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Sustainable entrepreneurship and competencies:

A study of the appliance of entrepreneurial and sustainability key competencies in the creation process of a sustainable enterprise

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Acknowledgements

Abstract

This thesis investigated the appliance of competencies for sustainable entrepreneurship in the process of creating a sustainable enterprise. Competencies are needed for starting and growing a sustainable enterprise because it helps in proceeding from an opportunity to the creation of a valuable enterprise. Thus far, no study has focused on identifying what entrepreneurial and sustainability competencies are deemed important by practitioners (sustainable entrepreneurs). Moreover, there is a lack of studies which identified the various phases within the creation process of sustainable enterprises. Therefore, 18 semi-structured interviews with (co)founders of sustainable start-ups were conducted in order to identify the relevant sustainable entrepreneurship competencies and corresponding phases. The main findings consist of contributions to the extant literature on the enterprise creation process of sustainable ventures. This thesis found empirical evidence for the phases presented in the study of Belz & Binder (2017), which is one of the few studies that established a phases model – called the convergent process model - for sustainable entrepreneurs and was used in this thesis to benchmark the findings of the respondents. In addition, this thesis suggests additional phases and an alteration in the sequence of Belz and Binders' (2017) convergent process model. Furthermore, this thesis also found empirical evidence for the appliance of key sustainability and entrepreneurial competencies as proposed in the study of Lans et al. (2014) by practitioners (sustainable entrepreneurs). This thesis also provides insights into when these competencies were used in the process of creating a sustainable enterprise.

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1.Introduction

Since the 1970s sustainable development has arrived as a societal goal that focused on the urge to achieve a better human well-being by simultaneously stopping and reversing environmental degradation. With the increasing attention for sustainable development as a validated and growing urgent public priority, researchers, policymakers and entrepreneurs are wondering what role entrepreneurship can have in achieving sustainable development (Parrish, 2010).

For many years, entrepreneurship was mainly based on economic development and generating wealth, while avoiding societal and environmental issues (Sarango-Lalangui, Santos & Hormiga, 2018). This traditional understanding of value creation has now increasingly been modified to include non-economic gains i.e. a triple bottom line perspective which considers financial, societal and ecological aspects (Sarango-Lalangui et al, 2018). In this regard, sustainable development has emerged as an important concept for enterprises; there is an increasing awareness of the necessity for significant societal transformation in order to decrease damaging environmental and societal impacts caused by unsustainable business practices (Hall, Daneke & Lenox, 2010). Numerous papers such as Cohen and Winn (2007), have cited Schumpeters' concept of creative destruction (1942), arguing that sustainability-oriented pressures coming from different stakeholders such as consumers, creates various types of market failures which opens up opportunities for new entrants to enter the market.

Sustainability problems have a high degree of complexity, are urgent and have a high damage potential. Moreover, there is no optimal solution for resolving all these problems and for this reason they are called wicked problems (Wiek, Withycombe & Redman, 2011). Arguably, entrepreneurship and sustainable entrepreneurship have some potential to bring solutions which explains the increased interest in sustainable entrepreneurship as a phenomenon and as a research topic that can solve these wicked sustainability problems (Hockerts & Wüstenhagen, 2010 & Wiek et al., 2011). In this context, sustainable entrepreneurship is commonly cited as an important means of stimulating a transformation to more sustainable products and processes. Several studies (e.g. Lans, Blok & Wesselink, 2014; Hockerts & Wüstenhagen, 2010 & Rasmussen, Mosey & Wright, 2011) argue that the ability to start and grow a sustainable enterprise requires an entrepreneur to possess and develop general entrepreneurial and sustainability key competencies. These studies argue that entrepreneurs mainly struggle with finding the best way to develop a business concept (Bhave, 1994 as cited

in Rasmussen et al., 2011), to gather essential resources (Baker & Nelson, 2005) and to make adequate decisions (Sarasvathy, 2001). In fact, a broad set of various competencies aids in proceeding from an idea (opportunity) to a value creating firm (Rasmussen et al., 2011). Many studies on entrepreneurial and sustainability competencies (e.g. Wiek et al., 2011; Lans et al., 2014; Ploum, Blok, Lans & Omta, 2018) extensively discussed which competencies are essential and which teaching methods should be applied to future generations. What seems to be missing in current literature are studies on how these key competencies are applied in practice. It is crucial to gain more insights regarding competencies used by sustainable entrepreneurs since in general entrepreneurial studies, competencies are perceived as being important determinants of how valuable the creation of a firm and its growth potential will be (Klapper & Farber 2016 Rasmussen et al., 2011). Thus far, Wesselink, Blok, Leur, Lans & Dentoni (2015), Ploum et al. (2018) and Lans et al. (2014) attempted to assess which competencies are used by sustainable entrepreneurs. However, Lans et al. (2014) and Ploum et al. (2018) used teachers and students their assessment and Wesselink et al. (2015) focused on CSR managers. The recent study of Biberhofer, Lintner, Bernhardt & Rieckmann (2019) assessed how competencies, values and worldviews should/could be used to enhance learning in higher education for sustainability-driven entrepreneurship through assessing the work-performance of entrepreneurs. Despite providing useful insights, the just-mentioned studies show that there are some research gaps related to the practioners' view of sustainable entrepreneurs on sustainable entrepreneurship key competencies. These studies have not researched the 'lived experience' of the competencies needed by sustainable entrepreneurs in the creation of a sustainable enterprise (Bann, 2009). To begin with, it is unclear when sustainable entrepreneurship key competencies are used during the process of creating a sustainable enterprise. As such, this thesis aims to provide insights – based on the lived experience of sustainable entrepreneurs - into which key competencies are used in the process of creating a sustainable enterprise. The thesis has three objectives. First of all, it seeks to explain how sustainable entrepreneurs themselves or rather those in the process of starting a sustainable enterprise understand or perceive the concept of a sustainable enterprise. Second, it also aims to establish different phases of creating a sustainable enterprise, as experienced from the practitioner's point of view. The convergent process model as proposed by Belz & Binder (2017) will be used as a guideline. This model displays that sustainable entrepreneurs tend to follow the following phases: recognizing an ecological or social problem, recognizing a social or ecological opportunity, developing a double bottom-line solution, developing a triple

bottom-line solution, funding and forming a sustainable enterprise and creating or entering a sustainable market. Thus, by using the convergent process model of Belz & Binder (2017) in combination with the competency frameworks presented in Lans et al. (2014) this thesis strived to identify which competencies are used in the different phases of creating a sustainable enterprise. Finally, it compared and contrasted these findings with the relevant literature. This led to the following research question:

How are sustainability-oriented and entrepreneurial key competencies used in the process of creating a sustainable enterprise?

To address this research question, the following sub questions were established:

- How do sustainable entrepreneurs themselves or those in the process of starting a sustainable enterprise understand or perceive the concept of a sustainable enterprise?

- What are the different phases of creating a sustainable enterprise, as experienced from the practitioner's point of view and what competencies are employed in which phase of the start-up process?

- What competencies are employed and how does entrepreneurial reality differ from academic theories?

The following chapter provides the theoretical background detailing entrepreneurship, sustainable entrepreneurship and the relevant competencies related to these domains. Additionally, it explains theories on the enterprise creation process. Chapter 3 shares the research methodology that is applied in this study and chapter 4 shares the results of this thesis. Subsequently these results are discussed in chapter 5 and chapter 6 presents the conclusion to this research.

2. Theoretical Background

Due to the urge of sustainable development, sustainable entrepreneurship has received much attention from academics and practitioners in the last decade (Sarango-Lalangui et al., 2018). In order to be successful in entrepreneurship it is important to understand which competencies are necessary, since key competencies are often mentioned as an important success factor for firms (Klewitz & Hansen, 2014). Moreover, it is important to understand what key competencies are deemed important to possess. It is assumed that sustainable entrepreneurs not

only use sustainability key competencies but also entrepreneurial key competencies (Lans et al., 2014), as motives per entrepreneur might differ. Understanding entrepreneurial motivation is critical as it aids in understanding the complete entrepreneurial process (Kuratko, Horsnby & Naffziger, 1997). Moreover, it can be argued that sustainable entrepreneurs share the same values but prioritize certain values differently (Spence, Gherib & Biwolé, 2011). For example, there are probably sustainable entrepreneurs who are more business-oriented whereas others focus more on making the world a better place. Arguably these different orientations require different competencies, some entrepreneurs rely more on sustainability key competencies (section 2.4) and others more on entrepreneurial key competencies (section 2.5). Hence this thesis will consider both and is thus one of the first research projects to take this approach as underlying perspective. This will be further documented in the ensuing discussion. The presented chapter begins with a brief elaboration on what a start-up entails. In addition, the state of the art of entrepreneurship and sustainable entrepreneurship literature is discussed. Subsequently, general entrepreneurial and sustainability key competencies will be explained. Thereafter, theories on different phases within the entrepreneurial creation processes will be discussed. In this regard an emphasis will be placed on the convergent process model of Belz & Binder (2017), which will be used as a guideline for the identification of the perceived phases by the entrepreneurs. Finally, a conceptual framework is presented that integrates the presented key competencies and development phases as presented in the convergent process model by Belz & Binder (2017).

2.1 Start-up

The definition of what a start-up entails has a wide variety of interpretations. Therefore this section will shortly present various views of its meaning. The definition followed in this thesis is presented in section 3.2.1.

According to Investopedia, start-ups represent the early phase of a company which is run by entrepreneurial founders that aim to develop and sell a product or service that consumers want (Investopedia, 2019). The European Start-up Monitor - which aims to present the development and significance of start-ups and to understand European founders – provides a more detailed description. They define a start-up based on three characteristics; start-ups are younger than 10 years, they have innovative business models and/or technologies, and they have or aim to achieve significant growth in terms of employees or sales (Kollmann, Stöckmann, Hensellek & Kensbock, 2016). Moreover, a study conducted by Robehmed (2013)

shed light on various interpretations of how a start-up is commonly defined. Based on these findings, they identified some general characteristics. According to this study, the start-up lifespan ends after three years. This lifespan is suggested based on some common factors that start-ups encounter after this period such as founders selling shares, being acquired by a larger company and gaining a certain amount of revenue.

2.2 Entrepreneurship

The term entrepreneur is derived from French and can be explained as "taking the initiative to bridge" (Wüstenhagen, Hamschmidt, Sharma & Starik, 2008, p.30). Moreover, entrepreneurs are described as people who connect for example money, people, ideas etc., usually between suppliers and customers (Wüstenhagen et al., 2008). The study of Cunningham (1991) stated that many academic studies provide various definitions of entrepreneurship. This is mainly caused due to the fact that these studies view entrepreneurship from different schools of thoughts (e.g. management school of entrepreneurship, the psychological characteristics school of entrepreneurship and the intrapreneurship school of entrepreneurship). The study of Wustenhagen et al. (2008) provided a summarized overview of these common entrepreneurship perspectives:

- Many academics focus on the process of establishing a start-up (Bennett, 1991; Ripsas, 1997 as cited by Wüstenhagen et al., 2008). Hereby entrepreneurship is perceived as the process of creating a new enterprise.

- Pursuing growth is another aspect of entrepreneurship (Timmons, 1986 as cited by Wüstenhagen et al., 2008 & Kyrö, 2001). In this regard entrepreneurs are seen as actors which achieve the expansion of businesses.

- Entrepreneurship can be perceived as a social movement (Pastakia, 1998). Hereby entrepreneurs are the actors which focus on altering common consumption and production behaviour.

- Entrepreneurship is focused on creating inventions which eventually result in market success. In this regard entrepreneurs are characterized by their innovative capacity which results in competitive advantage.

- The last perspective focuses on the individual characteristics of the entrepreneur such as leadership capacity, ambition and commitment.

Concerning the start-up phase, Cunningham (1991) related to two types of entrepreneurial models. The first one is the "Great person" school which refers to the intuitive ability and traits an entrepreneur is born with. Hereby a successful entrepreneur is described as possessing a strong drive for independence, success with high levels of vigour, persistence and self-esteem. The second one is the Psychological characteristics school that refers to the unique values, attitudes and needs that drive entrepreneurs. In this regard they highlight three personality characteristics that have received extensive attention: a) personal values such as honesty, duty, responsibility and ethical behaviour, b) risk-taking propensity and c) the need for achievement.

An integral part of entrepreneurship literature is focused on motivation, as this is deemed essential for gaining a better understanding of entrepreneurial processes (Kuratko et al., 1997). There is a wide variety of literature available which discusses motivational factors. One of the earliest and key theories/frameworks on human motivation was provided by Maslow (1943) which invented the hierarchy of needs pyramid. His framework shows that one of the higher needs is that of self-actualization that focuses on pursuing certain goals/values. Other pioneers of motivational studies are Hertzberg's (1959) two-factor theory and McClelland's (1961) need for achievement theory. Literature on entrepreneurial motivation provides several categories. Segal, Borgia & Schoenfeld (2005) argued that early studies on entrepreneurial motivation were mainly content-oriented theories and later on the focused shifted towards process-oriented theories. Content theories (e.g. McClelland, 1961) refer to theories that focus on specific things (traits) within individuals which start, direct, maintain and stop behaviour. Process-oriented theories (e.g. Bandura, 1977) explain how certain behaviour starts and evolves through focusing on attitudes and beliefs. Hereby there is a focus on cognitive models which strive to predict human behaviour and intentions. Gilad & Levine (1986) explained entrepreneurial motivation by distinguishing between 'push' and 'pull' theories. The push theory state that entrepreneurs are motivated to start for themselves out of necessity or negative external factors (e.g. low salary and job dissatisfaction). In contrary, the pull theory explains how factors such as independence, self-fulfilment, wealth and other desirable outcomes appeal to individuals in their entrepreneurial activities. Moreover, several motivational factors such as need for achievement, locus of control, independence and risk-taking propensity are often also mentioned (see Shane, Locke & Collins, 2003 for a good literature review).

2.3 Sustainable Entrepreneurship

In its nascent years, studies on sustainable entrepreneurship dealt with either social or environmental aspect whereas they are linked (Fellnhofer, Kraus & Bouncken, 2014). Sustainable entrepreneurship gradually evolved into a broader approach that incorporates social, ecological and economic aspects (triple bottom line perspective).

One of the earliest and most cited definition of sustainable entrepreneurship is provided by Cohen and Winn (2007). They formed their own definition based on Venkataraman's (1997, p.122) description of entrepreneurship. Venkataraman defined entrepreneurship as: "*seeking to understand how opportunities to bring into existence future goals and services are discovered, created and exploited, by whom and with what consequences*". According to Cohen and Winn (2007), this definition was unique since it placed entrepreneurship in a broader societal context which allows for well-designed and comprehensive research agenda. Moreover, it emphasized on opportunities and their sources, the entrepreneurs, the agents of their exploitation and its consequences. Cohen and Winn (2007, p.35) subsequently created their own sustainable entrepreneurship definition by also considering environmental consequences: "*how opportunities to bring into existence 'future' goods and services are discovered, created and exploited, by whom, and with that economic, psychological, social and environmental consequences*". According to (Majid & Koe, 2012) sustainable entrepreneurs are involved in activities which lead to identifying, evaluating, and exploiting business opportunities which promote sustainability and profitability. Furthermore, sustainable entrepreneurship is perceived as a means for achieving competitive advantage through recognizing business opportunities which lead to new products, new methods of production, new markets or new ways of organizing business processes more sustainably (Shepherd & Patzelt, 2011; Schaltegger & Wagner, 2011). Hall, Daneke & Lenox (2010) also focused on the importance of opportunities. They firstly stated that a limited number of researchers have explored sustainable development from an entrepreneurship perspective. However, several papers evoked Schumpter's (1942) concept of "creative destruction" which implies that new sustainability pressures are created due to market failures, which creates opportunities for new entrants. Hall, Daneke & Lenox (2010) perceive entrepreneurship as a way of improving market failures (e.g. environmental and social disruptions). Schaltegger and Wagner (2011) argued that sustainable entrepreneurship is an overarching term regarding the contributions of entrepreneurs to social, environmental and environmental aspects. They developed a classification matrix which assesses the position of a firm in terms of degree of environmental or social activities

orientation. Furthermore, they provided a more comprehensive definition of sustainable entrepreneurship. According to these authors, sustainable entrepreneurship is basically the realization of sustainability innovations which are intended for the mass market and it provides benefits to the larger part of society. By realizing this, sustainable entrepreneurs meet the demand of the majority of stakeholders which influence or are influenced by the firm's activities. In contrary to shareholders, the stakeholder usually demands beyond only economic interests. This makes them an ultimate source of entrepreneurial opportunities. Schaltegger and Wagner (2011) further emphasized that sustainable entrepreneurship is characterized by some important elements of entrepreneurial activities. These activities deviate from management systems or technical procedures and emphasize more on the personal initiative and skills of the sustainable entrepreneur which are needed to achieve large-scale market success and to induce societal change with environmental/social innovations. Based on this perspective they stated that sustainable entrepreneurship is about an innovative company – which can be a start-up or incumbent firm- that delivers environmentally and/or socially beneficial products and services which have the potential for capturing a large market share. Moreover, sustainable entrepreneurship extends beyond the common goal of market success and strives for initiating and achieving social change and changing market conditions and regulations. Within the field of sustainable entrepreneurship there are two perspectives visible (Sarango-Lalangui et al., 2018). According to Sarango-Lalangui et al. (2018), there are researchers who believe that entrepreneurship is subordinated to sustainable entrepreneurship and the triple bottom line perspective. These researchers emphasize the connection between sustainable development and entrepreneurship, highlighting that the sustainability activities of companies are attested in their environments, impact evaluation, goal achievement, communication of results and that it must be focused on satisfying the customers' needs. On the contrary, there are also researchers (e.g. Dean & McMullen, 2007 & Shepherd & Patzelt, 2011) who understand sustainable entrepreneurship as more with a focus on entrepreneurial processes. Moreover, these researchers (e.g. Dean & McMullen, 2007; Shepherd & Patzelt, 2011) emphasize the relationship that exists between individuals and opportunities. According to them the entrepreneurial process begins with environmental degradation, which is caused due to market failures. Individuals want these market failures to stop and therefore this leads to the creation of entrepreneurial opportunities. To be precise, sustainable entrepreneurship is perceived by these authors as examining how opportunities create future goods and services as discovered,

established and exploited, by whom, and with what economic, psychological, social and environmental consequences.

