DETERMINING THE SUSTAINABLE START-UP COMPANY

DEVELOPMENT OF A FRAMEWORK FOR INTEGRATION OF SUSTAINABLE ENTREPRENEURSHIP INTO THE ORGANISATIONAL SYSTEMS OF START-UP COMPANIES

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Summary

Entrepreneurs that involve sustainability in the development of their start-ups will have a positive contribution to a more sustainable development of the society. Thus, Sustainable Entrepreneurship (SE) is a new approach to entrepreneurship which allows start-ups to find unique solutions and have a positive social and environmental impact. This master thesis focuses on understanding SE and its integration in start-ups. An extensive theoretical review of the concept, elements, capabilities, and integration process of SE in start-ups is conducted. Further, an empirical understanding is achieved by analysing four case studies, each of them representing a start-up company. The research method used combines abduction logic, a transdisciplinary approach, and a grounded theory, and the main data collection method is the conduction of interviews. The results of the analysis are reflected in a framework. This framework provides a complete representation of objective setting, constrains and capabilities that are involved in SE, and that characterize its integration in the organizational system of a start-up company. This research enriches the area of SE integration by providing an empirical and more complete perspective, that gives a more detailed understanding on the characteristics that start-up companies need to consider in order to integrate SE in their organizational systems.

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Alba Cámara

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1. Introduction

Entrepreneurs that involve sustainability in the development of their start-ups will have a positive contribution to the sustainable development of society. Where a more sustainable society can be understood as a society in which current needs are met, but future needs are not compromised (Brundtland, 1987), the contribution by companies to this end can be seen in the three dimensions of sustainable development: (1) Issues Dimension, (2) Place Dimension, and (3) Time Dimension (Witjes, Vermeulen, & Cramer, 2017 b). The first Issues Dimension comprises three relevant issues that need to be considered when conducting economic activities in order to achieve a more sustainable development; planet, people and prosperity: the so called the Triple Bottom Line (Elkington, 1998; Witjes, et al., 2017 b). Secondly, Place Dimension refers to the links between any economic activity with a society. Finally Time Dimension outlines the need to have a forward-looking and long-term perspective, together consideration of the effects of the past and present activities (Witjes, 2017). Companies willing to contribute to the sustainable development of society must reconsider their organisational system according to these three dimensions (Schaltegger, Lüdeke-Freund & Hansen, 2016 b). Therefore, sustainable development needs to be integrated in the organizational system of the start-ups.

The integration of these three dimensions of sustainable development in an organisational system is referred to as Corporate Sustainability (CS) (Witjes et al., 2017 b). Consequently, CS can be defined as a process in which the company determines how significant is the impact of their organisational system on the three dimensions of sustainable development (Witjes et al., 2017 b). Whereas most research on CS is focussed on established companies, the integration of sustainability in the development of a start-up, known as Sustainable Entrepreneurship (SE), is gaining attention in both practice and science (Greco & de Jong, 2017).

The concept of Sustainable Entrepreneurship (SE) can be defined as "a process in which entrepreneurs exploit opportunities in an innovative manner for economic gain, social equity, environmental quality, and cultural preservation on an equal footing" (Majid & Koe, 2012, p. 295). By integrating the three dimensions of sustainable development in the exploitation of entrepreneurial opportunities, sustainability is reflected in the start-up's core values, activities, goals and strategy (Greco & de Jong, 2017; Hockerts & Wüstenhagen, 2010; Majid & Koe, 2012; Schaltegger & Wagner, 2011). In summary, the integration of the three dimensions (Issue, Place and Time, into the organisational system enables a start-up to positively contribute to the sustainable development of society.

Although SE has gained relevance among researchers in the last decade, the current state of the research on the topic indicates a need for further investigation (Greco & de Jong, 2017; Schaltegger & Wagner, 2011; Gast, Gundolf & Cesinger, 2017). Research has focused on the definition of the concept of SE (Greco & de Jong, 2017; O'Neill, Hershauer, & Golden, 2009; Majid & Koe, 2012). Other issues that have been addressed are related to start-ups as sustainable entrepreneurs, focusing on business models (Schaltegger et al., 2016 a & b), teams and entrepreneurs' traits (Lans, Blok & Wesselink, 2013) as well as finance and institutional interactions (Bocken, 2015; Pinkse & Groot, 2015; Pacheco, Dean & Payne, 2010). There is also research about the motivations for sustainable entrepreneurs (Bocken, 2015), as well as what constraints are faced by start-ups when conducting SE (Hockerts & Wüstenhagen, 2010), and their performance assessment (Schaltegger & Wagner, 2011). However, several gaps have been found.

In the SE research area, researchers have shown a need to dig deeper into the process of foundation of sustainable companies (Markman, Russo, Lumpkin, Jennings, & Mair, 2016). Markman et al., (2016), also highlight the need to understand the distinction among the entrepreneurial processes, discovery, evaluation and exploitation of opportunities, when the goals of a company are not only economic, but also social and environmental. Researchers also propose to investigate about which instruments enable the management or transition to sustainability (Schaltegger, Hansen & Lüdeke-Freund, 2016 a). Precisely which personal attributes, in the different contexts, and how these affect the success of integration of the sustainability dimensions into the organisational system, also need further understanding (Lans et al., 2013; Belz & Binder, 2015; Greco & de Jong, 2017; Gast et al., 2017). Moreover, research on SE elements and integration has focused mainly on small and medium enterprises (SMEs), (Bos-Brouwers, 2010; Witjes et al., 2017 a). Consequently, there remains much to investigate in this issue with regards to start-ups and new ventures. Overall, it is observed that there is a necessity for gaining a better empirical understanding of the different characteristics (e.g. capabilities, attributes, etc.) that are involved in SE.

Identifying and analysing the elements that characterise SE in start-up companies will lead to the development of a framework to facilitate and guide the integration of SE into the organisational system of a start-up. The objective of this thesis is thus to address this gap in the current research with the aim of understanding the characteristics for integration of sustainability into the organisational system of start-ups via empirical research. Therefore, the research question that is expected to be answered with the following research is:

The remainder of this thesis will be organized as follows. The **second section** will be a literature review. In this section, the concept of SE is explained. Start-ups, their characteristics and their relevance within SE are also described. Then, the process for SE integration and all its elements are presented. Finally, a theoretical framework is developed, which presents what characterizes SE integration based on the literature review. The **third section** presents the method for data gathering and analysis of the thesis. A case study as qualitative method has been chosen, the data is formed of interviews whose results are then reinforced by analysis of websites and observation of the cases. This third section will outline the rationale behind this selection and in what manner the analysis has been conducted. The **fourth section** consists of a detailed explanation of the results obtained from such analysis and concludes with a complete and accurate framework based on both the theoretical knowledge, data and results. The **fifth section** of this thesis initiates a discussion. It provides deeper insights into the results of the analysis and a comparison with the current literature on each of the topics covered. With this, new appreciations and ideas on the topic of SE in start-ups and the capabilities needed for these will be discovered and elaborated. Finally, a conclusion is presented in the **sixth section**. Here, the research question is answered together with an explanation of the relevance of the answer science, further research possibilities and managerial recommendations.

2. Literature Review

A Move Towards Sustainable Entrepreneurship

Entrepreneurship can be defined as "a process of identifying, evaluating and pursuing opportunities through creativity, innovativeness and transformations to produce new products, processes and values that are beneficial" (Majid & Koe, 2012, p. 295). It is the process behind the creation and establishment of new business with those opportunities found (Cuervo, Ribeiro, & Roig, 2007; Schaltegger & Wagner, 2011). More concretely, SE refers to a contribution to society, the environment, and economic growth by value creation and positive impact, achieved through the exploitation of entrepreneurial opportunities (Greco & de Jong, 2017; Hockerts & Wüstenhagen, 2010; Majid & Koe, 2012; Schaltegger & Wagner, 2011). Therefore, SE is characterized by the entrepreneur exploiting opportunities with a goal that integrates economic, social and environmental benefits.

The concepts of Green or Environmental Entrepreneurship and Social Entrepreneurship are related to SE, these are defined and compared below (Majid & Koe, 2012; Greco & de Jong, 2017; Schaltegger & Wagner, 2011). On one hand, Environmental Entrepreneurship focuses exclusively on solving and improving ecological issues (Dean & McMullen, 2007; Schick, Marxen, & Freimann, 2002; Jiménez, Martínez, Blanco, Peréz & Gradano, 2014). On the other hand, Social Entrepreneurship focuses on having a positive impact on society and creating public welfare (Zahra, Newey, & Li, 2014; Austin, Stevenson, & Wei-Skillern, 2006; Smith-Hunter, 2008). These two concepts focus on solving either ecological or social aspects (Majid & Koe, 2012; Schaltegger & Wagner, 2011). SE is considered as the evolution of both concepts towards an integrative approach (Majid & Koe, 2012). SE's integration of ecological and social aspects allows for a new approach to entrepreneurship by finding unique solutions for start-ups that have a positive social and environmental impact.

Start-ups and SE

Start-ups play a major role in conducting entrepreneurship in a sustainable way because of their growth potential and young age. These young start-ups are created with the intention of scaling up into large companies (Bakersville, 2015), and a significant proportion of current economic growth is attributed to them (Fetsch, 2018; Shabangu, 2014). Entrepreneurs and their start-ups, are therefore a very powerful element for the sustainable development of society, owing to their technological developments, improvements and efficiency and therefore value creation and prosperity (Dean, 2014; Kardos, 2012). They are new businesses with the ability to undertake entrepreneurship given their flexibility, and they are likely to

generate more radical innovations that provide societal changes or improvements (Greco & de Jong, 2017; Fichter & Weiss, 2013; Hockerts & Wüstenhagen, 2010). Start-ups are more likely to establish a sustainable behaviour and are guided by stronger sustainable motivations (Fichter & Weiss, 2013; Schick et al., 202; Greco & de Jong, 2017; Hockerts & Wüstenhagen, 2010). As new businesses, they do not have a pre-established organizational mindset and culture and, for that reason they are more likely to use innovative approaches, build their culture from scratch with a view of sustainability, and aim to provide sustainable solutions (Schick et. al, 2002; Hockerts & Wüstenhagen, 2010; Fichter & Weiss, 2013). These aspects create opportunities for growth and lay the best foundations for them to set out as sustainable entrepreneurs.

Conversely, start-ups have several limitations such as their size, inexperience and limited access to necessary resources. Start-ups are also characterized by their small size and resource limitation, lack of structure and planning, as well as initial high costs and difficulties accessing financing (Schick et al., 2002; Hockerts & Wüstenhagen, 2010). The limited access to skilled labour, capital and knowledge, reduces small company's capacity for SE (Bos-Brouwers, 2010). Furthermore, sustainable start-ups tend to have a clear goal for a single sustainable aspect, and this tendency extends to a focus uniquely on that one aspect. So their capabilities for addressing several sustainability aspects simultaneously are more constrained (Hockerts & Wüstenhagen, 2010). The uncertainty behind young companies is a weakness when it comes to attracting investments and therefore access to investments, economic resources, and public funding is one of the biggest problems for start-ups attempting to integrate sustainability (Bocken, 2015; Schick et al., 2002). Start-ups, and particularly those working with sustainability, face a lot of dynamism and changes (Dean, 2014). Accordingly, these limitations constrain the implementation of SE and start-ups need to search for solutions.

The flexibility associated with start-up companies, and the recent trends towards more sustainable investments, arise as opportunities for start-ups to overcome these constraints. The flexibility of their organization is their core strength, as it leads to less inertia and more entrepreneurship (Hockerts & Wüstenhagen, 2010; Bos-Brouwers, 2010). Sustainable start-ups also have potential to attract funding from sustainable and impact investors or venture capitalists (Pacheco et al., 2010; Bos-Brouwers, 2010; Bocken, 2015). Impact investors, who aim to generate social and environmental impact with their investments, alongside with financial return (The GIIN, 2018), are shifting towards sustainable investments (Bocken, 2015). These types of investment provide start-ups not only with financial support but also

with advice and networking support (Bocken, 2015). Moreover, sustainable start-ups have the opportunity to attract investments from CleanTech Venture Capitalists. This kind of potential investors look to invest in clean technologies (Dean, 2014). Venture Capitalists differ in an important way from Impact Investors, and that is found in their main financial and higher-return focus: investors are more willing forgo the possibility of a higher return in order to achieve a positive environmental or social impact (Dean, 2014). Crowdfunding is also an alternative source of funding for start-ups pursuing SE, and in many cases, sustainable entrepreneurs rely on their closest network for funding, that is, their family and friends (Belz & Binder, 2015; Dean, 2014). Another source of investment are the funds amongst the increasing number of social and environmental competitions provided by universities or companies (Dean, 2014). The competitions are normally directed at students or young entrepreneurs, giving them the option to launch their sustainable innovations and start-ups (Dean, 2014). For this reason it can be stated that start-ups offer solutions to the limitations presented above and emerging capabilities to integrate SE.

In summary, conducting entrepreneurship in a sustainable way is understood as key to a start-up's success, and sustainable start-ups are at the same time key to society's sustainability transition (Longoni & Cagliano, 2015; Bocken, 2015; Greco & de Jong, 2017; O'Neill et al., 2009). There are several opportunities for start-ups to deal with current sustainability problems, due to their structure and characteristics. If these characteristics are enhanced, and the right capabilities for SE's integration are acquired, start-ups can positively contribute to the sustainable development of society.

Integration Process

A start-up's approach to SE can be considered to be a three-phase process in which the present of the company is linked to its future. SE's integration in this development can be seen as a process (Belz & Binder, 2015), in which the organizational system is created from scratch with a sustainable foundation, or a there is a change or improvement of it at a very early stage. This process, known as backcasting (figure 1), starts by setting long-term-objectives that consider the past experiences of the company (Witjes, 2017), afterwards the current position of the start-up can be assessed to determine the existing gap to accomplish the set objectives. Finally, the resources and capabilities needed are developed (Markman et. al, 2016; Holmberg & Robert, 2000; Alänge & Holmberg, 2014). Following this process, the start-up can plan more successfully and be prepared for future changes (Holmberg & Robert, 2000). The backcasting process therefore allows a start-up to reach an objective by determining where they are, and how they can get there.
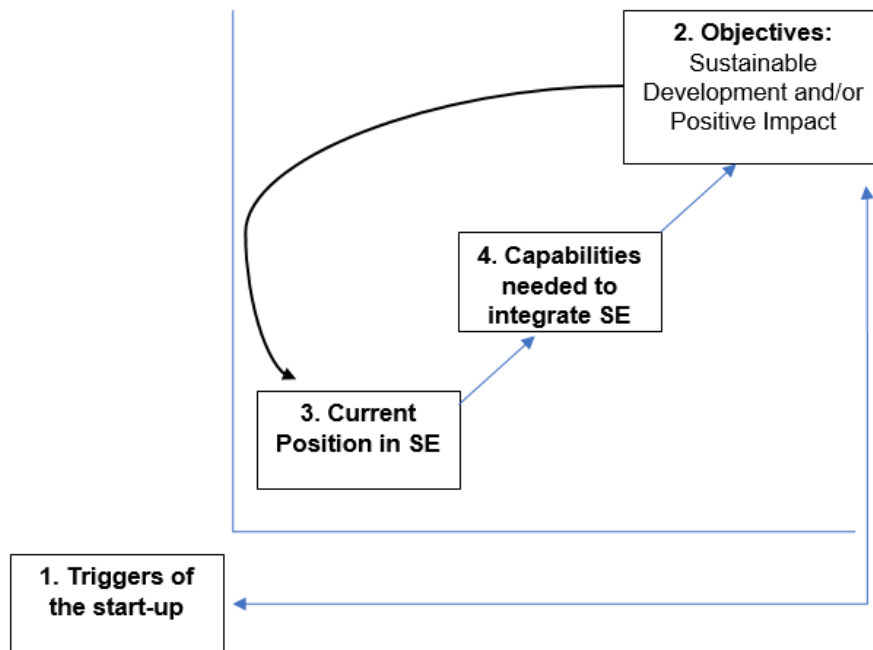
Figure 1 Representation of the backcasting process for start-ups' SE integration. Based on Alänge & Holmberg (2014).

Setting Objectives

In order to carry out this backcasting process, the start-up sets a long-term objective. Setting this objective is based on the triggers of the start-up. The possible triggers can be identified in internal drivers such as the beliefs of the founder of the start-up. In this case, the entrepreneur is motivated by personal values, background, and ethics towards sustainability, and therefore starts a business that upholds those values (Gast et al., 2017; Koe & Majid, 2014; Hockerts & Wüstenhagen, 2010; Schaltegger & Wagner, 2011). However triggers can also come from external influences. One trigger found is the identification of a market problem (Gast et al., 2017). In this case, the company was created with the intention to develop an entrepreneurial activity as a reaction to an ecological and/or social current problem, or because there was a social or environmental problem recognized and entrepreneurship becomes an opportunity to solve that problem (Gast et al., 2017; Belz & Binder, 2015). Therefore, the entrepreneur recognized a need for a sustainable option in the market, and approaches it (Gast et al., 2017). Other examples of triggers coming from external influences of the market or competitive situation would be: the reaction to certain requirements of the market players such as (potential) investors, customers, suppliers or competitors (Gast et al., 2017; Hockerts & Wüstenhagen, 2010) law, regulations, or even market trends (Schaltegger & Wagner, 2011; Gast et al., 2017). In general there are new opportunities derived from trends in the economy that trigger SE. The so called Six C's (Costs, Capital, Consumers, Climate, Consciousness

and Convergence) are six types of drivers of opportunity for sustainable start-ups (Dean, 2014). The decrease in cost of cleaner technologies, together with the increase in costs of natural resources, is the first driver mentioned. Moreover, the capital available for sustainable entrepreneurship and venturing is increasing through more private and public funds and an increased interest from the investors' side. There is a world-wide shift in consumption towards more sustainable products, and together with the rise of climate change, this constitutes another driver of opportunity. Opportunities also arise from the increase in societal consciousness and awareness on the topic, and a convergence of institutions and policy makers is starting to happen (Dean 2014). Hence, both internal and external triggers guide the establishment of the objectives of the start-up. Understanding the triggers is relevant to comprehend the start-up and its motivations, and therefore, the determination of the future objectives for the company.

