutschmann (2007) identified three subsequent consultancy stages within pre-incubators. He distinguished the consultancy process into general, business planning and special subject consultancy (Figure 4). These consultancy services are provided by the pre-incubator's management or external experts. During the general consultancy stage, the future entrepreneur is advised on the primary business idea, orientation and profitability of the business idea. In the business planning stage, the pre-incubator will provide support on market research, accounting, financial planning and marketing. Lastly, consultancy in special subjects assists future entrepreneurs with applications for subsidies, patent rights, legal forms of the company and developing personal skills (Deutschmann, 2007). Throughout the whole consultancy process, future entrepreneurs receive

coaching and support by their mentors. The degree of intensity of the consultancy depends on the time scope. The time scope can vary between lectures of 1-3 hours to highly intensive trainings of several days (Deutschmann, 2007).

Figure 4: Pre-incubator process of consultancy (Deutschmann, 2007, p.8)



2.4 Entrepreneurial competences

Now we know what separates an incubator from a pre-incubator and how a pre-incubation program looks like, it is important to know what entrepreneurial competences are important for starting entrepreneurs. This section will elaborate on the competences future entrepreneurs need to acquire in order to build a successful business. A competence is defined as *'something a person is very good at'* (Driessen & Zwart, 2006, p.2). It comprises a set of skills, knowledge, motivation and characteristics which enables people to perform well (Lathi, 1999). Additionally, Stoof et al. (2000) state that competence is the interplay of knowledge, capabilities and attitude which results in successful behavior. In line with the conclusions drawn by Driessen and Zwart (2006), motivation, capabilities, knowledge and characteristics are considered part of entrepreneurial competences.

Motivation is defined as the degree to which a person wants something. A distinction is made between intrinsic and extrinsic motivation. Intrinsic motivations are internally driven (Driessen & Zwart, 2006). Internally driven motives for a future entrepreneur to start a business are: a need for autonomy, a need for achievement and a need for power (Brockhaus, 1982; Begley & Boyd, 1987; Nandram & Samson, 2000). On the other hand, extrinsic motivations

are externally driven. Extrinsic motivations to start a business are unemployment, a gap in the market and certainty of clients (Driessen & Zwart, 2006).

The second factor is skills. If a person has a skill this means that someone has the ability to perform a specific task (Driessen & Zwart, 2006). There are several skills that an entrepreneur should possess to successfully set up a business, these are identified as market orientation, creativity, flexibility, leadership, organizing & planning, motivating and financial controlling (Brinkman, 2000; Driessen & Zwart, 2006). The necessary skills for the entrepreneur depend on the development stage of the company. If a company is at the early stage of the company life cycle, as is the case for a start-up, the most important skills are market orientation, creativity and flexibility.

The third component of entrepreneurial competence is knowledge (Driessen & Zwart, 2006). Knowledge is about what you know instead of what you can, it is based on rationale (Driessen & Zwart, 2006). Examples of knowledge that is useful for entrepreneurs is considered market knowledge, financial knowledge, regulatory knowledge, and experience (Driessen & Zwart, 2006).

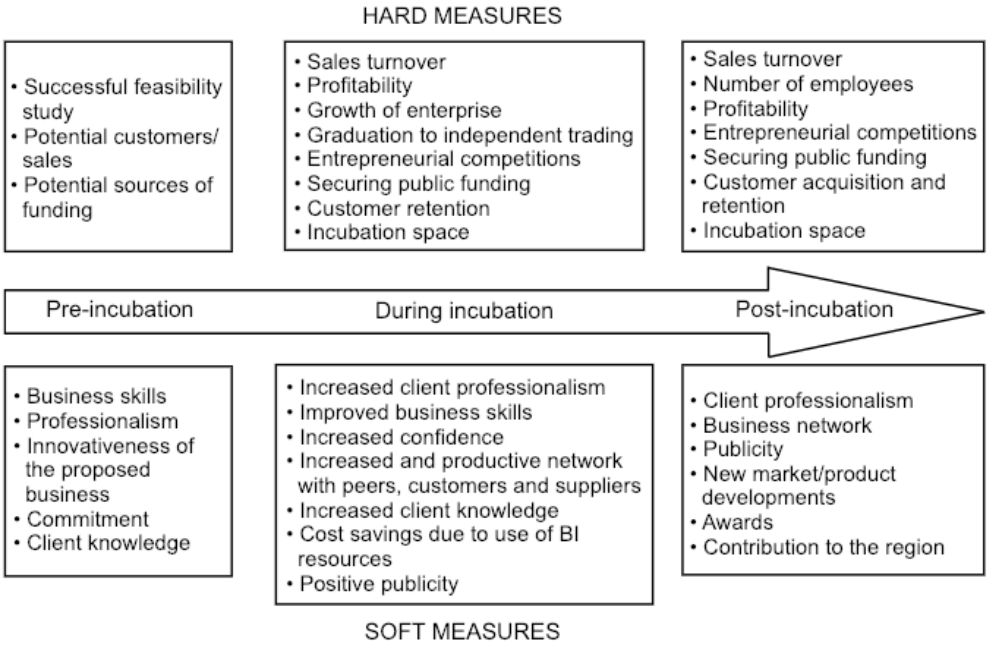
The last factor, characteristics, are personality traits that define the level of appropriateness to become a successful entrepreneur. The difference between characteristics and skills lies in their ability to learn. According to Nyström (1979), skills are easier to learn and to change than characteristics. Characteristics, in contrast to skills, are a fact and are very hard to change or learn in a short period of time. For this reason, personal characteristics are not included to measure entrepreneurial competences since a pre-incubation program is always within a short timeframe.

2.5 Impact of pre-incubation programs on entrepreneurial competences

Although not much has been written about the impact of pre-incubation programs on entrepreneurial competences, some researchers studied the impact of pre-incubation. Stephens and Onofrei (2012) elaborated on the conceptual framework of Voisey et al. (2006) aiming to address the outcomes of business incubation for future entrepreneurs and how these outcomes change during the pre-incubation stage. In their study, future entrepreneurs proposed three additional measures: increased productivity; networking and a positive image. Combining these findings with those presented by Voisey et al. (2006), results in the framework illustrated in Figure 5. Even more interesting, Stephens and Onofrei (2012) propose that these impacts change during the incubation process. The impact of the incubation process changes once the

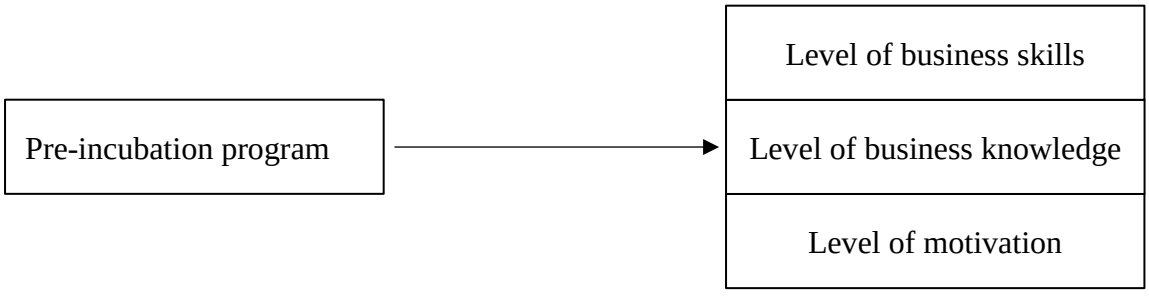
future entrepreneur moves through the successive stages: pre-incubation – during incubation – post-incubation. For the pre-incubation stage, three hard and five soft competences are identified. Hard competences are identified as successful feasibility study, potential customers/sales and potential sources of funding. Soft competences are identified as business skills, professionalism, innovativeness of the proposed business, commitment and client knowledge.

Figure 5: A conceptual framework of hard and soft measures for evaluation before, during and after the incubation process. Source: Stephens et al., 2012, p.278.



In consultation with Mercator Launch is decided to measure the impact of their pre-incubation program on the level of business skills, level of knowledge and motivation of the future entrepreneur because these have a strong overlap with the previously mentioned entrepreneurial competences of Driessen and Zwart (2006). Figure 6 shows the preliminary conceptual model which gives direction and provides focus to this study. The hard competences as mentioned by Stephens and Onofrei (2012) are not neglected but taken into account as well.

Figure 6: Preliminary conceptual model



3. Methodology

This section elaborates on the research methods that will be used in this study. An explanation on the chosen research method, case selection, data collection, operationalization of concepts, data analysis and research ethics are provided.

3.1 Research method

This study combines a qualitative and quantitative research method. Combining a qualitative and quantitative method allows the researcher to integrate the complementary strengths of both methods trough a division of labor, thereby increasing the robustness of the results (Gable, 1994; Morgan, 1998). This division of labor is realized by a twofold decision in the research design. First, a primary method accompanied with a complementary method of research has been chosen. Second, the sequence in which these methods follow up on each other has been chosen (Greene et al., 1989; Miles and Huberman, 1994; Morgan, 1998; Sandelowski, 2000). The primary method for gathering data in this research was qualitative by means of a multiple case study design. The case study approach consists of a collection of methods (in-depth interviews, observations, longitudinal studies) which emphasize qualitative analysis (Yin, 2003). A case study method is most appropriate if the objective is to gain an in-depth understanding of a phenomenon (Yin, 2011). Compared to other research methods like experiments or surveys, a case study method allows the researcher to collect rich qualitative data and explore the in-depth experiences of informants (Eisenhardt, 1989; Yin, 2011). Whereas a single case design is most appropriate for exploratory research, a multiple case study design is desirable if the aim of the research is to test theory since it allows for cross case analysis (Yin, 2003; Baxter & Jack, 2008). Using a multiple case study design has both advantages and disadvantages. A multiple case study design brings the advantage of more reliable evidence. On the other hand, this design can be very time consuming and expensive (Baxter & Jack, 2008). For this research, a multiple case study approach is selected to compare the programs of two pre-incubators and their impact on competences of future entrepreneurs. The two pre-incubators and their accompanied programs are: Mercator Launch (Improve program) and StudentsInc (Discovery program). The unit of analysis is the impact of the pre-incubation program. By including two different cases with a similar program outline, it was possible to cross compare the impact of both programs, detect any discrepancies and discover were these differences could be ascribed to (Baxter & Jack, 2008).