2.4 Sustainability competencies

In the past few years, competencies for sustainable development have received increasing attention as the success of sustainability-oriented innovations is partially determined by the set of skills, competencies, and capabilities an organisation possess (Klewitz & Hansen, 2014; Kyndt & Baert, 2015).

Table 1 - Overview of literature on sustainability competencies

Authors	Methodology	Competencies
Wiek, Withycombe & Redman (2011)	Literature review	1. System-thinking competence 2. Anticipatory competence 3. Normative competence 4. Strategic competence 5. Interpersonal competence
Rieckmann (2012)	Delphi-method (N=88)	1. System-thinking and handling complexity 2. Competency for anticipatory thinking 3. Competency for critical thinking 4. Competency for acting fairly and ecologically 5. Competency for cooperation in (heterogeneous groups) 6. Competency for participation 7. Competency for empathy and change perspective 8. Competency for interdisciplinary work 9. Competency for communication and use of media 10. Competency for planning and realising innovative projects 11. Competency for evaluation 12. Competency for ambiguity and frustration tolerance
Ploum (2018)	Questionnaire among students following	1. Strategic action competence 2. System-thinking competence 3. Normative competence

	entrepreneurship courses (N=438)	4. Interpersonal competence 5. Foresighted thinking competence 6. Embracing diversity and interdisciplinarity competence
Wesselink et al. (2015)	Secondary data analysis (existing interview data)	1. System-thinking 2. Embracing diversity and interdisciplinarity 3. Interpersonal competence 4. Action competence 5. Strategic management
Dentoni (2012)	Focus group discussions	1. System-thinking competence 2. Embracing diversity and interdisciplinarity 3. Foresighted thinking competence 4. Strategic competence 5. Normative competence 6. Action competence 7. Interpersonal competence

Many studies on competencies for sustainability (e.g. Wiek et al., 2011) are tailored for and conducted in an educational environment. The often-cited work of Wiek et al., (2011) emphasized that especially key competencies are crucial for sustainability efforts. By conducting a broad literature review, this study analysed key competencies which graduating students who study sustainability courses need to possess. Rieckmann (2012) – which also focused on the educational environment - added to this by stating that key competencies have a significant contribution to sustainability related goals. Through utilizing the Delphi method he identified 12 key competencies that are deemed crucial for sustainable development. Ploum et al. (2018) added to this by stating that individual competencies for sustainability contribute to successful task performance and for solving problems regarding real-world problems, challenges and opportunities. They studied the strength of existing key competencies (see table 2) by conducting an explorative study among 402 would be entrepreneurs which followed an entrepreneurship course at a university in the Netherlands. The results of their study show that the strategic management competence and action competence did not emerge as separate constructs. This was also a noticeable finding in the study of Lans et al. (2014). Wesselink et

al. (2015) focused on studying competencies in a specific working environment. Through analysing existing interview data from a previous research project they identified which competencies managers need to achieve corporate social responsibility targets. This study was relevant from a scientific point of view because it is interesting to know which competencies really matter in corporate social responsibility (CSR) implementation practices, as empirical findings about what is required of the sustainability professionals are limited. Their findings showed that foresighted thinking and normative competence were not deemed important/necessary by managers when working on CSR related tasks. Dentoni et al. (2012) took a different approach; they developed a competency framework based on a literature review and four focus group discussions with lecturers from 'green' higher education institutes that are designed for entrepreneurs which engage sustainability in their working environment. Moreover, they also explored the 'perceived learnability' of each competence through their methodology. They concluded that the development of competencies needs to take place in authentic situations (e.g. working on real-life cases) whereby professionals provide guidance for the students. Lans et al (2014) also focused on a specific working context and used the suggested sustainability competencies of Dentoni et al. (2012) combined with common entrepreneurial competencies. Moreover, the literature review revealed that the study of Lans et al. (2014) is the only study that attempted to elucidate these 'generic' competencies into the specific working context of sustainable entrepreneurs. To be precise, their study was conducted on 'would-be' sustainable entrepreneurs; students which were following an entrepreneurship course and teachers providing entrepreneurship or sustainability courses. Moreover, they sought to find general consistencies between entrepreneurial and sustainability-oriented competencies. They also suggested that further studies should conduct research concerning these competencies of practitioners of sustainable entrepreneurship, as this also involves a different working context and therefore the relevance of these competencies might be perceived differently. Therefore, this thesis used Lans et al's their presented competencies. In terms of sustainability competencies, the authors proposed the following competencies: system-thinking competence, embracing diversity and interdisciplinarity, foresighted thinking, normative competence, action competence, interpersonal competence and strategic management. The following sections will discuss the definitions of these key competencies.

2.4.1 System thinking competence

System-thinking competence is described as being capable to inclusively analyse complex systems from different domains (people, planet, profit) and on different scales (local to global). Analysing complex systems includes understanding them, empirically verifying them and explaining their structure (key components and dynamics). In order to do this, the authors emphasize possessing systemic knowledge for analysing, which includes the capacity related to concepts such as structure, function, cause-effect relations, perceptions, motives, decisions, and regulations.

This competence is crucial for building transition strategies concerning sustainability. A good understanding of complex social-ecological systems is a precondition for discovering intervention points. It also helps in mapping future paths for executing transition processes (Wiek et al., 2011).

2.4.2. Embracing diversity and interdisciplinarity

This competence is about considering other perspectives, recognizing issues and structuring relations in the process of business decision making regarding societal, economic and environmental issues (Lans et al., 2014). Moreover, it is about including relevant stakeholders and enhancing learning through exchanging ideas (De Haan, 2006; Ellis & Weekes, 2008; Wilson, Lenssen & Hind, 2006 as cited by Lans et al., 2014)

2.4.3. Foresighted thinking competence

The capability to analyse, evaluate and visualize pictures of the future related to sustainability issues and sustainability problem-solving frameworks is known as 'anticipatory competence' (Wiek et al., 2011). Being capable to analyse includes understanding and explaining their structure, key components and dynamics. Evaluating refers to possessing comparative skills which are connected to current circumstances and developing scenarios depends on future-oriented knowledge such as time, uncertainty and risk (Wiek et al., 2011 & Biberhofer et al., 2018). This competence is especially relevant when one is creating transition strategies, testing strategies and adapting strategies to alter towards a sustainable-oriented future (Wiek et al., 2011).

2.4.4 Normative competence

Sustainability is inextricably linked to norms and values. It is basically describing how the world should be (Lans et al. 2014). Therefore, it is important to have normative competence since it aids in directing transition strategies, which includes desirable states and dynamics as well as envisioning preferable ones. The normative competence is about collectively mapping, specifying, applying, integrating and negotiating sustainability values, principles, goals and targets. This competence allows for assessing the (un)sustainability of current and/or future states of social-ecological systems and for creating matching visions for these systems. In order to achieve this, it's essential to have normative knowledge which includes concepts of justice, ethics, equity, social-ecological integrity. Moreover, it is important to consider internal and external stakeholders (Wiek et al, 2011).

2.4.5. Action competence

This relates to being passively or actively involved in enhancing the sustainability of social-ecological systems (De Haan, 1996 as cited by Lans et al., 2014; Mogensen, & Schnack, 2010; Schnack, 1996 as cited by Lans et al., 2014).

2.4.6 Strategic competence

Strategic competence entails being able to construct and apply interventions, transitions and transformative sustainable governance strategies (Wiek et al., 2011). It requires deep knowledge concerning concepts such as strategic intent, systemic inertia, path dependencies, barriers, carriers and alliances. Additionally, having knowledge about viability, feasibility, effectiveness, efficiency of systemic interventions and unintended consequences is part of this competence Wiek et al., 2011). In terms of methods it is important to know about designing, testing, implementing, evaluating and adapting policies, programs and action plans whereby different societal actors are involved (Wiek et al., 2011). This competence is closely linked to the normative, system-thinking and anticipatory competence; first of all, strategies for transformative change attempt to change the current state of the social-ecological system, which is identified through system thinking, towards sustainable states and dynamics. The latter is achieved with normative competence. Finally, in this process existing path dependencies are

acknowledged which might potential lead to undesirable future states through anticipatory competence (Wiek et al., 2011).

2.4.7 Interpersonal competence

Interpersonal competence is all about being capable of comprehending, comparing and critically evaluating different perspectives and preferences (Wiek et al., 2011). Moreover, everything what is basically related to collaborative and participatory sustainable research and problem solving is classified under interpersonal competence. It includes advanced communication skills, collaborating, pluralistic and trans-cultural thinking, leadership, deliberating and negotiating. Finally, the ability to comprehend, embrace and aid diversity across cultures, social groups, communities and individuals is perceived as a key aspect of this competence (Wiek et al., 2011).

This competence is relevant within sustainability challenges, various stakeholders are involved and therefore strong stakeholder collaborations, interdisciplinarity etc. are important (Wiek et al., 2011).

2.5 Entrepreneurship key competencies

One of the main reasons for the interest of researching entrepreneurial competencies is its relationship with business performance and growth, which in turn leads to economic development. Arguably, competencies are a set of resources which contribute to the execution of the intended strategies of a firm (Bryson, Ackermann & Eden, 2007). These resources mainly comprise knowledge, skills and capabilities (Boyatzis, 2008). Due to the wide variety in perspectives on entrepreneurship there are many different suggested entrepreneurial competencies (Lans et al., 2014). Several studies have attempted to create a clear overview of the various entrepreneurial competencies that have been suggested. However, this is complex due to the various contexts in which it is used. Table 2 provides an overview of several studies which assessed entrepreneurial competencies.

Table 2 – Overview of studies on entrepreneurial competencies

Authors	Methodology	Competencies
Rasmussen et al. (2011)	Longitudinal multiple case study of four university spin-offs	1. Opportunity refinement competency 2. Leveraging competency 3. Championing competency
Mitchelmore & Rowley (2010)	Literature review	1. Identification and definition of a viable market niche 2. Development of products of services appropriate to the firms chosen market niche/product innovation 3. Idea generation 4. Environmental scanning 5. Recognising and envisioning taking advantage of opportunities 6. Formulating and taking advantage of opportunities
Robles & Zarraga-Rodriguez (2014)	Literature review for identifying 20 competencies & Delphi method with 10 entrepreneurs	1. Risk assumption 2. Initiative 3. Responsibility 4. Dynamism 5. Troubleshooting 6. Search and analysis information 7. Result orientation 8. Change management 9. Quality of work
Lans et al. (2014)	Focus group (N=8) & student questionnaire (N=231)	1. Opportunity competence 2. Social competence 3. Business competence 4. Industry-specific competence 5. Entrepreneurial self-efficacy

Mitchelmore & Rowley (2010) conducted a literature review and herein they provided an overview of different authors who highlighted knowledge, skills & experience as the basis for entrepreneurial success. These factors include personal background and experience, socio-economic factors, abilities (intellectual, social and managerial), personal qualities such as being

approachable, being an outgoing person, leadership and self-confidence, and behavioural characteristics such as being able to spot opportunities, seeing the bigger perspective and welcoming uncertainty.

Rasmussen et al. (2011) studied the development of entrepreneurial competencies in terms of creating new ventures in the non-academic environment by conducting a longitudinal multiple case study involving four university spin-offs. The findings of this study revealed that opportunity refinement competency, leveraging competency and championing competency helped the four cases to create their ventures. Opportunity refinement competency refers to using creativity to alter the initial idea based on new insights until it gets external credibility. Leveraging competency refers to the ability to obtain and combine resources in order to build the venture. In this regard, building credibility to attract resources is essential. Championing competence refers to being committed and the type of leadership that is necessary to build the venture. Robles & Zarraga-Rodriguez (2014) conducted a literature review to identify relevant competencies which are relevant for organizations and higher education institutions. Subsequently, they used the Delphi-method to obtain information regarding the relevance of those competencies based on the opinions of a group of entrepreneurs. Their literature review resulted in a list of 20 relevant entrepreneurial competencies that were often mentioned in relation with entrepreneurship. The results of the study show that the experts deemed risk assumption, initiative, responsibility, dynamism, troubleshooting, search and analysis of information, results orientation, change management and quality of work important. A noteworthy finding of this study was that there was no agreement reached concerning the competencies social network development, social mobility and self-control.

As stated in the previous section, Lans et al. (2014) is one of the few studies which brings entrepreneurship competencies and sustainability competencies together. In terms of key competencies for entrepreneurship, they compiled five key competencies based on frequently mentioned competencies in other studies, namely: opportunity competence, social competence, business competence, industry-specific competence and entrepreneurial self-efficacy competence. The following sections will briefly explain these competencies.

2.5.1 Opportunity competence

As mentioned previously, entrepreneurship is related to spotting opportunities (Shane & Venkataraman, 2000). These opportunities lead to the creation of potential new products or services which are missing in existing markets or do not have a market yet (Lans et al., 2014).

Besides opportunity recognition, this competence focuses on developing structured solutions to problems (Lans et al., 2014). Moreover, the opportunity competence consists of different aspect such as an individuals' ability to search opportunity, assessment strategies or entrepreneurial alertness which refers to being able to spot opportunities within your network or in the broader environment.

2.5.2 Social competence

Being able to build and keep external and internal social relationships is referred to as social competence. Hereby the role of networks is deemed important. Networks can contribute to further developing an idea, finding resources and gaining more legitimacy (Lans et al., 2014).

2.5.3 Business competence

Business competence implies being able to use, coordinate and control management systems properly. It is thus involved in "the organisation of different internal, external, human, physical, financial and technological resources as well as setting, evaluating and implementing the strategies of the firm (i.e. planning and control)" (Lans et al., 2014, p.39).

2.5.4 Industry-specific competence

This competence refers to possessing specific skills/knowledge which are deemed important to survive in an industry. To be precise, it involves having adequate technological knowledge and being knowledgeable about the market (Lans et al., 2014).

2.5.5 Entrepreneurial self-efficacy

The fifth competence can be described as an overarching competence; entrepreneurial self-efficacy implies personally believing in your own entrepreneurial competence (Bandura, 1982).

2.6 Sustainable enterprise creation process

As stated in section 2.3, there are researchers who focus on a perspective of entrepreneurial processes and emphasize the relationship between individuals and opportunities. They especially focus on different phases of entrepreneurship which includes discovering, creating, evaluating and exploitating. Dorado (2006) assessed whether social entrepreneurial ventures followed a different process compared to entrepreneurial ventures. Based on a literature review she identified that many activities including discovering business opportunities, analysing market potential and attracting investors are common phases for the general entrepreneurial process of creating an enterprise (Bhave, 1994). Moreover, she focused on three phases namely opportunity definition, leverage of resources and organizational building. This study concluded that there is a need for more specific research within this area of social ventures. Choi and Gray (2008) followed this trend and assessed the development process of sustainability-oriented mature ventures. Based on a literature review they created five stages for sustainable ventures; recognition of an opportunity, assembly of resources, launching the venture, managing the growth and harvesting the business. The findings of their study show that these companies are clustered in the high-end market with thus high prices and that aids them to balance the triple bottom line. Furthermore, they identified that these sustainable ventures tend to lack business experience. The most recent study on the creation process of sustainable entrepreneurship was conducted by Belz & Binder (2017). This study also follows a sustainability approach but provides a more detailed description of the phases that sustainable entrepreneurs tend to follow in the creation process of their enterprise. Moreover, the suggested phases are based on the previously mentioned literature in this section such as Choi and Gray (2008), and also on their own findings. Therefore, this thesis used the phases as described by Belz & Binder (2017) which is named the convergent process model (Figure 1) to benchmark or compare/contrast against this study's findings. Belz & Binder (2017) state that sustainable entrepreneurs usually follow these phases (in a sequential manner): recognizing an ecological or social problem, recognizing a social or ecological opportunity, developing a double bottom-line solution, developing a triple bottom-line solution, funding and forming a sustainable enterprise and creating or entering a sustainable market. The following sections will briefly explain these phases.
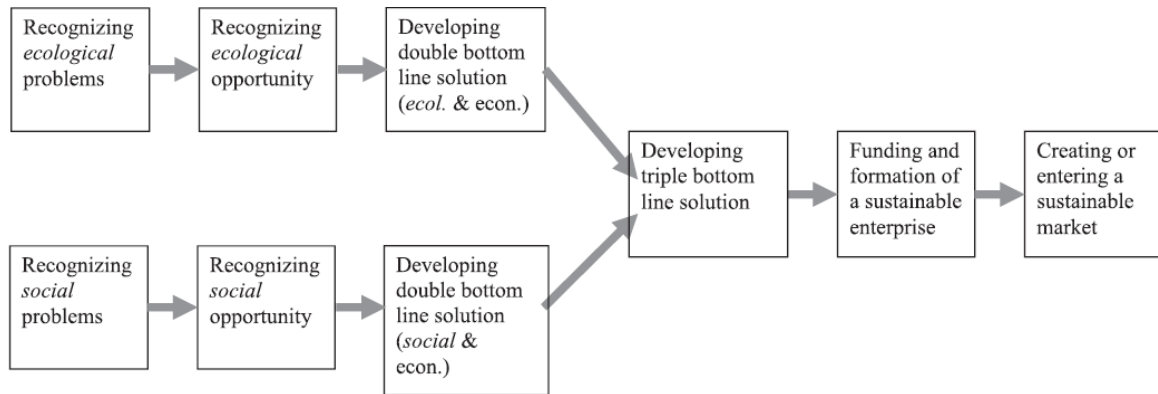
Figure 1 – The convergent process model of Belz & Binder (2017)

2.6.1 Recognizing a social or ecological problem

Belz & Binders' (2017) study shows that the birth of a sustainable entrepreneurship potentially begins with identifying a social or ecological problem on a local or global scale. This usually occurs in an entrepreneurs' private or working environment. Their data showed that first time experiences usually lead to recognizing a particular problem which forms a possible starting point for recognizing an opportunity which may purely have an economic/social or environmental/economic focus.