The objectives of a start-up include setting out their mission and vision. The mission of a start-up company will influence the strategy, business planning, and its actions (Dean, 2014). It is therefore relevant to set a clear mission from the beginning in order to highlight the social or environmental component of the company, and determine it focus as well as its identity (Dean, 2014). Furthermore, the vision of the company is an element that ensures the integration of sustainability and it should be established in relation to the same ideas and objectives of SE (Witjes et al., 2017). Sustainable start-ups normally differentiate themselves from conventional enterprises because their mission is related to sustainable development and having a positive impact (Dean, 2014). The mission also considers which specific social or environmental problems to focus on, and whether the start-up addresses them with its products, services or processes, or in the way the company performs and creates value (Dean, 2014). Thus, in order for the mission of the start-up to guide the company towards the SE objectives, it has to be shaped with the sustainable development dimensions in mind.

The concept of sustainable development has been traditionally attached to the Triple Bottom Line by Elkington (1997), in which three dimensions of sustainability are considered; People, Planet and Profit. These must be balanced to achieve a more sustainable development (Greco & de Jong, 2017; Hockerts & Wüstenhagen, 2010). The Triple Bottom Line has been used to explain how sustainable entrepreneurs operate (Greco & de Jong, 2017; Hockerts & Wüstenhagen, 2010). However, the Triple Bottom Line represents only one of the sustainable development dimensions: the Issues Dimension. There are two more dimensions, -Place and Time-, included as dimensions of sustainable development (Witjes, 2017). Therefore, these

three dimensions; Issues, Place and Time, ought to be considered to ensure that SE integration is successful and that sustainable development will be achieved.

The Issues, Place, and Time dimensions need to be addressed when determining the objectives of the start-up, and integrated in its mission. Time refers to Past, Present, and Future. Namely it expresses the need to consider the effects of activities that the start-ups conduct currently or has conducted, or will have conducted in the future (Witjes et al., 2017). Place is also deemed important to take into account, it includes the Me, Here and There; refers to the entrepreneurship's impact on the start-up, the stakeholders and society (Witjes et al., 2017). Furthermore, entrepreneurship needs a value-creation orientation, which means seeing sustainability as an entrepreneurship opportunity to create positive value (Bos-Brouwers, 2010; Lans et al., 2014). The planning and actions of the start-up are designed according to the objectives set (Dean, 2014), enhancing the relevance of setting those clearly. The start-up's triggers guide the determination of its objectives, and setting them as well as the mission according to the sustainable development dimensions, will lead the start-up to SE and sustainable development.

Assessment of the Current Position

In order to determine the current position of the start-up and the possibilities for achieving its set objectives, it is relevant to assess its current practices. The assessment of the practices of the company is one of the elements that ensures sustainability integration within the start-up (Witjes et al., 2017 a). Assessing the different elements of a company can help to monitor each activity and make sure sustainability targets are met (Halberstadt & Johnson, 2014; Witjes et al., 2017 a). In order to do this, both physical and social dynamics are considered (Witjes, 2017). Physical dynamics include all the aspects related to the products and physical materials used in the company. Social dynamics refers to the different stakeholders that are involved in the value chain of the company (Witjes, 2017). It should also be analysed whether value is created or destroyed in the activities conducted (Bocken, Rana & Short, 2015; Hockerts & Wüstenhagen, 2010). With this assessment, the start-up has a clearer point on where to start the process towards achieving its objectives.

Part of this assessment involves measurement of the activities already completed. The activities that have been conducted towards integration need to be checked, and specific actions implemented (Witjes et al., 2017 b). The measurement process starts with the definition of what a good outcome is for the company to achieve their goals, and after this is clearly determined, the tracking, measurement and improvement can take place (Dean, 2014). There are several ways to evaluate the social and environmental impact of the company, and

that is through assessments and certifications such as the Life cycle assessments (LCA) and B-Corp (Dean, 2014; Jiménez et al., 2014). The LCA is a method that is used to get an impression of the environmental impact of a product, a process or a service, considering that each part of the product or stage of the process has a certain impact on the environment for which responsibility needs to be taken (Jiménez et al., 2014). B-Corp is a certification, available for free to any company that meets the required standards. With the B-Corp certification, a company is able to see how their sustainable performance is, in both social and environmental aspects (Dean, 2014). Other methods for sustainability assessment are Carbon Accounting and the Social Return on Investment (SROI) (Dean, 2014). Carbon Accounting is a method for the evaluation of the economic and non-economic impact of the products and process with regards to the emission of greenhouse gases (Stechemesser & Guenther, 2012; Dean, 2014). Finally, the SROI shows the value created in a company including the economic, social and environmental value, with an economic representation. It is considered to be more suitable for start-up companies because of its simplicity (Millar & Hall, 2012; Dean 2014). Start-ups can make use of these methods and certifications in order to conduct the assessment that will help them determine the capabilities needed towards SE integration.

Capabilities Needed

There are necessary capabilities that entrepreneurs and their start-ups should possess, that offer them opportunities to achieve their objectives. The Business Dictionary (2018) defines capability as a "measure of the ability of an entity to achieve its objectives, in relation to its mission". Terms to describe capabilities such as skills, characteristics (Bos-Brouwers, 2010), competences (Lans et al., 2014) and attitudes, have been found. However, this thesis will use the general term capabilities because it is considered as the most complete and meaningful, referring to what allows or makes the start-up capable to conduct SE. Having the right capabilities is relevant because this will enable a start-up to accomplish their determined objectives (Alänge & Holmberg, 2014). Further, there are capabilities that arise on a personal level, that is, for the entrepreneur or manager of the start-up and its employees, as well as capabilities at an organizational and contextual level that are required in order to accomplish SE.

Managerial Capabilities

The role of the entrepreneur or manager is especially relevant for start-ups. To begin with, he/she needs to be intrinsically motivated towards having a positive impact on sustainable development. The entrepreneur's personality and ideas strongly influence the performance of the company, its objectives and the extent to which those are implemented (Bocken, 2015;

Schaltegger & Wagner, 2011). Therefore, the integrity in the entrepreneurs' mindset, motivation and initiative for doing "the right thing" and making a positive impact are a crucial starting point (Lans et al., 2013). Moreover, an individual oriented towards sustainability is more likely to recognize sustainable-related opportunities and conduct SE (Sung & Park, 2018). SE is characterized by a focus on an individual's ideas and skills rather than on management systems or procedures, as means to reach goals and change through environmental or social innovations (Schaltegger & Wagner, 2011). Furthermore, among start-ups in general, management as exercised by an interdisciplinary team rather than an individual manager is deemed as more successful due to the greater diversity in ideas and experience, and a wider network (Ensley, Hmieleski, & Pearce, 2006; Dean, 2014). This can be seen translated amongst start-ups conducting SE, where it becomes especially important that the whole managerial team is intrinsically motivated and in line with the mission, vision and values of the company (Dean, 2014). Therefore, an intrinsic motivation towards sustainability is a key managerial capability for the success of SE integration.

Moreover, creativity, involvement and inspiration are considered as necessary capabilities for a sustainable entrepreneur. Being creative is a capability for sustainable entrepreneurs to elaborate on and deliver the adequate solutions and face (future) problems (Lans et al., 2013). Intellectual creativity in a manager is required to find opportunities and generate innovative entrepreneurial ideas (Campos, Parellada, Quintero, Valenzuela, 2015). Further, the entrepreneur or manager needs to be involved in the process of SE development (Lans et al., 2013). Not only it is important to be involved at the beginning of company activities, but also to be active in the processes and daily issues of the start-up, and to do so with an intrinsic motivation towards sustainability (Lans et al., 2013). Finally, the entrepreneur must inspire the team to achieve the sustainability mission (Dean, 2014). These are three capabilities that can enhance the SE integration for the start-up.

For small companies in general, it has been found important to have a dynamic and entrepreneurial leadership style to compensate for the lack of managerial experience that is normally attached to entrepreneurs and start-ups (Bos-Brouwers, 2010). Moreover, a dynamic and entrepreneurial leadership leads to being able to face the environments that start-ups deal with, characterized by great uncertainty (Dean, 2014). Entrepreneurial leadership refers to the style of leading the team so that the goals of the company are approached in a way that also allows new opportunities to be recognized and exploited (Renko, El Tarabisky, Carsrud & Brännback, 2015). Sustainable entrepreneurs, moreover, need be good at networking: forming and managing relationships with stakeholders and with their network

(Gast et al., 2017). In SE, sometimes in order to exploit opportunities found, the entrepreneurs need to be proactive and transform the different formal and informal institutions as well as influence the parties involved (Pacheco et al., 2010; Pinkse & Groot, 2015). Thus, relationships and interactions with stakeholders are especially relevant (Gast et al., 2017). The combination of intrinsic motivation, creativity, involvement, inspiration, entrepreneurial and dynamic leadership and good networking, are capabilities that would allow an entrepreneur to manage a start-up favouring the successful development of SE.

Organizational Capabilities

Managerial capabilities are combined with certain organizational capabilities that are important for being able to conduct this integration. Organization in a sustainable start-up entails a certain degree of organizational flexibility (Bos-Brouwers, 2010). In small companies the lack of bureaucracy and a more informal communication style increases efficiency, and sustainable changes are easier to communicate and implement, it also makes them more responsive to external changes (Bos-Brouwers, 2010). In addition, the capability of providing support to employees is needed within start-ups conducting SE. First, it is especially relevant to provide support in SE integration. Providing enough resources and support to employees involves ensuring that they can access knowledge about what activities they can conduct and how, that they have enough time to establish sustainability within their daily activities without disturbing their normal tasks, and that they have the economic resources to do so (Bos-Brouwers, 2010; Hallstedt, Ny, Robèrt, & Broman, 2010). Concrete goals must be defined by the management, and proper education in sustainability and incentives are also seen as necessary for successful integration of sustainability in the start-up activities (Hallstedt et al., 2010). Therefore, flexibility and SE support will enhance a start-up's capabilities to conduct SE.

Further to flexibility and support, companies conducting SE can compensate lack of resources through enhancement of labour and cooperation (Bos-Brouwers, 2010). Enhancement of cooperation, can be considered as crucial for start-ups to meet sustainability objectives (Bos-Brouwers, 2010; Schaltegger & Wagner, 2011). Furthermore, the full involvement of every person in the start-up has high relevance, this is realised through activities such as regular meetings, as well as the exchange and dissemination of relevant data to ensure interactions within employees or groups within the start-up and with external parties (Witjes et al., 2017 a; Dettmann et al., 2013). The reason why involvement and interactions are relevant is that in order to achieve sustainable development, there is a need to bridge points of view to be able to generate with sustainable alternatives (Lans et. al. 2013).

Cooperation, involvement and interaction permit a continuous organizational improvement, that is decisive for small companies so as to improve at an individual, group, and organizational level (Witjes et al., 2017 a). At the organizational level, horizontal structure is adequate for SE since it allows employees in all positions to share ideas and participate in decision making, this enhances motivation and satisfaction among employees (Bos-Brouwers, 2010). A combination of the above organizational capabilities would permit the start-up to exploit the opportunities that arise due the nature of their own structures to conduct SE.

Employee Capabilities

In start-ups, the forming of teams plays an important role because team work allows for each member to compensate for the lack of resources and lack of experience or expertise of the managers (Schaltegger & Wagner, 2011; Dean, 2014). That is the reason why managers in sustainable start-ups need to place importance on the establishment the team (Dean, 2014). Assembling an adequate team is relevant because team members can be a sign of legitimacy for investors and clients, demonstrating the company's potential to succeed (Dean, 2014). Given the importance of teams and individuals for start-ups, the value alignment of the start-up with those of the employees is found as a relevant capability for their employees (Markevich, 2009; Dean, 2014). Therefore, in a sustainable start-up, employees should believe in the mission of the start-up and be committed to it, so that everyone is working towards achieving sustainable development (Dean, 2014). Every activity should be conducted around a common purpose of sustainability, with the orientation of achieving SE objectives previously established in the mission of the company (Bocken et al., 2015). Therefore, the alignment of employee and company values plays an important role together with the managerial and organizational capabilities that have been explained.

Contextual Capabilities

The context in which a start-up operates influences their SE performance. SE not only includes ecological, social, and economic issues but also the context in which those issues are places (O'Neill et al., 2009). In the Holistic Value Proposition (HVP), O'Neill et al., (2009) presented the whole value created by the start-up, both monetary and non-monetary, among the different dimensions of SE including its opportunities and the various stakeholders (Figure 2). The model proposes a whole network of value generation dimensions: -economic, environmental, and social-; and the society, value network and individuals as stakeholders (O'Neill et al., 2009). The institutional and cultural contexts in which the start-up operates are shown as influencing for SE, which the company cannot directly control (O'Neill et al., 2009). Therefore, not only are personal capabilities and the company itself important elements to

consider, but also the context in which SE is conducted (Nelson, 2014). The specific capabilities for the entrepreneur, manager, and employees or the specific characteristics of its organizational system, are not enough to guarantee its success; contextual capabilities therefore also need to be considered.
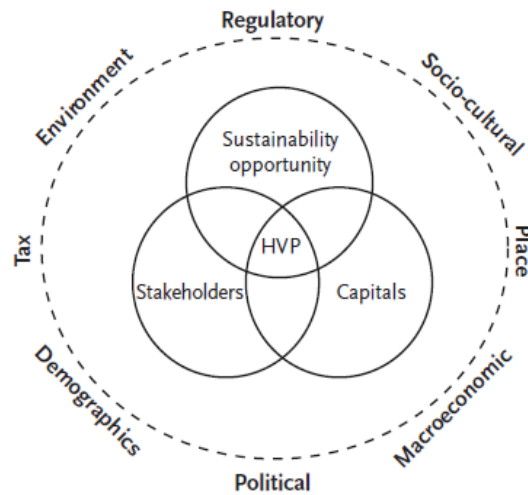
Figure 2 Holistic Value Proposition by O'Neill et al., (2009)
where the relevance of the context in SE is presented

The institutional context and cultural contexts have an influence on SE development and therefore, on the creation of sustainable start-ups, since these start-ups have to act differently depending on what is the cultural context and the surrounding institutions (Gast et al., 2017). It is important also to understand the importance of context in organizations, as this shapes entrepreneurial behaviours (Nelson, 2014). Context also includes the entrepreneurial environment around the start-up. For instance, external institutions such as the start-up incubators can either provide great incentives for SE, or not enhance sustainability in any aspect (Radzeviciute, 2017). Moreover, context also takes into account the influence of the company stakeholders (O'Neill et al., 2009). Consequently, the alignment of the sustainability objectives and mission of the company needs to be shared with the different groups of stakeholders, and especially clients (Belz & Binder, 2015). Relationships with institutions and stakeholders constitute therefore a contextual capability that start-ups need to consider.

Cultural diversity necessarily implies that contexts can differ greatly from one another, and therefore it affects the process of SE (Majid & Koe, 2012; O'Neill et al., 2009). Diversity entails not only the external context of the company but also the internal context. An international and multidisciplinary workforce is considered to enrich cooperation, opportunity identification, and exploitation, owing to the presence of a combination of different

perspectives and ideas in general, and in particular differing ideas about sustainability (Anderson, 2009). The relationships among employees are improved when communication is flowing and there is a good understanding of the cultural differences (Park, 2009). In sum, when integrating sustainability in the development of a start-up, both the internal and external context will influence the behaviour and outcomes of the company.

Conclusion of the Literature Review

SE involves conducting entrepreneurship in an integrative way in which economic, environmental and social aspects align. This is the new approach for entrepreneurship that is needed to achieve a more sustainable development. Start-ups face limitations such as lack of experience at managerial level, lack of resources and funding. Those limitations constrain the SE approach and the outcomes that they can accomplish. However, they possess characteristics that make them suitable for conducting SE, such as their ability to attract investing through the sustainable label, or their lack of a pre-established rigid hierarchy and organizational systems. These are characteristics with which they can confront the limitations faced. With those characteristics in combination with the right capabilities, start-ups can integrate SE and contribute to sustainable development.