In quantitative studies, the objective is to provide evidence for a causal effect within a controlled environment (Hair et al., 2006). A smaller quantitative study prior to the primary qualitative study helps to guide data collection (Morgan, 1998). Therefore, a complementary, quantitative research method in the form of a small questionnaire was integrated in the research design. The questionnaire outcomes served as input for the in-depth interview while at the same time providing a basic interview structure. Interesting associations that emerged from the preliminary questionnaire were analyzed through in-depth interviews, providing detailed qualitative understandings of why they exist and how they operate (Morgan, 1998). In this process of gathering richer information on why informants scored as they did, it was possible to gather information on whether the informants gave the same meaning during the interview as they did in the questionnaire (Sandelowski, 2000). Asking the respondent during the interview to comment on their view of each variable in the questionnaire helps to increase content and construct validity (Sandelowski, 2000). Additionally, allowing informants to give narratives of their experiences during an interview increases the holistic picture of their understanding and elucidates the meaning informants had about variables in the preliminary questionnaire (Brannen, 2005).

3.2 Case selection

In this research, the aim is to uncover the impact the pre-incubation program has on the competences of future entrepreneurs. A thoughtful consideration of cases is essential for multiple case study research since you want to compare the cases to either predict similar results or predicts contrasting results based on predictable reasons (Yin, 2003). In this study, two pre-incubators that offered a pre-incubation program were selected (Table 1). The primary case in this research is the pre-incubation program from Mercator Launch called Improve. Since Mercator Launch is the primary case, the second pre-incubator needs to have strong similarities to compare the results for any similarities or contradictions (Baxter & Jack, 2008). This second case was selected based on multiple criteria. First, it needed to offer a similar pre-incubation program in terms of program design, goals/themes, duration and accessibility. Second, it was required that his pre-incubator had strong ties to a university or university of applied sciences just like Mercator Launch. Thirdly, the pre-incubation program needed to be free of charge for participants. For the sake of time, tapping into the already existing network of Mercator Launch employees was used as method to select a suitable case for comparison. Based on all aforementioned criteria, StudentsInc Utrecht with its Discovery program was

selected as second case for this study. Similar to Mercator Launch, StudentsInc offers a pre-incubation program in which every week or every other week a specific theme is discussed. Participants need to prepare themselves for these sessions by making assignments through an online 'homework' tool. Business coaches have access to this tool, allowing them to track progress of each participant. During these meetings, a business coach or external expert gives a lecture on that particular theme. Afterwards, the participants have the opportunity to discuss the implications of their own business idea with each other and the coaches or external experts. Both programs have around 10 sessions, taking place over a period of 3 months. For participants to get admitted to the program, it is required to be a student or alumni (≤ 2 years) at the respective university or university of applied sciences. Next to that, participants need to have an innovative business idea and the motivation to become an entrepreneur. The goals and themes discussed in both programs also have strong similarities. The goal of both pre-incubation programs is to get participants ready to be an entrepreneur and gain insights into the first steps towards a successful and validated business plan. To achieve this, several themes like The Entrepreneur, Customer Validation, Value Proposition and Prototyping are offered. The bold themes in Table 1 show that six of the ten program themes have a direct overlap. Lastly, both programs are free of charge. One difference between the two pre-incubators is that StudentsInc, in collaboration with University Utrecht and Hogeschool Utrecht, offers students the opportunity to graduate at their own company.

Table 1: Overview pre-incubation design Mercator Launch Improve program and StudentsInc Discovery program.

Mercator Launch Improve Program - 12 weeks - Free of charge - Ties with University (Radboud)	**StudentInc Discovery Program** - 12 weeks - Free of charge - Ties with University (Utrecht)
Themes:	Themes:
1. Pitch Idea **The Entrepreneur**	1. Impact creation (basics)
2. Value proposition (canvas) **Customer Profile**	2. **Entrepreneurship**
3. Business Model (canvas)	3. **Lean Start-up (basics)**

4. Customer Validation	4. **Customer Discovery**
5. Form a team **Lean Start-up (prototyping)**	5. **Prototyping**
6. Target Market Intellectual Property	6. Design Thinking
7. Go2Market Strategy	7. Research Methods
8. Financial plan Funding sources	8. **Value proposition canvas**
9. Pitching	9. **Lean Canvas**
	10. Business Environment

3.3 Data collection

For this research, data from various sources combining multiple methods was collected. The main source of data was retrieved through a qualitative case study using in-depth semi-structured interviews with participants of a pre-incubation program. Prior to these interviews, a small-scale quantitative questionnaire (Appendix 1) based on theoretical propositions as mentioned by Driessen and Zwart (2006) was distributed among the informants. These entrepreneurial competences consist of business skills, business knowledge and motivation (Driessen & Zwart, 2006). All data from the questionnaire and interviews are confidential and therefore handled with great care.

First, a pilot session with an Improve informant was done to test the questionnaire and interview guide. After this pilot, it was decided to provide a more specific definition on the concepts, extrinsic motivation, market knowledge and regulatory knowledge to avoid that informants would interpret these concepts too freely. After these modifications, it rarely occurred that informants had a different understanding of a concept. In some cases, it did occur, but was easily noticed during the interview since each item in the questionnaire was further elaborated on, giving the researcher the opportunity to detect any deviant understandings of concepts. Based on additional feedback from the pilot interview, the introduction of the questionnaire was changed in a way that it gave more information on how the questionnaire would look like. Also, the structure of the questions was altered to create a more natural

conversation during the interview. Furthermore, one pilot interview with a business coach from Mercator Launch and one business coach from StudentsInc was conducted to get more information on the programs. They explained that both programs particularly focus on validating the business idea. It became clear that both programs did not emphasize on offering regulatory knowledge. Based on this, it was expected that this entrepreneurial competence would probably not be affected by the program. During the interviews, close attention was paid to any deviance in level regulatory knowledge and explicitly asked whether an increased regulatory knowledge was caused by the program or by other factors.

A total of twelve pre-incubation participants completed the questionnaire and have been interviewed. For the Mercator launch Improve program (MLIP) this included eight informants. For the StudentsInc Discovery program (SIDP) this included four informants. A complete overview of informant information is displayed in Appendix 3. The informants were selected based on several criteria such as level of education, field of study and their entrepreneurial experience. It was tried to select a set of informants with different levels of education, a high variety with regard to their field of study and a mix of very inexperienced and somewhat experienced entrepreneurs. The levels of education were distributed as follows: 3 HBO, 3 WO bachelor, 4 WO master and 2 PhD. A wide variety of study fields was observed among the informants: neuroscience, spatial planning, (bio)chemistry, microbiology, marketing, engineering, physics, artificial intelligence. As to entrepreneurial experience: 8 informants indicated they had little to no experience and 4 already had some experience.

In qualitative research, the point of reaching data saturation, that is when more data does not lead to more information, is hard to indicate (Mason, 2010). Since qualitative research is concerned with meaning, frequency is less important (Mason, 2010). One prerequisite of achieving data saturation is that interview questions need to be structured to ensure all informants are asked the same questions, otherwise it is impossible to focus (Guest et al. 2006; Fusch & Ness, 2015). Interview questions in this study were structured according to the questionnaire questions to make sure every respondent was asked the same questions. Samples in qualitative research need to be large enough to ensure that almost every important perception is revealed, but at the same time a too large sample causes repetitive and excessive data (Mason, 2010). After 12 interviews, data became repetitive and no more new themes emerged, so it seemed the data was more or less saturated. Furthermore, because the process of taking interviews and analyzing data is very time consuming, the 12 interviews were believed to be sufficient for the sake of this research.

3.4 Operationalization

The concepts business skills, business knowledge and motivation were measured based on multiple variables explaining these broad concepts. The informants were asked to fill in several questions, on a five-point Likert scale, regarding their level of competence before they started the pre-incubation program and their current level of competence. For interpretation reasons, the meaning of each variable was clarified with a definition. To avoid steering the informants towards socially desirable answers, the word 'program' was not used in the questionnaire questions about their current level of competence. By doing this, variations caused by the program were disconnected from variations caused by other factors. The preliminary questionnaire offered structure for the in-depth interviews (Appendix 2). The data retrieved from the questionnaire, that is the variations in competences before and after finishing the pre-incubation program, were the foundation for the interview questions. Informants were asked to provide further elaboration on each variable and potential variance in level of competence. During the interview, informants were asked what caused the change in their competences and in what way the pre-incubation program influenced these changes. If informants mentioned that the pre-incubation program influenced their competences, further elaboration on specific program elements that caused this were asked to uncover the exact influence of the pre-incubation program. To ensure content and construct validity in the interviews, the informants were asked to comment on their interpretation of each variable in the questionnaire (Sandelowski, 2000). In the following paragraphs, the measurement of the concepts and associated variables are further explained.

Business skills

Level of business skills was measured by the variables level of market orientation, level of creativity and level of flexibility, based on Driessen and Zwart (2006).

Level of market orientation was measured by the questions: "my level of market orientation is?" and "before I started with the program my level of market orientation was?" clarified by the definition "market orientation means you are able to identify the needs and desires of consumers and create products/services that satisfy them." This was measured on a five-point Likert scale (1: very bad – 5: very good).

Level of creativity was measured by the questions: "my level of creativity is?" and "before I started the program my level of creativity was?" clarified by the definition "creativity

means you are able to come up with novel and useful ideas". This was measured on a five-point Likert scale (1: very low – 5: very high).