2.6.2 Recognizing a Social or Ecological opportunity

The next phase is the recognition of an opportunity in the market out of this social or ecological problem. They refer to this as a social or ecological opportunity. This notion is linked to what Cohen and Winn (2007) recognize as market imperfections. These market imperfections are perceived as potential opportunities by sustainable entrepreneurs. Moreover, the findings of Belz & Binder (2017) are in accordance with the study of Dorado (2006) and Lumpkin, Moss, Gras, Kato & Amezcua (2013); these studies argue that recognizing social entrepreneurial opportunities might be triggered by market failures.

2.6.3 Developing a double-bottom line solution

In this phase it is important to align social or ecological goals with the values that various customer groups seek always bearing in mind that there is an economic dimension to the venture. Furthermore, Belz & Binder (2017) argue that this phase is characterized by either having a combination of social and economic goals or environmental and economic goals.

2.6.4. Developing a triple bottom line solution

As mentioned previously, sustainable entrepreneurship mainly involves pursuing to achieve the triple bottom line goals. Belz & Binder (2017) argue that after the double-bottom line phase, firms are inclined to integrate a triple bottom line solution. They point out that it is often challenging for firms to immediately integrate a triple bottom solution. Integrating it gradually - thus from a double bottom line solution to a triple bottom solution - makes the process easier and more feasible for the entrepreneurs.

2.6.5 Funding and forming a sustainable enterprise

Applying for the initial capital used to start a business, which occurs before market entry, is described in the fifth stage. This is a crucial stage since previous studies (Wagner, 2017 & Lee, Sameen & Cowling, 2015) have shown that in general entrepreneurs find it difficult to get financial resources. For sustainable entrepreneurs it is even more complex since their non-traditional business view might be perceived as being riskier by investors (Lee et al., 2015).

2.6.6 Creating or entering a sustainable market

The final stage is when market entry takes place. This is done when the sustainable innovation is commercialized and offered to customers. New sustainable firms usually have high environmental and social standards that are translated into the price and tend to emphasize on quality (Hockerts & Wüstenhagen, 2010). Furthermore, they describe three different market situations which might occur with new (sustainable) enterprises.

- There is no existing market yet: this can be challenging since there might unawareness of related sustainability issues and scepticism by the customers about the quality of the sustainable innovation.

- An established sustainable niche already exists: in this case the new sustainable enterprise will especially deal with competitors.

- There is a sustainable market segment for sustainable enterprises: this accounts for at least 5% of the total market share and is often stimulated by demand shifts or new laws and policies.

This section has discussed previous studies concerning 1) entrepreneurship and sustainable entrepreneurship, 2) competencies related to entrepreneurship and sustainability and 3) the creation process of sustainable enterprises. The following section will integrate these discussions into a conceptual framework and discuss the research gaps.

2.7 Conceptual framework

The literature review has revealed that to date there seem to be no studies which have assessed how sustainability key competencies are 1) perceived by sustainable entrepreneurs and 2) applied in the process of creating a sustainable enterprise. Lans et al. (2014) is one of the few studies which brings entrepreneurship competencies and sustainability competencies together. Given the lack of studies that take a similar approach i.e. investigating entrepreneurial and sustainability competences together and from a practitioner's perspective, this constitutes a gap in the literature that this research addresses. In short, this thesis investigated which competencies (entrepreneurial and sustainability) are used in the process of creating a sustainable enterprise. Hereby, the phases in the creation process will be based on the entrepreneurs' perception. In this regard, the convergent process model of Belz & Binder (2017) will serve as a guideline for benchmarking (more on this in section 3.1). Figure 2 shows how entrepreneurial key competencies and sustainability key competencies as presented in Lans et al. (2014) can arguably lead to the identification of key competencies for sustainable entrepreneurship.

Entrepreneurial competencies
- Opportunity competence
- Social competence
- Business competence
- Industry-specific competence
- Entrepreneurial self-efficiacy

Sustainability competencies
- System-thinking competence
- Embracing diversity and interdisciplinarity
- Foresighted thinking
- Normative competence
- Action competence
- Interpersonal competence
- Strategic management

Sustainable entrepreneurship competencies

Figure 2 – Conceptual model

The following section will detail the methodological approach chosen for this thesis.

3. Methodology

3.1 Research design

In order to identify which competencies are used in the process of creating a sustainable enterprise this research will follow an inductive qualitative approach. This refers to "approaches that primarily use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher" (Thomas, 2006, p.238).

Moreover, an inductive approach allows for the creation of theories (Morse & Field, 1995). In the case of the thesis, a practitioner 'view of sustainable enterprise/entrepreneurship was sought, and the research investigated how competencies were used in the phases of creating a sustainable enterprise. Furthermore, the convergent process models' (Belz & Binder, 2017) description might be contested/different from the respondents' perception. Therefore, insights gained through utilizing a qualitative research approach – which shows the interpretation of an individual (Bryman, 2012) - might be valuable since it strives to better comprehend and explain certain phenomenon and allows for more in depth answering of the questions (Jamshed, 2014; Morse & Field, 1995).

The entrepreneurs were first asked to share by the means of a drawing what the process of setting up a sustainable enterprise entail, aiming to identify the different phases lived by the entrepreneurs. At the same time, they were asked to identify which key competencies are needed in the different phases. This methodological approach is based on the PhD thesis of Klapper (2008) on the role of social capital in French entrepreneurial networks at the start-up. The self-identified phases from the practitioner's point of view was then benchmarked against the convergent process model of Belz & Binder (2017). This approach allowed for the entrepreneurs depicting their own honest interpretation of how the process for establishing a sustainable enterprise looks like and which competences were employed at which stage. Moreover, this allowed for reconfirming and/or improving the data as presented in the study of Belz & Binder (2017) and Lans et al. (2014).

3.2 Data collection

3.2.1 The case study companies

This thesis used a multiple-case study design as it allows to gain insight into different perspectives on sustainable entrepreneurship competencies and the experienced phases (Baxter & Jack, 2008). In order to create a broad overview of varying perspectives, cases were selected from different sectors. This in turn ensures gaining robust and reliable data (Noor, 2008; Baxter & Jack, 2008). The cases were 18 companies from various sectors as can be seen in table 3.

Table 3 - Sample overview of start-ups

Entrepreneur	Age	Gender	Sector	Year Founded	Means of interview
A	24	Male	Construction	2018	Face-to-face
B	30	Male	Consumer Electronics	2016	Face-to-face
C	32	Male	Energy	2016	Face-to-face
D	29	Male	Paint	2016	Face-to-face
E	28	Male	Construction	2017	Face-to-face
F	35	Male	Vegan warehouse	2018	Face-to-face
G	35	Male	Water Treatment	2016	Face-to-face
H	33	Male	Energy	2017	Face-to-face
I	35	Male	Furniture	2015	Face-to-face
J	50	Male	Hydropower Energy	2015	Face-to-face
K	25	Female	Materials & Products	2017	Phone
L	24	Female	Coating	2016	Phone
M	29	Male	3D Printing	2016	Phone
N	28	Female	Clothing	2017	Face-to-face
O	29	Female	Food	2017	Phone
P	33	Male	Food waste	2018	Phone
Q	28	Male	Cups	2018	Face-to-face
R	37	Male	Straws	2017	Face-to-face

In addition, the thesis used two of the three sampling criteria of Belz & Binder (2017) as this provides clear boundaries for selecting cases and part of the interview questions will be based on their convergent process model. The selected criteria were as follows:

- The cases are start-up enterprises that only sell sustainable products and/or services. Additionally, these enterprises do not offer conventional products and have a triple bottom line focus.
- The cases are start-ups which are in the process of setting up or have already entered the market.

Moreover, the selected start-ups were not older than 3 years. As explained in section 2.1, the start-up lifespan is argued to end after 3 years. Therefore, this age limit was utilized as a searching criterion for the selected cases.

3.2.2. Interview method

The main methodological tool for investigating the research questions was a semi-structured interview approach. As stated in section 3.1, there is limited data available on which competencies are used in the development process of creating a sustainable enterprise. A semi-structured approach provided more flexibility for the respondents to answer the questions and it allows the researcher to ask follow-up and probing questions (Barriball & While, 1994). The latter contributes to the enhancement of data reliability, because it enables the interviewer to seek, clarify and evoke complete responses which might be valuable (Barriball & While, 1994).

Baker & Edwards (2012) argue that conducting 15 to 20 interviews is satisfactory for reaching thematic saturation. Thematic saturation refers to the situation whereby conducting more interviews barely has added value since no new information/themes emerge from the data. Therefore, in terms of thematic saturation, the aim of this thesis was to conduct at least 10 interviews with founders or co-founders of sustainable enterprises. With a total of 18 semi-structured interviews this thesis was able to achieve thematic saturation.

As stated earlier, the thesis mainly aimed to assess the perception of (1) sustainable entrepreneurs regarding the process of creating a sustainable enterprise and (2) identifying the relevant key competencies within this process. In order to answer these questions a purposive and snowball sampling method was utilized, as entrepreneurs with knowledge and experience regarding the just-mentioned research aims are required (Etikan, Musa & Alkassim, 2016).

All interviews were recorded with the permission of the respondents. Due to confidentiality, the names of the sustainable start-ups and respondents were anonymized.

As stated earlier, the main interview questions were based on the methodological approach of Klapper (2008) whereby the entrepreneurs were asked to draw their entrepreneurial process. A similar approach was applied to identify the – according to them - relevant competencies. The questionairre for the semi-strucutred interviews consisted of four questions (see Appendix A). Question 1 was presented in order to gain general background knowledge about the respondent and the start-up. It also sought to identify their motivation for starting a

sustainable enterprise. Question 2 aimed to gain a deeper understanding of the start-ups' profile, mainly through identifying what their perception is of sustainable entrepreneurship. The respondents were asked in question 3 to draw their experienced phases and the accompanying competencies.

Question 4 presented respectively the convergent process model of Belz & Binder (2017), the entrepreneurial competencies and sustainability competencies. The respondents were subsequently asked to comment on the phases of Belz & Binders' (2017) convergent process model (wheter they agreed or disagreed with the phases). A similar approach was utilized for both lists of competencies; the respondents were asked to identify which comeptencies they used and deemed important in their entrepreneurial creation process.

3.3. Data analysis

The selected cases were firstly selected and assessed through desktop research in order to gain background information on the selected cases (e.g. is it a sustainable start-up and age). In this regard, websites such as the Climate KIC Start-up archive, ASN Banks' 'voor de wereld van morgen', 'Duurzame Jonge 100' and LinkedIn were utilized in order to find young sustainable start-ups. Being included on these sites provided substantial background information concerning the focus of their business.

In order to analyse the data, the steps according to grounded theory were followed because it "provides a set of strategies for conducting rigorous qualitative research" (Charmaz & Belgrave, 2007, p.27). A coding framework was used as it helps to systematically analyse the data (Macqueen, McLellan, Kay & Milstein, 1998). The coding framework was constructed in an iterative process of coding (Bryman, 2012). Hereby memos were used as it aided in articulating and tracking the researchers' interpretation in terms of creating and adjusting theory (Strauss & Corbin, 1990). Moreover, the codes were partially derived from the theory (e.g. each key competence) and emerged from the interviews. This process begun with identifying concepts and their properties which is achieved through open coding 3 interviews. Based on these codes, a set of coding rules were created. Thereafter, sub-categories and categories were made by respectively axial coding and selectively coding the data. This allowed for finding relationships and differences between the data (Oliveira, Bitencourt, Santos & Teixeira, 2013).

Moreover, data reliability was ensured through analysing each case according to these steps Consequently, similar results could be obtained by replicating these same steps (King, 1994).

The interviews were analysed and transcribed with the software MAXQDA. It has proven to be valuable for interpreting and finding relationships within data (Saillard, 2011). Furthermore, MAXQDA contains a well-organised colour coding system which makes it easier to distinguish the various codes into categories (Oliveira et al., 2013).

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4. Results

The following sections will present the results of the interviews. Several quotes contained names of persons/companies. Therefore, fictional names (e.g. Alpha, Beta) were used in order to maintain their anonymity.

This chapter is divided as follow: paragraph 4.1 reports the entrepreneurial motivation of the respondents. Thereafter 4.2 zooms in on their perception of sustainable entrepreneurship, sustainability and entrepreneurship. Subsequently in paragraph 4.3 the phases as explained by the entrepreneurs are presented. Paragraph 4.4 presents the results from the benchmark with the convergent process model of Belz & Binder (2017) and paragraph 4.5 shows the findings regarding the sequence of this model.

4.0 General Characteristics

As mentioned in the theoretical framework entrepreneurs form the basis of sustainable enterprises. Therefore, it is crucial to understand what their background is.

The respondents consisted for 72% out of men and 28% women. The majority of the respondents are aged between 24-37 years, except for one respondent who is 50 years old. Furthermore, five respondents have had some entrepreneurial experience. Additionally, five respondents started their sustainable enterprise with a friend or spouse.

4.1 Motivation to create a sustainable enterprise

In terms of motivation, the entrepreneurs presented several reasons for why they decided to create a sustainable enterprise. The concepts that emerged from this theme are divided in two categories; extrinsic-based motivation and intrinsic motivation. Extrinsic-based motivation stands for whenever the respondent was triggered by an external factor for starting their sustainable enterprise. In contrary, intrinsic motivation stands for when the respondents state that he/she always had the ambition to start their own sustainable enterprise.

4.1.1 Intrinsic motivation

Previous studies such as Carsrud & Brännback (2011) have highlighted the importance of intrinsic motivation in relation to the entrepreneurial process. The data of this study also showed that it is deemed important. Moreover, the most recurring concept - mentioned by 9 out of the

18 respondents - was the fact that they were always fascinated about having their own (sustainable) business. The following quotes provides examples of what motivated them:

"So, I was always really interested in sustainable energy. I also specialized myself in sustainable energy in both of my studies as I really want to improve the world with sustainable energy and I think it already takes too long. I think we should just rapidly increase the amount of sustainable energy compared to the conventional ways of producing energy. So I was always passionate about that." (Entrepreneur N)

"I was using 3d printers myself and just as a hobby and I saw it was an upcoming new technology and everybody was using virgin plastics and I was also seeing all the news about plastic waste, plastic soup, climate change and I said "why are we still in 2014 still using virgin plastics for just making prototypes and useless stuff with 3d printers" it didn't feel right so I wanted to do something about it . Instead of nagging to do something myself." (Entrepreneur M)

The above quotes illustrate that their ambition mainly came forth out of a sense of urgency and the need to take things into their own hands in order to have a positive impact on tackling sustainability challenges, because current measures against these challenges are not satisfactory.