The backcasting process that start-ups can implement to integrate SE includes four parts; (1) analysing the triggers of the start-up, (2) setting the future sustainable objectives, (3) assessing the current situation, and (4) establishing the necessary capabilities to achieve the goals. Fostering a better understanding of the triggers of the company is necessary to understand the objectives the start-up sets. These objectives will guide the activities of the start-up from their current standing. In order to achieve future objectives, it is important to assess the current position of the company so that the capabilities that are needed can be identified. Finally, managerial, employee, organizational, and contextual capabilities are needed to accomplish this process. Figure 3 illustrates the theoretical framework proposed for this thesis. It represents the objective setting, as well as the capabilities found, that a start-up needs in order to conduct SE according to the theoretical review.

```
┌──────────────┐     ┌──────────────┐      ┌────────────────────┐
│   Setting    │ ──▶ │   Mission:   │ ──┬─▶ │  Issues : People,  │
│  Objectives  │     │ Sustainable  │   │   │    Place, Profit   │
└──────────────┘     │ Development  │   │   └────────────────────┘
                     └──────────────┘   │   ┌────────────────────┐
                                        ├─▶ │ Place:  Me, Here &  │
                                        │   │       There         │
                                        │   └────────────────────┘
                                        │   ┌────────────────────┐
                                        └─▶ │  Time: Now & Then   │
                                            └────────────────────┘
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                    ┌─────────────────────┐              ┌──────────────────────┐
                ┌──▶│ Intrinsic motivation│          ┌──▶│   Organizational     │
                │   └─────────────────────┘          │   │    Flexibility       │
                │   ┌─────────────────────┐          │   └──────────────────────┘
                ├──▶│      Creativity     │          │   ┌──────────────────────┐
                │   └─────────────────────┘          ├──▶│   Organizational     │
┌────────────┐  │   ┌─────────────────────┐  ┌────────────┐│     Support        │
│ Managerial │──┼──▶│     Inspiration     │  │Organizational││──┘                │
│ capabilities│ │   └─────────────────────┘  │ capabilities ││ ┌────────────────┐
└────────────┘  ├──▶│   Self - Involvement│  └────────────┘├▶│   Cooperation   │
                │   └─────────────────────┘                │ └────────────────┘
                │   ┌─────────────────────┐                │ ┌────────────────┐
                ├──▶│  Entrepreneurial and│                └▶│Horizontal Structure│
                │   │       Dynamic       │                  └────────────────┘
                │   │      Leadership     │
                │   └─────────────────────┘
                │   ┌─────────────────────┐
                └──▶│     Networking      │
                    │    Capabilities     │
                    └─────────────────────┘
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```
┌────────────┐     ┌──────────────┐      ┌──────────────┐     ┌──────────────┐
│  Employee  │ ──▶ │    Value     │      │  Contextual  │ ──▶ │ Consider and │
│capabilities│     │  Alignment   │      │ capabilities │     │ adapt to context│
└────────────┘     └──────────────┘      └──────────────┘     └──────────────┘
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Figure 3 Theoretical Framework. Representing what characterizes SE integration in start-ups based on theory.

3. Methods for Data Gathering and Analysis

Case Study

In order to truly understand the relevant elements that are involved in SE integration, and which capabilities start-ups need to possess, a qualitative method will be used. Qualitative research methods are adequate for reflecting the sensitivity to context and, the impact and importance of the work in view of earlier research (Symon & Cassell, 2004). Analysis of case studies is the method used to conduct this qualitative research. The reason case study research is appropriate is that the aim of the research lies in understanding the practice, since case studies reflect real-life situations which give plenty of meaningful details (Flyvbjerg, 2006). To answer the research question of this thesis *"What characterizes SE integration in the organizational system of start-ups?"* organizational processes need to be understood and capturing details is required. Case study research allows for an in-depth and detailed analysis that permits this understanding (Hartley, 2004; Rowley, 2002). It is also suitable for exploration and for studies that focus on contemporary events (Benbasat, Goldstein, & Mead,

1987) and such is the case of this thesis. Further, case studies allow for more dynamic studies (Hartley, 2004), through which the dynamism attached to start-up companies can be better understood. These arguments support case study analysis as the most suitable research method for this thesis.

Combinatory Research

This thesis applies a research method which entails a combination of three different approaches. First of all, an abduction logic, which consists of having a base of knowledge about the topic that is obtained from the literature review and is exhibited in the previously presented theoretical framework (Figure 3). Secondly, the research is conducted in collaboration with start-ups and therefore a transdisciplinary approach is applied. With this approach a close integration of theory and practice is achieved, which permits a closer understanding of the topic of SE by presenting more evidence about the practice (Witjes, 2017). Finally, by gathering empirical knowledge via interviews, and analysing and interacting with the gathered data, a grounded theory is developed (Charmaz, 2004). Moreover, this method also involves carrying out analysis and understanding from the beginning of the data collection (Charmaz, 2004). Data collected through these methods allows development of a theory based on the in-depth and contextual exploration (Hartley, 2004). The combination of these three approaches results in the development of a framework that is reinforced by theory, practice, and experience (Witjes, 2017). Therefore, a case study analysis through a combinatory approach is considered to provide a more accurate, applicable and relevant framework.

The research is conducted as an iterative process, consistently comparing the theoretical framework with the analysis of the data (Birks & Mills, 2010). First, a theoretical framework is formed out of the findings from the literature review, then data is gathered from practice. Each start-up represents a case which is meant to illustrate the theoretical framework. After, the findings obtained from the analysis of each case are related to the literature, in a continuous process of adaptation and improvement on each part of the research. Moreover, a constant comparative analysis is carried out, by which the different situations seen within the analysis, the codes, groups of codes, categories and theory, are compared along the whole process of data collection, analysis, results, and theoretical information improvements (Birks & Mills, 2010). The following figure represents the method that has been used in this thesis.
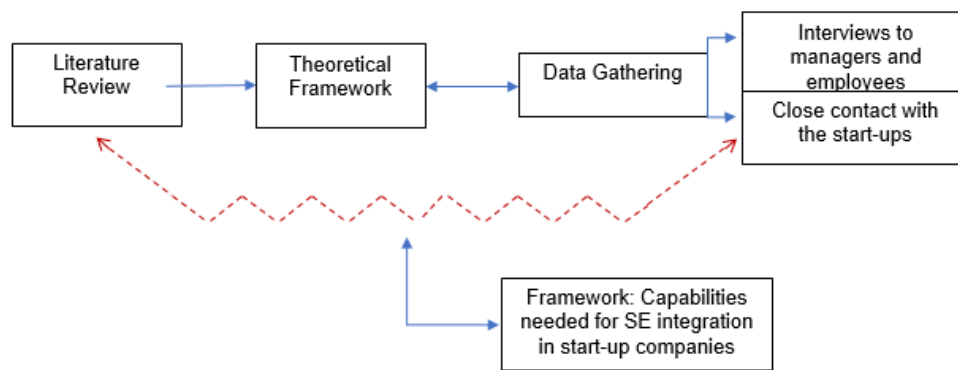
Figure 4 Method used in this thesis: a combination of theory, practice and experience conducted as an iterative process. Based on Witjes (2017)

Case Selection

The case studies were selected with a theoretical base (Eisenhardt, 1989). Four cases were chosen, as the analysis of multiple case studies tends toward a more robust research outcome (Rowley, 2002). The cases are selected taking into account that the information they contribute can provide useful insights to the analysis, the so-called "information-oriented selection method" (Flyvbjerg, 2006). For selection, it was important that the cases were specific, measurable, acceptable, realistic and time specific. Each case study represents a small start-up, located in the Netherlands, developing a disruptive innovation and which has a level of SE performance. The cases selected are the following: MindAffect, Nowi Energy, Finch Buildings, and Aqysta.

MindAffect

MindAffect is a start-up company currently working in the health-tech industry, specializing in the development of Brain Computer Interface (BCI). They are working on the development of a solution to open-up new dimensions of interaction for the ALS patients who unable to communicate, to improve their quality of life. MindAffect is also currently innovating and developing new applications of BCI to other areas and to provide different solutions. MindAffect has the technological capability, but their product is still the development phase. Therefore, they are planning on conducting this development in the most sustainable way possible, with a business model based on leasing rather than purchase, and where recyclability and reusability of the materials used and parts is being considered. They were incorporated in 2017 and are currently working with a team of seventeen people. Their location is the NovioTech Campus; in Nijmegen, it is a campus where many high-technology related start-ups are located.

Nowi Energy

Nowi Energy is a company working on the implementation of the Internet of Things. Specifically, they are innovating on long lasting sensors which do not require any batteries. They last longer and avoid battery waste and the pollution associated with short-life disposable batteries. Among others, their technology promotes reduced energy consumption, increased energy efficiency and a reduced need for maintenance. The application of the sensors varies. It was applied, for instance, to control the temperature of roads in winter and avoid the economic waste and environmental problems caused by the unnecessary use of salt when the roads are frozen, by optimizing when and where the salt is needed. They were founded in 2016, in Delft, and currently have nine employees. They are located in the YesDelft start-up incubator. This incubator was awarded as the second-best incubator in the world, and it supports technological start-ups in particular.

Finch Buildings

Finch Buildings is a company in the real estate and construction sector, they design and build modular housing. The materials of the modules they build are carefully chosen, for example by considering their origin and by only working with environmentally certified partners, and by choosing materials that are less harmful to both the health of the people inhabiting the modules, and the environment. Also the modules can be deconstructed without damage; therefore allowing the materials to be reused. They build modules that can be adapted from a studio to an apartment block or even a hotel. Their modules are made of solid timber, are energy efficient, quick to build, durable, and affordable. Finch Buildings has a team of eight employees and was founded in 2014 in Amsterdam. They are part of RockStart, a start-up accelerator that supports the scalability of start-ups in the fields of smart energy, web and mobile applications, digital health and artificial intelligence.

Aqysta

Aqysta works in the renewable energy industry. Specifically, they focus on the development of hydropower water pumps, which allow extraction of water with no need for other external energy sources, and which requires less maintenance. They are innovating on business models to increase the affordability of the product for farmers in developing countries such as Thailand, which would allow the farmers to receive the pump, together with seeds and fertilizers, and pay for the pump once they have made a profit. Therefore, they innovate to provide an environmentally friendly solution in a socially responsible manner. The company was founded in 2013 and they are located in Delft. Two years ago, the company was formed

of eight employees, currently there are eighteen, which clearly reflects the dynamism attached to start-ups.

Data Collection

The main data collection method selected is the conduction of interviews. Interviews allow a gathering of descriptions from the real world and obtain the perspectives of subjects and reasons for those perspectives (King, 2004). Further, interviews permit the gathering of real information and perspectives of the people involved in the start-ups, which helps to understand what capabilities are relevant for start-ups and how to interpret SE integration in a more complete and realistic way (King, 2004). Therefore, interviews are the most relevant method for this research. The style of the interviews conducted is semi-structured. A semi-structured approach ensures the theme of the interview (King, 2004). The researcher developed a guide including the main questions to be asked, but this method allowed for flexibility, accessibility and more open questions (King, 2004; Qu & Dumay, 2011). This interview method ensured the possibility of including new relevant topics in the interview when it was necessary (Qu & Dumay, 2011). Moreover, the interviews followed a realistic approach, so that interviewees could give insights outside of the interview setting (King, 2004). For that reason, the interviews needed some organization and there were predefined topics for discussion (King, 2004). Semi-structured and realistic interviews are thus the main methods of data collection.

The findings of the interview are supported by documentary analysis, specifically an analysis of the company's website. The reason for this is to better approach the complexity of the research (Hartley, 2004), and because with triangulation from multiple data collection methods, the conclusions will have stronger support (Waddington, 2004; Benbasat et al., 1987; Eisenhardt, 1989). Data collection through documentation consists of analysing written material of all kinds – from newspapers to reports (Benbasat et al., 1987). For this research, the website of the companies is reviewed and analysed. Each website was revised, and general information about the company, projects, personnel, current position, product and mission and vision was collected. Moreover, some time was spent within the companies and some more informal conversations were held, which allowed the researcher to observe the situation in the company, the internal context as well as the relation with the external context that surrounded them. In order not to overlook any details, it is necessary to carefully keep record of all the information collected (Benbasat et al., 1987). Therefore, memo writing was used throughout the data collection process (Birks & Mills, 2010), to record the researcher's thoughts, ideas

and observations. With this, enough data and insights were collected in order to reach informed conclusions to answer the research question.

Data Collection Approach

A contact person at each case company was contacted by email, and an overview of the purpose of the research and, requirements for participation by the company was given. This included the number of interviews needed as well as possible meeting dates and the average length of the interviews. This allowed the interviewees to form an idea of the time requirements and the overall topic that was going to be discussed, in order to be as transparent as possible. The interviewees were selected according to their position in the company and their willingness and time availability to collaborate. To ensure that the interviews provided different perspectives within the company regarding the same issue, the interviewees occupy positions ranging from CEO, founder, and managers, to full-time and part-time employees. In total, fourteen interviews were conducted. Twelve of the interviews were conducted face-to-face, which is preferable to get all the details and improve the quality of the interaction. Two interviews were conducted by Skype due to the unavailability of the interviewees to attend in person. Out of the fourteen interviews, six were with the managers and the entrepreneurs; and the rest were with the employees of the different start-ups.

Prior to the data collection, a protocol was developed. The interviews were planned according to that protocol, so that there was a structure to guide the research (Benbasat et al., 1987; Rowley, 2002). Appendix 1.1 sets out the protocol of the interviews. It includes the theoretical concepts applied to the interview questions and the initial codes derived from theory. Appendix 1.2 contains each interview conducted, its date and length.

Limitations

The research conducted has some limitations. Case studies are typically limited by the concept that one case cannot be generalized (Yin, 2014). Moreover, conducting interviews raises concerns of accuracy (King, 2004), and there is a risk of assuming that the subjects interviewed are honest and competent when they may not in fact be so(Qu & Dumay, 2011). Triangulation is conducted in this thesis so that the generalizability of the results is increased and the accuracy constraints of the interviews in reduced. This is achieved by gathering information from other sources (Yin, 2014). However, the time and resources constraints of this thesis limit the triangulation to analysis of the website and some observation. The sources and depth of these analyses are also limited because of the time constraints of the thesis research. In order to mitigate these limitations, the cases were carefully selected so that

certain generalizations could be conducted and could contribute to the science of SE integration in start-ups (Flyvbjerg, 2006). Furthermore, as the case studies are start-up companies, which are small businesses, the analysis can be more in-depth (Rowley, 2002). In conclusion, the method chosen has several limitations with regards to the generalization and depth of the analysis. The researcher tries to reduce these with triangulation and careful selection of the cases to be studied.

Research Ethics

In this thesis, transparency and confidentiality are taken into consideration. The researcher has been transparent with the participants and with the companies subjected to interview and during the whole process. The purpose, procedures, duration, implications and any other information related to the research were shared. No confidential information of the companies or the participants is shared and the information of the participants in the interviews is not publicly shared. Prior to all interviews, permission for recording or transcribing was requested (American Psychological Association, 2017). Moreover, the interviewees were given the option not to participate or to stop participating, in line with APA's code (American Psychological Association, 2017). This thesis did not use any work, information, data, figures or images without its proper citation (American Psychological Association, 2017). Therefore, research ethics are considered along the whole research process.

Data Analysis

In order to carry out the analysis, the interviews were recorded and later transcribed by the researcher. After transcription, the interviews and the information from the websites were coded. The coding was applied in two steps. First of all, the first coding for the analysis was applied using code in vivo and open coding (Birks & Mills, 2010). This is a broad way of coding, in which the researcher reads every interview, going through each of the parts of the transcriptions, line by line. This detailed view allows for reflection on every detail of the data and an initial detailed interpretation. Looking at every sentence facilitates making connections between the different interviews and topics, encouraging a more adequate understanding (Charmaz, 2004). This process of coding developed from a base list of codes created to reflect the elements found in the theoretical framework from the literature (see protocol in Appendix 1.1). During this first step of the coding, 103 codes were created including the codes that were derived from the theoretical framework, and also new codes with details that were considered relevant through the analysis of each part of the interview.

Afterwards, these broader codes were refined into more focused codes. This selection allowed formation of categories that connected several codes attached to certain meaning, and

the codes describing the same capability or aspect were grouped (Birks & Mills, 2010). With this, the intention was to facilitate analysis, reference to a specific part of the interview and the categorization of the findings (Charmaz, 2004). This process of grouping by meaning, connection and relevance is reflected in the 31 final codes that were used for conceptualizing the data. A complete table that includes the initial list of codes, final codes and the meaning of each code, can be found in the Appendix 2.

The software that has been chosen for the qualitative data analysis is *Atlas.ti*. The decision to conduct the analysis with a software instead of manual analysis was made to render the process time saving and effective (Basit, 2003; Hwang, 2008). Moreover, employing software can lead to a more transparent and therefore replicable process (Hwang, 2008). Within the software, the Query Tool was used in order to facilitate the analysis of all the codes. This tool enabled combining codes, accumulating the amount of times they were used, their frequency in the interviews and the relationships among the different codes and interviews. Therefore, it was useful to fully understand each code, its relevance for the research and process of categorization.

Within Case Analysis

To begin with, the four cases are analysed individually in order to gain a better understanding of each case before analysing all the cases simultaneously. With this, each case is deeply understood before any patterns or generalizations can be made across the cases (Eisenhardt, 1989). This analysis consisted of a description of all the start-up companies. Following this, a careful revision of each interview, case per case, was reflected on using the theoretical framework. It could be seen whether the capabilities found in the literature were represented in the individual cases, and which unique aspects and capabilities for the case start-ups were identified. Appendix 3 contains the graphical representation of each case within the theoretical framework as well as a table summarizing the findings for each of the companies.

Cross Case Analysis

After the within case analysis, a cross-case analysis takes place, in order to search for patterns, relationships or differences among the cases (Eisenhardt, 1989). This will contribute to the research by highlighting relevant commonalities in terms of the elements involved in SE start-ups: constraints faced, capabilities, notable differences among cases and finally, highlighting what is needed to integrate SE. At the within-case analysis stage, it could be seen which what elements from the framework applied to each case. Therefore, in the cross-case analysis the researcher focused on finding which ones applied in all cases. The unique elements for each company were observed in a wider context at the cross case analysis stage;

it could also be seen that some elements were interrelated. It was also investigated whether a code was seen only within the interviews of one company or several. Also, the number of repetitions of one code among the interviews demonstrates its relevance. For questions that were asked only to managers (six interviews), the codes that were repeated five or six times were considered relevant. For the questions asked of all participants (fourteen), more than eight or nine times repetitions was the cut-off point to consider a code as relevant. This process of within and cross case analysis concluded in some findings, these are presented in the subsequent Results section.

Validity and Reliability

In this research the construct, external validity, and the reliability of the data are considered (Yin, 2014). To begin with, the topic investigated with the case studies was selected based on a theoretical gap. Furthermore, the topic is supported with a theoretical research and framework that were presented in the literature review, therefore fulfilling the condition of *construct validity* (Yin 2014). Construct Validity refers to selection of the appropriate measures for the concepts studied (Yin 2014). In order to strengthen the validity of the case study, it is also relevant to use other complementary techniques. Direct observations of the companies and the website reviews that have been conducted in this case increase the validity of the research (Yin, 2014). In terms of the extent to which the research is generalizable, meaning its *external validity*, multiple cases were studied instead of conducting a single case study analysis. The four cases were chosen according to their specific characteristics, with the intention that together they could represent SE start-ups despite the small size of the sample (Yin, 2014). In addition, in order to ensure the relevance of the data collection, the analysis was conducted using a method that allowed for in-depth analysis (Noble & Smith, 2015) in this case; the combinatory method. Finally, the whole process of data collection and analysis has been clearly described in detail in this section (Noble & Smith, 2015). Furthermore, all the documents with the codes, interview questions and other relevant information are available in the appendices to the thesis. The aim is to increase the reliability of the research and its replicability (Yin, 2014). In summary, validity and reliability are addressed in order to ensure a high quality research.

4. Results of the Analysis

This section elaborates on the results of the analysis. It incorporates quotations that refer to the *Atlas.ti* documents. The first number in the reference indicates the document number and the second one refers to the quotation number.

Constraints

Following the analysis, it can be said that the fact these companies are still in their early stages is a constraining factor. Their lack of managerial experience pushes the companies to operate in a "learning by doing" way. In addition, being at the beginning of their corporate lives severely limits start-ups from consistently prioritizing SE.

> Manager 1 at Nowi Energy: "Pretty much everything we do is that after a while we realize that it isn't really professional the way we're doing this, maybe we should act more like what an actual company would be doing, then we answer ourselves, and we try to do that. You kind of try to do it as you go along" (11:49).

> Manager 3 at MindAffect: "But on the other hand a lot of times to make a more sustainable choice it does cause more investment and maybe more expensive products. And then you know as a starter, just surviving, it's difficult to make those choices" (7:50).

Moreover, it could be seen that limited access to resources such as time, knowledge and money, constrain the capacity of the companies to conduct and integrate SE among the different parts of the company and instead focus on one specific thing.

> Manager 1 at Finch Buildings: "We are so much involved with the product that we forget about other things that we can do, so sometimes we don't think about these things with other things that we do, like in marketing campaigns. But I also think we don't have the resources to always be critical in that to be honest, we are still a small company" (14:24).

It is important to mention that, apart from these constraints, an aspect that appears common to all the case studies is the constraining factor of the role of investors and their influence on sustainability decisions. It is not only start-up companies that have general difficulties accessing financing, but when they do, investors still have a profit-based mindset that forces start-ups to compromise regarding the right sustainable decision or the most profitable one. In order to be able to make an impact, there is a need to be profitable and grow; an idea that was repeated several times among the interviewees. The code "Investors constraining role in SE" was repeated twenty times. This reflected the given this need to grow the investors had an important role and that means that the decisions taken are frequently biased towards the pressure of the investors. Until all the investors and stakeholders are fully in line with the values and beliefs of sustainability, there are moments where the most sustainable solution,