Level of flexibility was measured by the questions: "my level of flexibility is?" and "before the program my level of flexibility was?" clarified by the definition: "flexibility means that you are able to adapt to changing situations". This was measured on a five-point Likert scale (1: very low – 5: very high).

Business knowledge

Level of business knowledge was measured by the variables level of market knowledge, level of financial knowledge, level of regulatory knowledge, and level of experience, based on Driessen & Zwart (2006).

Level of market knowledge was measured by the questions: "my level of market knowledge is?" and "before I started with the program my level of market knowledge was?" clarified by the definition: "knowledge on market size, competition, distribution channels etc." This was measured on a five-point Likert scale (1: very bad – 5: very good).

Level of financial knowledge was measured by the questions: "my level of financial knowledge is?" and "before I started with the program my level of financial knowledge was?" clarified by the definition: "Knowledge on financial projections, budgeting, funding, daily financials". This was measured on a five-point Likert scale (1: very bad – 5: very good).

Level of regulatory knowledge was measured by the questions: "my level of regulatory knowledge is?" and "before I started with the program my level of regulatory knowledge was?" clarified by the definition: "Knowledge on the Dutch rules and laws, rules for administration, Chamber of Commerce application (KvK), legal forms of business". This was measured on a five-point Likert scale (1: very bad – 5: very good).

Level of experience was measured by asking the questions: "my experience with setting up a business is?" and "before I started the program my experience with setting up a business was?" with no further definition. This was measured on a five-point Likert scale (1: very low – 5: very high).

Motivation

Level of motivation was measured by the variables level of intrinsic motivation and level of extrinsic motivation, based on Driessen & Zwart (2006).

Level of intrinsic motivation was measured by asking the questions: “my intrinsic motivation to start a business is?” and “before I started the program my intrinsic motivation to start a business was?” clarified by the definition: “intrinsic motivation is the motivation to engage in a behavior that arises from within yourself because it is naturally satisfying to you”. This was measured on a five-point Likert scale (1: very low – 5: very high).

Level of extrinsic motivation was measured by asking the questions: “my extrinsic motivation to start a business is?” and “before I started the program my extrinsic motivation to start a business was?” clarified by the definition: “Extrinsic motivation involves engaging in a behavior in order to earn external rewards or avoid punishment”. This was measured on a five-point Likert scale (1: very low – 5: very high).

Table 2: Operationalization

Concept	Dimensions	Items	Source
Business Skills	- Market Orientation	The ability to identify the needs and desires of consumers and create products/services that satisfy them.	(Driessen and Zwart, 2006)
	- Creativity	The ability to come up with novel and useful ideas.	
	- Flexibility	The ability to adapt to changing situations.	
Business Knowledge	- Market Knowledge	Knowledge on market size, competition, distribution channels etc.	(Driessen and Zwart, 2006)
	- Financial Knowledge	Knowledge on financial projections, budgeting, funding, daily financials	
	- Regulatory Knowledge	Knowledge on the Dutch rules and laws, rules for administration, Chamber of Commerce application (KvK), legal forms of business.	
Motivation	- Intrinsic motivation	The motivation to engage in a behavior that arises from within yourself because it is naturally satisfying to you. • Autonomy • Achievement • Power	(Driessen and Zwart, 2006)
	- Extrinsic Motivation	The motivation to engage in a behavior that arises from outside the individual and is driven by external rewards or to avoid punishment. • Unemployment • Gap in Market • Certainty of customers	

Pre-incubation Program	- Program elements	- Office facilities - Business plan assistance including feasibility study - Practical guidance like connecting to the authorities - Mentoring by entrepreneurs and experts - Training (workshops, seminars) - Financial counselling - Networking through events and joint training and joint location - Execute a real market test - Learn how to make a proof of concept - Develop a business plan - Create a prototype - Form a business team - Make the nascent business market-ready	(Voisey et al., 2013) (Deutschmann, 2007)
	- Program design	- How is the program designed? - How long does the program take? - How many sessions are there and over what time period?	
	- Goals/themes	- What is the goal of the program? - What themes are being discussed?	
	- Accessibility	- Who can enter the program? - What is required of participants to enter the program? - Are there costs to participants in the program?	
	- Ties to education	- What are your ties to university (of applied sciences)?	

3.5 Data analysis

Data from the questionnaire was first analyzed using the analyzing tool in Qualtrics. For each informant, the 'before' situation was compared with the 'after' situation to determine the change in level of competence. If a competence level increased by a minimum of one unit (e.g. (3) neutral to (4) moderately high), it was perceived as an improvement, the opposite goes for a decrease. For each competence, the number of informants who had an increased, decreased or stable outcome was counted and reported. A difference was made between the Improve informants and Discovery informants to detect discrepancies between the program impact. Then, the recorded interviews were first transcribed and uploaded into Atlas.ti, a software program designed to analyze qualitative data. The data retrieved from the interviews was analyzed by coding all important items in Atlas.ti (Appendix 4). Since it is important to understand the overall case, the data retrieved from all sources is analyzed collectively instead of treated individually (Baxter & Jack, 2008). Coding data allowed the researcher to group together data into categories that show similarities and ultimately form a pattern (Saldaña, 2015). When the essential patterns within the data were found, they were further analyzed using the pattern-matching technique. The pattern-matching technique, as described by Yin (2003), holds that patterns in the data are identified and subsequently compared with hypothesized patterns that the researcher has based on theory. According to Yin (2003), pattern-matching techniques in case study research are designed to improve the accuracy of the study. If the observed patterns match the predicted patterns, this results in a strong internal validity of the study. Consequently, if the observed patterns do not match the hypothesized patterns, alternative explanations for this discrepancy must be examined by the researcher.

3.6 Research Ethics

This research was conducted with great care of the research ethics. The role of professional scientific researcher has been adopted during the course of data collection, data analyzing and reporting of results. This includes a formal and confidential treatment of informants during the research. The objectives of this research have been made clear to all informants prior to the questionnaire and interview. All informants participated voluntarily and had the freedom to withdrawn from the research at any time. Data in any form provided by the informants and others is considered as confidential and anonymized in this research. The table in Appendix 3 was altered to make sure no personal information that could lead back to the informants is included. Confidential information is only to be shared with the Thesis supervisor. After each

interview, the informants were asked if they would like to receive a copy of the transcript so they had the opportunity to check the data for any misinterpretations and make corrections if needed. After anonymizing this study, informant and others involved in this research were send a copy of the results if they wanted to.

4. Results

The results of this study will be discussed in this chapter. First, the impact on level of business skills is presented, Second, the impact on level of business knowledge is presented. Third, the impact on level of motivation is presented. Lastly, additional competences mentioned by the informants are shown. At the end of this chapter a visual representation of the impact of both programs on entrepreneurial competences is presented (Table 3 & 4) together with a conceptual model (Figure 7).

4.1 Business Skills

Market Orientation

Results from the questionnaire showed that six (75%) of the Improve informants indicated an increase in level of market orientation, whereas all informants of the Discovery program indicated an increased level of market orientation. In the interviews it became clear that both programs put a great focus on market orientation. According to MLIP7 & MLIP2 & MLIP4, the Improve program increased their market orientation by pushing them to identify their market and to 'go out' and talk to (potential) customers in order to understand their desires. Also, using the online homework tool GoldenEgg where participants need to reflect the topic of that week on their own business, contributed to an increased market orientation (MLIP3). For example, informant MLIP2 mentioned that the increased market orientation caused by the Improve program resulted in a radical change of direction as the following quote illustrates. *"We have taken a completely new direction because the original idea was not good enough. We first wanted to focus on the music consumer, but now we are moving into a different segment: the artist music, they understand us better and our product. Mercator Launch helped us with that, go outside, talk to people and see what they think of your idea. You have an idea what you think is right, but you really don't know if that is right." (MLIP2)*. Informants of the Discovery program mentioned during the interview that identifying their market and customer was one of the most valuable skills the program taught them. *"The program really taught me to get to know my market, ask the right questions and practice talking about my company. This was really the most important thing the program taught me." (SIDP3).* The Discovery program pushed them to talk to potential customers to find out their needs and create a fit with their value proposition (SIDP3, SIDP1, SIDP2). Additionally, informants of both programs mentioned that market orientation was increased by identifying their market with the use of

models like the Value proposition canvas and Customer validation board (SIDP4, MLIP3, MLIP5, MLIP1, MLIP2, SIDP1.). Two (25%) informants of the Improve program indicated in the questionnaire that their level of market orientation remained unchanged. During the interview, informant MLIP8 explained that the reason his market orientation had not increased was because he believes you are not able to really determine your market since your market is for 99% based on assumptions. During the program, his prior assumptions were supported, but his level of market orientation had not increased. Informant MLIP6 said his level of market orientation had not increased during the program since he already had a high level of market knowledge (4 – moderately good) because he did a lot of market research himself.

Based on the results from the questionnaire and interviews, it can be concluded that the pre-incubation program has a large impact on the level of market orientation of future entrepreneurs. Most participants of both programs merely have a broad business idea but have no idea how their market looks like or what their potential customers want. Both programs highly focus on developing future entrepreneurs' market orientation throughout the program by pushing them to talk to their customers, identify their market and find out if their prior assumptions can be validated by asking the right questions. Accompanied by various models and tools, an improved understanding of their market and customers is created which helps them to validate their business idea and provides direction to develop their business idea with a better customer focus.