Moreover, four respondents also emphasized that the timing of starting their own sustainable enterprise was an important reason. Within this concept several arguments were provided for why it was better to start a sustainable enterprise at a young age. The potential risk of starting a sustainable enterprise now – whereby there are less responsibilities such as not having a mortgage and taking care of a child - versus at a later age were deemed important:

"It is a job that you can better do when you are in your twenties. I think it becomes more difficult to do it when you are older because there is risk involved and you have more responsibilities normally, the older you get." (Entrepreneur E)

Other noteworthy arguments were that, firstly, the respondents felt the urge of being independent. They explained that they missed something in their previous jobs and they could see/already know what their career trajectory would look like if they would have stayed at their previous jobs. So somehow, they felt that their job was limiting their career choices/development. Secondly, there was also an urge to start their own sustainable enterprise because they felt emotionally responsible for taking initiative to tackle sustainability problems.
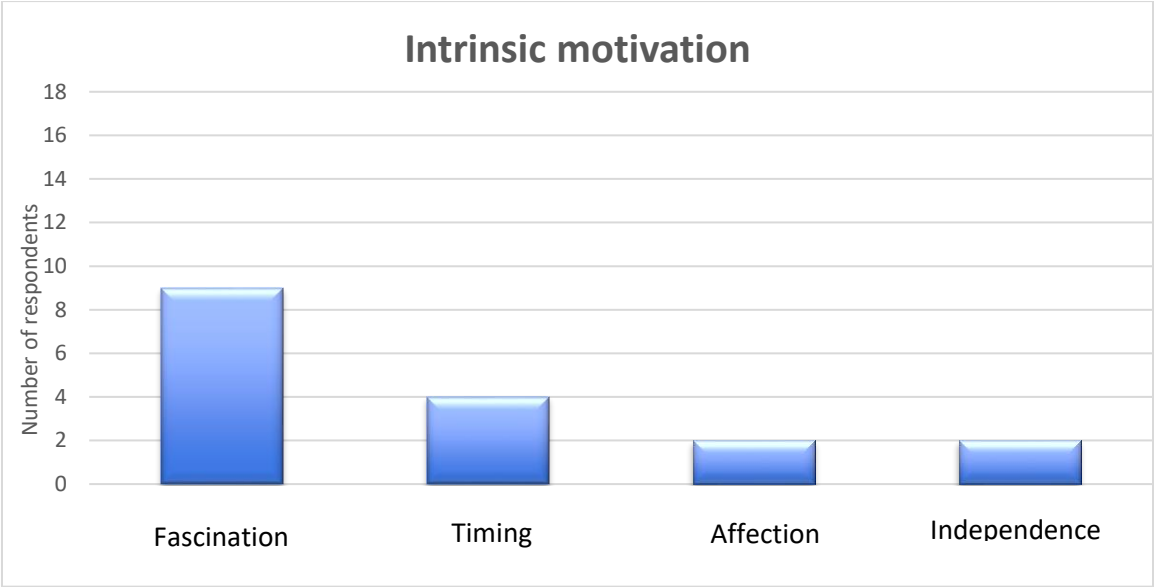
Figure 3 - Concepts mentioned as intrinsic motivation

4.1.2 Extrinsic motivation

The second recurring category was that respondents decided to start their own sustainable enterprise based on an experience. Regarding this category, an interesting finding was that 6 out of the 18 respondents indicated that they initially were not interested in starting a sustainable enterprise themselves. Most of them came into contact with a certain problem or opportunity and from there on they proceeded into starting a business. They were not actively engaged in seeking to start their own sustainable enterprise but due to the influence of a family member, friend or due to educational related projects/assignments they eventually saw the opportunity to start a sustainable enterprise.

Another related concept which was mentioned by two respondents was that they were inspired by things they saw in a different industry and abroad.

"We get a lot of inspiration from the car industry, why because let's say 50,60,70 years ago, one out of 10 people in Europe could afford a car. And now today everyone has a car, now we have a very good car. Our business car is a Volkswagen caddy, 16000 euros. I mean it does what it needs to do, it brings you from point a to b in a quite safe way. But why were we able to achieve this because they moved all their work to automated production process. And what I saw is that there was a lack of automated production processes in the construction industry, a huge lack of it actually."
(Entrepreneur E)

Two respondents explained that they were triggered to start a sustainable enterprise purely out of frustration. They spoke about a problem related to a certain habit or lifestyle which they encountered frequently, and of which the market (at the time) did not provide an adequate solution for. The following quote displays how Entrepreneur B – which sells circular headphones – decided to produce these products as a consequence of being frustrated about the quality of headphones he had purchased in the past. Moreover, this quote illustrates how frustration led to identifying an opportunity.

"I was a true music lover. That also meant that I threw away several headphones a year and because of that I didn't want to buy... I was afraid to buy a more expensive one, but I did want a more high-end experience and I think Dorus, the co-founder also had this problem and during our graduation we came across the circular economy and we found that a very interesting way of thinking." *(Entrepreneur B)*
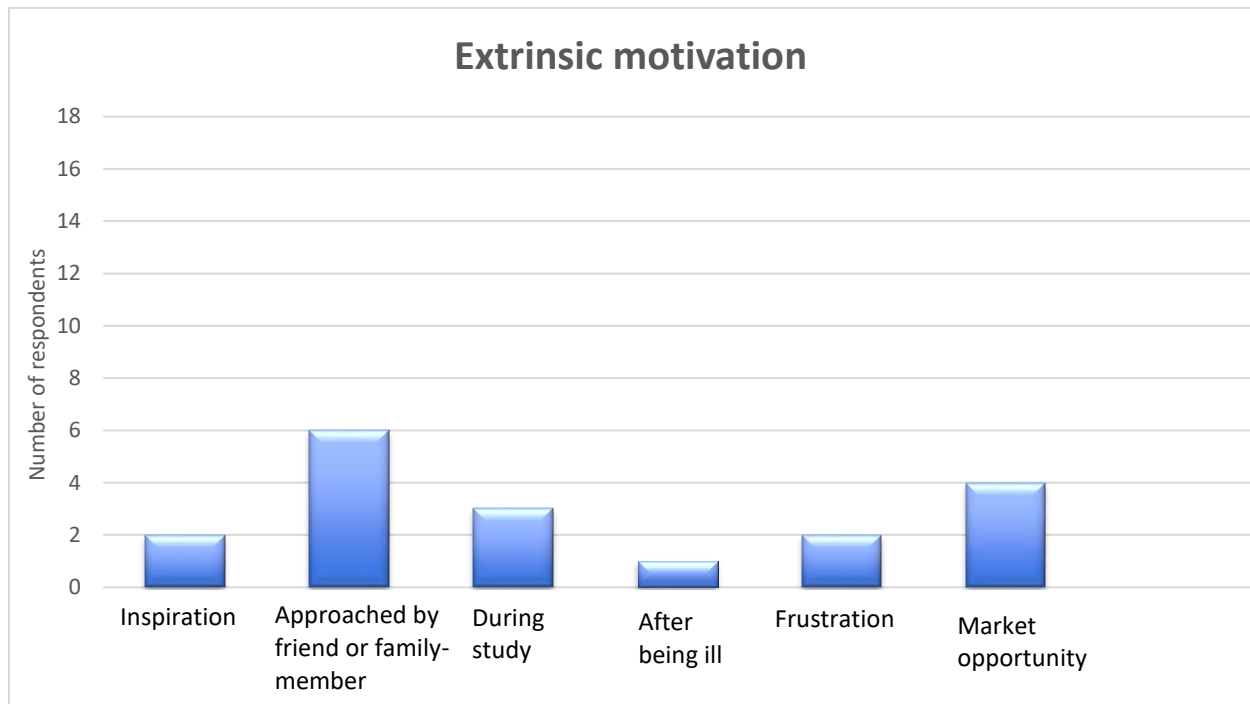
Figure 4 - Concepts mentioned as extrinsic motivation

4.2 Perception

Due to the fact that sustainable entrepreneurship is a broadly interpreted concept, the respondents were also asked to respectively explain what their perception is of sustainable entrepreneurship (4.2.1), to provide their own definition of sustainability (4.2.2) and entrepreneurship (4.2.3), and how they feel that these two definitions connect (4.2.4).

4.2.1 Perception of sustainable entrepreneurship

Besides entrepreneurial motivation, knowing the perception of entrepreneurs' aids in understanding their entrepreneurial behaviour (Koe, Omar & Majid, 2014). The results from this section demonstrated that sustainable entrepreneurship is perceived by the majority of the respondents (6) as having a business of which the core value revolves around sustainability.

Another frequently given explanation - which is similar to the core value perception - concerned minimizing impact. According to these respondents, having a positive impact is

essential. One of the respondents combined these perspectives (core value & minimizing impact) in her explanation and referred to it as core impact value:

> *"To me it means that you have a very clear impact driven mission and that you always put your impact first. That does not mean that you are not allowed to make money, and that does not mean that you don't have to be business smart, but it does mean that everything you do is aligned with your core impact value." (Entrepreneur O)*

Different from these, four respondents perceived a sustainable enterprise as a 'normal business'. They emphasized that they were not particularly focused on the triple-bottom line dimensions but rather on general activities of a start-up such as getting customers and improving their product. Several reasons were provided for why they perceive their enterprise just as a normal business. One of the respondents explained that, after doing market research, they discovered that their client was not interested in sustainability that much. Therefore, the respondent perceives his enterprise/product as a regular product which competes in the regular market with other main competitors. The majority of the respondents which shared the same perception explained that they believed that the core of sustainable entrepreneurship is still entrepreneurship; sustainable entrepreneurship is rather perceived as a branch within entrepreneurship. For them, the core of entrepreneurship is all about creating something that is of value for their customers. The fact that it happens to be in the sustainable segment is mainly related to the current transitions/innovations that are taking place in the sector that they are working in (energy and construction).

Other responses to this question revolved around being 'critical' and 'committed'. In terms of being critical it was deemed important to focus on every aspect of the company and seeing it through a critical lense in order to ensure that everything eventually becomes transparent. The following quote of Entrepreneur D which operates in the painting industry clarifies this perspective:

> *"So I want to explain sustainable entrepreneurship by focusing on every aspect of the company and seeing it through a critical perspective.. so knowing where the paint is*

produced, how to do the transportation, what to do with the communication, what cans to use, how to make people order the right quantities, how to ensure that people are always happy with the colour so that they don't have to throw the paint away if they're not happy…. stuff like that and I think that is really interesting and important to build as a sustainable company. So focussing on everything and everything should be perfect and clear." (Entrepreneur D)

Being committed was explained in two ways. Firstly, two respondents stated that it is a fundamental prerequisite for them when they are hiring new employees. Secondly, one respondent stated that in order to have committed employees you have to be commercial:

"What I learned is that if you really want to have some impact, you can't work with volunteers because they are never ever really committed, most of them, because they will always have excuses like ..when I have some time left , I will do something.. and you can't really change the world with people who have some time left sometimes and most of the time they don't. So I learned that if you want to make the world more sustainable, you have to be commercial because it won't work otherwise." (Entrepreneur F)

Finally, Entrepreneur N explained sustainable entrepreneurship as a mindset. This involves not only being sustainable in a business context but also on a personal level which includes taking care of yourself, being healthy in order to run the company on the long-term. The following quote explains this in more detail:

"So sustainability is also taking care of yourself… so making sure that you are healthy, that you are taking time off, that you are sleeping well, that you are eating healthy, because sometimes that is also not sustainable right. You can like for example go hard for two years and then have a break down, what will then happen to the company? It is a very ultimate approach to me.. more like a mindset as well." (Entrepreneur N)

Table 4 – Overview of the identified perceptions of sustainable entrepreneurship

Perception of sustainable entrepreneurship	Mentioned
Mindset	1
Commitment	1
Being critical	1
Minimizing impact	4
Normal business	5
Core value	6

4.2.2. Perception of sustainability

When asked about their perception on sustainability the respondents mentioned several things. Three respondents described sustainability in a more general way; they explained it as meeting the needs concerning all aspects of the triple bottom-line dimension.

One of the most frequently mentioned perceptions was related to considering future generations. More specifically, this was about minimizing impact, mainly towards future generations and also not creating negative externalities on the long-term. Additionally, one of the respondents also emphasized on helping people to minimize their impact through providing sustainable products which are convenient. The respondent argues that people in the end always prefer to have a convenient product, because that is easy to get, which is currently not always the case with sustainable products.

Another relevant finding was that sustainability was coupled to creating something which is durable. The following quote provides an example of how this was explained:

"So if we design something, we are already thinking of "what in 10 years", can it be re-recycled so can it be designed circular and also always thinking about XXX as a company. How sustainable is it, maybe we won't exist in 10 years because the plastic

waste problem is solved, what do we do then and how can we adapt to the world." *(Entrepreneur M).*

Working together in harmony was also mentioned as an important aspect of sustainability. Hereby its deemed important to share knowledge so that it can be further developed, and this would then be beneficial for the long-term, which relates to the just-mentioned durability concept.

Table 5 – Overview of the sustainability perceptions

Perception of sustainability	Mentioned
Convenience	1
Work in harmony	2
Knowledge sharing	1
Triple bottom line	3
Durability	4
Minimize harm for future generations	4
Awareness	1

4.2.3 Perception of entrepreneurship

When asked about their perception of entrepreneurship, 7 out of the 18 respondents explained entrepreneurship as taking the initiative to work towards a specific goal. Its noteworthy that most of the respondents speak about immediately translating an idea into testing in the market if it is viable, accepting the fact that there is risk involved, and also being responsible for those risks.

Some respondents also argued that it is essential for an entrepreneur to be passionate and committed, because they often meet people who try and push them back and usually start-ups have limited resources available. Therefore, its perceived important to be enthusiastic, staying persistent and motivated. The following quote illustrates how this problem is even harder for sustainable entrepreneurs:

"If you don't put your heart into everyday that you are there, it is not going to happen. You are going to get killed and being a sustainable entrepreneur is that probably times 2, because of the additional headwinds you encounter, you know you are trying to change an existing infrastructure, trying to change an existing market-system with a new technology or with a new solution and existing stakeholders and economic interest groups will try to do everything to convince your customer that they should continue to do what they did and not go with you." (Entrepreneur J)

The findings also show that having added value was deemed important. This was described as providing a service or product which is of added value to the customer. Additionally, one respondent related this to the importance of creating a good network which helps to find market opportunities and that leads to spotting where you can add value for the customer.

Table 6 – Overview of the identified perceptions of entrepreneurship

Perception of entrepreneurship	Mentioned
Network	1
Added value	2
Upfront vision	1
Spotting market opportunities	2
Passion	5
Taking initiative	7

4.2.4. Connection between sustainability and entrepreneurship

Connection

The respondents were also asked to explain how they feel that sustainability and entrepreneurship are connected to each other. In this regard a range of different responses emerged. The majority of the respondents described this connection by stating that sustainability is an (infinite) goal that can be achieved by the means of entrepreneurship.

Furthermore, two respondents explained the relationship between sustainability and entrepreneurship by linking it to the previously mentioned concept of taking initiative (4.2.3):

"I think because so many people are aware of the ... problems that it causes... that people want to do something about it and also see like ... the potential of .. making a business out of it. so I think entrepreneurship and sustainability works perfectly together, especially in this time because there are so many options of making the world more sustainable and making a profit." (Entrepreneur R)

"We really need to change, and change requires new ideas, new ideas/new initiatives and that is where entrepreneurship comes in because these are people who not only set up a new company but are generating new ideas and not only that but also executing on those ideas. So that is I think where these two connect." (Entrepreneur H)

No connection

There were also two respondents who did not feel that there was a connection between these definitions. Several reasons were given for this. One respondent explained that - based on what he sees in his environment - entrepreneurship is still part of the system of traditional capitalism and as a consequence of this, sustainability aspects are still often ignored. Another respondent explained that he tries to actively avoid being called an entrepreneur. He argues that it has negative connotations related to getting rich quick and not having a long-term view.

4.3 Phases

The respondents were asked to draw and explain the phases, according to what they experienced in the process of creating their sustainable enterprise. This question resulted in a wide variety of answers. The identified phases are divided into three core categories which are named 'recognition, solution and market'. Within the 'recognition' category, the respondents identified 'ideation' ' recognizing the problem' and 'ambition' as the corresponding phases. In terms of the 'solution' category, developing the 'first product/service', 'market validation' , 'iteration', 'funding', 'minimal viable product', 'human resources' and 'business identity' were deemed relevant phases. The third and final core category 'market' consisted of a 'launch' and 'upscaling' phase. Moreover, the self-identified phases match the description of the presented phases of Belz & Binders' (2017) convergent process model (will be further elaborated in section 5.2.3) except for upscaling because the convergent process model (Belz & Binder, 2017) ends at market entrance. The activities within the 'recognition' phase are similar to the recognizing a problem and recognizing an opportunity phases, the process of finding 'solutions' is almost identical to the description of the developing a double and triple-bottom line solution. The difference regarding this phase was that respondents also utilized funding within this core category to finance the development of their product or service. Furthermore, they also argued to conduct iterations within this core category. Finally, 'market' resembles the funding and forming and creating or entering a sustainable enterprise step. The following sections will elaborate on these findings.

4.3.1 Recognition

Recognition refers to any description of a phase which is related to the recognition of opportunities and/or problems.

Ideation and ambition

Findings show contrasting opinions regarding the first phase. The majority of the respondents - 10 out of 18 - identified having an idea as the beginning. Entrepreneur C and Entrepreneur N explicitly stated that it all started with having ambition. Interestingly, these two respondents also explained this as their entrepreneurial motivation (fascinated, 4.1.1); they always dreamed

of having their own company and explicitly mentioned in this question that it all starts with having this desire.

Problem recognition

Another identified (potential) starting point was the recognition of a problem. Within this concept, many respondents only mentioned that they became (more) aware of a problem. Entrepreneur Q and Entrepreneur R already knew that they wanted to start a sustainable enterprise and subsequently conducted a market research that led to discovering a problem. Another given argument was based on having a specific frustration emerging from a certain habit or lifestyle, which led to perceiving it as a problem that other people probably also encounter.

4.3.2 Solution

The category 'Solution' includes any description of a phase regarding the development of a product or a service, such as searching for market validation and adding people to the company. The presented subphases are consequential except for the funding phase and iteration, which occurred according to the respondents several times within this category.