material or action is not considered as a priority, most often in the early moments of the start-up's behaviour. According the Manager 1 at Finch Buildings; "it took some time" (14:33), to align the values of the stakeholders completely with those of the company. This is considered as an influencing factor on a company's capacity to conduct SE. The CEOs of three out of four companies emphasized the importance of strategizing which investors and stakeholders of the company and share the beliefs of the company, so that they don't constrain the goals.

> Manager 1 at Aqysta: "So what we are trying to do in a way is that we are trying to look for an investor that matches our philosophy" (17:19).
>
> Manager 1 at MindAffect: "As long as you yourself have a strong opinion you'd rather reinforce your opinion because somehow you will seek those partners that strengthen your story" (8:37).

Setting the Company Objectives

The companies interviewed are characterized by a high level of innovation, providing unique solutions that position them as trailblazers in their industries. In the interviews there were two types of triggers that could be differentiated among the companies.

First of all, two out of four companies had a technology trigger. These companies developed innovative technologies – BCI, and Internet of Things' sensors- and after inventing the technology, it was applied to a part of the market where it could solve a problem. In both cases, the solution was either socially sustainable or environmentally sustainable (in the first case to improve ALS patients' lives, and in the second, the elimination of batteries). Therefore, a pattern can be seen, which is that the main trigger is the development of a highly technological and disruptive innovation, followed by the intention of applying this technology to a social or environmental cause.

> Manager 3 at MindAffect: "so there was an invention really from the technology side or even from the mathematical side, [...], and the ALS case or the patient came up" (7:12).
>
> Manager 1 at Nowi Energy: "we started with sort of a personal intrinsic motivation, that at the bottom line I believe that technology is a good thing in the world, a positive force, and then the Internet of Things is one of the biggest technological developments of our age. And we saw that energy was a key bottleneck" (11:1).

Secondly, the two other companies analysed were founded with the trigger to solve a social or environmental problem. They both identified that something was causing problems for a

society or for the environment, and they developed a way of solving those problems with an innovative technology. In the case of Finch Buildings, they saw that there was a need for new housing, and they identified that the current way of building was very harmful for the environment and detrimental for people's health. For Aqysta, one of the co-founders saw that the current pumps used by farmers in Nepal, were powered by diesel, he then recognized the need for more affordable, socially and environmentally responsible pumps.

> Manager 1 at Aqysta: "How the whole story started was that one of the co-founder is from Nepal, and his parents had some land next to a river and they were doing farming, he saw that they rented a diesel pump. He became an engineering and he thought, why can't we use the energy that is present in water to pump some of the water?"(17:4).
>
> Employee 1 at Finch Buildings: "The building sector is responsible for 36 percent more than a third of all those CO_2 emissions. So that's the biggest trigger" (15:4).

The divide found in the triggers of each company also translates to which mission and vision each company held. The mission and vision of the more sustainability driven companies, Finch Buildings and Aqysta, included some of the sustainable development elements. For example, it could be seen that issues - People, Planet and Profit-, were integrated in the mission and vision. This also meant that among their daily activities and decision making, these issues were actively taken into account. This could be seen in the interview responses and parts of their website such as;

> Employee 1 at Aqysta: "In our case the vision is in the future that in some years, farmers or anyone who needs to have a water use, can have an affordable and sustainable way of accessing and using water" (18:2).
>
> Manager 1 at Aqysta: "We started this company with the idea to supply sustainable products, in a commercially viable manner" (17:1).
>
> Website of Aqysta: "To Aqysta, sustainability is not just about being concerned with CO_2, it is about bettering lives for people in a reliable way" (19:1).
>
> Manager 1 at Finch Buildings: "We want to make people live with the lowest carbon footprint possible, and we are trying to help them with that" (14:2).
>
> Employee 1 at Finch Buildings: "We want to make sustainable living being available for mankind, for everyone and also for the ones with less money, so because the

building buildings are responsible for a big amount of CO2 emissions and so we want to make sustainable living normal" (15:1).

Moreover, time -Past, Present, Future-, and place -Me, Here, There- were also be found to have been considered.

> Website of Finch Buildings: "We see a world in which buildings contribute to solving climate change, are durable and environmentally friendly" (1:1).
>
> Employee 2 at Finch Buildings: "I would say is sustainable, replaceable, affordable" (16:1).
>
> Website of Aqysta: "While providing a proper perspective for the future, not just for the developed world, but for everyone." (19:1).

MindAffect and Nowi Energy's mission and vision are shaped from a different perspective given that their primary motivation is technology. Nevertheless, by observing their activities it can be seen that making a positive impact remains part of their core. In MindAffect's case, the issue People is combined with the technological aspect, and it is included in their mission.

> Website of MindAffect: "We want to open up new dimensions of interaction through the development of a Brain Computer Interface (BCI)" (2:1).
>
> Manager 2 at MindAffect: "The purpose of the company right now is basically to enable people who cannot communicate anymore and who are in a very difficult phase of their lives, namely they are dying, to give them the opportunity to communicate again" (8:2).

In the case of Nowi Energy, the mission combines the technology with the environmental need to reduce the energy consumption and the amount of batteries used.

> Manager 1 at Nowi Energy: "So the mission really became about enabling the Internet of Things" (11:1).
>
> Employee 2 at Nowi Energy: "I think the most important one is designing a chip for low power" (13:1).
>
> Website of Nowi Energy: "In buildings it reduces energy consumption and temperature, light, air quality and noise sensors in a work office also increases productivity" (3:5).

Through analysis of the websites and interviews, two main approaches could be seen. One in which entrepreneurship led to the creation of a start-up with the clear trigger of fulfilling a

mission towards sustainable development, and the other in which start-ups are created with a more technological drive but whose innovations are contributing to sustainable development. Both types of companies can be considered start-ups conducting SE, with the difference that in the first case, the purpose and application is fully sustainable and all the activities surrounding the innovation and the start-up follow this distinction.

When covering the topic of innovation in the start-up, importance was given to innovating in a way that integrates SE. The code "innovation with SE" was used forty times among the fourteen interviews and the four websites analysed. In general, having a positive impact on the sustainable development of society, on the environment and for growth, was seen as intrinsically established among the companies' activities, mission and innovation no matter the main triggers of the start-up.

> Manager 1 at Nowi Energy: "I would say that the underlying problem is not that we used too much energy, the problem is that we get it from the wrong source, there's more than enough energy. So there is no much of a point in fighting the symptoms and we should solve the underlying problem. And that is kind of what the company does" (11:13).
>
> Manager 3 at MindAffect: "So if you can choose between the glue or screws, you use screw because it's easy to take it apart. And in our business model we're considering to sort of a lease model [...] if you lease a product then it's in our interest to have it produced in a way so when it breaks you can change parts [...] and other sort of materials, recyclability, decomposition and […] some chemicals that you don't want." (7:62).
>
> Manager 2 at MindAffect: "I think in the end you have to deliver improvements on the current situation, so to do that in a way that can be continued. [...] and their usage would also be an aspect that would improve social aspects for the people that we try to help, that does not impact the waste and the energy on the other hand" (8:21).

Finally, the cases studied reflected a lack of systems and methods to assess their impact related to start-ups' resource scarcity. In the cases were certain assessment was seen, it was mainly related to the product performance, for example the Manager 1 at Aqysta mentioned; "So in general we don't do monitoring among the team but do look at the pumps, how they performed in the field and then we calculate how many Kbt/hour they actually delivered and what is the equivalent of CO_2 emissions that we saved" (17:15).

Managerial Capabilities

All the managers interviewed were found to have awareness towards sustainability. However, some difference that could be seen among the founders and managers regarding the sustainable intrinsic motivation. In the cases of Finch Buildings and Aqysta, it was found that they had a special interest but also an intrinsic motivation towards sustainability. In the two other cases, MindAffect and Nowi Energy, sustainability is not the main trigger, neither the core of the whole business, and the intrinsic motivation was found to be not as strong as in Finch Buildings or Aqysta's managers, but it could be seen that the managers were aware of the need to make a positive impact with their entrepreneurial activities, and that they were approaching this. Sentences such as the following reflect how SE was integrated in the entrepreneurship of the companies:

> Manager 2 at MindAffect: "I think the least we can do it to make our products in a way that it doesn't add up to the environmental waste. So, this kind of things are in the centre of how we do business" (8:10).

Start-ups are small, and the role of the managers is especially important. This was perceived in the cases, as in all the start-ups the managers were involved in the processes and activities. The relevance of managerial involvement relies then on the extent to which they involve SE in the company's processes. Therefore, the capability of involving SE in the start-ups' activities is needed, and this capability is closely related to intrinsic motivation. It was observed, how in the companies in which the managers had sustainability intrinsically integrated in their mindsets as a priority, that SE was played a bigger part of the processes and daily company activities. Managerial enthusiasm was a term that was repeated fourteen times in the interviews. When mentioned, this term referred to motivation, engagement, and positivism with the company and the product, combined with being able to transmit that enthusiasm among the team. Managerial enthusiasm inspired other employees to be more enthusiastic as well, and could be observed among all the companies.

> Employee 1 at MindAffect: "I think there is a lot of enthusiasm […] and I think that other people become more enthusiastic because of that" (5:28).

Enthusiasm together with an intrinsic motivation towards the goals of sustainability was seen as important for the SE activities of the start-up and a source of inspiration for employees to work towards these goals. At Finch Buildings and Aqysta, where the intrinsic motivation of

the managers towards sustainability was more evident, employees were more driven towards achieving the sustainable goals of the company.

> Employee 1 at Finch Buildings: "Because when you work here, you get attached to goals of the company. That wasn't something I was working on two years ago, it's really something that grew on me very fast when I started here. And that's also something I don't think I will lose" (15:6).

Therefore, these three managerial capabilities (intrinsic motivation, SE involvement and enthusiasm) are interconnected and important for the SE behaviour of a start-up company. However, the capability of creativity in the managers was not found relevant in the analysis. It appeared in some occasions referring to the need of coming up with new ideas for the company in general, but is not deemed as a required capability.

An entrepreneurial and dynamic leadership style was acknowledged in several aspects of the interviews. The managers interviewed expressed a need for dynamism and change because of the early stages the start-ups are in. Entrepreneurial leadership was seen in the simultaneous focus and motivation of the companies to achieve goals whilst always looking for new opportunities and encouraging employees to discover new opportunities. First of all, it was found in the awareness, openness, and efforts of each company with regards to encouraging employees to innovating and finding new applications for their technology:

> Manager 1 at Nowi Energy: "And we really spend resources on developing ideas and exploring them whether they make sense or not" (11:6).
>
> Manager 1 at MindAffect: "In the company what we want to install is that people have the ideas, they fell free to bring them forward, to be able to discuss them" (6:108)

A general observation in all the cases is that management is characterized by providing a large amount of freedom and space to the employees. It was highlighted that employees are encouraged to find their own ways to complete their tasks in the best way possible and conduct their own projects. This management type is known as hands-off management, and involves the concept that employees are allowed to work using the approach they consider best, even to work on personal projects. It was found twelve times and was presented in all the cases. Hands-off management is characterized, furthermore, by trust in the team, which was perceived by both managers and employees in all the cases.

Employee 1 at MindAffect: "There is a lot space to do your work the way you think is best. I really like that and I think if you trust people then they also work better and like their work better" (5:28).

Employee 1 at Nowi Energy: "For example we have a development planning, […] we can work like two hours, per week on our own project[…] now I have to work on this but I can always say that for the future I would like to learn more about these other things" (12:8).

Employee Capabilities

There were certain capabilities that were deemed relevant for employees in start-ups in general, and in sustainable start-ups specifically. Among the found own-responsibility which was mentioned among the interviews. Own responsibility referred to the fact that people have their own tasks, responsibilities, and must be able to deal with freedom and space and be accountable for their own mistakes. Employee flexibility also appeared fourteen times in the managerial interviews and referred to a curiosity to investigate, readiness to do several roles at once and responsiveness to market dynamics. The alignment of the company's goals and values with employees is quoted 24 times among the interviews and therefore considered an important capability for the employees of a start-ups. All the employees seem aware of and in line with the goals of the company and this coincides with their engagement with the company.

> Employee 1 at Nowi Energy: "I think everyone if working hard for it because we know Nowi right now is an start-up, so we don't get let's say like the advantages of the really big companies [...] So we are all here because we like to be, we want to be part of it, we think this is possible and we would like to be here when we make possible" (12:4).

This related back to the triggers of the company; in the case of the more technological companies, employee engagement is focused more on the technological development aspect rather than the development of sustainable solutions. However, making a positive impact remains a part of the motivations. Whereas in the companies whose main purpose is sustainability, founded because of a social or environmental driving factor, the responses of the interviewed employees included a sustainable driver as well.

> Manager 3 at MindAffect: "As far as I know everyone […] are very enthusiastic […] so everyone is really motivated to make this great" (10:11).

Employee 1 Finch Buildings: "I would say that I'm fully engaged [...] it's really good to do something that's nice and also good for society, for next generations [...] I think we serve a good cause" (15:5).

Employee 1 Aqysta: "So we are people that are more trying to fulfil goals, rather than just earning money [...] so not only me but also most of my colleagues I would say are very driven to fulfil this mission" (18:6).

Employee 2 at Finch Buildings: "I would like to make a change" (16:15).

Therefore, an intrinsic motivation and awareness from the employee side is crucial for the sustainable behaviour of the start-up, -this code was found eighteen times among the interviews, and includes motivation towards sustainable development. Awareness of both the goals of the company and sustainability were found as required capabilities for the employees. Finally, another capability recognized is the acceptance of uncertainty attached to the start-up's environment.

Organizational Capabilities

The dynamism seen as a managerial capability is reflected as flexibility in the organizational system and is also found as a common organizational capability. Organizational flexibility encompasses a company's ability to adapt, adjusting organizational structures to the needs of the start-up. Their structures are changing, and adapt to the needs and capacities of the market and of each individual.

Manager 1 at Finch Buildings: "Is also really dynamic, also searching for the rights hierarchies and who is responsible for what" (14:63).

Manager 1 at Aqysta: "The problem is that in general the picture changes rapidly in the company, and you constantly need to redistribute roles" (17:40).

In line with this, roles within the company are also continuously changing; conducting several tasks at once is perceived as something normal. Further, horizontal structure was recognized in all the cases. This was seen, for example, in the close relationship with the management team and among employees. In general, interviewees considered that ideas were easily shared among the company as a whole, and employees felt valued. An element related to this is the ease of communication;

Manager 1 at Nowi Energy: "I'd say that the culture is very horizontal, that the best idea always wins doesn't matter whether you are an intern or a CEO or whoever you are" (11:3).

> Employee 2 at MindAffect: "Yeah I think it's very easy to share ideas on a daily basis with colleagues, this team is really open to share ideas. This is encouraged as well by management and it's even pushed to happen. If I would be more sitting on my desk at my desk and then doing my own thing that would be discouraged" (9:30).

The small size of the companies and flat level environments were favourable for the start-up's interactions, communications, and operations, and therefore for the continuity and development of SE. In terms of ease of communication, internal transparency was mentioned. All the managers expressed that they try to be as transparent as possible in terms of informing on the overall condition of the company, updates, and other general information about the start-up's status. However, generally not all the information regarding the company was shared to all employees. One of the reasons given in relation to this was the high level of dynamism attached to the environment of the company:

> Manager 1 at Finch Buildings: "The dynamics are so great that if I have to be very transparent, at the beginning of one week I would say I think we go bankrupt, and at the end of the following week I would say, oh no everything is fine and the sky's the limit" (14:36).

Whereas one company shared their salary levels, the other managers claimed to be hesitant about whether that would have a positive effect for the start-up. In general, financial information was the least shared topic among all the companies.

> Manager 1 at Aqysta: "We are not sharing for example the salary levels among the team, but that is more or less the only detail that I wouldn't share publicly, simply because I don't know whether other people would like that or not" (17:21).

There was an important observation to make of the analysis of the interviews. The greater the number of employees, the more difficulties were faced to maintain the ease of the communication. It could be seen that in the cases where the number of employees was more than fifteen, even when the structure could be considered flexible and horizontal, there were already certain layers between the management and the rest of the employees. For instance, in Aqysta, with eighteen employees it was noted;

> Manager 1 at Aqysta: "In general, is flat, everyone can speak to everybody but we are also seeing that beyond the size is not possible anymore […] if any intern starts talking to me, I wouldn't have time anymore because there are simply things that I

need to do that are more important for the survival of the company and then I have to say sorry but I don't have time for you, even though it hurts" (17:30).

Moreover, it was observed that among the start-ups interviewed, the two companies that faced the most internal communication issues were the ones again with more than fifteen employees. These issues related mainly related to internal aspects among employees, management or with problems communicating with personnel working in foreign locations.

Employee 3 at MindAffect: "I do think sometimes internal communication lacks a bit of communication [...] within the teams and also between the teams we can use more communication" (10:17-10:18).

Employee 1 Aqysta: "In our case, we have an office in the Netherland and one office in Nepal, and that also makes it more difficult, the communication and cooperation among employees in both offices and that is also something that we struggle a bit" (18:19).

Cooperation between employees and management was observed among all the cases. On one hand, it was considered to improve the quality of the work, on the other hand it had a direct influence on a good work environment for the company. For example Manager 1 at Finch Buildings noted; "I think we have a real working relationship and that helps as we do this as a team" (14:38).This is in line with most of the interviewees.

An element of cooperation and collaboration found in the cases is teamwork, which goes beyond helping each other by referring more to a common company effort and work of the company as a team. Among the interviews responses, it was observed that in most cases there was an intention of the companies to conduct their daily activities in the most sustainable way possible. The answers ranged from small acts, such as avoiding the use of paper, setting recyclability requirements for the products, or considering sustainability during the product design. However, the organizational SE support, meaning providing the knowledge and resources for everyone in the company to conduct their entrepreneurial activities in a fully sustainable way, is limited. In general, there is a lack of time and economic resources to train employees, to conduct the activities, analysis or tracking systems necessary to carry out fully sustainable activities.

Employee 1 at Aqysta: "We try to do it because that is actually one of cores of our innovation itself, but one problem that I see is that in order to be fully sustainable you

need to do a life cycle assessment […] that is a very resource consuming analysis and that is something we haven't been able to do fully" (18:30)

In terms of networking, the interview answers showed that the relevance of this relies on the need of finance, external support for growth and the search for new opportunities. First of all, the relevance of managers and founders having networking skills and conducting the networking of the company was visible in all the start-ups analysed, since one of the founder or manager's main role was to grow the company's network. In addition the importance of managers' networking abilities, it was observed that informal networking conducted by employees had a relevant aspect for the company as well, as it could lead to new business opportunities and relevant contacts. Therefore, networking becomes a capability that has an organizational scope rather than just managerial. For example:

Employee 1 at Nowi Energy: "And I would say it is mostly the CEOs […]. But for example I was talking with another Spanish guy in another company here, […] and we were talking and maybe we will have product or something in common in the future" (12:12).

Employee 2 at MindAffect: "I think I am involved in this in the sense that I like to do that networking […] within my scientific collaborators network and I'm doing so because there are people that are interested […]. Currently there are efforts to try to do more networking with customers and this is done by the commercial people in the start-up" (9:20).

Networking is thus an organizational capability during which employees take a more informal approach, as opposed to the more formal approach taken by management. Organizational networking had a certain influence on the sustainable opportunities for the company. However, those were not clear and tangible opportunities. The code "Networking incentives towards SE" was repeated twenty-one times referring for instance to the environmental-friendliness of the partners, the interest of potential clients or stakeholders or the fact that sustainability is currently a hot topic.

Contextual Capabilities

The contextual capabilities are divided in external and internal context. To begin with, external context refers to international influences. Three of the start-up interviewed have operations internationally and the other is exploring its international opportunities. The effects of international activity differed greatly among companies. MindAffect, the company that is still exploring international activity, could not see any incentives towards sustainability yet.

Among the other companies, the effects varied. According to Finch Buildings, the incentives vary among countries, mostly due to the differences in marketing value that sustainability has. Dubai was given as example by Manager 1 at Nowi Energy; "I think sustainability seems to work fairly well in most countries. In Dubai for example, because they have a bad image with oil and they want to reverse that a little bit, they can do so with cleaner tech" (11:35). This particular marketing value incentivizes the sustainable applications of the company's technology.

According to Finch Buildings and Aqysta, however, who work in Asian countries such as the Philippines and Nepal, the nature of the markets here constrained their sustainability behaviour. The start-ups analysed had to find alternative ways of conducting their activities and innovating to provide value to their clients.

> Manager 1 at Finch Buildings: "For example the timber we are using in Europe all comes from certified forests, in the Philippines we want to do the same, we don't want to use anything that we don't know where it's coming from, that is non-negotiable, which results now in getting timber from Russia [...] or Africa [...] because we cannot be sure that what we can get in the Philippines is certified and that is a little bit crazy I have to admit" (14:16).
>
> Employee 1 at Aqysta: "For example in Nepal not many people care about sustainability, at least environmental, over there, people cares about their own, their individual economic sustainability" (18:22).
>
> Manager 1 at Aqysta: "They just want a cheap product, so then it's for us to make the product […] and especially in the agriculture sector that is sometimes very challenging and you have to make it affordable so that people can buy it" (17:7).

What was agreed among all the companies was that in Europe, but specifically in the Netherlands, there were many incentives towards sustainability. Those incentives were seen in the amount of grants or subsidies given to sustainable companies;