Creativity

From the questionnaire it became clear that four (50%) informants of the Improve program had an increase in level of creativity. For informants of the Discovery program, no variance in level of creativity was observed. In the interviews, informants of the Improve program mentioned that their level of creativity had increased because the program taught them to adopt a different way of thinking (MLIP4, MLIP3, MLIP8). For example, MLIP4 who has a non-business background, explained that the program made him more creative in a way that it taught him to think from a customer perspective. The program helped him to focus the development of his business idea to the needs of his main customer instead of targeting the whole market. With the wishes of his main customer in the back of his mind, he was able to come up with creative solutions. Furthermore, informant MLIP3 explained that his level of creativity improved because the program taught him a certain way of thinking. When I asked him how the program influenced his creativity, he answered as follows: *"A way of thinking, I guess. What really*

helped me is that you always need to ask why. Why is something? You need to keep asking 'why' until you get to the core. Do not settle for the first best answer but keep asking." (MLIP3). Also, MLIP1 ascribed an increased level of creativity to a different way of thinking, although he mentioned that this was not a result of the Improve program, but rather due to the process of setting up the business: *"Difficult to apply to the program. In general, when setting up a company, you just have to think differently, I didn't know that beforehand." (MLIP1).* The explanation from informants who indicated that their level of creativity did not change was similar for both programs. Informants made clear that creativity was a trait they already possessed. This could increase, but that would be more due to experience outside the pre-incubator (SIDP1, SIDP4, MLIP2, MLIP6, MLIP7). For example, SIDP4 mentioned: *"I think you develop creativity throughout your life and not so much through this program. For me, the program has been a place where I could apply that creativity again. But I don't think it has affected my creativity." (SIDP4)* Furthermore, in the interview, MLIP5 clarified that he perceived creativity rather as a personal characteristic then a skill that could be learned. Additionally, informants indicate that the program emphasized on practical implementations and not so much on generating novel and useful ideas (MLIP7 & SIDP2).

Based on these results, it can be concluded that the pre-incubation program can have an impact on level of creativity. From the interviews with Improve informants it appears that there is some link between an increased level of creativity and a shift in way of thinking. All four informants mentioned that a different way of thinking enabled them to be more creative. This could either be through the pre-incubation program or through the process of setting up the business. Additionally, enablers of a creative way of thinking have strong similarities with market orientation skills. Informants mention skills like 'customer identification' and 'asking the right questions' that helped them to be more creative. So, for some future entrepreneurs, an increased level of market orientation leads to a higher level of creativity. Nonetheless, half of the Improve informants and all of the Discovery informants did not experience an increased level of creativity. The data could not give a clear explanation on why there is a difference between the Improve informants and between the two programs. It seems that some informants, in contrast to others, consider creativity as a personal characteristic that cannot be easily influenced by a program.

Flexibility

Level of flexibility showed no variance in the questionnaire for six (75%) informants of the Improve program. Only two Improve informants indicated a change in level of flexibility in the questionnaire, one increased and one a decreased. For Discovery informants, level of flexibility showed inconsistent variances, for 2 informants it remained stable, 1 increased and 1 decreased. Improve informants MLIP3 and MLIP2 mention that the program paid no attention to developing the level of flexibility of future entrepreneurs. Also, the Improve informant MLIP5 clarified during the interviews that flexibility, similar to creativity, is considered a personal characteristic that is hard to teach in a program. On the other hand, MLIP7 noted in the interview that her level of flexibility had slightly increased because the program helped her to understand the needs of her customers better. This resulted in a radical change of course at which she abandoned her initial unvalidated assumptions and started to focus on a new market. Contradictory, MLIP1 indicated that his level of flexibility had decreased. The reduced flexibility was caused by the fact that setting up a business affected his freedom as following quote illustrates. *"You are heading towards a certain direction at that moment and then, suddenly, you have to drop other things and you no longer have all the liberties you had before." (MLIP1).* The Discovery informants whose level of flexibility remained the same mentioned that they already perceived themselves as highly flexible and that the program was not of influence (SIDP4 & SIDP3). SIDP1's level of flexibility increased as a result of the program as illustrated by the following quote: *"I think the program contributed to that (flexibility). This again is caused by the fact we were pushed to go out, that was one of the most valuable things I learned during the program." (SIDP1).* Lastly, SIDP2 explained that his level of flexibility decreased because of the natural growth of his business which resulted in multiyear contracts and trainees who stay for a limited time.

Based on these results, it can be concluded that the pre-incubation program has a limited impact of level of flexibility. Both programs do not focus on developing the level of flexibility and some informants consider this as a personal characteristic that is hard to influence by means of a program. Also, level of flexibility was already high for most informants which makes it harder to improve. For the two informants whose level of flexibility increased, it had something to do with a better understanding of their customer needs. So, similar to level of creativity, level of flexibility can be increased by a better market orientation, but only for certain people. Unfortunately, no similarities between the two informants whose level of flexibility had increased were discovered.

4.2 Business Knowledge

Market Knowledge

In the questionnaire, seven (88%) Improve informants indicated that their level of market knowledge had increased. Three (75%) Discovery informants mentioned an increase in level of market knowledge. In the interviews, informants of both programs indicated that their level of market knowledge had increased because of the Business model canvas (MLIP3, MLIP1, MLIP2, SIDP1). *"The business model canvas really gave me insights in the market. You suddenly find who is your competition, how big is the market and how many people there are who all have different interests. That has given me a lot of insight. If you have never seen something before, I think it is very difficult to bring your product to the market." (MLIP3).* Furthermore, informants of both programs mention that interaction with other future entrepreneurs and their business helped to increase their level of market knowledge. Discussing how others solve problems and receive feedback on your business is valuable business knowledge (MLIP2, MLIP1, SIDP1.). *"You also hear from other companies how they deal with this and you learn a lot about other niche products there. I have seen business plans from others, and I learn a lot from that." (MLIP2).* The level of market knowledge for Improve informant MLIP7 remained the same. Reason for this was that she did a lot of market research prior to the program, so her level of market knowledge was already high. Discovery informant SIDP3, whose market knowledge remained unchanged, mentioned that he had gained market knowledge from an earlier attempt to set up a business. Also, his level of market knowledge was already high before he started the program.

Based on these results, it can be concluded that the pre-incubation program has an impact on level of market knowledge of future entrepreneurs. The Business model canvas allows future entrepreneurs to get a structured understanding of how their market looks like in terms of competition, channels and partners. Furthermore, discussing with other participants and providing and receiving feedback is a useful way to increase market knowledge. This interaction with other participants was mentioned multiple times as a reason for an increased level of market knowledge. The impact of the pre-incubation program on level of market knowledge is negligible when participants already gained a lot of market knowledge through prior research or prior experience with setting up a business in the same industry.

Financial Knowledge

From the questionnaire appeared that seven (88%) Improve informants indicated that their level of financial knowledge increased, the others remained the same. Half of the Discovery informants indicated that their level of financial knowledge increased, the other half remained the same. In the interviews, Improve informants MLIP4, MLIP5 and MLIP1 stated that, during the program, they learned about basic financials like profit, revenue, budgeting, funding and balance sheets. Similarly, MLIP2, MLIP8 and MLIP7 mentioned that the Improve program provided a foundation for financial knowledge which could be applied to their own business. Financial knowledge was offered by a general lecture on basic start-up financing and funding either given by a business coach or an external expert. *"Financials for companies was completely new to me. In the Improve program we had a lesson about funding and reports at Rabobank (MLIP1).* On the other hand, multiple Improve informants stated that additional, company specific, financial knowledge was retrieved from individual meetings with their business coach instead of the program itself (MLIP1, MLIP2, MLIP3). *'Nevertheless, you do not really learn much about financials during class. If you need to prepare a pitch to receive funding, you make an appointment with your business coach and they will help you." (MLIP2 and MLIP1).* Moreover, a frequently mentioned remark from the Improve informants was that financial knowledge was not particularly relevant for them during this stage of development. A very basic understanding of financials was useful, but more detailed financial knowledge was more relevant during a later stage (MLIP3, MLIP1, MLIP2). A third way that increased financial knowledge was mentioned by MLIP4. Through the network of Mercator Launch, he partnered up with a business student who helped him with the commercial side of his business. Informants of the Discovery program mentioned that financial knowledge was barely part of the curriculum. Financial knowledge they needed was offered by individual meetings with their business coach (SIDP1). *In this phase, my financial knowledge is sufficient because we are really still in the research phase. But it has become slightly better because we had multiple conversations with our business coach to help us with questions. (SIDP1).* Similar to Improve informants, Discovery informants mentioned that they believe that financial knowledge is not particularly necessary in the research phase and therefore not an objective of the program (SIDP3 & SIDP1). However, later in the interview the question was asked if informants missed something in the Discovery program. SIDP1 answered that he preferred if the program paid more attention to financial knowledge and more knowledge on how to run a business, instead of only idea development. SIDP4, who did not experience an increase in level of financial knowledge, gave as reason that it was not at all mentioned in the program. SIDP3 and MLIP8

both mentioned that their financial knowledge had not increased because it was only barely covered during the program, thereby, they stated that finance was not their cup of tea and they were also not interested in this topic.

Based on these results, it can be concluded that the pre-incubation program has a limited impact on level of financial knowledge for future entrepreneurs. An increased financial knowledge was caused in three different ways, namely either by the program itself, through individual sessions with business coaches, or through experience outside the pre-incubator. The Improve program taught future entrepreneurs basic financial knowledge by offering a general lecture. If future entrepreneurs were in need of additional financial knowledge, their business coach was able to provide this. The Discovery program did not pay attention to offering financial knowledge, a business coach would help participants with financials if needed. At this stage of development, were future entrepreneurs are still validating their business idea, financial knowledge was not considered particularly relevant. However, one informant mentioned that it would be valuable if additional financial knowledge was offered in the program. Possibly because this informant was already ahead of his fellow participants in validating his business idea, additional financial knowledge was more valuable for him than for others.