Business identity

Three respondents mentioned and explained the formation of the business identity as a phase. Only Entrepreneur F identified this as the first phase. Entrepreneurs E and N described this as the phase after the 'recognition' phases. This phase was described as crystalizing the idea or concept that one has in mind. The following quote provides an example of what this entails:

> *"I had an evening business course to come up with a business plan, how to strategize, come up with a name, logo and then it crystalized from there. And for me the decision to make bags really came from practicality.. because when you make shoes there is different sizes etc. ... so it was really because bags have one size." (Entrepreneur N)*

This quote shows that establishing a business identity refers to setting up formalities such as designing a name and a logo which aid in building a brand and specifying what the focus of the company will be.

First product/service

After recognizing a problem, developing an idea and identifying with the business identity what the focus will be, most respondents described the next phase as designing the first product or service. Some of the respondents explained that they pre-financed their product. The following quotes clarifies this:

> *"We focused on finding our first customers and also developing our product. Within this step we found people who were willing to pay 5 euros a month and then we asked them what they want from the product and how can we develop it." (Entrepreneur B)*

> *"In January we started rolling it out, calling companies to sell a product we did not even have yet and that proved successful because within two months we had 5 tenders already and yeah having four clients and more in the pipeline." (Entrepreneur C)*

Through offering a product/service, asking interested customers their willingness to pay and also gathering information in terms of design and other expectations regarding the product, these respondents were able to develop and sell their first product before it was made.

Market validation and iteration

Not all respondents pre-financed their product or service. Many respondents rather started with validating their solution in the market. Generally speaking, this implied firstly assessing if there is a product-solution fit. This means finding out if their product or service is a solution to a

problem, and if the problem is there in the first place. Additionally, the respondents also tended to explore the product-market fit. The following quote explains this:

> *"So you can say that... looking at the business model canvas, I was testing the customer-product match. And then you are going to fill in the other things so the communication, the customer, relationships, partnerships, pricing all that stuff was here so the validation." (Entrepreneur D)*

This quote explains that the product-market fit is concerned about knowing what the market wants and expects from your product or service. Moreover, thirteen respondents explained how and why validating if a product or service is already in the market, and if it provides added value for (potential) customers is important. They usually start with conducting desk research whereby they assess whether there is a demand for the product or service, what the customers expect from that product or service and how much they are willing to pay. Based on this information the first prototype is developed. Subsequently, the physical product or service is developed and then tested in the market; interested people are asked to try the product or service. These people will most likely encounter some troubles or inconveniences with the first product and hence they can provide feedback which will aid in optimizing the product or service. This process of adapting to newly obtained knowledge was mentioned and defined by 50% of the respondents as iterating or pivoting. Interestingly, the iteration of the first prototype often not only leads to the improvement of the product but also to reconfiguring the initial idea. The following quote provides an example of this:

> *"So first you have the problem. From this problem you come up with a first product to help the problem. For us then…. we started doing a lot of research, how we would do this, and we started to write a business plan. Then throughout doing this we noticed that our idea was slightly off, so then we had a first pivot and that is when went from the containers to the wooden containers. Thereafter we finished the business plan and proceeded with conducting some real-life research, market research. That led for us to a second pivot, by which we went from the wooden containers to the XXX unit." (Entrepreneur E)*

This quote illustrates the flow and interconnection of the various phases which were mentioned in the previous sections. Furthermore, it highlights how the first product (containers) was not always a suitable solution for solving the problem. In other words, the initial product-solution fit was not optimal yet.

Funding and minimal viable product

After improving the product or service based on the feedback of the first prototype, the respondents repeated the just described process again by making a second prototype or by developing their minimal viable product (mvp).

Funding was also identified as a phase. In this regard, three ways of funding emerged from the data. As previously mentioned, two respondents pre-financed their product before working on the first product/service. Besides this, there were also respondents who invested their own money into the start-up. Interestingly, these respondents did not work full time on their start-up but also had another job. The majority of the respondents sought funding through partnerships and investors. Respondents mainly sought funding before launching their prototypes and also for developing their minimal viable product. Additionally, they also explained that funding was necessary for scaling-up; section 4.3.3 will elaborate on this.

Human resources

Adding people to the team, which include employees, freelancers, (co)-founders and partnerships (investors), was also identified as a phase by six respondents. Some respondents stated that they stuck to the same team from the beginning. Other respondents added people later on in the process, usually when the founders realized that they lacked some area of expertise, which was mainly necessary for developing the product or service.

4.3.3 Market

This section presents the subphases - which are consequential - of the category 'market'. It refers to the identified phases that occur during and after the official launch of the business. Moreover, most of the respondents have recently entered or are about to enter one of the described phases in this section.

Launch

The findings show that the respondents talked about launching the company in different contexts. Generally speaking, launching was perceived as really entering the market and selling the optimized product or service to the customers. Besides that, it also includes the launch of an official website and branding the start-up.

Upscaling

Nine respondents mentioned that the phase that they are about to enter, or current position is the phase of upscaling. The respondents mentioned two aspects of scaling-up. Most of them spoke about this in the context of seeking funding which is essential for increasing the production capacity. Additionally, it was also deemed important because it aids in becoming more consistent in having products regularly available. This is crucial for keeping up with the increasing demand.

Another aspect that was mentioned is expanding the current team. As stated earlier, most respondents have no or few employees. Moreover, they acknowledged that in order to grow they will need (more) employees. This is needed to supplement the competencies that they are missing.

4.4 Phases from benchmark with convergent process model

The respondents were also asked to provide their opinion on the appropriateness of the convergent process model (Belz & Binder, 2017). They were asked to explain if they agreed or disagreed with the phases, based on their own experience. The following sections will, firstly, present the findings regarding this question. Thereafter, section 4.5 will elucidate the findings concerning the sequence of Belz & Binders' (2017) convergent process model. Additionally, the perceived missing phases will be presented.

4.4.1 Recognizing an ecological or social problem

According to Belz & Binder (2017), recognizing an ecological or social problem can be a potential beginning point for sustainable entrepreneurs. Moreover, they explain that recognizing these problems tend to occur in the private or working environment of sustainable entrepreneurs. This is in accordance with the results of this study. Moreover, thirteen of the respondents acknowledged this as their starting point. A wide variety of explanations was provided in terms of how they recognized the problem. Furthermore, these explanations are linked to their entrepreneurial motivation (see 4.1.1 and 4.1.2.) which is either intrinsic or extrinsic.

4.4.2 Recognizing an ecological or social opportunity

This phase entails recognizing a solution for the identified social or ecological problem, which provides an opportunity in the market. The findings show that 12 respondents in this study confirmed that they experienced this phase. Moreover, explanations of this phase are also related to their entrepreneurial motivation.

Some respondents argued if they first recognized the problem or rather the opportunity. They stated that they did not experience these two phases occurring separately, but rather they were happening at the same time. Moreover, 17% of the respondents also argued that they did not perceive recognizing an ecological or social problem or opportunity but rather a business problem and a business solution:

> *"We were working in a certain way which was inefficient at XXX but did not think too much about it, until we somewhere stumbled upon a solution and then we suddenly recognized the problem we had and where we found a solution for. To be very honest, in my opinion it is not specifically an ecological or a social problem or solution it is really a business problem and a business solution for companies which operate in a sustainable industry." (Entrepreneur H)*

Interestingly, these respondents are identical to the ones that regard their start-up as a normal business, as explained in section 4.2.1.

4.4.3 Developing a double-bottom line solution

Developing a double-bottom line solution refers to when an opportunity is narrowed down towards a feasible solution, whereby the values sought by selected customer groups is identified. Double-bottom line stands for the focus of the start-up that is either ecological-economic or social-economic. The majority of the respondents (14) agreed that they experienced this phase. A notable finding regarding this phase is that they explained this phase as the moment when they conducted desk and market research in order to develop the first product and also running pilots in order to optimize the product or service.

4.4.4. Developing a triple-bottom line solution

The next phase in the convergent process model (Belz & Binder, 2017) is that of integrating all aspects of sustainability; the ecological, social and economic dimension. Most of the respondents doubted whether they incorporated all dimensions and also if they have already reached this phase yet. The respondents which agreed with this phase usually mentioned a social aspect which is inherent to the problem that their product or service solves. The following quote gives an example of such an explanation: *"It is very important that housing is an affordable product because everyone needs one so its ecological and social" (Entrepreneur E).* This respondent has a solution that provides a pre-fabricated unit which contains various utilities such as heating, kitchen, bathroom etc. that can be installed directly into (new) houses. This offers ecological benefits since it saves tons of co2 emissions but also social benefits because it speeds up the process of building a house and it makes houses more affordable.

There were also respondents which did not agree with this phase. A common argument given was that the triple bottom line solution should be worked upon after entering the market because start-ups usually have limited resources available and therefore it is better to focus on optimizing the double bottom line dimension first. Furthermore, these respondents perceived the social dimension rather as conducting activities such as providing charity or providing community projects.

Funding and forming of sustainable enterprise

This phase comprises the application for initial capital which is needed to start a business before market entry. When asked about this phase, twelve respondents deemed this phase important, because it is perceived as the official start of the company. The other six respondents did not discuss this phase during this question. However, it must be noted that they argued in the question about drawing and describing their phases (section 4.3.2) that external funding is important.

There were also respondents which did acknowledge/recognize the funding phase but nuanced its importance. Some of them relied on different ways of funding, as explained in section 4.3.2. The following quote provides an example of this:

> *"I don't 100% agree with the funding part. I believe very much in having a lean start-up which means that you basically try to bring your first product to market without funding... or as little funding as possible." (Entrepreneur O)*

This respondent emphasized that it is important not to become too dependent on external funding. Reason therefore is that she believes that seeking external funding before validation of the product and market leads to being too relaxed. Moreover, there was also a respondent which believed that funding and forming overlaps with creating or entering a sustainable market. The latter will be explained in the following section.

Creating or entering a sustainable market

This phase implies entering the market with an official product or service which can be purchased by customers. The majority of the respondents (14) agreed that they experienced this phase. There were also some respondents which doubted this phase. The following quote provides an example:

> *"Well creating a sustainable market.... you are entering the market.. it is not a sustainable market... it's the market that you are providing a sustainable solution, but you are not creating a new market in my opinion. Well... you can but it depends on what you define as the market... like the construction industry... it's not like you are going to*

make a new construction industry.. so yeah I don't agree with this one." *(Entrepreneur A)*

The following quote illustrates how his perception of his business influences his opinion regarding entering or creating a sustainable market. Interestingly, there were many respondents which also commented on the moment of creating or entering a sustainable market. This also accounts for the other phases of the convergent process model (Belz & Binder, 2017). Therefore, the following section will present these findings concerning the sequence of the convergent process model of Belz & Binder (2017).

4.5 Sequence

As mentioned earlier, the respondents were also asked to shed light upon the sequence of the convergent process model (Belz & Binder, 2017). In response to this question, a range of different responses was given. Moreover, eight respondents questioned or disagreed with the sequence of this model, being it the entire model or one of the phases.

Triple-bottom line solution

From all phases that were questioned, the triple-bottom line phase was the most frequently doubted. A commonly given argument was that the triple bottom line solution should be worked upon after entering the market. The following quote provides an example of one of these arguments:

> *"I think you have to be in the market for a while, for a few years and then you can add the triple bottom line solution, because for us, and I think that is for everyone, you have to focus on one thing. You have your reason for why you exist, and you have to work really hard on your double bottom line aspects for a few years to get yourself of the ground and then you start "okay my employees.. how is that working, and can we do something for people in this neighbourhood or whatever". So I would say that the triple bottom line solution should be last, like years later. That is what I am seeing now."*

Another respondent gave a similar argument. Additionally, this respondent was also sceptical about whether this phase is applicable for every sustainable enterprise.

> *"An ecological problem or opportunity and uhm it shouldn't .. the triple bottom line solution doesn't have to be there, before you actually started your company. It can also be included later, and some companies never include it. They will just only focus on ecological and economical solution and they will never include the social aspect."* *(Entrepreneur L)*

The argument provided in the above quote was also noticeable with other respondents because several respondents found difficulty in assessing for themselves in which phase they are located:

> *"I think this is the correct line although I am not sure if we already incorporated people (social) as well in the... maybe we are still at the double bottom line solution, I am not sure. So we.. but we already had funding, we have formatted our enterprise so to say and we entered the market.. we actually entered the market before we had a complete solution."* *(Entrepreneur M)*

These respondents seem to have the characteristics of reaching the last phase. Moreover, this quote illustrates that the linearity of the convergent process model (Belz & Binder, 2017) was contested. These quotes indicate that there is a time dimension for going to a triple bottom line solution i.e. that it is not an immediate process.

Funding

As presented in section 4.3.2. respondents argued that funding not only occurred after the development of their solution. The data revealed that funding occurred also prior or during the development of the first product or service and during the development of the mvp product.

Creating or entering a sustainable market

Three out of the eight respondents who disagreed with the sequence of the model highlighted the last phase. All of them argue that entering the market occurs immediately after recognizing an ecological or social problem. The respondents explained this as immediately entering the

market in order to validate if there is a demand and to develop a well-functioning product or service.

Another remark was provided by one respondent who argued that creating or entering a sustainable market occurs before and overlaps with the funding and forming phase. One reason therefore could be that in order to receive funding, investors want to know if you have an actual product and that you are making sales.

Design of convergent process model

Besides commenting on the various phases, several respondents also shared their opinion on the shape of Belz & Binders' (2017) convergent process model. The most given criticism was focused on the sequentially of the phases of Belz & Binders' (2017) convergent process model. The respondents argued that between the phases there are continuous iterations which occur and therefore the model should not be linear. The following quote provides an example of these arguments:

> *"So and this is like a linear way of developing a product and then launching it on the market and that is an opportunity, but the market is changing really fast so in some cases you can do it ... in the healthcare for example because that is a slowly moving market. Fast moving consumer goods is not a good idea to do that. So then I would suggest of looping it .. like doing iterations." (Entrepreneur D)*

This quote suggests that the shape of Belz & Binders' (2017) convergent process model likely depends on the industry or sector of the sustainable enterprise.

Missing phases

The respondents were also asked to state if they felt that one or more phases were missing. Only Entrepreneur C and N commented on this question. According to him there should be one phase before recognizing an ecological or social problem, which is ambition. He argues that ambition forms a prerequisite for spotting problems and opportunities.

4.6 Competencies

This paragraph presents the self-identified and relevant competencies needed in the process of creating a sustainable enterprise. Additionally, a few respondents linked the competencies to their self-identified phases or the phases of Belz & Binders' (2017) convergent process model. This will be also presented in this paragraph.

Similar to section 4.3, the first question sought to identify what competencies they deemed important. Thereafter, a list with key entrepreneurial and sustainability competencies, as explained in the theoretical framework was presented. In this regard, the respondents were asked to explain which competencies they deemed relevant.

When asked about the familiarity with the concept of competencies, several respondents asked for an explanation of the definition. These respondents were given the academic definition as presented in section 2.2; competencies were explained as possessing knowledge, skills, capabilities. Table 7 provides an overview of the self-identified competencies.

Table 7 – Overview of self-identified competencies

Self-identified key competencies	Mentioned
Perseverance	12
Creativity	5
Sociability	13
Technical competence	8
Staying above process	3
Business competence	5
Market insight	5
Analytical competence	7
Self-reflection	7
Strategic competence	2
Pro-activeness	2
Sense of purpose	1

4.6.1 Competencies identified by respondents

One of the most recurring themes was being able to convince others of their product/service, presenting the vision of the company, listening to the feedback of peers or other experienced partners/people, getting new people on board of the company and forming partnerships. This competence was labelled as 'sociability' and was deemed relevant in all the phases. The data showed that 14 out of the 18 respondents deemed this important because it often led to broadening their network which in turn caused receiving (financial) support.

Entrepreneur M stated that having a 'sense of purpose' was a needed competence for the ambition phase ('recognition').

The respondents (12 out of the 18) also identified 'perseverance' as an important competence. In this regard, having patience, being resilient against setbacks and dedication were considered to be important. Resilience and patience were needed for example during negotiating with other companies:

> *"All of this signing contracts, waiting for emails and accepting that companies have slow response rate is kicking my ass at the moment and I am sick of it. I am trying to let that go and accept that people and companies have their own thing... its really frustrating when you know what you need, what your next step is and then you have to wait on someone else." (Entrepreneur G).*

Some of the respondents also indicated in which phase this competence was deemed important. Interestingly, three respondents stated that having perseverance was the most relevant competence and therefore vital in every phase. Furthermore, three respondents stated that it is necessary in the early phases (Recognition, see section 4.3.1) as there are many uncertainties in this period such as not knowing if there is a market for the product/service. Entrepreneur P added to this by explaining that within the pilot phase it is not only important to believe in your product/service but also to have a willingness to change.

Possessing technical competence was deemed important by 10 out of the 18 respondents. It is essential for creating and maintaining the product or service and therefore it was linked to the 'solution' phase. Furthermore, it was also believed to be important for other business aspects such as creating their own website/web shop. Moreover, this competence also comprises the ability to detect the feasibility of turning the idea into a product/service. Respondents either possessed technical competence due to their (educational) background,

through learning on the job and by attracting this competence from an external party.