> Manager 1 at Aqysta: "In Europe there is a lot of funding, sustainability is a hot topic" (17:13).
>
> Employee 1 at Nowi Energy: "First of all we've got some funds, and one I know it was from the regional government south Holland or something like that, because we won a competition for sustainability" (18:28).

Another reason is simply because of the sustainability orientation of the country as whole;

Manager 1 at Finch Buildings: "So there is sustainability always in the business otherwise we don't do things, […] and here it's much easier than for instance in the Philippines" (14:17).

Employee 2 at MindAffect: "The people is very much sustainability oriented, I think because of the culture in the Netherlands" (9:25).

The environment in which the company is physically located, for instance the start-up incubator, university, or innovation hubs, was in general very important. Partnership or networking opportunities, new ideas, help, or just inspiration, were some of the things mentioned as advantages of these types of locations. However, the responses varied depending on the location. Incubators such as YesDelft or RockStarter experienced more influence than MindAffect, located in the NovioTech campus where interviewees mentioned that the only influences they experienced were in the form of occasional informal conversations.

As has been mentioned earlier in the Results section, investors can be a constraint for the SE activities of the start-up, it is therefore preferable if their values and objectives are in line with those of the start-up. This alignment, however, is difficult to find. Some of the interviewees explained that their stakeholders are to some extent in line with their objectives, but that the main motivation is economic, and this impedes the achievement of their goals. When the investors and the company have their values aligned, SE is incentivized.

Manager 1 at Finch Buildings: "It helps in that the pressure would not be in things like "can you not do this with concrete?" for example. That's a question I will never get from the stakeholders, they would understand that's not what we do" (14:34).

Other interviews expressed that the social or environmental purpose of the start-up is sometimes the reason why investors are interested in them.

Manager 2 at MindAffect: "And also that is the reason why ALS foundations in many countries like in the Netherlands, Belgium or the US are supporting us, so they have given us money to improve the lives of these patients" (8:5).

Regarding the internal context, having a good internal work environment was a capability that was recognized during the interviews. A good work environment is achieved by cooperation between employees and management. The codes "good work environment" and "cooperation" together, were seen eleven times during the interviews;

> Employee 1 at Nowi Energy: "I think the collaboration creates a better place to work on, and also, I think it helps coming up with ideas of application that can be more sustainable" (12:22).

> Employee 3 at MindAffect: "So I can say that being together or being able to communicate […] is the best thing you can have" (10:22).

Within the company, international aspects had also an effect. The results showed that in general, having an international workforce was perceived as very positive. The results showed an association with benefits to company diversity; resulting from different perspectives, backgrounds, and an openness to international work situations and new ideas. An international workforce was found ten times in combination with good work environment during the analysis.

> Manager 1 at Aqysta: "Given the fact that don't know about the culture of the other people, you are forced to listen to them better [...] if it is a person from a different culture, you automatically kind of treat the person with respect and you also listen more to what they have to say" (17:32).

However, some constraints were also associated with having an intercultural workforce; namely the need to speak a language which is not you mother tongue, and the communication problems or misunderstandings that might arise out of these language or cultural differences. However, both cooperation and the international aspect of the workforce overall provide benefits that are primarily social benefits for the company; creating a better work environment and a more prepared position in an international market. It can be said a good work environment is favourable for the social sustainability within the company.

4.1. Synthesis of the Findings

To begin with, in this analysis it was found that investors were a constraining element for SE integration. The constraints derived from the early stage start-ups are in the lack of resources, and a dependency on investors as determinants of key decisions for the company.

Two types of triggers for the start-ups are found, a technological trigger and a social and/or environmental trigger. Both types of triggers determined the focus of the mission and vision of the company. The start-ups with purely sustainable triggers conducted sustainability consistently throughout all their activities and with focussed SE. However, having a mission in which sustainability was not the core did not inhibit SE from being conducted. In these cases, SE was the result of technological development, and there was awareness, interest, or

intrinsic motivation towards sustainability which encouraged SE. Therefore, innovation with a view to SE was observed.

The managerial capabilities that were found relevant for the start-ups were an intrinsic motivation towards sustainability and a dynamic and entrepreneurial leadership. The first of these, clearly determines the sustainable behaviour of the company because of the relevance of the manager/entrepreneur in start-ups. While awareness of having a positive impact at the managerial level facilitates the carrying out of SE in the start-up, a higher intrinsic motivation towards SE ensures that all company activities are conducted with the objective of achieving a sustainable development. Involving SE among the start-up's activities is also a requisite capability. It has been illustrated how a higher intrinsic motivation towards sustainability naturally involved a higher level enthusiasm and managerial involvement in SE, leading to a more successful SE overall. Leading the start-up in a dynamic and entrepreneurial style is another managerial capability recognized. It is reflected in a readiness for discovery and innovation, aims for growth in order to have a positive impact, where both of these lead to enhanced SE. Furthermore, the findings include that managers must be capable of following a hands-off management approach. This managerial approach entails providing freedom and space for employees' work, and placing trust in the team.

Employees in sustainable start-ups need mainly five essential capabilities. First is the alignment of the company's goals and values with their own, to ensure the achievability of the (sustainability) goals of the company. Second is the intrinsic motivation and awareness amongst the employees, which affect the sustainable performance of the company. Moreover, own responsibility is required in the ability to work without supervision to complete tasks and therefore account for their own mistakes. Flexibility is also recognized as an employee capability. Finally, uncertainty acceptance is also a required capability for the employees in start-ups conducting SE.

In order to have SE integrated within the organizational system, the research found flexibility, a horizontal structure, and team cooperation as key capabilities. These allow more flexible structures and easier communication. The results of the analysis show a horizontal structure in which the management and employees are closely connected, in which everyone is valued, and all ideas are shared without a need to navigate hierarchies. There is a high degree of transparency and ease of communication attached to these start-up companies. It was also seen that regardless of their small size, the flexibility, horizontal structure, and easy and transparent communication become constrained as the size of the company grows. Cooperation, including teamwork, is another important capability found that must be

considered. All members of the start-up play a role in the networking practices of the start-up, networking capabilities can have an influence on the SE behaviour of the company. Whereas management conducts networking as part of their job and in a more formal way networking carried out by employees by way of informal conversations is relevant as well.

In terms of the contextual capabilities, international environments present both constraints and opportunities. In order to deal with the external context, it was recognized that start-ups must have the capability to deal with lack of awareness, gathering interest or means for sustainability solutions, or a client's desire to shift focus in marketing. The Netherlands was recognized in general as a market where SE is incentivized, therefore those incentives provided via funding or prizes constitute an opportunity for start-ups to conduct more SE. The external environment in terms of start-up location can be beneficial, since working in close proximity to other start-ups can foster motivations and encouragements. Working in hubs or incubators, where all the resident start-ups are at similar stages and facing the same problems, enhances the interaction and exchange of ideas. In some cases, the location in a hub or campus creates business opportunities, new business partnerships, new projects, or simply new contacts, and in some cases those are related to sustainable solutions. A very important capability that was recognized, is to find investors that share the values and mission of the company. It was observed that when this is not the case, investors can vote for business decisions that constrain the start-ups' SE mission and values. Within the company, a capability found that of developing a good work environment, which, according to the results, can be achieved by cooperation and having an international workforce.

The findings are presented in the following framework (Figure 5). This framework is first based on the theoretical framework developed after the literature review, and, with the findings from the analysis of the case studies and thus a better understanding of the practice, a more complete and accurate framework has been developed. It represents what characterizes SE integration in start-ups, starting with the objective setting, based on the technological and social or environmental drive that led to a sustainable solution by which sustainable development and positive impact are achieved. In the process from the objective-setting stage through to the impact, there are several constraints that need to be faced. After that, the capabilities that the personnel need, as well as the required organizational and contextual capabilities are shown. The capabilities are organized by colour. The darkest tonality represents the most important capability within the group, and the lightest in the capability that was found as less relevant during the analysis.
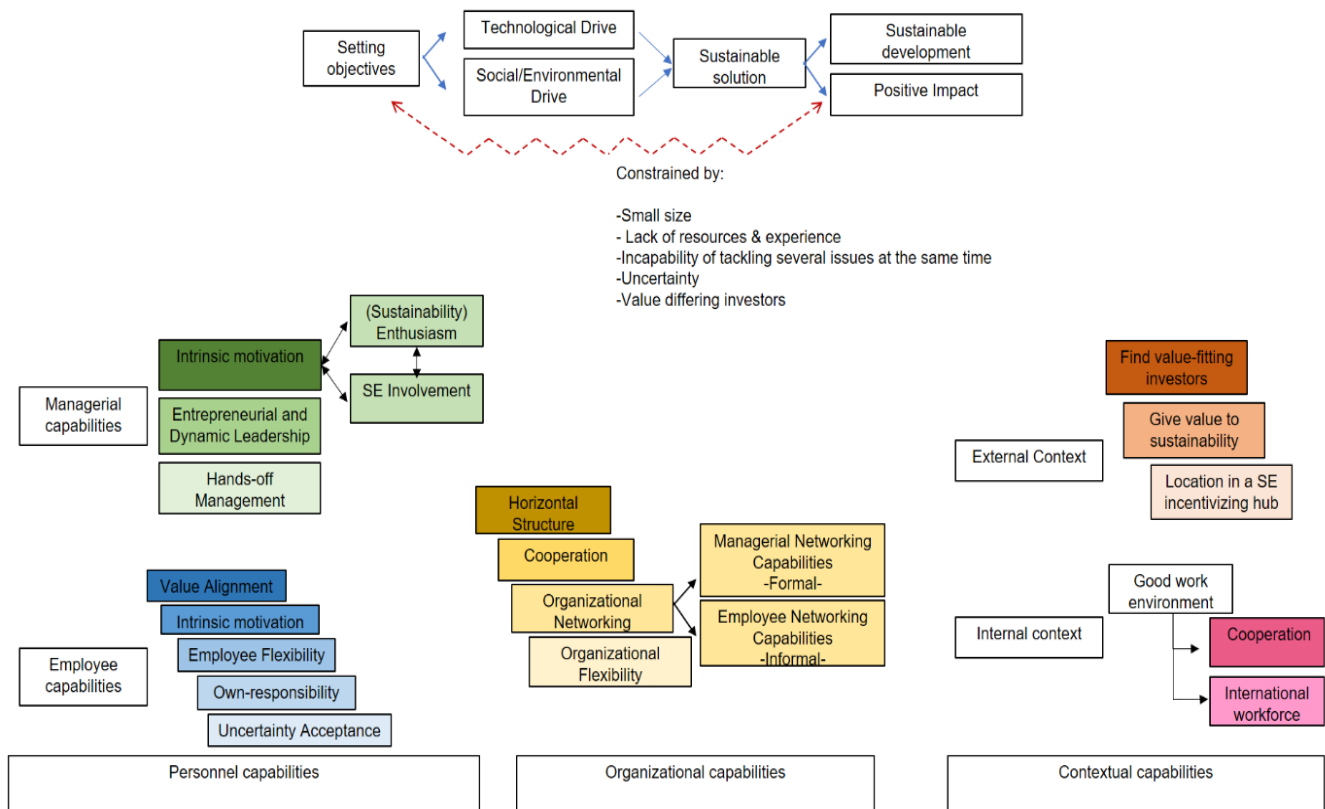
Figure 5 Final framework of what characterizes the start-up's SE integration. Including the objective setting, constraints and the capabilities.

5. Discussion

Constraints, Objectives and Assessment

Start-up companies are important vehicles for achieving sustainable development (Dean, 2014). They have a great potential for growth and for the generation of radical innovations (Hockerts & Wüstenhagen, 2010). Moreover, flexibility as well as a young organizational system are reasons why they have an enhanced ability to conduct SE (Greco & de Jong, 2017; Fichter & Weiss, 2013; Schick et al., 2002). The case studies show that there is a lot of potential for growth and radical innovations among start-ups. The data exhibits the crucial role of entrepreneurship and its direct connection with sustainability for start-ups conducting SE. Sustainable start-ups conduct innovation with an approach that places sustainable development at its core. That is the Issues, Time and Place dimensions as well as the intention to make a positive impact, are considered when starting the entrepreneurship and when making continuous innovations. Therefore start-up companies conducting SE are characterized by integrating sustainable development in their entrepreneurial activities and new innovations.

Both the existing literature and the analysis of the thesis highlight the several limitations that start-up companies in general, and start-ups conducting SE specifically, need to face. Limitations arise mainly due to their small size and lack of resources (Bos-Brouwers, 2010). Aside from this, start-ups are sometimes incapable of tackling several issues regarding sustainability simultaneously (Hockerts & Wüstenhagen, 2010). Another constraint is their lack of managerial experience, and the uncertainty attached to them (Dean, 2014), where uncertainty entails difficulties into accessing finance; another significant constraint of the activities of the start-up (Bocken, 2015; Schick et al., 2002). These constraints were reflected in the cases through, for instance, the trade-offs that needed to be made when choosing between a more sustainable solution or more economical solution, and the severe difficulties in accessing resources or knowledge for SE. It was also observed that the companies focused on a specific product or sustainable solution, but human, and economic resources would not allow them to extend the scope of their sustainable activities. If they are working on a sustainable product, that project attracts all the attention and therefore daily aspects of the company or other activities besides that product development were not conducted fully in a sustainable way. Therefore, these constraints found in the theory are supported, and it has been found that lack of resources is a significant constraint on the company to achieve its sustainability goals.

However, this thesis uncovers another constraint faced in sustainable start-ups, and that is the constraint of non-value-fitting investments. Where investors do not wholly share the mission and values of sustainability that the start-up has, and instead priorities economic value, the start-ups are forced to compromise between the most sustainable solution and the cheapest or most profitable one. Whereas the aim of the company is to grow and to be profitable, and being successful increases the impact that the company is able to make, investors play an important role in the company. For that reason, ensuring that investors share the company's values towards sustainable development is crucial. Consequently, start-ups are characterized by constraints to SE, and having investors who do not fit the start-up is a very relevant one. These constraints must be faced during the process of SE integration.

The backcasting process has been explained as a way to integrate SE that could be applied to the organizational system of start-ups. This process begins with assessing the triggers of the start-up, its mission and objectives, followed by the current activities of the company and the capabilities needed to achieve the mission and objectives (Markman et al, 2016; Holmberg & Robert, 2000; Alänge & Holmberg, 2014). This is a simple process that can guide start-ups to fulfil their mission in SE. Analysing the triggers and setting the

objectives regarding sustainability are the initial steps towards SE. Identifying a problem in the market regarding a social or environmental issue and deciding to conduct SE to solve it, is a trigger that leads to SE conduction (Gast et al., 2017; Belz & Binder, 2015). In the cases it was observed how the objectives of the company were related to the reasons why it was founded and therefore its triggers to conduct SE. This trigger of problem identification was observed among the cases studied; Aqysta and Finch Buildings started the company as a reaction to an environmental problem. A different type of trigger was also identified among the cases that of technological development. The awareness of the entrepreneur, manager and employees can result in the development of a technological motivation with the concurrent aim of making a positive impact on sustainability. The primary motivation of the start-up may be technological development, leading to an opportunity for that technology to make a positive social or environmental impact. Thus, where the motives of the company do not have sustainability at the core of their initial triggers, this does not result in SE not being conducted.

The same translates to the mission of the start-up. Shaping the mission in relation to sustainable development is important to lead the companies' activities in a fully sustainable direction (Dean, 2014; Witjes et al., 2017 b). However, this thesis argues that in a company where SE is not at the core of the mission, this does not restrict its capability to pursue fully sustainable activities. In conclusion, start-ups conducting SE are characterized by either a technologically or a more social and/or environmental trigger which have a clear influence on the establishment of the objectives and mission of the company, and both can lead to the development of solutions for sustainable development.

The next stage of this backcasting process consists of assessing the current activities of the start-up. This is appropriate in order to monitor the position of the company and assess whether the sustainability goals are being achieved (Halberstadt & Johnson, 2014; Witjes et al., 2017 a). It is, however, a resource consuming process that start-ups are not able to conduct in all the cases (Dean, 2014). Methods such as the LCA or Carbon Accounting, are time and resource consuming processes (Dean, 2014). Following the analysis it was understood that start-ups could analyse the impact of their products, but were uncertain of the impact the start-up had as a whole. The impact of the product itself is measured, but the research found no evidence of start-ups assessing their current situation. A lack of resources is clearly a constraining factor as start-up companies in their early stages cannot afford to conduct these assessment, at all or in part, as was seen in the cases. The integration of SE in start-ups is

therefore not necessarily characterized by a complete assessment of the whole company's products and activities. Instead, the start-up relies on their characteristics and capabilities to achieve SE.

Capabilities

The capabilities needed to integrate SE are divided into categories: managerial, employee, organizational and contextual. In terms of managerial capabilities, the roles of awareness and intrinsic motivation of the entrepreneur have been frequently highlighted among previous researchers (Bocken, 2015; Schaltegger & Wagner, 2011; Lans et al., 2013; Bos-Brouwers, 2010). It is more essential that those sustainable development goals are ingrained in the mindset of the entrepreneur, because of their significant influence on the company's behaviour and choices (Lans et al., 2013). The analysis conducted provided evidence to strengthen the literature on this aspect. A personal motivation or personal interest in sustainability lead to a more sustainable approach in the start-up itself. According to the findings, the intrinsic motivation of the entrepreneur and/or manager is especially relevant to shaping the beliefs and behaviour of the company. When the triggers of the start-up are not the identification of a market problem related to sustainability, but instead a technological innovation; the mission has no sustainability focus but the outcome can still be a sustainable entrepreneurial innovation because there is an intrinsic motivation or awareness from the managerial side. In the cases studied, the companies with sustainable drivers and a highly intrinsically motivated sustainable entrepreneur had a mission that included SE, and conducted all activities with this in mind. In the others, with technology as the main driver, the mission only included the technological aspect, but the managers' beliefs lead to the application of sustainable development in their innovations. Furthermore, in line with the literature, a managerial team is especially relevant to manage a start-up company (Ensley et al., 2006; Dean, 2014) which was observed in the majority of the cases. In the case of a sustainable start-up, the managerial team's motivation and engagement in the mission and values of the company is key. Therefore, the greater the personal motivation of the managerial team towards being sustainable and having a positive impact for the sustainable development, the more sustainable the start-up behaves and thus the entrepreneurship conducted by the start-up is more sustainable overall. Intrinsic motivation is thus one of the capabilities that characterizes SE integration.

An intrinsic motivation towards sustainability, enthusiasm, and managerial involvement of SE were closely related. Those capabilities are required in a sustainable start-up (Lans et al., 2013; Dean, 2014; Bos-Brouwers, 2010; Sung & Park, 2018; Ahmad et al.,

2010; Schaltegger & Wagner, 2011). Self-involvement in practices with the sustainable mindset is necessary to inspire individuals, and inspiring employees is necessary to carry out sustainable activities (Dean, 2014). In the companies where the manager was more intrinsically motivated, he/she showed higher enthusiasm for sustainability and therefore sustainable practices were more involved in the company. The more the manager is involved in the company and integrates a sustainable perspective in all the aspects of it, the more sustainable the company was behaving and, consequently, the more engaged the employees were towards sustainability.

Moreover, in the literature research it was found that for SMEs working in sustainability, it is important to have a dynamic and entrepreneurial leadership style (Bos-Brouwers, 2010). This thesis finds that this type of leadership is also applicable to start-up companies carrying out SE. Start-ups are frequently facing uncertainty in terms of their future, finance access, investors requirements, continuous external changes, and trade-offs between the most sustainable solution and the most profitable one; therefore a dynamic and entrepreneurial leadership style must be implemented by the managers. This involves leading the start-up in an open way, potentiating and encouraging the search and exploitation of new opportunities, and consequently, growth. A need for managerial capability that was not found in the literature, but that was observed in every case, is hands-off management. A hand-offs management style is defined by a high degree of freedom for individual to find their own ways of working and options to conduct own projects. Furthermore, contrary to the finding that creativity is a necessary capability for manager (Lans et al., 2013; Campos et al., 2015), this research did not find any clear evidence that creativity was a requirement. In sum, SE integration is characterized by an intrinsically motivated manager, that transmits enthusiasm and involves SE within the company, with a leadership style characterizes by dynamism, entrepreneurship, and hand-off management.

In terms of the capabilities that are considered relevant for the employees of the company, first of these is the capability of aligning the values of the employees with those of the company; this has been identified in the literature review (Markevich, 2009; Dean, 2014; Bocken et al., 2015) and was confirmed in the findings of the thesis. Furthermore, an intrinsic motivation towards sustainability is found among employees of SE start-ups. Accordingly, the intrinsic motivation towards sustainability is seen both in the entrepreneur or manager (Lans et al., 2013), as well as in the rest of the team. This thesis further uncovers the employee capabilities of own-responsibility, uncertainty acceptance and flexibility. The entrepreneurial,

dynamic (Bos-Brouwers, 2010), and hands-off management that characterizes start-ups, as well as a need to adapt to the continuously changing environments around them (Dean, 2014), are the reasons why these three capabilities are attached to SE start-up employees. Thus, these five employee capabilities characterize start-ups conducting SE.

The literature on SME's referred to organizational flexibility, a horizontal structure, and cooperation (Bos-Brouwers, 2010) as necessary capabilities for conducting sustainability. This research finds that to carry out entrepreneurship in a sustainable way, those capabilities are necessary not only for SMEs but also for start-ups. Flexibility in both the start-up's structure as well as in the internal communications is required (Bos-Brouwers, 2010). The findings show that that start-ups have a structure and an organizational system that is able to adapt to the changing internal and external circumstances. Sustainable start-ups are also characterized by a horizontal structure, in which managers and employees have a close and easily accessible relationship, ideas are easily shared, and people feels equal (Bos-Brouwers, 2010). A horizontal structure and organizational flexibility involve high levels of transparency and thus facilitate communication inside the company. It is noted that increased complexity of the internal structure due to growth in size of the company and a higher number of employees might lead to communication related problems for these start-ups; such as misinformation, which is ultimately reflected in a less horizontal structure and less transparency. However, there is no evidence found that this constrains the start-ups in their approach to SE. Cooperation is another organizational capability for start-ups as it is also applicable to sustainable SMEs (Schaltegger & Wagner, 2011). Cooperation is reflected in the cases through managerial and employee teamwork. Team bonding and collaboration are therefore relevant for SE integration in start-ups, and there is a need for managers to facilitate this. It can be said therefore that organizational flexibility, a horizontal structure, and cooperation characterize SE in start-ups.

Furthermore, providing sufficient resources and support in order to integrate sustainability was found to improve the sustainability behaviour of small companies (Bos-Brouwers, 2010; Hallstedt et al., 2010). Following the interviews and observation it was noted that employees sometimes lacked the necessary time and resources to conduct SE. Therefore, a system that supports acquiring greater knowledge of sustainability would be ideal. However, contrary to the literature review, the organizational capability of providing support for the employees to conduct SE was not found in the research. Given the early stages that start-ups are in, and their lack of resources, this research finds that it is not possible for them to provide

that support. The reason for this may be that the literature focuses mainly on SMEs which, in contrast with start-ups, are more established in the markets and therefore have more resources to provide the necessary support. Training and knowledge resources on sustainability could be useful, but as start-ups' resources are limited, it is not possible for them to offer these.

The findings of the analysis are in line with the literature, emphasizing the importance of the relationship with stakeholders (Gast et al., 2017). Managerial networking capabilities are therefore regarded as highly important (Pacheco et al., 2010; Pinkse & Groot, 2015). However, in the data analysis of this thesis it has also been noticed that employees must also have the capability of networking, albeit in this case a more informal approach to networking. Networking was found to be important for interaction with external parties to source new ideas and business opportunities, and it is considered no longer a managerial capability but rather a capability for the organization as a whole.

Finally, the context surrounding the start-up has a significant effect, and SE behaviour is also highly influenced by context (O'Neill et al., 2009; Nelson, 2014). The country where the company is located has a direct influence on the SE activities that they conduct and how they are conducted (Gast et al., 2017). This could be observes among the different cases, in that each start-up adapts to the diverse scenarios faced. Therefore, the location of the start-up in an institutional and cultural context plays a relevant role.