Regulatory Knowledge

In the questionnaire, four (50%) Improve informants mentioned that their level of regulatory knowledge increased, the others remained unchanged. Three Discovery informants (75%) mentioned that their level of regulatory knowledge increased, while one informant indicated a decrease in level of regulatory knowledge. From the interviews became clear that both programs did not put much emphasis on providing specific knowledge on regulations. However, SIDP2 mentioned that during the program he gained regulatory knowledge by discussing with fellow participants as following quote illustrates: *"You get a lot of wisdom from your fellow entrepreneurs. You learn from the regulatory pitfalls that others have already been confronted with."* Informants that improved their regulatory knowledge mostly achieved this either through individual sessions with their business coach (SIDP1, MLIP3, SIDP4) or through other experts via the pre-incubator (MLIP1, MLIP2, MLIP4). The four Improve informants whose level of regulatory knowledge remained the same indicated that they were not yet in a stage were this knowledge was relevant (MLIP5) or they simply were not interested in regulatory knowledge (MLIP7 & MLIP8). In the questionnaire, (SIDP3) indicated that his

regulatory knowledge decreased. However, in the interview it became clear that doing market research made him realize that regulations were more complex than he initially had anticipated. *"As I started to do more research on the market, I got the idea that there is still a lot to learn and that it is a bit more complex than I thought. That is caused by the program." (SIDP3).*

Based on the results, it can be concluded that the pre-incubation program has no impact on the level of regulatory knowledge of future entrepreneurs. Both programs do not put emphasis on providing regulatory knowledge to future entrepreneurs. It was possible for one Discovery informants to increase knowledge on regulations through interaction with fellow participants. Regulatory knowledge is regularly retrieved from business coaches, external experts of fellow participants. The stage of development appears to be important for the need of regulatory knowledge. Future entrepreneurs who are still validating their business idea find it not relevant to gain knowledge on regulations. However, contradictory results appeared when was asked if informants missed any knowledge in the Improve program. MLIP1, MLIP2 and MLIP3 mentioned that it would be valuable if an overview of important follow-up steps and contacts would be provided after finishing the program. For example, a list of which institutes can provide you with regulatory knowledge when actually starting the business.

4.3 Motivation

Intrinsic Motivation

From the questionnaire became clear that only 2 (25%) Improve informants indicated that their level of intrinsic motivation increased, the other remained unchanged. Two (50%) Discovery informants indicated that their level of intrinsic motivation increased, two remained unchanged. The level of intrinsic motivation for all Discovery informants is currently *very high*. Improve informants that had an increased level of intrinsic motivation ascribed two program specific factors to this change, namely the use of the GoldenEgg tool and seeing other entrepreneurs setting up a business. *"Especially using GoldenEgg and see how others find their way motivated me." (MLIP 2).* Next to the program, the accessibility of the business coaches and the possibility to ask them questions was important for informants to increase their intrinsic motivation. *"You can just go to one of the business coaches and ask questions. It is now much more accessible. I first thought starting a business was very difficult, but now I think everyone can do it with the right knowledge and therefore I also like it better" (MLIP1 & MLIP2).* The Discovery program contributed to an increased intrinsic motivation by offering a save

environment with likeminded people (SIDP1). Next to that, SIDP3 stated in the interview that his intrinsic motivation was increased because his business became a lifestyle. *"Money was never a driver, I just enjoyed doing it. The program did not contribute to this, it has become more of a lifestyle for me." (SIDP3).* One Discovery informant (SIDP2) indicated in the questionnaire that his intrinsic motivation before the program was very high and was still very high. But, during the interview he mentioned that his intrinsic motivation had increased. The program helped him with validating the business problem which made him realize that he actually had an idea that could work, thereby increasing his intrinsic and extrinsic motivation. Informants of both programs who showed no increase in intrinsic motivation mentioned that they already were very intrinsically motivated and there was no factor that substantially increased that. They always had the urge to create something (MLIP2 & SIDP4) or wanted a sense of autonomy. "*I always had an itch to do my own thing and try to be creative and create a business." (MLIP4).*

Based on these results, it can be concluded that the Improve program has an impact on the intrinsic motivation of future entrepreneurs only for some participants. The two Improve informants that had an increased level of intrinsic motivation are co-founders of the same company. They specifically mentioned that they never considered starting a business before. The Improve program increased their intrinsic motivation by making them realize that starting a company was feasible for them. Nevertheless, the intrinsic motivation of the majority of Improve informants was not affected. General explanation for this was based on the fact that their intrinsic motivation was already high and could not be substantially improved. One exception was MLIP7, she had a moderately low intrinsic motivation which remained the same after the program. She realized that she had no motivation to become an entrepreneur at all and therefore she decided to leave the company. The Discovery program had some impact on the intrinsic motivation of future entrepreneurs. Similar to the Improve informants, their level of intrinsic motivation was already high, nevertheless the program was able to increase this. The save environment with like-minded people and proper validation of the business idea were mentioned as key program elements. The data could not provide a definitive answer on how this difference between the programs occurred. Perhaps the Discovery program puts more focus on creating a save environments which enhances the intrinsic motivation.

Extrinsic Motivation

Half of the Improve informants mentioned that their level of extrinsic motivation increased, the other half remained the same. Only 1 Discovery informant (25%) mentioned that his level of extrinsic motivation increased, the rest remained the same. Extrinsic motivation is never the main driver to start a business but is rather something that is the back of the mind of the future entrepreneur (MLIP1, MLIP2, SIDP2, MLIP3, SIDP4, SIDP3). Informants state that the Improve program contributed to an increased level of extrinsic motivation because they found out that their business idea is plausible enough to become an actual business and therefore generate income (MLIP1 & MLIP3) *"At first, I thought it was just a great idea and wanted to see what we could do with it, but gradually, also by sitting at Mercator Launch, I learned that it is also about making money. Extrinsic motivation to make money is in the back of your mind. And then it becomes interesting to set up a small business with which you can earn a nice living." (MLIP3).* Other Improve informants state that their increased extrinsic motivation was caused by pressure from outsiders and not by the program (MLIP4 & MLIP7). The Discovery informant contributed the increased level of extrinsic motivation partly to the program and partly to external factors. The program helped because validating the problem made him realize that the product is actually adding value. The other part came from the natural growth of the business and the increased responsibility that came with it. Important to mention, this informant already started a business before joining the program so he experienced an increased responsibility which could explain why his level of extrinsic motivation increased. Informants with a stable extrinsic motivation mentioned they feel no pressure from outside (MLIP7 & MLIP5) or do not care about money and just want to do what they like (SIDP3 & SIDP4).

Based on these results, it can be concluded that the Improve program has some impact on the extrinsic motivation of future entrepreneurs. The Discovery program has a minimal influence on level of extrinsic innovation. From the programs, future entrepreneurs found out that their business idea is plausible enough to become an actual business and therefore generate income. So, validating the business idea can lead to an increased extrinsic motivation. However, the overall tendency is that the program has no influence on extrinsic motivation.

4.4 Additional competences

During the interviews, informants were asked if there were any additional important competences they learned from the pre-incubation program. Informants of both programs gave similar answers.

First of all, presentation skills were improved because informants learned to pitch their business idea (MLIP1, MLIP2, MLIP4, MLIP8, SIDP2). During the program, informants needed to pitch their idea multiple times to fellow participants and potential investors. *"A big part of it is talking about your company, you practice that. That was a big thing the improve taught me. Session one you start with a pitch and the last you end with a pitch and you see the progress. Communication skills improve." (MLIP4).*

Secondly, communication skills improved because informants were pushed to talk to a lot of people about their business idea and pitch it (MLIP1, MLIP2, MLIP4, MLIP8, MLIP7, SIDP2). *"Communication skills / presentation skills, we focus very much on this, stepping out of your comfort zone. Because you are constantly asked to pitch, you learn to tell brief and concise, but also to present yourself and become more self-assured" (SIDP2).* Informants mentioned that going to network events and just talk to people was an important competence they learned.

Lastly, for some informants the program meant they needed to step out of their comfort zone, resulting in an enhanced level of confidence. They are more confident talking about their business to potential customers, professors and bank employees. *"Yes, self-confidence is very important during discussions with the bank, for example. If you talk to someone from the business world then I see that it has really gotten better." (MLIP2).* Pitching the business idea over and over again helped them to gain more confidence.

Table 3: Visual representation of the impact of the Improve program on entrepreneurial competences