Two respondents mentioned strategy as a competence. Entrepreneur F related it to the technical competence by explaining that it involves possessing strategic knowledge of how to use the technical competencies. Entrepreneur G explained it as planning the long-term strategy for growth, in order to receive funding.

The data also showed that five respondents mentioned the possession of analytical competence. Moreover it was linked to all the phases. This competence was usually linked to brainstorming about an idea, researching the idea and viability of the product or service (i.e. does the product already exist and understanding the customer) and evaluating past activities. Furthermore, some respondents expressed the believe that this competence was also important for iterating the product or service as described in section 4.3.2. Hereby they analysed the flaws of the pilot run, listened and incorporated the feedback provided by customers and partners and assessed how they could process the feedback in the next prototype.

A competence related to the analytical competency is self-reflection. Some participants expressed the belief that it is important to evaluate themselves, to know what they lack and find a solution for it. They also referred to this competence as evaluating whether you are still on track in terms of reaching the set goals. Besides that, it refers to not being fixated to one idea and being capable of evaluating whether that is the best path to follow.

Five respondents also mentioned that they needed business competence in the 'solution' and 'market' phase. In this regard they referred to for example knowing what kind of business model and communicating the identity of the start-up into the market as an important feature. Furthermore, they mentioned the use of financial, marketing and sales skills as part of this competency. The following quote shows the relevance of having financial skills:

> *"I think pretty much the same goes for upscaling I suppose. The thing for upscaling is we had to a lot of calculations for you know cost and income, how much can we ask for a product, how much is going to cost this... so financial insight I suppose."* (Entrepreneur R)

Having 'market insight' and/or gaining knowledge about markets was also mentioned by five respondents as an important competence. Three respondents also emphasized the importance of staying above the process. This was explained as overseeing the whole business, sticking and pursuing your principles and self-development as a leader that can scale-up the company.

Five respondents argued that creativity was an important competence in the

'recognition' and 'solution' phase. The majority of these respondents agreed that it was necessary for crafting their ideas into concrete concepts. Moreover, one respondent also explained the following:

> *"Uhm.. then founding the company the competencies again creativity because we had to make our own design, own logo everything... we had to do a lot of research on how to do things ourselves.. like building a website everything." (Entrepreneur R)*

The reason for being independent was related to the limited availability of resources. Although it was not mentioned within this question, several respondents such as Entrepreneur E also explained how having limited financial resources forces them to be more creative.

Three respondents also emphasized the importance of 'staying above the process'. This was explained as overseeing the whole business, sticking and pursuing your principles and self-development as a leader that can scale-up the company.

Two respondents mentioned pro-activeness as an important competence for starting their sustainable enterprise ('Recognition'). Entrepreneur F explained how he turned his frustration into creating a sustainable enterprise. Entrepreneur M explained how his drive and enthusiasm pushed him to become an entrepreneur.

4.6.2 Entrepreneurial and sustainability competencies

As stated earlier, the respondents were also presented a list of entrepreneurial and sustainability competencies. They determined for themselves if they used these competencies in their process of creating a sustainable enterprise and if they deemed these competencies relevant. The following sections present these findings. Some respondents also indicated in what phase they needed these competencies

4.6.2.1 Entrepreneurial competencies

Table 8 – Overview of entrepreneurial competencies

Entrepreneurial competencies	Mentioned
Opportunity competence	14
Social competence	18
Business competence	15
Industry specific competence	11
Entrepreneurial self-efficacy	15

Opportunity competence

Opportunity competence refers to the ability to (systematically) search and recognize opportunities (Lans et al., 2014). This can occur within their network or in the broader environment. When asked about this competency, fourteen respondents agreed that they used this in their process of creating a sustainable enterprise. The majority of these respondents stated that it is inextricably linked to the very beginning of the enterprise creation process ('recognition'). Several respondents such as Entrepreneur R explained that without spotting an opportunity it is not possible to create a firm since it helps in identifying and developing a product or service that the market needs. Besides that, one respondent also claimed that it is also important in the other phases ('solution' and 'market'):

> *"In the current economic environment... if you don't see other opportunities along the way.. your product will get to maturity ... competition will increase and if you don't have something else in the pipeline it will go down and your business will end. So I think spotting opportunities always remains very important." (Entrepreneur E)*

Social competence

The social competence referred to the ability to maintain and build new relationships/good network that aids in the further development of the product or service (Lans et al., 2014). Findings show all respondents acknowledged this competence. This competence was deemed important because as a starting enterprise, having a good network aided in the further development of their idea and was also deemed necessary in the 'solution' and 'market' phase. The respondents had limited resources and therefore they had to convince external parties that their product or service is worth partnering with/investing in. Moreover, they also argued that they had to maintain good relations with other parties in order to further develop their product/service and eventually introducing it in the market. Besides attracting resources, having a good network was also mentioned to aid in gaining legitimacy:

> *"What really is important in this phase as a start-up/scale-up, is that we work with parties who gained much legitimacy in the market already. For example the Alpha, the glue that we used from Beta, and for us to work with them gives us tonnes of legitimacy so that really helps a lot. So our network is definitely contributing to the idea, the resources in terms of money and legitimacy in the market." (Entrepreneur I)*

Business competence

Business competence refers to possessing planning and control mechanisms/systems that aid in managing various resources (e.g. financial and technical) within the enterprise and also setting, evaluating and incorporating strategies for an enterprise (Lans et al., 2014). When asked about this competence, fifteen respondents agreed that this it was important. The respondents explained this competence as using resources of the company wisely and (re-evaluating the current strategy/strategies. Therefore, some respondents argued that this competence was deemed necessary in the 'solution' and 'market' phase. Moreover, several respondents such as Entrepreneur E also acknowledged that they were not actively using this competence currently due to the lack of employees and that they deemed this competence necessary in the stage of scaling-up, as this would require working with more structure.

In contrary, there was one respondent which firmly disagreed with this competence. The following explanation was given:

"Then the business-competence , yeah I definitely do not believe in planning and control. It is not about planning and control, but it is about being reactive and responsive. I think that is the business competence you should have, instead of planning and control. Control is not from these days; also micro management is a bit old-fashioned. I don't think that is necessary. Self-management is way more important." (Entrepreneur L)

Industry specific competence

Interestingly, only eleven respondents deemed the industry-specific competence relevant. A wide range of responses were given regarding this competence. Five out of the eleven respondents argued that the industry-specific competence can be learned on the job and therefore it is not a prerequisite to possess for creating a sustainable enterprise. In this regard, one respondent argued that it is rather important to be passionate:

" Someone once asked me "would you say if I want to start a business that I should start in a field that I know a lot about" and my answer was "no" because that is also what I did. I started in a field that I was passionate about and that made me learn more about it. So yes its important but it is not something you must have at the very beginning you should just be willing to enhance it." (Entrepreneur O)

Furthermore, one respondent stated that her expertise from a different industry was also beneficial for working in the industry that she currently operates in. She stated that having a different view aided in thinking outside the box:

"And then industry specific... yeah.. no that is definitely not true. In our company nobody has experience in the coating industry , the maritime industry or the aircraft industry. You just need to have a vision and when you don't know the industry, you can be crazy enough to think that you can change the industry. When you know the industry to well you might be too conservative to actually think outside the box. So I don't think that one is true."(Entrepreneur L)

Others argued that their background/prior knowledge about the concerning industry worked as an advantage for their enterprise, as it aided in recognizing opportunities and made it easier to develop their product/service ('solution'). One respondent added that it is not only relevant to

have industry-specific competence, but also to be aware of developments in the market in order to make the right decisions:

"I think the industry-specific competence for us is really about the materials. The materials and also the business model. So we need to be aware of the latest financial regulations. And the second thing is more of a political/economic reason. I truly believe that you are either getting punished in about a few years, when your carbon dioxide balance is way off… or you will probably get financial credits when your carbon dioxide balance is positive. So I think we need to be aware of those developments in order to make the right developments for now." (Entrepreneur I)

Entrepreneurial self-efficacy

Entrepreneurial self-efficacy means believing in your own entrepreneurial skills (Lans et al., 2014). The findings show that this was deemed the second most relevant competence; fifteen respondents highlighted its importance. This competence was deemed important in every phase as it was important for them to have confidence in their product, being very driven on a personal level, being driven by the mission of achieving a sustainable goal and being driven in terms of personal development.

4.6.2.2 Sustainability competencies

This section presents the findings concerning the sustainability competencies deemed important by the entrepreneurs. It follows the sequence of the sustainability list (see appendix B).

Table 9 – Overview of sustainability competencies

Sustainability competencies	Mentioned
System-thinking competence	13
Embracing diversity and interdisciplinarity	13
Foresighted thinking competence	14
Normative competence	14
Action competence	14
Interpersonal competence	16
Strategic competence	14

System thinking competence

System thinking competence means being able to study complex systems. In this regard, it also refers to the ability to identify and analyse all relevant domains (based on the triple bottom line) from different systems. Furthermore, it also includes focusing on understanding the connection between these systems (Lans et al., 2014; Wiek, 2011; Ploum, 2018). The findings show that thirteen respondents acknowledged the importance of this competence. Furthermore, the data also reveals that the respondents interpret system-thinking in different ways. Two respondents argued that system-thinking is part of their personal way of working; this was explained as analysing problems systematically and therefore it was deemed necessary in all the phases. Besides that, four respondents explained this competence by stating that their solution is part of a system. Moreover, their explanation showed that they are well aware of the fact that their solution requires thinking across different domains and overseeing these domains. The following quote further clarifies this point of view:

> *"I like the system-thinking because the electricity market is really a system industry with a lot of players, it is a huge value chain and you cannot change one thing without*

impacting the others, so we really need to have a system approach. I think we do that
quite well." (Entrepreneur H)

Embracing diversity and interdisciplinarity

Embracing diversity and interdisciplinarity refers to considering other perspectives, recognizing issues and structuring relations during the process of business decision-making regarding societal, environmental and ecological issues (Lans et al., 2014). This competence was deemed important by thirteen respondents. In this regard, many respondents referred to the importance of continuously listening to the feedback of others and sharing knowledge with other relevant parties throughout the entire enterprise creation process. Others referred to ensuring ethics in terms of working with the right people. Respondents also mentioned that it is an inherent part of their work to embrace diversity and interdisciplinarity:

> *"As a true circular entrepreneur or sustainable entrepreneur you can't work alone. So*
> *I really need my suppliers to think with me, they need me to think with them and it is far*
> *more intense than the current sort of ecosystem so to speak, so I definitely recognize*
> *those issues and it is definitely both structuring relations and helping each other being*
> *more efficient and innovative and being more sufficient in designing new business*
> *models and new financial models or whatever." (Entrepreneur I)*

One respondent coupled this competence to the scale-up phase by stating that divers people inhibiting certain skills such as technical , sales, managing) are required.

Foresighted thinking competence

Foresighted thinking competence is described as thinking in long-term horizons, considering future generations and envisioning future scenarios through integrating uncertainty and risk (Wiek, 2011; Lans et al, 2014). The results showed that fourteen respondents considered it important. Respondents explained this competence in the context of pre-empting problems and finding suitable solutions before they emerge as problems, they explained it as related to their

vision of pursuing a sustainable (end) goal and it was also explained as constantly adjusting this vision due to setbacks. Therefore this competence was acknowledged to be essential in all the phases.

Normative competence

Normative competence refers to being able to reflect, negotiate and apply sustainability values/goals based on deeper concepts such as justice, ethics and equity (Lans et al., 2014). Regarding this competence, respondents mainly commented on the ethical aspect and on reflecting on past decisions. The importance of working with ethics was described as choosing the right people to work with and thereby negotiating with certain values/principles, which mainly relates to ensuring the sustainability of a certain activity/material. Hence, this competence was also deemed necessary in all the phases. The following quote is an example of this notion:

> *"Normative competence… definitely ethics, and that is also the discussion which we have with clients. I mean there is always like price, then you have ethics and there is price against principles. So we are always leveraging between those aspects. So that is always the discussion, everyone wants to do good but never wants to pay for it."* *(Entrepreneur I)*

In terms of reflecting sustainability goals/values/principles the respondents linked this to the iteration phase as described in section 4.3.2. Moreover, they explained it as looking at the past and assessing how things can be improved in the future.

Action competence

Action competence refers to being passively or actively engaged in improving the sustainability of social-ecological systems (Lans et al., 2014). It was deemed relevant by fourteen respondents. They explained this competence as taking initiative in a pro-active manner. Moreover, Entrepreneur E coupled this competence to the 'recognition' phase. He explained how important it is to have a sense of urgency as a prerequisite for taking action (which resulted in his case creating a sustainable enterprise). In this regard, he referred to translating concepts into what the implications are in the real world. Furthermore respondents also argued that this

competence occurs naturally; being actively engaged is inherent to running a sustainable business.

Interpersonal competence

Interpersonal competence refers to the ability to motivate, enable and sustain working relations (Wiek, 2011 & Lans et al., 2014). Additionally it implies embracing diversity of multifaceted teams and networks. The findings show that this was the most frequently mentioned sustainability competence; sixteen respondents deemed this competence important. Motivating team-members during encountering problems/setbacks was the most frequently explanation given. Besides this, keeping good relations with clients/partners was also mentioned. This competence was also deemed necessary throughout the entire enterprise creation process.

Strategic competence

Strategic competence means being able to design and incorporate transitions towards sustainability (Wiek, 2011 & Lans et al., 2014). This requires innovative thinking and a solution orientation and requires skills in planning, organising, leading and controlling. Fourteen respondents deemed this competence important. Moreover, it was linked to the 'solution' and 'market' phase. Entrepreneur K, R and I focused their explanation on innovative thinking in terms of creating and adjusting their products. Furthermore, Entrepreneur H related this competence to being knowledgeable about the market and its future trajectory. Entrepreneur Q explained it as working on your goals and targets on a day-to-day basis.

Missing competencies

The respondents were also asked to suggest competencies which are, according to them, also relevant but not on the presented lists. Entrepreneur H identified perseverance and intrinsic drive as missing competencies. These identified competencies match the description of entrepreneurial self-efficacy which involves believing in your entrepreneurial competence. Entrepreneur H argued that perseverance is needed due to the fact that he encountered people that were very critical. Therefore as an entrepreneur, according to him, you need a thick skin.

He explained the intrinsic drive as having the determination to show his former colleagues that he can manage to build a successful start-up.

Prioritization of competencies lists

An unexpected finding in this thesis was that several respondents disclosed which competence list they considered to be more important. Entrepreneurs A, C and P stated without further explanation that they related more to the entrepreneurial competencies. Entrepreneurs J and R explicitly mentioned that both lists were equally important to them. The following explanation was provided by Entrepreneur J:

> *" So I think the sustainability competencies are very much aligned with the "what". You have to qualify, understand what it is that you are bringing to the market. Having an understanding of what you bring to the market also helps you to communicate to the market. Bringing it to the market has a lot to do with entrepreneurial competencies. So I think both lists are important, and I think , depending on exactly what you do , each of these has more emphasis at a certain stage then others." (Entrepreneur J*

5. Discussion

Identifying what competencies are used in the process of creating sustainable enterprises, and what phases are followed, is the common thread of this research. What became clear from the interviews is that the entrepreneurs share similarities and differences in their opinion on which competencies and phases are relevant. This section will discuss these similarities and differences and moreover it will be contrasted with relevant literature.

5.1 – Reasons for becoming a sustainable entrepreneur

In order to gain a better understanding of the entrepreneurial process of the sustainable entrepreneurs, it was relevant to know their motivation for creating their sustainable enterprise. The data showed that the entrepreneurial motivation can be subdivided into either intrinsic or extrinsic motivation (Ryan & Deci, 2000; Kuratko et al., 1997). In this regard, intrinsic motivation referred to the personal drivers for starting a sustainable enterprise. The most frequently mentioned intrinsic motivation was labelled as 'fascination'. Respondents argued that they were always fascinated to start their own company; mainly because they felt responsibility for contributing in solving a sustainability-related problem. This finding corroborates with the high need for achievement concept (McClelland, 1961), as presented in the theoretical framework which explains how individuals who seek a high need of achievement tend to translate this into creating a venture. Another theme that emerged from the data and also relates to the need of achievement concept is 'frustration'. Several respondents explained how they were frustrated about a problem of which there seemed to be no adequate solution for it. This intrigued them to take the initiative to solve this problem themselves, through creating a sustainable enterprise. Moreover, independence also emerged from the data as a theme. The study of Hisrich (1984) also found evidence for this as an important motivator for starting an enterprise. Some entrepreneurs also explained their motivation from an emotional perspective. This was labelled as 'affection'. These respondents felt emotionally responsible for solving sustainability problems and ensuring a better future for the coming generations. Eisenberg (2000) identified a similar theme (sympathy) in her research on the role of emotion and regulation in morality. This was described as individuals that can think and feel themselves into another's perspective, without emotionally experiencing similar emotions.