According to Belz & Binder (2017), fitting the values of the company with those of the clients is necessary when conducting SE. In the results of this thesis, there was evidence showing that companies in other countries have a focus solely on the marketing value of sustainability, or that clients, particularly in developing countries, do not give any importance at all to sustainability. However, the company still strives to provide a sustainable solution, even where there was not value-fit with the clients. The capability recognized in this is case is being able to adapt to the different scenarios and constraints, by providing a targeted value to clients with different needs, without the company having to constrain their goals of sustainability. Applying this kind of adaptability is crucial when navigating the values of stakeholders (Gast et al., 2017), and particularly with employees of the company and with investors. The analysis finds that there is in the context and networks of the start-ups analysed regarding the topic of sustainability which affects the start-up's sustainable performance. For instance, where an interest in sustainability is primarily for marketing reasons, or where companies or investors show a level of sustainability level which does not reflect the actual situation. Moreover, investors can constrain much of a company's sustainability behaviour,

because of a start-up need to survive and grow, sustainability may not always be the main priority. The importance of value alignment with those investors is highlighted and therefore so is the capability to attract the "right" investors. There is high relevance in approaching "Impact Investors" whose focus is to make a positive social, environmental and economic impact (Pacheco et al., 2010; Bocken, 2015; The GIIN, 2018). Consequently, finding those investors that fit the values and objectives of the company is needed, so that constraints by investors on sustainable business decisions may be avoided.

In concurrence with Radzeviciute (2017), it is found that the physical location of the start-up enhances or constraints the sustainable behaviour of the start-up. Therefore there is a need for the capability of locating the start-up in more favourable locations, such as hubs or incubators, where SE is incentivized and supported. An international and intercultural workforce was deemed important to enrich the company's cooperation and recognition and exploitation of opportunities (Anderson, 2009). This thesis remarks that that an international and intercultural workforce, together with cooperation, has an important role in creating a good work environment. Moreover, a good work environment is key for social sustainability inside the company.

Method

This thesis' analysis was conducted with the used of case studies and with the intention of gathering a large amount of information and details that would likely be ignored when conducting a quantitative analysis (Flyvbjerg, 2006). Moreover, the different elements and characteristics of start-ups conducting SE needed to be analysed in depth in order to define what characterizes SE; this in-depth and detailed research can be achieved through studying different cases (Hartley, 2004; Rowley, 2002). Further, following the combinatory approach method allowed for development of a more complete and specific framework that includes both a theoretical and empirical perspectives (Witjes, 2017). Thus, the combination of approaches are found adequate for this thesis and to achieve the aim of understanding the practice.

The case studies were carried out on start-up companies and conducted via interviews, which were supported by analysis of the websites and observing the start-ups' behaviour at their locations. Conducting interviews was the selected approach because it permits gathering real life perspectives and information (King, 2004; Qu & Dumay, 2011). This was a useful way of collecting data; several details about SE and the experiences of entrepreneurs, managers, and employees were collected. This can be contrasted with other methods, such as

a questionnaire, in which questions are closed and there is no interaction with respondents, several important details would have been missed.

Moreover, the researcher gained a high level of theoretical sensitivity because of the full immersion in the data and research on the topic of SE (Birks & Mills, 2010). However, there might still be some subjectivity from the researcher during the coding and data analysis. The researcher strove to be as objective as possible by consistently considering the theoretical knowledge and findings of the literature review conducted. However, the researcher had to analyse the meaning of the interviewees' responses, and those were in general open responses about feelings, own interpretations or experiences. Therefore, the analysis of the subjective responses may be exposed to certain personal bias from the researcher's point of view. Furthermore, the research method required a certain degree of dependence on external parties to collect the data. Needing the collaboration of several people in different companies resulted in a time consuming process that, given the time constraints of a master thesis, can impact on quality of the results.

6. Conclusion

In the field of Corporate Sustainability, a gap was found in relation to start-up companies and entrepreneurship. Entrepreneurship has an important role in the current economic development, and it is essential to conduct this development in a more sustainable way. Therefore the integration of sustainability in entrepreneurship is of great relevance and it was found a need for an empirical understanding of what specifically is involved in the integration of SE in the organizational system of a start-up.

In order to address this gap, a theoretical research was conducted and a framework was created. This theoretical framework includes the elements for setting the objectives of the start-up and the capabilities for SE recognized in the theory literature. The method used for the analysis was a case study research, using a combinatorial approach based on abduction logic, a transdisciplinary approach and grounded theory. The main goal was to develop a deeper perspective on the topic based on the current theoretical explanations and supplementing this with a perspective from practice. This was done through interviews, website analysis and working closely with start-ups. The knowledge obtained together with the previously conducted theoretical research allowed the desired deeper understanding of the topic of SE integration in start-ups, what is required for this to happen overall, what characterizes it.

The research question; *what characterizes SE integration in the organizational system of start-ups?,* has been answered with this research. SE in start-ups is characterized by technological or social/environmental drivers that lead to solutions for sustainable development and a positive impact. It is also characterized by constraints such as their size, lack of resources, or the restrictions imposed by investors whose priorities are not wholly in line with the start-up's sustainability objectives.

Specific capabilities were also found as characterizing elements of SE integration, and these are divided into four main categories; managerial, employee, organizational, and contextual. The managerial capabilities detected are as follows. First, an intrinsic motivation towards sustainability, which is closely related to showing enthusiasm about the mission of the company and about achieving a sustainable development. With these in place, the capability of involving SE among the activities of the company appears. Furthermore, it was observed that a versatile, entrepreneurial and open managerial style is effective for SE integration and therefore the capabilities of having an entrepreneurial and dynamic leadership and hands-off management are defined. In terms of capabilities needed for employees, own-responsibility and flexibility are recognized. Most relevant are the need for value alignment between the company and the employees, as well as a personal intrinsic motivation towards sustainability not only among managers but rather among the workforce as a whole. Flexibility in the organizational system, a horizontal structure, cooperation between employees, and networking capabilities of both managers and employees, are the organizational capabilities observed. Finally, the contextual capabilities are divided into external context and internal context. Giving value to sustainability in order to deal with international market constraints, such as lack of awareness or a need to adapt to the interest in the marketing value of sustainability is recognized. Further, a very important capability is that of finding those investors that "fit" with sustainable development objectives of the start-up. The physical location of the start-up can bring benefits for the start-up operations and for the SE behaviour, therefore finding start-up hubs in which SE is incentivized is preferable. Finally, the internal context impacts on SE, and cooperation and an international workforce are elements essential to foresting a good working environment.

Most of the information that was available on the topic gave a perspective on CS for larger sized corporations, or views SE with a focus on SMEs, and previous researches focused on companies conducting environmental or social entrepreneurship separately. This research contributes to the current research by analysing innovative start-ups that conduct both environmental and social entrepreneurship, therefore together with current research this

provides a more complete perspective of SE that contributes to a better and more complete view on the characteristics that start-up companies need to consider in order to integrate SE. Further, since some of the capabilities studied were only recognized in the context of SMEs, with this research it can be seen which capabilities also apply also to start-ups and which capabilities have been ignored in the previous researches.

Recommendations for Further Research

The developing status of the research on this topic makes it very relevant for further research. Also, because of the time limitation of this thesis, there are some aspects in which it would be interesting to conduct further analysis. Firstly, the research uncovered a relationship between an intrinsic motivation in sustainability, the enthusiasm transmitted to the company, and the level of integration of SE in the activities of the company, and this has an effect on the sustainability level of the company. It would be interesting to further research into this relationship and on the effects it has on SE integration.

The analysis did not recognize that a hands-off management was directly related to a more significant environmentally sustainable behaviour. However, one could imply that if there is an intrinsic motivation towards sustainability among the employees of the start-up, the freedom given to them could translate into more sustainability oriented projects, and business activities would be conducted in a more sustainable way. Therefore, it is suggested that the effect of a hands-off management style on the SE integration of the company is investigated, in order to find out if it leads to sustainable behaviour.

This thesis used a qualitative method and conducted certain triangulation. It is suggested that further research on the topic should place more emphasis on triangulation as this will ensure a higher generalizability. Furthermore, a combination of interviews to managers and questionnaires to several companies concurrently may be a more adequate approach to collect data in order to avoid a heavy dependence on external parties. Given that being subjected to companies' availability slows down the research process, and that a master thesis is already subject to time limitations, a mixed method is proposed as a way of ensuring a more complete and efficient data collection process. Moreover, by conducting a mixed method of qualitative and quantitative analysis, the research can still obtain details from the interviews, but the exposure to subjectivity attached to it would be reduced to a great extent through the controls of a concurrent quantitative analysis.

Managerial Recommendations

This chapter provides entrepreneurs and start-up managers practical recommendations to integrate SE in start-ups. To begin with, assessing the current position of the company can certainly be helpful for a start-up company to properly integrate SE as well as to measure the extent to which the objectives are being achieved, to assess which capabilities to develop, and which corrective actions it may be necessary to implement. The analysis showed, however, that this was not normally carried out owing to a lack of resources. If the start-up is not able to use the LCA, Carbon Neutral methods or the SROI, for example, an overview of the activities being conducted currently and its impact could be given instead. In Appendix 4 the researcher provides a tool that can be used as a more simple starting point for the assessment of the current position of the company in terms of SE.

Given that start-ups do not have sufficient resources to support SE integrations in terms of providing training to employees, it is suggested to integrate simpler and less resource-intensive actions. More specifically, company meetings can dedicate a part of their allocated time to inform on the current actions taken, to provide with more information on how to improve SE behaviour at the individual level, or to invite the sharing of towards more SE activities within the company, etc.

This thesis uncovered the importance of working with value-fitting investors to facilitate the achievement of SE in the company. It is recommended that when the managers or founders look for investors, they should have a clear view of what the start-up goals and ambitions are and conduct their research with these in mind. Furthermore, for the companies located in Europe, and specifically in The Netherlands, it was highlighted that sustainability in entrepreneurship is incentivized and that there are a significant number of funds and competitions supporting it. It could be advised to young and innovative entrepreneurs to actively search for these types of funds.

Since the contextual environment of the start-up can be beneficial to its growth and offer business and partnership opportunities, it is recommended that the company is located in a hub-type environment where SE is encouraged.

Finally, in order to deal with constrains derived from international operations, it is recommended for start-ups to adapt to diverse international situations searching for alternatives, or adjusting to what is perceived as having a higher value in the relevant markets, but without compromising on the sustainable values of the solution given.

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Appendix

Appendix 1: Protocol

Appendix 1.1: Interview Content

	Theoretical concept	Description	Operationalization (questions manager)	Operationalization (questions employee)	Codes based on theory
Objectives and Assessment	Mission Sustainable development elements: Place Time Issue Assessment of the current position	The mission of the start-up needs to be shaped in a way that sustainable development elements are in the core Me, Here, There Past, Present, Future People, Planet, Profit Assess current practices to determine the position of the start-up and its possibilities for achieving the objectives set	What do you think are the mission and vision of your company? Which are the goals of the company right now and goals for the future? What are the core elements? What triggers the company towards those (sustainable) goals? How would you describe your engagement towards fulfilling the goals of the company? Do you use any method to track the sustainable activities of the company?	What do you think are the mission and vision of your company? Which are the goals of the company right now and goals for the future? What are the core elements? What triggers the company towards those (sustainable) goals? How would you describe your engagement towards fulfilling the goals of the company?	Sustainable development People, Planet, Profit Me, Here, There Past, Present, Future Entrepreneurship Societal/Environmental driver Positive impact Tracking impact
Capabilities	Managerial	The entrepreneur/ manager needs to	How important is sustainability for you, what does it mean to you? Do		

		have an intrinsic motivation towards sustainability	you care about being sustainable in your daily life, and in your work life? For you personally what does it mean to conduct entrepreneurship in a sustainable way? How is it done in your company?		Intrinsic motivation
		-Capability to recognize opportunities -novelty and creativity to face problems -involvement in the process -engagement with the team -an inspiring attitude for the employees -dynamic and entrepreneurial leadership style -Capability to form and manage relationships with stakeholders	Which are the characteristics of the management (team) or leadership style that you consider especially important for managing a (sustainable) company? How important is networking for your business? How is networking currently approached? Who is in charge? Is it something that is done by the management person, team, or everyone is involved? Have you experienced that it influences the level of sustainability of the company? Does it encourage or constraint the sustainability behaviour or intentions of the company?	Are there any characteristics of the management / leadership style of the manager/founder that you find especially important for the start-up? What do you think about the involvement of the management team in the process? How important is networking for the business? Who is in charge? Is it something that is done by the management person, team, or everyone is involved? What is your experience with networking so far? How would you say it influences the sustainable level of the company?	Opportunity recognition Novelty Creativity Dynamism Handle diversity and changes Involvement Inspiration Engagement with the team Freedom Management networking skills Importance of networking Networking incentives towards sustainability

Organizational	-provide with enough resources and support for the employees -Cooperation within the team - Allow flow and sharing of ideas, and new perspectives. -Continuous organizational improvement -Horizontal structure	Do you think employees have enough knowledge and resources (time, material, training) to integrate SE in their daily activities? How do you perceive the involvement and cooperation among the employees? Do you think cooperation helps reach the goals of the company? In what way? Do you think that has a positive effect in conducting entrepreneurship in a sustainable way? What would you say is special/different about your organizational system? What capabilities does your company have that allow or constrain to conduct SE? How is the structure and management style of the company? Do you perceive that a positive effect for the improvement of the company? Is there transparency within the company? And how important do you think that is for the performance of the company?	Do you think about integrating sustainability within the activities that you normally conduct? Do you have time, resources and knowledge for it? What do you think about the cooperation with your colleagues? How do you think that sharing ideas, collaborating and cooperating among employees helps the approach of the company? And do you think that has a positive effect in conducting entrepreneurship in a sustainable way? Is there transparency within the company? And how important do you think that is for the performance of the company? How is the structure and management style of the company? Do you perceive that a positive effect for the improvement of the company? Do you have a chance to share your ideas? Is everyone equally valued?	Enough economic resources, education and time Engagement employees Openness for new applications or forms of their technology/product Seek for discovery and growth Cooperation Team Work Ideas are shared Everyone is valued Interaction of management and employees Transparency Flat/Horizontal structure Continuous improvement

Appendix 1.2: Data Collection Information

Interviewees	Duration	Date
MindAffect		
Employee 1	35 min	16/04/2018
Manager 1	40:27 min	20/04/2018
Manager 2	43:25 min	20/04/2018
Manager 3	25:47 min	20/04/2018
Employee 2	37:74 min	24/04/2018
Employee 3	17:08 min	24/04/2018
Nowi Energy		
Manager 1	28:30 min	26/04/2018
Employee 1	30:31 min	26/04/2018
Employee 2	21:22 min	26/04/2018

Finch Buildings		
Manager 1	40:10 min	01/05/2018
Employee 1	19 min	01/05/2018
Employee 2 Employee 3	21 min	01/05/2018
Aqysta		
Employee 1	31:35 min	07/05/2018
Manager 1	31:52 min	07/05/2018

Appendix 2: Complete List of Codes

First Codes List of codes based on the theoretical and details of the interview	Second Codes List of codes based on the relevance of each code for the analysis	Meaning of the codes
Constraints		
Early stage		Represents the aspects that their young age, inexperience and lack of resources are really constraining the start-ups
SE not a priority at the beginning		

Not enough resources to conduct SE	Constraints towards SE	approach towards conducting their entrepreneurial activities in a sustainable way.
Lack of knowledge and sustainable resources		
Not able to conduct several actions regarding SE at the same time		
Lack of experience		
Trade-off sustainability/profitability	Investors constraining role in the SE development of the company	Reflects the fact that start-ups need to grow in order to have a positive impact, and they need to be profitable and therefore the investor pressure is a constraint
Investors Pressure towards economic benefits		
Need to be profitable to have impact		
Intention to grow to have impact		
Assessment of impact	Assessment of impact	Assessing the company impact regarding both the product and the daily activities
Objectives		
Technological development driver	Technology drive	The triggers are a technological development.
Social Driver		

Economic Driver	Social and/or environmental driver	A societal need or environmental issue are the main triggers of the start-up.
Environmental driver		
Identify a social/environmental need and address it		
Mission	Mission	The mission and vision of the company.
People, Planet, Profit	Sustainable Development	The intention of the company and its activities is working towards having a positive impact and contribution to a sustainable development
Me, Here, There		
Past, Present, Future		
Positive Impact		
Innovation with SE	SE innovation	New products/methods are developed with a focus on SE in order to have a positive impact
Innovation		
SE as a core of the company		
Sustainable from the beginning		

Provide sustainable solutions		
Management		
Interest and awareness of sustainability Intrinsic motivation	Intrinsic motivation in SE	The entrepreneur/manager has motivation, awareness, and interest towards the conduction of sustainable activities.
Enthusiasm in the company (sustainable) objectives Ability to inspire	Enthusiasm	Motivation, passion and inspiration about the company and about sustainability that is transmitted to the employees.
Entrepreneurship Accept the unknown Dynamism Handle diversity and changes Entrepreneurial leadership Dynamic Leadership	Entrepreneurial and Dynamic leadership	The start-up is lead with an orientation for finding and exploiting new opportunities and capability of adapting to changes inside and outside.

Seek and encourage discovery of new opportunities and growth		
Positive impact		
Creativity	Creativity	Creativity as a capability for the manager to have in the first entrepreneurial idea and for the everyday management.
Opportunity recognition		
Novelty		
Involvement in the company processes	Managerial Involvement of SE in the company	The entrepreneur/manager is integrated in the whole company process, the beginnings and everyday activities and involves SE in the intentions and activities of the company
Engagement with the team		
Inspiration		
Physical involvement in the company		
Managerial involvement in sustainability in the company		
Proactivity	Hands-off management	A managerial approach that involves giving employees a lot of freedom for their own projects and approaches, space, and trust in them
Freedom		

Trust		
Set goals, not tasks and encourage its achievement		
Space		
Resources for own development / initiatives		
Organizational		
Management networking skills	Organizational networking capabilities	Networking plays an important role for the company. Both employees and managers network but with a different approach and relevance
Employee networking		
Importance of networking		
Knowledge on SE	Organizational SE support	The start-up supports SE integration providing with those resources.
Time to integrate SE		
Education on SE		
Resources to give training on SE		

Internal and External Adaptation	Organizational Flexibility	Having a structure and an organizational system that is able to adapt to the changing internal and external circumstances
Openness for new applications or forms of their technology/product		
Continuous improvement		
Seek for discovery and growth		
Flexible Structure		
Team Work	Cooperation	Among employees and management there is collaboration and work in teams.
Cooperation		
Engagement employees		
Collaboration		
Ideas are shared	Horizontal Structure	The structure is flat, there is a boss but everyone is almost in the same level, the boss is easy to reach, the hierarchy is not really important.
Everyone is valued		
Interaction of management and employees		

Equality		
Good and easy communication		
Transparency		
Flat/Horizontal structure		
Not fully transparent	Problems when the company grows	When the company is bigger there are communication problems for instance Information is not shared or people doesn't know about things that are going on in the company and there is less transparency because it is not fully flat structure anymore
Communication issues		
No clear formulation of the mission and vision		
Not fully Flat structure		
Employee		
Accept the unknown	Accept the unknown	Employees are ready to face the uncertainty attached to start-ups' environments
Curious	Employee Flexibility	Employees are able to adapt, are curious and creative to investigate and find new ideas and solutions
Creative		

Interdisciplinary		
Open-minded		
Organized and structured approach to work	Own responsibility	They are given a lot of freedom and therefore they need to be able to work in these conditions and face their own responsibilities.
Own responsibility		
Intrinsic motivation	Intrinsic motivation towards sustainability	Beliefs and awareness of sustainability so that is reflected in their work
Interest and awareness in sustainability		
Alignment company - employee	Value alignment	The values (of sustainability) the company are in line with those of the employees and therefore they are engaged with the company and motivated to fulfil the goals.
Engagement of employees		
Motivation of employees		
Context		

International incentives to SE	Incentives and Constraints to SE from international operations	Incentives and Constraints to SE from international operations
The Netherlands as incentive towards SE		
International constraints to SE		
No interest of sustainability in the market		
Sustainability as a marketing tool		
No international effects regarding SE		
Benefits of intercultural workforce	Intercultural workforce effect	An intercultural workforce has both positive effects and negative. The positive are about the cultural enrichment and negative about communication problems
International experience/perspectives/ background of the employees		
No perceived effect of an international workforce	Good work environment	A good internal working environment entails an intercultural workforce and cooperation
Influences from the internal work context		
Alignment of values company-stakeholder		The SE values and goals of the company are in line with

Relationship with stakeholders	Value Fitting investors	those of the investors and stakeholders in general
Benefits of alignment of values with stakeholders		
Stakeholders focus on economic drives		
Influences from the external work context	External work environment influences	Referring to the location where the company is. If there is an exchange of ideas, questions, motivations... with other start-ups, possibilities for partnerships... that lead to more SE
External exchange of ideas		
Partnership Opportunities		
Inspiration	Networking influences	If the networking of the company is leading to more opportunities in SE
(No)SE incentives from external work environment		
Hypocrisy in sustainability beliefs		

Appendix 3: Within Case Analysis

Appendix 3.1: MindAffect

Theoretical Framework Applied