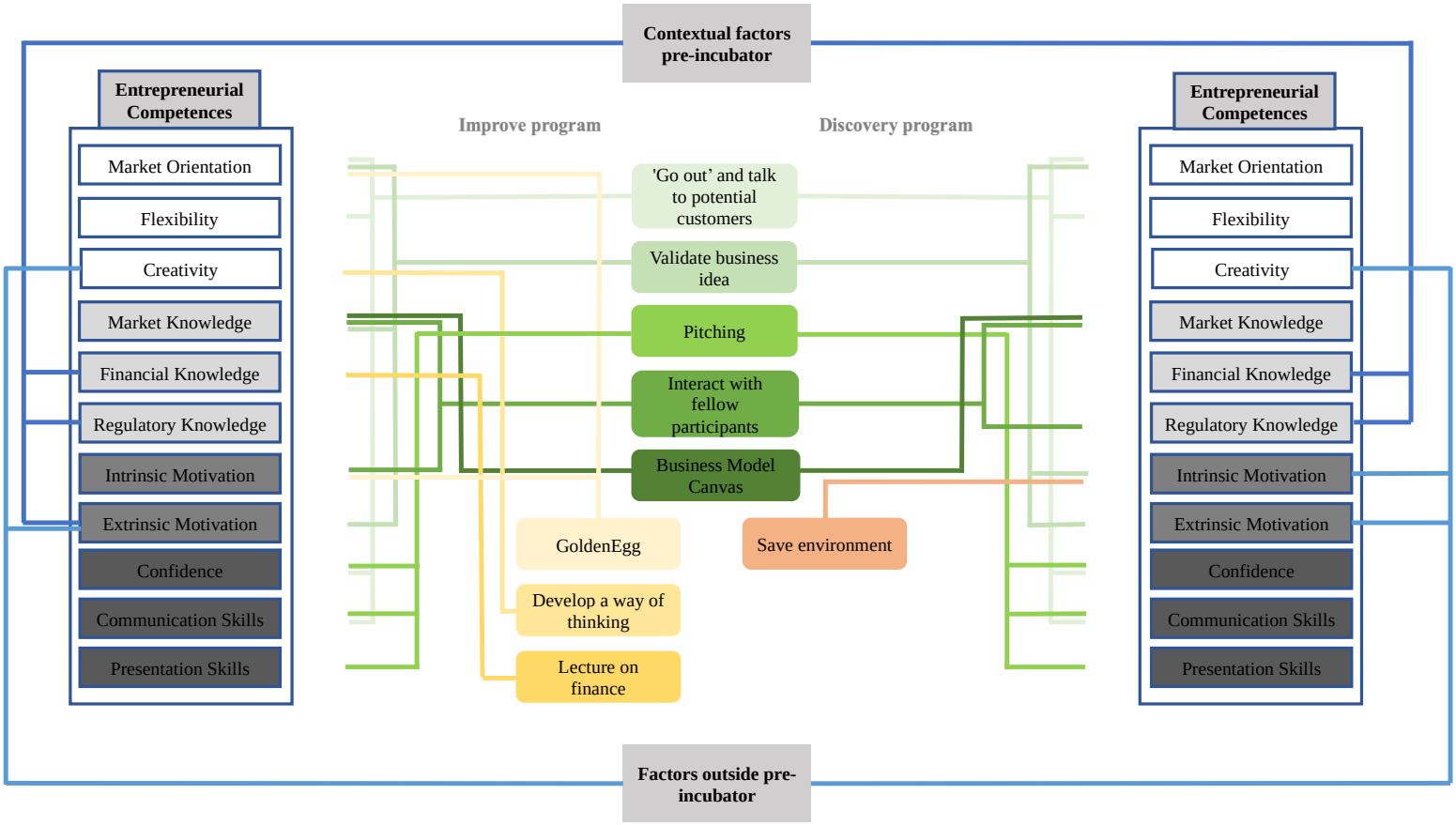
Mercator Launch Improve program	Market orientation	Creativity	Flexibility	Market Knowledge	Financial Knowledge	Regulatory Knowledge	Intrinsic Motivation	Extrinsic Motivation	Communic ation Skills	Presentation Skills	Confidence	Impact
'Go out' and talk to potential customers												++++
Validate Business idea												+++
Business model canvas												+
Interact and discuss with fellow participants												++
Pitch Business idea												+++
Develop a way of thinking												+
GoldenEgg												++
General lecture on finance												+

Table 4: Visual representation of the impact of the Discovery program on entrepreneurial competences

StudentsInc Discovery program	Market orientation	Creativity	Flexibility	Market Knowledge	Financial Knowledge	Regulatory Knowledge	Intrinsic Motivation	Extrinsic Motivation	Communic ation Skills	Presentation Skills	Confidence	Impact
'Go out' and talk to potential customers												++++
Validate Business idea												+++
Business model canvas												+
Interact and discuss with fellow participants												++
Pitch Business idea												+++
Offering a save environment												+

4.5 Conceptual Model

Figure 7: A conceptual model of the specific program elements of pre-incubators Mercator Launch and StudentsInc and its impact on entrepreneurial competences



5. Conclusion and discussion

5.1 Conclusion

The aim of this study was to find out what impact the pre-incubation program has on the competences of future entrepreneurs. The importance of this question comes from the limited knowledge on what specific pre-incubation program elements have an impact on entrepreneurial competences. Several researchers have studied the impact (Stephens and Onofrei, 2012; Voisey et al., 2013; Martínez, Fernández-Laviada and Crespo, 2017) on entrepreneurial competences, but a gap in the literature was observed on what specific elements of the pre-incubation program have an impact on entrepreneurial competences. From a practical perspective, it is important for a pre-incubator to determine the impact of its program, not only to improve the quality, but also to justify its existence to external stakeholders. The findings of this study indicate that the pre-incubation programs of Mercator Launch and StudentsInc both have a substantial impact on entrepreneurial competences of its future entrepreneurs. 'Going out' and talk to potential customers had an impact on multiple entrepreneurial competences and was the most important program element observed in both cases. Regulatory knowledge was the only competence that was not affected by the Improve Program while informants indicated they would find this valuable knowledge to learn. Offering general information and connect them to the right experts would be of great help according to the future entrepreneurs. Within the Discovery program, only creativity and financial knowledge were not observed as increased competence. Financial knowledge can easily be improved by offering a general lecture to participants. Creativity is more difficult to teach since it is considered a personality trait. Taking into account differences in personalities might help pre-incubators to create a more valuable program for each future entrepreneur. Additional entrepreneurial competences affected by the pre-incubation program that were found are presentation skills, communication skills and confidence. Pitching the business idea has an impact on all three competences. Figure 7 presents a detailed visualization of the specific elements of the pre-incubation program and the impact it has on entrepreneurial competences.

5.2 Theoretical and practical implications

This study was able to add knowledge to entrepreneurship literature and business incubation literature by providing concrete pre-incubation program elements and its impact on

entrepreneurial competences. The entrepreneurial competences provided by Driessen and Zwart (2006) and conceptual framework on the impact of pre-incubation on entrepreneurial competences, provided by Stephens and Onofrei (2012), have been used as starting point for the case study on the two Dutch pre-incubators Mercator Launch and StudentsInc. It was tested whether this framework still holds in the context of these pre-incubation programs.

First, pushing participants to 'go out' and talk to potential customers has been observed as the most important program element which resulted in an increase in level of market orientation, flexibility, communication skills and confidence. It was expected, based on Driessen and Zwart (2006) and Stephens and Onofrei (2012), that the pre-incubation program would have an impact on business skills (market orientation and flexibility). It appears that communication skills and confidence are also competences that are affected by the pre-incubation program. In contrast to findings from Stephens and Onofrei (2012), this study observed an increased confidence already at the pre-incubation stage instead of the 'during incubation' stage. Communication skills, although not mentioned in the literature as an essential entrepreneurial competence taught by a pre-incubation program, has been indicated by multiple informants from both programs as important skill they developed. These discrepancies might be explained by the fact that both programs in this study actively push participants to go into the field instead of passively do market research based on models. So, it is recommendable for pre-incubators to actively push participants to 'go out' in order to develop not only market orientation and flexibility, but also communication skills and confidence.

Second, pitching the business idea results in an increased level of presentation skills, communication skills and confidence. Interestingly enough, pitching has not been mentioned by Voisey et al., (2013), Deutschmann (2007) or Kirby (2004) as important pre-incubation program element but was often mentioned by informants of both programs. Consequently, the competences that are developed by pitching the business idea have not been mentioned either by Driessen and Zwart (2006) and Stephens and Onofrei (2012). Increased communication and presentation skills seem obvious when pitching a lot, but apparently confidence is also positively affected. At the early phase of starting up a business, it appears to be highly valuable for future entrepreneurs to practice presenting their business idea. Therefore, it is recommended to integrate pitching in the pre-incubation program.

Third, the business model canvas (BMC) enabled future entrepreneurs to increase their level of market knowledge. The BMC is a popular tool that offers future entrepreneurs insights in their market and can be placed under the umbrella of 'market research' in pre-incubation.

Remarkably, informants have not mentioned an increase in level of market orientation due to the BMC. Driessen and Zwart (2006) and Stephens and Onofrei (2012) indicate market knowledge as entrepreneurial competence. Although the use of the BMC has not been explicitly mentioned by Voisey et al., (2013), Deutschmann (2007) or Kirby (2004), it was expected that it would have an impact on market knowledge and market orientation since it is designed to identify who your customers are. Alternative explanations for this could be that either the concepts market knowledge and market orientation were not understood correctly, or because informants mixed up the various models used in the program.

Fourth, validating the business idea resulted in an increased level of market orientation and extrinsic motivation at both pre-incubation programs. Validating the business idea helps future entrepreneurs determine if there actually is a market and that there are customers who want to pay for it. However, informants of the Improve program indicated that validating the business idea also resulted in an increased level of market knowledge, whereas Discovery informants mentioned an increase in intrinsic motivation as a result of validating the business idea. Reflecting these results on the conceptual framework of Stephens and Onofrei (2012) and Driessen and Zwart (2006), it was expected that the pre-incubation program would have a positive impact on market orientation, market knowledge and motivation. It was expected that validating the business idea would have an impact on both market orientation and market knowledge at both programs. It is not entirely clear why validating the business idea did not increase market knowledge in the Discovery program. It was not particularly expected that intrinsic motivation was affected by validating the business idea. It seems like Discovery participants retrieved intrinsic motivation from the fact that they realized that their business idea was actually feasible.

Fifth, interacting and discussing with fellow participants increased the level of market knowledge for future entrepreneurs of both programs. For Improve participants this also increased their intrinsic motivation and for Discovery participants it increased their level of regulatory knowledge. Based on the conceptual model of Driessen and Zwart (2006) and Stephens and Onofrei (2012), it was expected that the pre-incubation program would have an impact on market knowledge, motivation and regulatory knowledge. Seeing others setting up a business gave some Improve participants more intrinsic motivation to set up their own business. Although regulatory knowledge was not part of the Discovery program, participants gained knowledge on regulations from peers who already had some experience. No Improve program element contributed to the development of regulatory knowledge. The stage of development appears to be important for the need of regulatory knowledge. Future

entrepreneurs who are still validating their business idea find it not relevant to get knowledge of regulations. However, contradictory results appeared when was asked if informants missed any knowledge in the Improve program. Some mentioned that it would be valuable if an overview of important follow-up steps and contacts would be provided after finishing the program. So, a recommendation for the Improve program is to offer participants additional general information on regulations. It may also be beneficial to stimulate participants to interact more with fellow entrepreneurs during the program since they might learn competences that are not specifically addressed in the program, like regulatory knowledge.