Extrinsic motivation referred to being influenced by external factors for starting a

sustainable enterprise (Carsrud & Brännback, 2011). Choi and Gray (2008) found that their respondents were motivated by two factors: (1) to make a living out of their company and (2) due to their drive to make a difference. Interestingly, the first motive was not mentioned by any of the respondents. It was rather the latter that was also found in this study. Previous studies (e.g. Ryan & Deci, 2000; Kuratko et al., 1997; Carsrud & Brännback, 2011; Gilad & Levine, 1986) explain extrinsic motivation as an external reward that follows from certain behaviour. This differs from what was found in this study; the data revealed that the extrinsic motivation was not necessarily related to the reward that follows from certain behaviour. Moreover, this finding is in line with the recent study of Nhemachena & Murimbika (2018) who argued that social and environmental entrepreneurs are - besides economic objectives - triggered by social or environmental goals and seek entrepreneurial opportunities without any reward other than the fulfilment generated by obtaining their targets.

As stated in section 4.1, some of the entrepreneurial motivations resulted from life course events (Jayawarna, Rouse & Kitching (2013). Several respondents started their enterprise as a consequence of an opportunity that they encountered during their study, four respondents stated that the timing for starting their own company was right and one respondent was triggered due to a severe illness. These results agree with the study of Jayawarna et al. (2013). They proposed that an entrepreneurs' motivations are shaped by their life course contexts that are either career, household or business related. In terms of timing, the respondents argued that now is the best moment for them to start for themselves as they do not have parental obligations and do not have to pay a high mortgage. In other words, the perceived risk is lower now than in the future. This finding is related to the career and household related life course context as described by Jayawarna et al. (2013).

5.2 – Understanding of sustainable entrepreneurship

As stated in the theoretical framework, literature on sustainable entrepreneurship distinguishes sustainable-oriented firms from conventional firms. While the latter is mainly focused on obtaining profit, the former rather focuses on also providing ecological and social benefits (Tilley & Young, 2009; Cohen & Winn, 2007; Schaltegger & Wagner, 2011). Moreover, meanings and interpretations of sustainable entrepreneurship differ widely. Therefore, it was

also relevant to understand how the sustainable entrepreneurs made sense of sustainability in their process of developing their venture. Especially due to the fact that the perception of individuals contributes to the identification of opportunities (Ardichivili, Cardozo & Ray, 2003).

The results concerning the explanation of sustainable entrepreneurship showed that the majority of the respondents emphasized that the core value of their business revolves around being sustainable. Additionally, minimizing impact was also highlighted as an important aspect of being sustainable. These results are in line with one of the three typologies that were developed in the study of Muñoz & Cohen (2017) which studied the perception of sustainable entrepreneurs by asking their narratives concerning the creation process of a sustainable venture. This typology - labelled 'the new responsibility for entrepreneurship' - states that sustainable entrepreneurship is about reconsidering the purpose of sustainable enterprises. Moreover, it concerns embedding social and ecological considerations in the core business.

A surprising finding was that several respondents (4 out of 18) rather emphasized that sustainable entrepreneurship does not differ from conventional business. As explained in section 4.2.2, they stated that their focus is not on the triple-bottom line dimension but rather on general activities of a start-up such as getting customers and improving their product, as the core of entrepreneurship revolves around creating value for their customers. Interestingly, their answer concerning the connection between sustainability and entrepreneurship showed that all of them perceived sustainability mainly as minimizing harm for future generations. A possible explanation of this finding is also provided by Muñoz & Cohen (2017) which discussed a similar notion. They argued that the perception of some entrepreneurs, which identify themselves as sustainable entrepreneurs (and also based on their activities fit this description), differs from the assumed 'triple bottom line mentality' which has dominated the field so far. In other words, Muñoz & Cohen (2017) argue that an entrepreneur that gains in the pursuit of its activities social and environmental positive externalities also fits the description of a sustainable entrepreneur, whereas he/she might have negligent concerns for its social and environmental impact. These negligent concerns were seemingly also reflected in the argumentation of the concerned respondents in this thesis. Pursuing a sustainable cause was apparently not their priority. They were rather interested in working in a certain sector, starting their own company and creating a solution for a frustrating problem than pursuing a sustainable cause.

5.3 – Discussion of competencies

The data of this thesis revealed that 'sociability', 'perseverance' and 'technical competence' were the most frequently mentioned self-identified competencies. The observed correlation between these competencies may be explained in this way: 'sociability' (section 4.6.1.) was required in order to attract resources. Respondents argued that it was difficult to attract funding and other resources such as human capital. This made them depend on available resources and help from others (within their network or approaching other parties), primarily to start the development of their first product/service. In this regard, they often indicated that 'perseverance' was essential as they had to work with limited resources, they often encountered difficulty in finding someone who was willing to help, and they often received critical/negative feedback. For that reason, it is also not surprising that the respondents also consider possessing 'technical competence' and 'creativity' important because there were limited financial resources available that allowed to hire someone to complement the team with these missing competencies. These results corroborate with the effectuation theory principles of Sarasvathy (2001) which explain how entrepreneurs tend to rely on available resources such as their knowledge and network. Moreover, it pays attention to including other people and learning through experience. The latter was also explained within the technical competence and was also highlighted in the description of the industry-specific competence (section 4.6.2.1).

The analytical competence and 'self-criticism' were also regularly mentioned. Both competencies were linked to evaluating past activities such as a pilot-run and analysing how/what can be improved. These competencies are similar to the description of the strategic management competence which includes evaluating past policies, organising and leading. Therefore, it is not surprising that strategic management competence was deemed necessary in the iteration ('solution') and 'market' phase as these phases involved re-evaluating past activities and preparing a well-developed plan for entering the market.

Some similarities were also found between the self-identified competencies, the entrepreneurial competencies and the sustainability competencies. Two self-identified competencies fitted the description of the industry specific competence, namely the 'technical competence' and 'market insight'. Industry specific competence referred to being knowledgeable about the market and having technical know-how. The 'technical competence' referred to skills and knowledge necessary for the development of the product/service and other

business features such as a website and market insight involved knowing how the market works and where it is heading to. Moreover, findings on the entrepreneurial competencies showed that the industry-specific competence was often considered less relevant. Several respondents stated that it was not essential as learning through experience was also deemed sufficient for surviving in the industry. This is also in line with the just-mentioned effectuation theory of Sarasvathy (2001). Pro-activeness referred to being actively engaged in trying to make a change. This fits the description of the action competence as it implies having the urgency to take action about a sustainability problem; in the case of the entrepreneurs this resulted into creating a sustainable enterprise.

The results also indicated that - of all self-identified, entrepreneurial and sustainability competencies, respectively - 'sociability', social competence and interpersonal competence were deemed most relevant and needed in all phases. These competencies also resemble each other as they encompass social interactions with relevant stakeholders such as employees and maintaining good relationships. The study of Dentoni (2012), Wesselink et al., (2015), Lans et al., (2014) and Ploum et al., (2018) also acknowledged the interpersonal competence. A possible reason for the frequent mentioning of this competence is because most entrepreneurs had a few employees, worked with freelancers and formed partnerships with other stakeholders. Thereby they stated that it is very important to keep everyone motivated and to sustain good relationships as these aids in maintaining clients.

The study of Wesselink et al. (2015) concluded that the foresighted-thinking and normative competence were not considered important for CSR managers. This thesis found other results; sustainable entrepreneurs who considered these competencies relevant often indicated that it is an integral part of being a sustainable entrepreneur and therefore it was necessary in every phase of the creation process. According to them, the essence of sustainability is working with ethics (normative competence). In terms of foresighted thinking, a long-term orientation is needed in order to successfully mitigate sustainability problems. Moreover, the. findings of this thesis concerning the normative competence is also in accordance with Lans et al. (2014) which concluded that the normative competence formed the key difference between entrepreneurial and sustainability competencies as this competence emphasizes on awareness and being able to reflect on certain decisions when dealing with sustainability problems.

Lans et al., (2014) stated in their study that the strategic competence and action competence did not emerge as separate constructs. They argued that both competencies involve

pursuing a sustainability opportunity and turning it into a concrete project, which thus requires active involvement of the individual. In contrary, respondents in this thesis did not explain/state this link. Neither did their discussion of these competencies relate to this noteworthy finding of Lans et al. (2014). The respondents perceived the action competence primarily as taking the initiative to work on a sustainability problem. This also recurred in the self-identified competencies as 'pro-activeness' and usually implied creating a sustainable start-up, therefore it was linked to the 'recognition' phase. Strategic competence involved assessing how decisions could be taken in the most effective and efficient way.

5.4 – Discussion of phases

The second objective of this study was to establish different phases for creating a sustainable enterprise, as experienced from the practitioners' point of view. The self-proclaimed phases of the respondents were distinguished into three core categories: 'recognition', 'solution' and 'market'. This section will discuss their self-proclaimed phases combined with the identified phases from the benchmark with Belz & Binders' (2017) convergent process model. Moreover, three suggestions were made which are presented in figure 8:

- Respondents stated that the subphases of the category 'solution' were followed in a circular sequence. This was explained as an 'iteration' phase, indicating that the phases within this category (developing a double/triple-bottom line solution and funding) are followed multiple times (more on this in the discussion below).
- Funding was perceived to occur also within the 'solution' category. Respondents argued that it occurred before or after the developing the double bottom line solution and/or before the triple-bottom line solution.
- Developing the triple-bottom line solution did not always sequentially follow after developing the double-bottom line solution. It was also suggested to occur after creating or entering a sustainable market
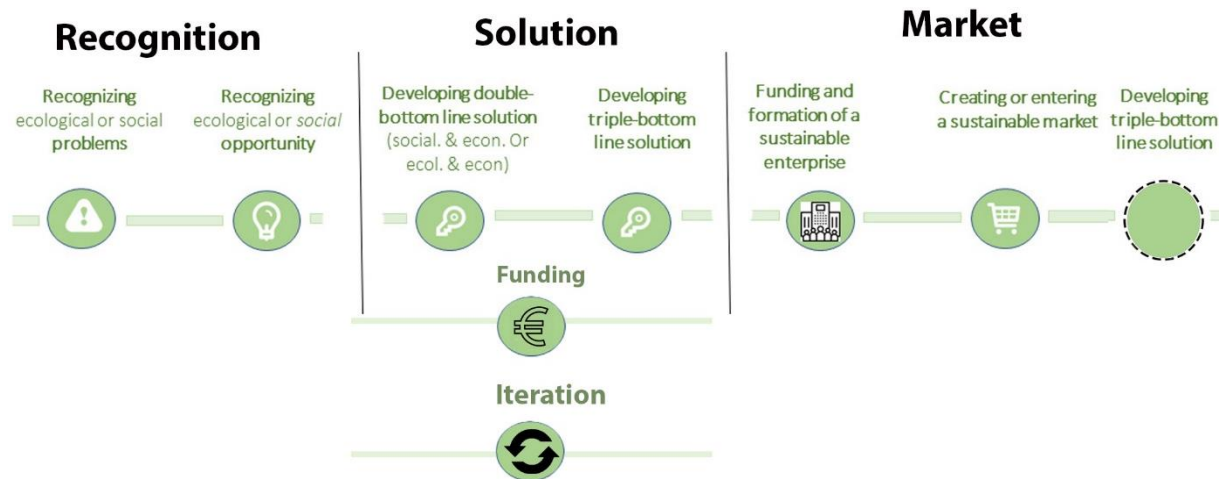
Figure 8 – Suggested phases model for sustainable entrepreneurs

Recognition

The recognition core category consisted of ideation, ambition and recognizing a problem. These phases were most frequently mentioned as the starting point of their entrepreneurial process. In general terms, the description of these phases (see 4.3.1) are similar to the recognizing a social or ecological problem and recognizing a social or ecological opportunity phase of Belz & Binders' (2017) convergent process model, as explained in the theoretical framework. Moreover, the explanation of the respondents showed that they encountered these problems or opportunities for example during their study, when they were approached by a friend or out of frustration. Belz & Binder (2017) also indicated that sustainable entrepreneurs encountered these problem and opportunity recognition in their private or professional lives. Furthermore, several studies such as Kirzner, (1997); Shane, (1999); Corner & Ho (2010); Shepherd & Patzelt (2011) stated that entrepreneurial opportunities are earlier discovered by entrepreneurs that have prior knowledge or experience that is related to the problem/opportunity. This is caused by 'knowledge and experience corridors' that trigger the recognition of the value of new information. These arguments were also identified in this thesis as some of the respondents were already working in the same industry, followed a study related to their sustainable enterprise or identified a problem due to a life experience (Entrepreneur O had a severe illness).

One interesting difference compared to the study of Belz & Binder, 2017) is that two respondents (Entrepreneur C & N) also perceived always having the ambition to start their own

sustainable enterprise as a starting point/phase. As stated in section 4.3.1, they argued that without having any ambition, opportunities cannot be detected. This was also argued in the studies of (Shane et al., 2003; Shepherd & Patzelt, 2011) on entrepreneurial motivation and opportunity recognition. Therefore, these findings once again demonstrate – as argued in section 5.1- how entrepreneurial motivation forms a pre-requisite for detecting opportunities.

Solution

After the recognition phases, the respondents explained how they would work on building and optimizing their solution for the identified problem. In this regard, they mainly spoke about developing their first product/service, validating in the market if it meets the expectations of other parties (e.g. customers and investors) and how it would be financed. This result differs from the findings of Choi and Gray (2008) and Dorado (2006), which did not integrate a phase that discusses the actual development of a solution for the recognized problem/opportunity. In contrary, these results seem to be consistent with the study of Belz & Binder (2017) which found that translating sustainability objectives into products that have added value for customers is a crucial phase. Moreover, these steps are in accordance with the description of the 'developing a double bottom line solution' and 'developing a triple bottom line solution' phases of the convergent process model (Belz & Binder, 2017).

The results of this thesis showed that the majority of the respondents claimed to work on a problem that lies within the environmental-economic dimension. Others stated that they skipped the double-bottom line phase and integrated all dimensions of the triple bottom line directly from the beginning. This indicates that not all respondents experienced that the triple bottom line phase followed immediately after the double bottom line phase. Several respondents also admitted that it was currently too complex to integrate all dimensions. Belz & Binder (2017) also acknowledged that immediately integrating a triple bottom line dimension is a challenging task for founders. Therefore, they assumed that the triple bottom line integration follows successively after the double-bottom line integration. Several implications could be coupled to the above-mentioned finding. On the one hand, it can be argued whether all these respondents should be considered sustainable entrepreneurs, since only working on a double bottom line solution would rather fit the description of being a social entrepreneur or an ecopreneur, as described in the study of Schaltegger and Wagner (2011). On the other hand, some respondents suggested that they would rather implement the triple bottom line dimension

after officially entering the market. Their focus for now is on optimizing the double-bottom line solution first, indicating that there is more time needed to go to a triple bottom line solution, which is thus in contrast with the suggestion of Belz & Binders' (2017) convergent process model. Additionally, this also suggests that there is an intention to integrate all dimensions of sustainability and therefore they should be considered to be sustainable entrepreneurs.

Another interesting finding was that the majority of the respondents emphasized the importance of iterating their product multiple times based on feedback received from their customers and other relevant parties. Bhave (1994) & Ardichvili et al. (2003) also stated in their study that opportunities that do not successfully pass through the development stage of a product/service may be revised or aborted. The studies of Choi and Gray (2008) and Belz & Binder (2017) did not discuss this feature. Therefore, this thesis suggests the inclusion of an iteration dimension (see figure 8) which indicates that the phases within the 'solution' category not necessarily occur in a linear sequence but rather in a circular sequence. This circular sequence reflects that these phases are experienced multiple times.

Some respondents stated that they needed funding in several phases within the 'solution' phase for example, in order to run conduct pilots. This suggests that funding was also needed multiple times; during the process of developing their double and/or triple bottom line solution. However, Belz & Binders' (2017) convergent process model only discusses funding after the development of the solution phases. Therefore, this thesis suggests the inclusion of another funding phase within the 'solution' category (see figure 8). In terms of funding the respondents mentioned difference ways of financing their first product such as pre-financing their products, following an incubator programme and searching for investors. Choi and Gray (2008) argued that gaining financial resources for sustainable entrepreneurs is more difficult due to their non-conventional business view, that is often perceived as being riskier. This was also reflected in this study because the vast majority of respondents indicated that attracting funding is one of the biggest weaknesses of their enterprise. Moreover, Choi and Gray (2008) assumed that - due to their non-conventional business view - sustainable entrepreneurs mainly rely on financial support from friends and family. This was barely reflected in the results of this study; only one respondent declared receiving seed capital from her parents. Findings of Belz & Binder (2017) also indicated that seed capital is not limited to bank loans and personal resources (family and friends). Their respondents received funding through bank loans, governmental support and through utilizing crowdfunding platforms. In contrast to the just mentioned studies, the respondents from this thesis appeared to have multiple (different) ways of receiving funding. A

possible reason therefore might be the different options for entrepreneurial support provided by e.g. the government and incubators, which differs per country/location. In the Netherlands there are multiple options for obtaining financing as a sustainable entrepreneur. The ESM report of 2015 confirms this; they describe the Dutch start-up ecosystem as providing the most highly educated, flexible and motivated workforces in Europe.