```
┌──────────────────┐     ┌──────────────────┐     ┌────────────────────────────────────────┐
│                  │     │    Mission:      │     │ People: Help locked-in patients. Good  │
│ Setting Objectives│───▶│  Technology ->   │───▶│ work environment                       │     ╋  ┌──────────────────┐
│                  │     │    Open new      │     │ Planet: Do it with a product that is as│        │ Positive impact  │
│                  │     │  dimensions of   │     │ environmentally friendly as possible   │        └──────────────────┘
│                  │     │   interaction    │     │ Profit: Apply the technology to differ-│
│                  │     │                  │     │ ent industries                         │
└──────────────────┘     └──────────────────┘     └────────────────────────────────────────┘
```

```
                              ┌──────────────────────────────────────┐
                              │ Interest and awareness of managers    │          ┌─────────────────────────────────────────┐
                              │ towards SE                            │          │ Management team and employees work in   │
                              ├──────────────────────────────────────┤   ┌─────▶│ groups and continuously cooperate       │
           ┌───────────────┐  │ Managerial team tries to involve SE in│   │      ├─────────────────────────────────────────┤
           │  Managerial   │─▶│ the processes and product development.│   │      │ Relationship among both management and  │
           │ capabilities  │  ├──────────────────────────────────────┤   │      │ employees is close                      │
           └───────────────┘  │ Management potentiates entrepreneur-  │   │      └─────────────────────────────────────────┘
                              │ ship and internal/external adaptation │
                              ├──────────────────────────────────────┤                 ┌─────────────────────────────────────────┐
                              │ The management team is in charge of   │            ╋   │ Certain miscommunication problems were  │
                              │ the networking                        │                │ seen                                    │
                              └──────────────────────────────────────┘                ├─────────────────────────────────────────┤
┌───────────┐                   ┌──────────────────────────────────────┐              │ They do not have enough resources to    │
│Capabilities│                  │ Employees are free to find their ways │              │ train and inform about employees in     │
└───────────┘               ╋   │ of doing things                       │              │ sustainability                          │
                               ├──────────────────────────────────────┤              └─────────────────────────────────────────┘
                               │ Managers are enthusiastic about the   │
                               │ company and transmit it.              │              ┌─────────────────────────────────────────┐
                               └──────────────────────────────────────┘         ┌───▶│ Investors are driven by the social value│
                                                                                 │    │ of the company                          │
                                                                                 │    ├─────────────────────────────────────────┤
                              ┌───────────────────────────────────────┐         │    │ Interculturality and Interdisciplinary  │
           ┌───────────────┐  │ Employees and managers are pursuing    │    ╋   │    │ involves a good work environment and    │
           │  Employee     │─▶│ the same goal                          │        │    │ that they are more prepared for an      │
           │ capabilities  │  └───────────────────────────────────────┘        │    │ international market                     │
           └───────────────┘    ┌──────────────────────────────────────┐       │    ├─────────────────────────────────────────┤
                             ╋   │ Employees conduct informal networking │       └───▶│ External parties constrain their        │
                                ├──────────────────────────────────────┤            │ sustainability intentions               │
                                │ Employees work under own responsibility│           └─────────────────────────────────────────┘
                                └──────────────────────────────────────┘
```

Organizational capabilities

Contextual capabilities

Company	Mission	SE	Observations
MindAffect Year: 2017 17 employees Location: NovioTech Campus, Nijmegen	"Open-up new dimensions of interaction with BCI" -Focus on technology development. Developing new applications of their technology (BCI)	- Social Sustainable solution: Improve the quality of life of locked-in patients - Environmental Sustainable solution: Business model based on leasing rather than purchase. Recyclability and reusability of the materials and parts used is something that is being considered and will be implemented in their product.	-Employees in a non-managerial position are not fully informed about the SE plans. -Miscommunication problems. -Employees of the company worked very independently towards the goals to be achieved, following their own ideas and perspectives. -At a very early stage there is a need to prioritize, and SE is not always the priority. - When being dependent on other parties, such as investors or companies within the supply chain, (for example, and in this case, insurance companies) it can be more difficult to implement the most sustainable solutions.