Some program specific elements were found which had an impact on entrepreneurial competences. For the Improve program this includes the development of a way of thinking which increased creativity. Creativity was mentioned by Driessen and Zwart (2006) and Stephens and Onofrei (2012). Furthermore, GoldenEgg, which increased market orientation and intrinsic motivation, as well as a lecture on finance & funding which increased financial knowledge are elements only observed in the Improve program. Financial knowledge is an entrepreneurial competence stated by Driessen and Zwart (2006) and Stephens and Onofrei (2012). Interestingly, the Discovery program puts no emphasis on financial knowledge and therefore shows no impact on this competence. Although multiple informants indicated that financial knowledge was important at a later stage, informants from both programs particularly mentioned that they would appreciate it if more financial knowledge was offered. So, both Mercator Launch and StudentsInc could provide more financial knowledge during the program to even better enable future entrepreneurs setting up their business. Also, no Discovery program element was able to increase the creativity of future entrepreneurs. Multiple informants indicated that creativity was not impacted by the program because it was perceived as a personal characteristic that could not be changed easily. For pre-incubators this could imply that the personality of a future entrepreneur should be accounted for when designing a program.

For the Discovery program, offering a save environment with likeminded people resulted in an increased intrinsic motivation. This program element was not specifically mentioned by one of the Improve informants. However, it is mentioned in the literature by Hackett and Dilts (2004a) that a pre-incubator should offer an environment where future entrepreneurs can fail without consequences. Mercator Launch might improve the Improve program by creating an environment with likeminded people where they feel save and thereby increasing intrinsic motivation.

5.3 Limitations and suggestions for future research

A limitation in this study is the generalizability of the results since each case is very context specific. Although the specific impact of the program has been disconnected from contextual factors, there might still be other contextual factors that influence the relative impact on entrepreneurial competences. Further research is required to find out how other contextual factors play a role in the impact of pre-incubation programs on of entrepreneurial competences. For example, personal characteristics of people could be accounted for in future studies. Other researchers could include contextual factors like personality traits to give better insights in what other elements might influence the impact on entrepreneurial competences. Furthermore, to increase generalizability of results, other pre-incubation programs should be researched to find out if the additional competences found in this study are also observed at other pre-incubators. A limitation in this study is the validity of measures. Since the operationalization of concepts in this study was rather superficial, concepts might not measure what they were intended to measure. A recommendation for future research is to deepen the measurement of concepts to create a better validity. This could be done by not only providing a definition with each concept, but by asking multiple questions that give a better underlying meaning of those concepts. Another limitation in this study is the reliability of the outcomes. Since the sample size was rather small, especially at StudentsInc, results might not be representative for all participants of the pre-incubation program. So, a suggestion for further research is to increase the sample size to increase the reliability of results. Lastly, all respondents successfully finished one of the pre-incubation programs which could lead to biased results. Respondents that finished the program are more likely to give positive answers than people who prematurely abandoned the program. A suggestion for further research on this subject is to include participants who did not successfully finish the pre-incubation program.

Reference list

Albert, P., & Gaynor, L. (2006). Technology business incubation management: Lessons of experience. *High-Tech Entrepreneurship: Managing Innovation, Variety and Uncertainty, Routledge, London*, 131-143.

Allen, D. N., & McCluskey, R. (1991). Structure, policy, services, and performance in the business incubator industry. *Entrepreneurship Theory and Practice*, *15*(2), 61-77.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The qualitative report*, *13*(4), 544-559.

Begley, T.M. & Boyd, D.P. (1987). Psychological characteristics associated with performance in entrepreneurial firms and smaller businesses. *Journal of Business Venturing*, *2*(1), 79-93.

Brannen, J. (2005). Mixing methods: The entry of qualitative and quantitative approaches into the research process. *International journal of social research methodology*, *8*(3), 173-184.

Brinkman, E. (2000), Research about success- and failfactors of starters. *Master thesis, RUG.*

Brockhaus, Sr., R.H. (1982), The psychology of the entrepreneur. *Encyclopedia of Entrepreneurship*, 39-57.

Deutschmann, M. (2007). *What difference a 'pre' makes: University business preincubators in Germany. A national survey*. Lüneburger Beiträge zur Gründungsforschung.

Dickson, A. (2004). *Pre-incubation and the New Zealand business incubation industry*. New Zealand Centre for SME Research.

Driessen, M.P., & Zwart, P.S. (2006). De e-scan ondernemerstest ter beoordeling van ondernemerschap. *Maandblad voor Accountancy en Bedrijfseconomie, 80*(7/8), 382-391.

Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of management review*, *14*(4), 532-550.

Fusch, P. I., & Ness, L. R. (2015). Are We There Yet? Data Saturation in Qualitative Research. *The Qualitative Report, 20*(9), 1408-1416.

Gable, G. G. (1994). Integrating case study and survey research methods: an example in information systems. *European journal of information systems*, *3*(2), 112-126.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis*, *11*(3), 255-274.

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods, 18*(1), 59-82.

Hannon, D. (2004) A qualitative sense-making classification of business incubation environments, *Qualitative Market Research: An International Journal*, *7*(4), 274-283.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis*. Upper saddle River, NY: Prentice Hall.

Harman, P., & Read, L. (2003). Supporting incubation in the UK through the development of benchmarks. *UKBI: International Council for Small Business, 48th World Conference, Northern Ireland*. 15-18

Kirby, D. A. (2004). Entrepreneurship education and incubators: pre-incubators, incubators and science parks as enterprise laboratories. *14th Annual IntEnt Conference*.

Knafl, K., & Breitmayer, B. J. (1989). Triangulation in qualitative research: Issues of conceptual clarity and purpose. *Qualitative nursing research: A contemporary dialogue*. 193-203. Rockville, MD: Aspen.

Lahti, R.K. (1999). Identifying and Integrating Individual Level and Organizational Level Core Competences. *Journal of Business and Psychology, 14*(1), 59-75.

Martínez, K. R. G., Fernández-Laviada, A., & Crespo, Á. H. (2017). Influence of Business Incubators Performance on Entrepreneurial Intentions and Its Antecedents during the Pre-incubation Stage. *Entrepreneurship Research Journal*, *8*(2).

Mason, M. (2010,). Sample size and saturation in PhD studies using qualitative interviews. *Forum: Qualitative Social Research, 11*(3).

Miles, M. B., Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.

Monsson, C. K., & Jørgensen, S. B. (2016). How do entrepreneurs' characteristics influence the benefits from the various elements of a business incubator?. *Journal of Small Business and Enterprise Development, 23*(1), 224-239.

Morgan, D. L. (1998). Practical strategies for combining qualitative and quantitative methods: Applications to health research. *Qualitative health research*, *8*(3), 362-376.

Nandram, S.S. & Samson, K.J. (2000). Succesvol Ondernemen: Eerder een Kwestie van Karakter dan Kennis. *Nyenrode Center for Entrepreneurship, Breukelen, Netherlands.*

Onderzoeksrapportage in opdracht van het Ministerie van Economische Zaken en de Nederlandse Vereniging van Participatiemaatschappijen.

Osterwalder, A., Pigneur, Y., Bernarda, G., & Smith, A. (2014). *Value proposition design: How to create products and services customers want*. New Jersey, NY: John Wiley & Sons.

Patton, M. (1990). *Qualitative Evaluation and Research Methods*. London: Sage.

Patton, D., & Marlow, S. (2011). University technology business incubators: helping new entrepreneurial firms to learn to grow. *Environment and Planning C: Government and Policy*, *29*(5), 911-926.

Peters, L., Rice, M., and Sundararajan, M. (2004). The role of incubators in the entrepreneurial process. *Journal of Technology Transfer, 29*(1), 83–91.

Ries, E. (2011). The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses. *Crown Books.*

Saldaña, J. (2015). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage.

Sandelowski, M. (2000). Combining qualitative and quantitative sampling, data collection, and analysis techniques in mixed-method studies. *Research in nursing & health*, *23*(3), 246-255.

Stephens, S., & Onofrei, G. (2012). Measuring business incubation outcomes: an Irish case study. *The International Journal of Entrepreneurship and Innovation*, *13*(4), 277-285.

Symon, G., & Cassell, C. (Eds.). (2012). *Qualitative organizational research: core methods and current challenges*. Thousand Oaks, CA: Sage.

Voisey, P., Gornall, L., Jones, P., & Thomas, B. (2006). The measurement of success in a business incubation project. *Journal of Small Business and Enterprise Development*, *13*(3), 454-468.

Voisey, P., Jones, P., & Thomas, B. (2013). The pre-incubator: a longitudinal study of 10 years of university pre-incubation in Wales. *Industry and higher education*, *27*(5), 349-363.

Wilson, P. (2008). Fostering entrepreneurship and innovation through business incubators: a comparative analysis of the role of European business and innovation centres. *Doctoral dissertation, Newcastle University.*

Wirsing, B., Traude, A., Steffens, J., Sheen, M., Löffler, B., De Lapparent, D., Broadfoot, C., & Alonso-Gonzalez, J. L. (2002). Becoming an entrepreneur for a trial period: the

pre-incubation experience. *The International Journal of Entrepreneurship and Innovation, 3*(4), 265-277.

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.

Yin, R. K. (2011). *Applications of case study research*. Thousand Oaks, CA: Sage.

Appendices

Appendix 1: Questionnaire

This questionnaire contains several questions that relate to your motivation, knowledge and skills you have learned while setting up your business.
The answers to the questions are divided on a scale from 1 to 5. Please indicate which answer best fits your situation.
This questionnaire will take about 3 minutes to finish.
The information retrieved from this questionnaire will be treated confidentially.