Market

The last two phases of the convergent process model (Belz & Binder, 2017) describe/include funding and forming and entering the market. Data from this thesis showed similar findings. The respondents spoke about officially launching their product or service and thereafter upscaling the business. The convergent process model (Belz & Binder, 2017) describes 'creating or entering the market as the moment when the end product or service is ready and sold directly to the consumer. In contrast, the data from this thesis also showed that several respondents entered the market after the 'Recognizing a problem or opportunity' phase of Belz & Binders' (2017) convergent process model. This allowed them to validate if their product had added value for their customers. The convergent process model (Belz & Binder, 2017) also reflects this activity within the 'developing the double/triple bottom line solution'. In contrast with Belz & Binders' (2017) convergent process model, several respondents argued that including the triple bottom line solution does not occur after the development of the double bottom line solution, but rather after entering the market as this was presumed to be more feasible. Therefore this thesis suggests the inclusion of another triple-bottom line solution phase after entering the market (see figure 8).

The previous sections have explained how entrepreneurial motivation (section 5.1) and perceptions (section 5.2) aid in getting a better understanding of the entrepreneurial process. Moreover, it has discussed the identified competencies (section 5.3) related to the suggested phases (section 5.4) for the creation of a sustainable enterprise. Figure 9 provides a summarized overview of these findings.
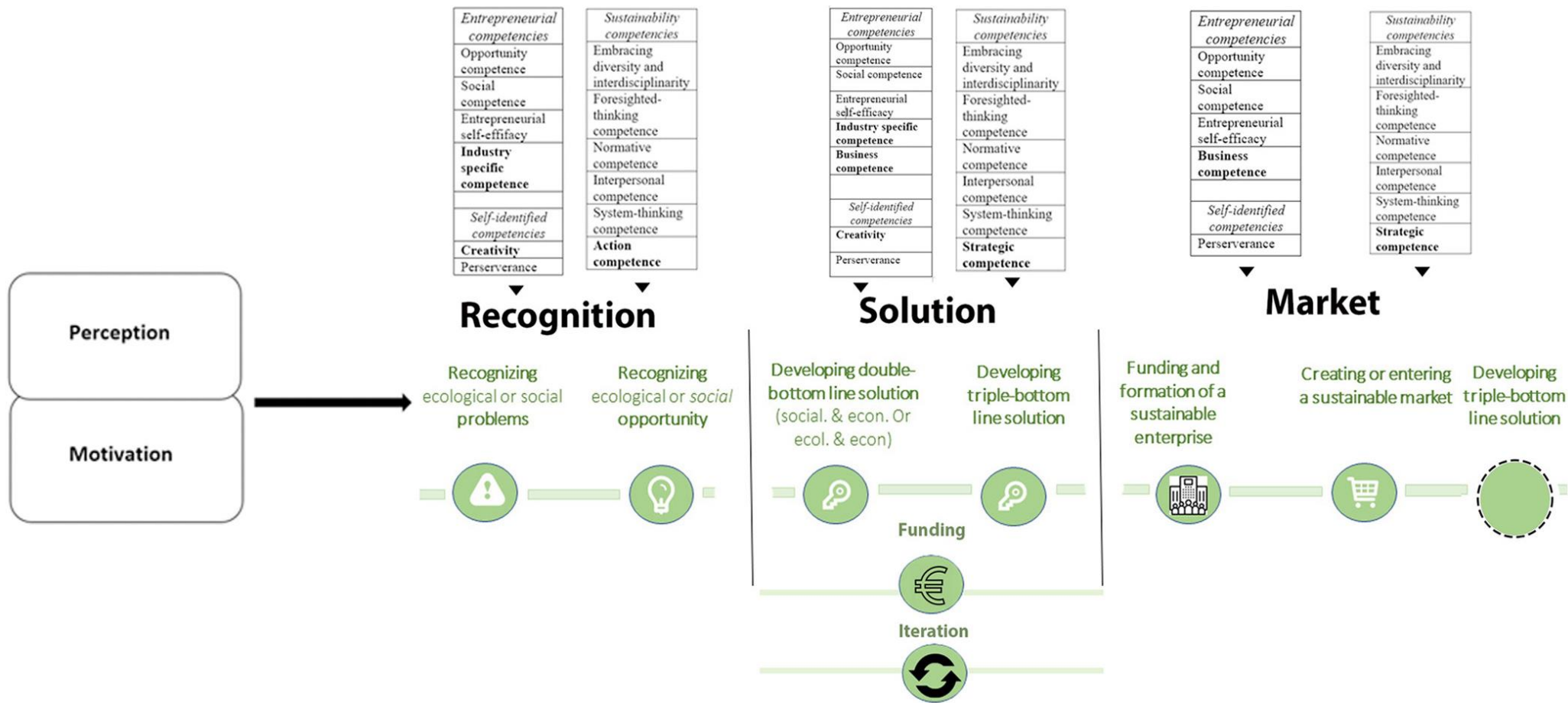
Figure 9 – Summarized overview of the findings

5.5 – Limitations

Overall, Belz & Binder's (2017) convergent process model, together with Lans et al.'s (2014) theories on entrepreneurial and sustainability competencies proved as an appropriate way to conduct the current research. It allowed to analyse the research objectives in depth and thereby contributing to expanding existing knowledge about the practioners' view on competencies as suggested by the study of Lans et al. (2014), and to find empirical evidence for the creation phases of sustainable entrepreneurs.

However, as with the majority of studies, this thesis also has several limitations. This study conducted 18 semi-structured interviews with sustainable entrepreneurs. Despite the fact that they have been selected based on specific criteria (section 3.2.1), the sample size makes it difficult to generalise the findings of this thesis. The selected start-ups were not older than 3 years and therefore it could be argued whether the same competencies apply for more experienced sustainable entrepreneurs. Although choosing sustainable entrepreneurs operating in different industries enhanced the external validity of the thesis it could be argued that the type of industry in which the entrepreneurs operate requires a prioritization of certain competencies. This also limits the generalizability of the findings. Moreover, it could also be argued that the purposeful sampling criteria for selecting the sustainable entrepreneurs could be stricter. In this regard, the approach utilized in the study of Muñoz & Cohen (2017) provides a clear and strict selection method. Their respondents were firstly asked to fill in a screening question that sought to select entrepreneurs that identify themselves as sustainable entrepreneurs. Additionally, they screened the sustainable entrepreneurs by assessing their business plans and pitches which provided more insights in terms of their commitment to sustainability. This thesis was not able to get access to the business plans or pitches of the respondents, but a screening question could have been applied.

Semi-structured interviews were conducted in order to explore the relevant competencies from a practitioners' view. Although this allowed for asking probing questions and gaining a better understanding of interpretations and concepts it is suggested that further research also incorporates other research methods mainly because reflecting on their own competencies and linking the competencies to the phases was difficult for the respondents. A suggested method is a competence self-report questionnaire as proposed and utilized in the study of Lans et al. (2014). Another methodological approach which can be utilized in further studies is the Delphi method which was also applied in previous studies on competencies for educational purposes by Rieckmann (2012) and Robles & Zarraga-Rodriguez (2014). This aids

in gaining a better understanding of the extent in which certain competencies are deemed important by the respondents within certain phases.

5.6 - Further research

As stated earlier, semi-structured interviews were conducted in order to explore the relevant competencies from a practitioners' view. Although this allowed for asking probing questions and gaining a better understanding of interpretations and concepts, it is suggested that further research also incorporates other research methods mainly because several respondents found difficulty in reflecting on their competencies and more especially linking it to the phases. A suggested method is a competence self-report questionnaire as proposed and utilized in the study of Lans et al. (2014). This allows the respondents to rate their competencies and thereby the extent in which each competence is used can be detected. Another methodological approach which can be utilized in further studies is the Delphi method which was also applied in previous studies such as Rieckmann (2012) and Robles & Zarraga-Rodriguez (2014) on competencies for educational purposes. This aids in gaining a better understanding of the extent in which certain competencies are deemed important by the respondents within certain phases.

Due to the lack of studies on competencies from a practioners' view this thesis focused on incorporating sustainable start-ups from various sectors. However, it could be argued that the type of industry in which the entrepreneur operates requires a prioritization of certain competencies. It is therefore suggested that further research should be undertaken to investigate what competencies are used by sustainable entrepreneurs within certain industries (e.g. energy sector). It might also be possible to focus on the type of business model (e.g. circular) that is deployed. Hereby, the business model archetypes presented in the study of Bocken, Short, Rana & Evans (2014) could serve as a guide to distinguish between the various sustainable business models.

6. Conclusion

This thesis is the first study that focused on the appliance of key competencies by sustainable entrepreneurs in the process of creating a sustainable enterprise. In this thesis, insights were gathered through conducting semi-structured interviews with 18 sustainable start-ups. The objectives were to gain an understanding of the entrepreneurs' perception of sustainable entrepreneurship and their motivation for creating a sustainable enterprise. Additionally, it aimed to establish different phases of creating a sustainable enterprise, according to the experience of sustainable entrepreneurs – using Belz & Binders' (2017) convergent process model as a guideline. Finally, it aimed to assess which competencies were needed in the various phases of the enterprise creation process. This led to the following research question: '*How are sustainability-oriented and entrepreneurial key competencies used in the process of creating a sustainable enterprise?'*

To address this research question, the following sub questions were established:

- How do sustainable entrepreneurs themselves or those in the process of starting a sustainable enterprise understand or perceive the concept of a sustainable enterprise

- What are the different phases of creating a sustainable enterprise, as experienced from the practitioner's point of view and what competencies are employed in which phase of the start-up process?

- What competencies are employed and how does entrepreneurial reality differ from academic theories?

The methodological approach – inspired by the study of Klapper (2008) - used to answer this research questions was mainly based on first asking the respondents to indicate and write down about their own experience concerning what phases and competencies they experienced so far. Thereafter, these findings were compared and contrasted with a 1) set of key competencies as proposed in the study of Lans et al. (2014) and 2) the convergent process model of Belz & Binder (2017).

The majority of the respondents of this thesis understand sustainable entrepreneurship as having a company whereby the core value revolves around being sustainable. This was explained as providing a solution which is beneficial in economic, social and ecological terms. Besides that, minimizing impact was also deemed important. Interestingly, four respondents perceived their company as a normal business; their perception of sustainable entrepreneurship

was only focused on considering the needs of future generations.

Overall it can be said that the respondents of this thesis in general terms agreed with the content of the phases in Belz & Binders' (2017) convergent process model. Most of the descriptions of their self-identified phases matched the phases of the convergent process model (see section 5.4). The first theoretical contribution that emerged from the analysis of the data is that many respondents argued that they followed these phases in a different sequence and new phases were suggested. Applying for funding did not only occur after developing their solution, but also during the development of their double and/or triple-bottom line solution. Many respondents also emphasized that there were several iterations necessary within the process of working on their 'Solution'. Therefore this thesis suggests that the phases within the category 'solution' are followed in a circular instead of a linear sequence. Additionally, the findings revealed that working on the triple-bottom line solution could also occur after officially creating or entering the market, as it was deemed too complex to implement this after the 'developing the double-bottom line solution', mainly due to the lack of resources.

The second theoretical contribution that emerged from the analysis was that most of the competencies were deemed relevant in every phase except for the business competence, industry specific competence, action competence and strategic competence, creativity and perseverance (see figure 9 in section 5.4). In terms of the sustainability competencies, the action competence was deemed relevant for recognizing an opportunity or a problem as this required having a 'pro-active' attitude for detecting these problems or opportunities. The strategic competence was deemed necessary in the 'solution' and 'market' categories as these phases required evaluating past decisions and analysing and planning the implementation of future decisions. In contrast with the results of Lans et al.(2014), strategic competence and action competence did emerge as separate constructs as the respondents perceived it as two different competencies. Moreover, the foresighted-thinking competence and normative competence were deemed important. This is in contrast with the study of Wesselink et al. (2015). A possible explanation for this difference is that his study focused on CSR managers in incumbent firms whereas this study focused on sustainable entrepreneurs in start-ups. Concerning the entrepreneurial competencies, the industry-specific and business competence were not needed in every phase. The industry-specific competence was deemed relevant in the 'recognition' and 'solution' categories as it aided in spotting opportunities and contributed to the development of the product or service. Business competence was necessary in the 'solution' and 'market' categories as these phases required working in a more structured manner. Moreover, creativity

- which emerged from the self-identified competencies – was deemed necessary in the 'recognition' and 'solution' categories in order to convert an opportunity into a product or service. Another identified reason for this competence within these categories was due to the limited help available and the limited access to resources.

In summary, this thesis has investigated the appliance of sustainability and entrepreneurial key competencies in the process of creating a sustainable enterprise. The focus was on (co)founders of sustainable start-ups. To date, little research has explored the practitioners view of competencies for sustainable entrepreneurs and the creation process of sustainable enterprises. Thus, this thesis has contributed to the extant literature and has also provided suggestions for further research.

7. References

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8. Appendices

Appendix A: Interview guide for sustainable entrepreneurs

Introduction

(self-introduction of interviewer)

<u>Introduction of the thesis:</u>

I am a student of the Sustainable Business and Innovation master's programme at the University of Utrecht. My research focuses on identifying which phases and corresponding competencies sustainable entrepreneurs tend to follow in creating a sustainable enterprise. I have prepared an interview to gain some more insights on this topic. The interview will take about 30-60 minutes.

To be able to process the gathered information correctly, I kindly ask your permission to record this interview. All information will be treated confidentially, and your name can be anonymised upon request in my thesis.

1.General questions:

- Could you please start by introducing yourself? Your age, education, professional background
- You have created _____, what was your motivation for creating this business?
- What are its main activities and where?
- Why did you choose this location?
- Do you have employees? How many? What do they do?

2. I am interested in your perception of the term Sustainable entrepreneurship and what a sustainable enterprise is for you. So please tell me

- How do you perceive sustainable entrepreneurship? (what does it mean to you)?
- Or you could also tell me about your definitions of sustainability and entrepreneurship and how the two connect?

    - How does this perception of entrepreneurship and sustainability translate into your daily/business activities?

- ○ Can you tell me something about your enterprise? What is its mission? Its purpose?
- ○ What are its Strengths and maybe areas to develop (Weaknesses) (what is going well/ what can be improved?) and where do you see opportunities?
- ○ Where do you see yourself and your enterprise in 5 years?/ What are your goals for the coming years?

3.Own perception on process and competencies employed in different phases

- ● Could you please explain **(in 5-7 steps?)** which phases you went through during the creation of your sustainable enterprise? Take this white piece of paper and just indicate the different phases with the different main activities and competencies you/your team members used. Who was involved in these phases and what competencies did they bring to the venture?

    - ○ Why was this needed (provide examples) ?

4.Process and competencies (literature)

(show convergent process model)

- ● Could you please elaborate if you agree/disagree with these phases? Ie. Compare the phases we just identified with those in the model.

(show list of competencies)

- ● Do you agree that you were using these competences throughout the different stages and how does this compare with what we just put on the paper? Do you feel that there are some competencies missing?

Closing

- ● Anything you would like to add to this interview?

Thank you for your time and in helping me with my research. Please let me know if you would like me to send the notes of the interview via email for final review, so as to prevent any misinterpretations and also if you want a copy of the final thesis.

Appendix B – Lists of competencies

Entrepreneurial competencies

Opportunity competence

Entrepreneurship is related to spotting opportunities (Shane & Ventakaraman, 2000). These opportunities lead to the creation of potential new products or services which are missing in existing markets or do not have a market yet (Lans et al., 2014). Additionally, these competence focuses on developing structured solutions to problems (Lans et al., 2014).

Opportunity competence focuses on the systematic development of adequate solutions to problems i.e. emphasising a more constructed view on opportunities, thus putting perception, interpretation and construction at the heart of opportunity identification

Social competence

Being able to bu8ild and keep social relationships is referred to as social competence. Hereby the role of networks is deemed important. Networks can contribute to further developing an idea, finding resources and gaining legitimacy (Lans et al., 2014).

Business competence

Business competence implies being able to use, coordinate and control management systems properly. It is thus involved in " the organisation of different internal, external, human, physical, financial and technological resources as well as setting, evaluating and implementing strategies of the firm (i.e. planning and control)." (Lans et al., 2014, p.39)

Industry-specific competence

This competence refers to possessing specific skills/knowledge which are deemed important to survive in an industry. To be precise, it involves having adequate technological knowledge and being knowledgeable about the market (Lans et al., 2014).

Entrepreneurial self-efficacy

The fifth competence can be described as an overarching competence; entrepreneurial self-efficacy implies personally believing in your own entrepreneurial competence (Bandura, 1982).

Sustainability competencies

System thinking competence

Ability to analyse complex systems across different domains and scales, and to cope with complexity by focusing on cyclic thinking (Lans et al., 2014).

Embracing diversity and interdisciplinarity

Considering other perspectives, recognizing issues and structuring relations in the process of business decision making regarding societal, economic and environmental issues . Moreover, it also concerns including relevant stakeholders and enhancing learning through exchanging ideas (Lans et al., 2014)

Foresighted thinking competence

Ability to think in long-term horizons, to consider future generations' need and to envision future scenarios by integrating uncertainty and risk.

Normative competence

Ability to reflect, to negotiate and to apply sustainability values/goals/principles/targets, grounded on deeper concepts of justice, equity and ethics

Action competence

This relate to being passively or actively involved in enhancing the sustainability of social ecological systems

Strategic competence

Strategic competence implies being able to design and implement transition towards sustainability, requiring solution orientation and innovative thinking

Interpersonal competence

Ability to motivate, enable and sustain collaborative and participatory working relations, embracing diversity of multifaceted teams and networks.