```
Setting          Mission:              People: the technology can be applied in health
Objectives  -->  Technology->          sectors. Good work environment
                 enablement of    -->  Planet: help reducing the amount of bateries used    [+]  Positive impact
                 the internet of the
                 things                Profit: increase efficiency and reduce maintance
```

```
                            Awareness of sustainability

                            Total involvement in the aspects of the
                            company
                 Managerial                                                    Organizational    Management team and employees work
                 capabilities  Potentiates entrepreneurship                    capabilities      in groups and continuously cooperate

                            Management is in charge of the                                       Equality and transparency in the
                            networking                                                           company and a fully horizontal and flat
                                                                                                 structure
                            Employees have time for their own personal
                         [+] projects
Capabilities                Managers are enthusiastic about the                                  Their international operations gives them
                            company and transmit it.                                             incentives to SE but countries are interested in
                                                                                                 sustainability just for the marketing value

                                                                               Contextual        The external context provides business
                                                                           [+] capabilities      opportunities and sometimes related to SE and
                 Employee     Employees and mangaers are                                          helps with motivation to the company
                 capabilities pursuing the same goal
                                                                                                 The Netherlands provides them with a lot of
                                                                                                 incentives towards SE through funding offered to
                         [+] Employees conduct informal networking                               sustainable technologies...
```

Company	Mission	SE	Observations
Nowi Energy Year: 2016 9 employees Location: YesDelft, Delft	"Working on the enablement of the Internet of the Things" -Focus on the technological development of sensors for the Internet of Things	- Environmental Sustainability solutions: Long lasting sensors which do not require any batteries. Sensors last longer, promotes reduced energy consumption, increased energy efficiency, and a reduced need for maintenance. - The technology can be applied to many areas, such as the health sector, which implies that their innovations could provide Socially Sustainable solutions.	-High level of equality and transparency among the management and the rest of team. In the flat level working environment, everyone knew aspects of each other's work and their salaries, and all, from founder to intern, felt they could share ideas that were equally considered and valued. -Employees have a personal development program which consists of allocating time and resources to work on their personal projects and develop individual ideas. -The marketing value of sustainability gives them business opportunities in foreign markets.

Appendix 3.3: Finch Buildings

Theoretical Framework Applied

Setting Objectives → **Mission: permanent, modular housing, CO2 neutral and with a healthy environment** →

- People: Healthy housing, safe working environment, life improvement goals
  Planet: modular, timber, CO2 neutral housing
  Profit: Affordable housing, less maintained need
- Place: they consider sustainability in their own office, the location where the module is built and the society in general. They also have projects in Indonesia...
- Time: long lasting houses, that can be transformed into different types of buildings and rebuilt

Capabilities

Managerial capabilities
- Fully intrinsic motivation in sustainability
- Manager involves himself and SE in every aspect of the company
- Potentiate entrepreneurship, adaptation, flexibility..
- The management team is in charge of the networking

➕
- Manager is very enthusiastic about SE and its employees become more aware because of that.
- Employees are given with a lot of freedom to do their projects the way they think is best

Employee capabilities → Employees and managers are pursuing the same goal

Organizational capabilities
- Flexibility in their structure
- Management team and employees work in groups and continuously cooperate
- Relationship among both management and employees is close and flat

➕
- Employees have the knowledge but sometimes they don't have the resources or time to implement sustainability in what they do

Contextual capabilities
- Incentives from the sector because sustainability is a „hot" topic
- Their external context (location) is relatively beneficial for contacts and motivation
- Investors are in line with the values of the company and that helps them conduct full SE
- Interculturality and Interdisciplinarity create a good work environment
- International markets constraint their sustainability intentions because of lack of awareness
- The Netherlands provides more incentives towards SE than countries outside europe

➕

Finch Buildings' Results Table

Company	Mission	SE	Observations
Finch Buildings Year: 2014 8 employees Location: Rockstarter, Amsterdam	"Design and build permanent, modular housing, CO2 neutral and which offers a healthy environment for the people inhabiting the modules " -Focus on sustainable development	-Environmental Sustainable solution: The materials of the modules they build are carefully chosen, for example by considering their origin and by only working with environmentally certified partners, and by choosing materials that are less harmful the environment. - Sustainability values are applied in the way the modules are built, they can be deconstructed without damage therefore allowing the materials to be reused. - Social Sustainable solution: The materials used are less harmful for people's health. Good relationships are developed with the construction workers and local population. - "Finch Floating Homes" is a program to help Indonesian households whose houses experience flooding twice a day.	-The intrinsic motivation of the manager is very important. Employees identify with his view and accordingly, their goals, daily activities, and future approaches revolve around the global impact of sustainable development. -The interdisciplinary approach of their team was a relevant factor. -Employees and management have the knowledge, but sometimes lack the resources or time to implement full sustainability in their activities. -The fact that their investors share their values and goals was considered key for the achievement of SE. - Sustainability is becoming more and more important in the construction industry, and particularly in the Netherlands, so they could see incentives. - Their actions in foreign markets are constrained because in countries such as Indonesia, there is a low level of awareness of sustainable construction and it can be difficult to access sustainable materials.

Theoretical Framework Applied
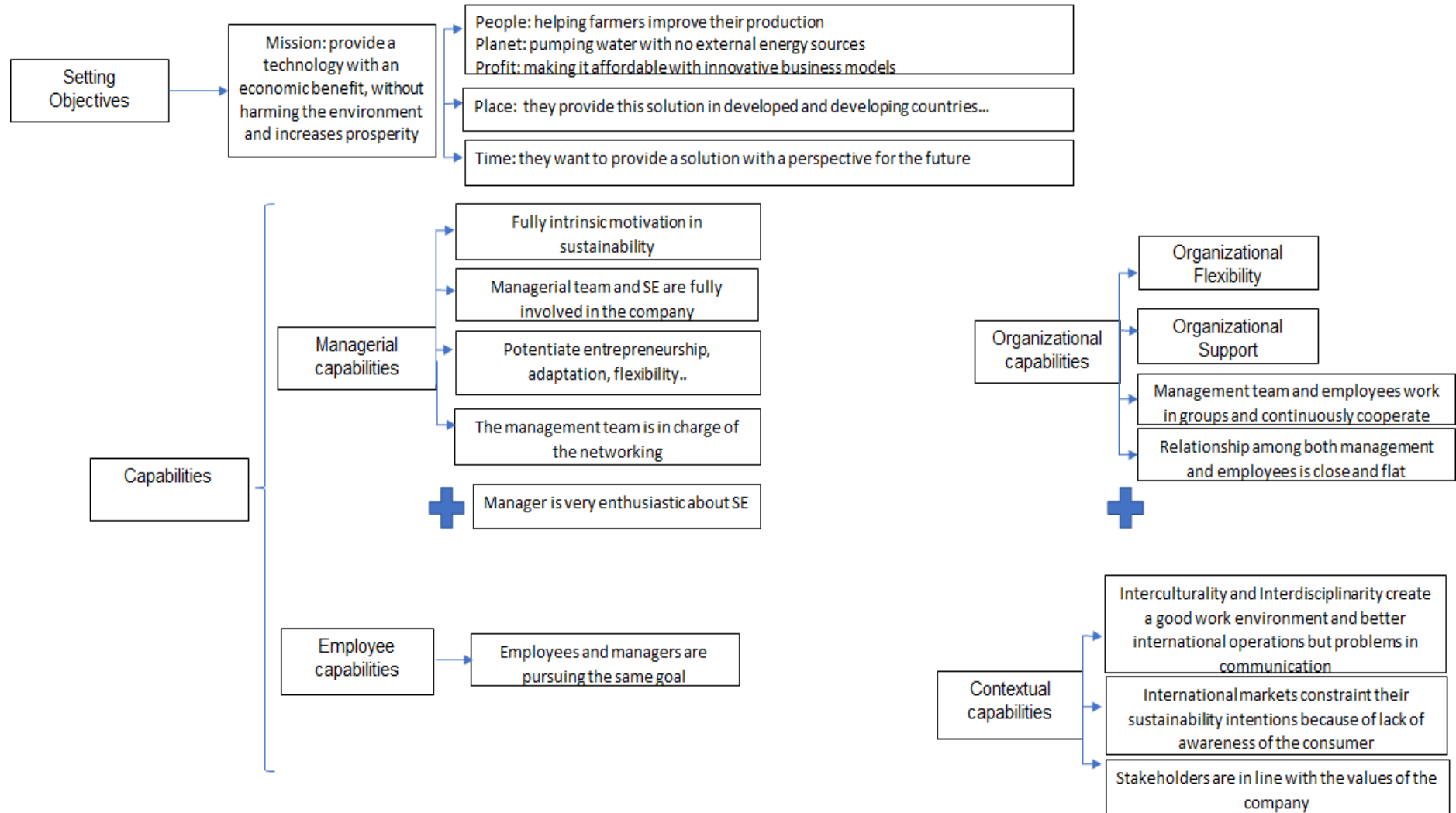
Aqysta's Results Table

Company	Mission	SE	Observations
Aqysta Year: 2013 18 employees Location: YesDelft, Delft	"Provide a technology with an economic benefit, without harming the environment and that increases prosperity" -Focus on sustainable development	-Environmental Sustainable solution: They produce hydropower water pumps, which allow extraction of water with no need for other external energy sources, and which require less maintenance. -Social Sustainable solution: Business models to increase affordability of the product for farmers in developing countries, to improve their quality of life. This model would allow the farmers to receive the pump, together with seeds and fertilizers, and pay for the pump once they have made a profit.	- Aqysta is characterized by a diverse international workforce and complex operations. This is seen as favourable for their work environment in certain situations but, at times they face communication problems - They operate mainly in developing countries where environmental sustainability is a priority for the customers; this is considered a constraining factor. Their innovations consequently call for a need to focus on price reduction, without comprising the sustainability values of the company. - Employees and management try to conduct all activities in the most sustainable way possible, and track these activities, but a lack of resources impedes their ability to do this fully.

Appendix 4: Tool for the Assessment of the Current Activities

Considerations ➡ Dynamics ⬇	Planet	People (Company and Society)	Profit	Place
Current Activities Conducted (Management processes, production, testing, design…)				
Current Resources Needed (Product materials, energy, technology needed …)				
Current Stakeholders Involved -Employees (behaviour, shared belief, leadership) -Investors/ Potential Investors -Clients -Suppliers, partners				

Based on: (Halberstadt & Johnson, 2014; Bocken et al., 2015; Witjes et. al, 2017)