My intrinsic motivation to start a business is?
(Intrinsic motivation is the motivation to engage in a behavior that arises from within yourself because it is naturally satisfying to you)

- ○ Very low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

My extrinsic motivation to start a business is?
(Extrinsic motivation involves engaging in a behavior in order to earn external rewards or avoid punishment)

- ○ Very low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

My level of market orientation is?
(Market orientation means you are able to identify the needs and desires of consumers and create products/services that satisfy them)

- ○ Very bad
- ○ Moderately bad
- ○ Neutral
- ○ Moderately good
- ○ Very good

My level of creativity is?
(Creativity means you are able to come up with novel and useful ideas)

- ○ Very low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

My level of flexibility is?
(Flexibility means that you are able to adapt to changing situations)

- ○ Very low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

My level of market knowledge is?
(Knowledge on market size, competition, distribution channels etc.)

- ○ Very bad
- ○ Moderately bad
- ○ Neutral
- ○ Moderately good
- ○ Very good

My level of financial knowledge regarding setting up a business is?
(Knowledge on financial projections, budgeting, funding, daily financials)

- ○ Very bad
- ○ Moderately bad
- ○ Neutral
- ○ Moderately good
- ○ Very good

My level of regulatory knowledge regarding setting up a business in the Netherlands?
(Knowledge on the Dutch rules and laws, rules for administration, Chamber of Commerce application (KvK), legal forms of business)

- ○ Very bad
- ○ Moderately bad
- ○ Neutral
- ○ Moderately good,
- ○ Very good

My experience with setting up a business is?

- ○ Very low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

Before I started with the program my <u>intrinsic</u> motivation to start a business was?
(Intrinsic motivation is the motivation to engage in a behavior that arises from within yourself because it is naturally satisfying to you)

- ○ Very low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

Before I started with the program my <u>extrinsic</u> motivation to start a business was?
(The motivation to engage in a behavior that arises from outside the individual and is driven by external rewards or to avoid punishment)

- ○ Very low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

Before I started with the program my market orientation was?
(Market orientation means you are able to identify the needs and desires of consumers and create products that satisfy them)

- ○ Very bad
- ○ Moderately bad
- ○ Neutral
- ○ Moderately good
- ○ Very good

Before I started with the program my level of creativity was?
(Creativity means you are able to come up with novel and useful ideas)

- ○ Very low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

Before I started with the program my level of flexibility was?
(Flexibility means that you are able to adapt to changing situations)

- ○ Very Low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very high

Before I started with the program my level of market knowledge was?
(Market size, competition, distribution channels etc.)

- ○ Very bad
- ○ Moderately bad
- ○ Neutral
- ○ Moderately good
- ○ Very good

Before I started with the program my financial knowledge was?
(Financial plan, Budget, Funding, Daily financials)

- ○ Very bad
- ○ Moderately bad
- ○ Neutral
- ○ Moderately good
- ○ Very good

Before I started with the program my regulatory knowledge regarding setting up a business was?
(Contracts, Chamber of Commerce application, Legal forms of business, etc.)

- ○ Very bad
- ○ Moderately bad
- ○ Neutral
- ○ Moderately good
- ○ Very good

Before I started with the program my experience with setting up a business was?

- ○ Very Low
- ○ Moderately low
- ○ Neutral
- ○ Moderately high
- ○ Very High

Name

_____

Age

_____

Education

- ○ HBO
- ○ WO Bachelor
- ○ WO Master
- ○ PhD degree
- ○ Other _____

Company name

_____

Email

_____

Appendix 2: Interview Guide

Interview guide Mercator Launch Improve Program/StudentsInc Discovery Program

Intro:

- Voostellen: ik ben Stan Custers, Master student Innovation & Entrepreneurship aan de Radboud Universiteit.
- Onderzoek introduceren: Voor mijn Master scriptie doe ik onderzoek naar de impact van pre-incubation programma's op de competenties van startende ondernemers.
- De opzet van de vragenlijst duidelijk maken: Op basis van de questionnaire die je hebt ingevuld ga ik een aantal dieptevragen stellen. Ik pak zometeen de questionnaire erbij en zal per competentie vragen op welke manier deze verbeterd/verslechterd/gelijk gebleven is.
- Toestemming vragen om het gesprek op te nemen.

Vragen:

- Vertel iets meer over jezelf en je onderneming?

Motivation:

- **Intrinsieke motivatie**: De motivatie om iets te doen omdat het van nature bevredigend voor je is.
    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?
- **Extrinsieke motivatie**: De motivatie om iets te doen omdat je druk voelt van buitenaf, een externe beloning wilt of straf wilt voorkomen.
    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?

Business Skills:

- **Marktoriëntatie**: in staat zijn om de behoefte van de klant te identificeren en op basis hiervan producten/diensten te maken?
    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?
- **Creativiteit**: Het vermogen om nieuwe en nuttige ideeën te bedenken
    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?
- **Flexibiliteit**: Het vermogen om je aan te passen aan een veranderende situatie.
    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?

Business Knowledge:

- **Marktkennis**: Hoe groot is de markt? Concurrenten? Distributiekanalen?
    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?
- **Financiële kennis**: Boekhouding, investeringen, budgettering, dagelijkse financiën.

    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?
- **Regelgevende kennis:** Kennis van regelgeving omtrent start-ups in Nederland: Contracten, KVK-aanmelding etc)
    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?
- **Ervaring**: Op het gebied van ondernemen. Zowel praktijk- als theoretische ervaring
    - Ik zie dat dit beter/slechter/gelijk is geworden, kun je dit toelichten?
    - Heeft meedoen het programma hieraan bijgedragen? Zo ja, op welke manier?

Algemeen:

- Waarom heb je meegedaan aan het programma?
- Wat vond je van het programma?

Afsluitende vragen:

- Zijn er nog competenties die je hebt geleerd van het programma die nog niet zijn genoemd?
- Zijn er competenties die je graag had willen leren maar niet hebt geleerd?
- Zijn er dingen die je buiten het programma hebt geleerd/ontdekt? (context pre-incubator)
- Heb je nog tips voor het programma?
- Welk cijfer zou je het programma geven

Appendix 3: Informant information

Code	Gender	Fictional company name	Industry	Education	Field of Study	Prior Entrepreneurial Experience	Still Involved in company
MLIP1	Male	NextGenHeadphones	Music electronics	WO Bachelor	Biochemistry	Very Low	Yes
MLIP2	Male	NextGenHeadphones	Music electronics	WO Bachelor	Cognitive neuroscience	Very Low	Yes
MLIP3	Male	VR City	Virtual Reality Spatial Planning	WO Master	Spatial planning	Very Low	Yes
MLIP4	Male	MicrobeAgri	Sustainable Agriculture	PhD Degree	Microbiology	Very Low	Yes
MLIP5	Male	HoneyBiotic	Natural Medication	WO Master	Chemistry	Moderately Low	Yes
MLIP6	Male	RainbowSolar	Sustainable Energy	PhD Degree	Physics	Neutral	Yes
MLIP7	Female	Pollution Sensor	Consumer Measurement Equipment	WO Master	Climate physics	Neutral	No
MLIP8	Male	PortableEnergy	Sustainable Energy	HBO	Engineering	Moderately High	Yes
SIDP1	Male	OnlineMarketing	Marketing	HBO	Digital Media & Communication	Moderately Low	Yes
SIDP2	Male	AdminSoftware	Administration Software	WO Master	Artificial Intelligence	Moderately Low	Yes
SIDP3	Male	KoreaGo	Korean Entertainment industry	HBO	Marketing	Moderately High	Yes
SIDP4	Male	SeniorTechnology	Elderly Education Software	WO Bachelor	Natural science & Innovation management	Moderately High	Yes

Appendix 4: Coding list

○ Aanvullende competencies
○ Cijfer Discovery programma
○ Cijfer Improve programma
○ Coaching en training programma
○ Communicatie skills
○ Creatief bezig zijn
○ Creativiteit
○ Customer/value fit
○ Discovery -> Business design program
○ Drang om te ondernemen
○ Ervaring
○ Ervaring buiten het program
○ Extrinsic motivation
○ Financieel voordeel
○ Financiele kennis
○ Flexibiliteit
○ Focus
○ Geconfronteerd worden met jezelf
○ Gepusht om eropuit te gaan
○ Gewoon leuk om te doen
○ Intrinsic motivation
○ Je eigen ding doen
○ Je klant kennen

○ Juiste vragen stellen
○ Kennis buiten programma om
○ Komt later pas
○ Manier van denken
○ Marktkennis
○ Marktoriëntatie
○ Meer ervaring door program
○ Meer kennis door program
○ Missing competencies
○ Netwerk buiten pre-incubator
○ Netwerk vanuit pre-incubator
○ Netwerk vanuit programma
○ Omgeving met gelijkgestemde mensen
○ Ontwikkelen business idee
○ Pitchen
○ Presentatie skills
○ problem/solution fit
○ Prototype ontwikkelen
○ Regelgevende kennis
○ Sales
○ Samenwerking
○ Sparren met andere ondermers
○ Sparren met business coach
○ Uit comfortzone gehaald worden

○ Valideren van assumpties
○ veilige omgeving
○ Verbeterpunten/tips
○ Vrijheid
○ Waardevolle kennis en skills voor altijd
○ Zelf verantwoordelijk zijn
○ Zelfverzekerdheid

Appendix 5: Planning

Week	Activities
14	- Make questionnaire - Contact second pre-incubator - Select informants for interviews Mercator Launch
15	- Select informants for interviews second pre-incubator - Finetune questionnaire
16	Interviews (x2) + participant observation and code data
17	Interviews (x2) + participants observation and code data
18	Interviews (x3) and code data
19	Interviews (x3) and code data
20	Interviews (x3) and code data
21	Interviews (x2) and code data
22	Analyze coded data and start pattern matching
23	Write down all results
24	Write conclusions and recommendations
25	Finetuning

Appendix 6: Improve program

Mercator Launch Improve Program Layout. Source: www.mercatorlaunch.nl/what-we-do/improve

Appendix 7: Discovery program

StudentsInc Discovery Program & Business Design Program. Source: www.studentsinc.nl