Sustainable opportunity recognition: A systematic literature review on individual factors

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SUSTAINABLE OPPORTUNITY RECOGNITION: A SYSTEMATIC LITERATURE REVIEW ON INDIVIDUAL FACTORS

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ABSTRACT

This paper reviews the literature on the sustainable entrepreneur in relation to opportunity recognition. A systematic literature review (SLR) was used to identify factors related to opportunity recognition for sustainable entrepreneurship. The initial literature search yielded 265 papers on sustainable entrepreneurship, of which 37 discussed individual factors for sustainable opportunity recognition. Based on these papers, four conceptual clusters were constructed. These clusters are demographic, knowledge and competences, internally oriented psychological factors and externally oriented psychological factors. A conceptual model was created based on these clusters. The conceptual model presented in this literature review is a model for opportunity recognition in sustainable entrepreneurship that should be tested in future empirical research.

Keywords: Sustainable entrepreneurship, opportunity recognition, systematic literature review, individual factors
INTRODUCTION

Sustainable entrepreneurship is considered a means of achieving sustainable development (Gibbs, 2009). Although entrepreneurship is associated with environmental pollution and social issues (York & Venkataraman, 2010), by contrast entrepreneurs can play the role of radical innovators and agents of socio-economic change (Schaltegger & Wagner, 2011). Technological, organizational and service innovation can lead to the radical transformation of markets, institutions and consumption patterns (Schaltegger & Wagner, 2011). Thus, the innovations of sustainable entrepreneurs have the potential to fuel the transition towards a more sustainable society (Gibbs, 2009; Hörisch et al., 2016). Sustainable entrepreneurship has the potential to challenge current unsustainable business or trigger institutional change (Dean & McMullen, 2007; Gibbs, 2009).

In a Schumpeterian sense, the entrepreneur is an innovator who does new things or does existing things in a different way (Schumpeter, 1934). The presence of opportunities together with entrepreneurial persons creates entrepreneurship (Venkataraman, 1997). The individual founder, manager or CEO of a company has a large influence on the performance of the company and his or her characteristics and skills are key in the survival of the company (Hatak et al. 2015). Their experience and personality traits influence the strategic choices of the firm (Hambrick & Mason 1984). Therefore, individual entrepreneurial factors are key in the start-up process of a firm.

In this research, individual entrepreneurial factors are related to opportunity recognition for sustainable entrepreneurship. Opportunity recognition is a prerequisite for starting a business, which makes it a crucial topic of entrepreneurship research (Shane & Venkataraman 2000). All entrepreneurs go through a phase of opportunity recognition before starting a successful business. Due to the importance of the individual entrepreneurial factors on the start-up process and the crucial role of opportunity recognition, there is a need to uncover the individual factors for opportunity recognition in sustainable entrepreneurship.

Sustainable entrepreneurship is a field that has gained momentum over the past years in entrepreneurship literature. Sustainable entrepreneurship literature is interconnected with
literature on institutional entrepreneurship, social entrepreneurship, ecopreneurship, corporate social responsibility and hybrid ventures (Schaltegger & Wagner 2011; McMullen & Warnick 2016). Furthermore, it is a recurring theme in business ethics (Markman et al. 2016). For the sake of achieving sustainable development through business, there is a need to determine the drivers for sustainable entrepreneurship. Essential in stimulating sustainable entrepreneurship is the knowledge which individual factors determine sustainable entrepreneurship start-up. Knowing start-up factors can aid nascent entrepreneurs in becoming sustainable entrepreneurs, teachers in providing sustainable entrepreneurship education and policy makers and funders in stimulating sustainable business. Therefore, this literature review focusses on the individual characteristics of sustainable entrepreneurs. It unites the individual factors for sustainable entrepreneurship in a conceptual model and discusses suggestions for future research. The research question is: What are determinants of opportunity recognition for sustainable entrepreneurship on the individual level?

We believe the results of this literature study are applicable to nascent entrepreneurs, start-ups, entrepreneurship in existing organizations and entrepreneurship in NGOs. Furthermore, this review is at the interface of social psychology, management and sustainable development and thus can provide a theoretical contribution to each field. The first section of this paper discusses conventional entrepreneurship and opportunity recognition. Second, the review method is introduced. Third, the review findings are discussed on the basis of concept clustering. Based on these findings, a conceptual model is developed and discussed. Finally, conclusions and directions for future research are discussed.

**Factors for conventional entrepreneurship and opportunity recognition**

Before explaining the review method, we discuss conventional entrepreneurship and its view on the individual. Because the conventional entrepreneurship field has a tradition of
discussing the entrepreneurial person, this field also offers a useful contribution in
determining individual factors for sustainable entrepreneurship and is therefore discussed in
the following section.

There are many determinants of entrepreneurship and this sections aims to provide a
short overview of them. Tested and verified determinants are the desire for achievement
(McClelland, 1965; Collins, et al., 2004), the orientation to control (Durand & Shea, 1974),
the willingness to take on risk (van Praag & Cramer, 2001) and strong preferences for non-
pecuniary (non-monetary) benefits, such as being your own boss (Hamilton, 2000; Hitt, et
al., 2011). Entrepreneurs’ preference for non-pecuniary benefits results in higher levels of job
and life satisfaction than non-entrepreneurs (Blanchflower & Oswald, 1998). Besides these
character traits, the entrepreneur's access to capital, their age, their labour market
experience and their job record are important determinants (Blanchflower & Oswald, 1998;
Leighton, 1989), especially inherited or gifted instead of loaned capital, is a key determinant
for entrepreneurship (Blanchflower & Oswald, 1998). Age and labour market experience are a
determinant as well, as the chance to become an entrepreneur increases until the age of forty,
after which it remains stable until retirement levels (Evans & Leighton, 1989; Reynolds, et al.,
1995). Furthermore, people who are unemployed, lower paid or who switch jobs often are
more likely to become self-employed (Evans & Leighton, 1989). Finally, firm success is
greater the longer the entrepreneur has lived in the area where he or she starts a firm (Dahl &
Sorenson, 2012).

Opportunity recognition is a precondition for entrepreneurial start-up success and
thus a crucial event in entrepreneurship. Opportunity recognition consists of opportunity
perception, recognition and development (Ardichvili et al. 2003). To recognize opportunities
requires entrepreneurial knowledge and skills (Cohen & Winn 2007; Markman & Baron
2003), entrepreneurial alertness (Ardichvili et al. 2003) and the right cognitive framework
(Baron & Ensley 2006). Before recognizing an opportunity the entrepreneur perceives a need
in the market (Kuckertz et al. 2017). After this recognition of need, the opportunity
recognition process follows. In this process, an opportunity should exist in the entrepreneur’s environment. Then, the entrepreneur needs to believe that there is an opportunity for someone else in the environment. Finally, the entrepreneur needs to realize that this is an opportunity for him or herself and that he or she can exploit as an entrepreneur (Shepherd 2015).

**METHOD**

The method for this systematic literature review (SLR) follows Tranfield et al. (2003). SLR has been widely discussed and used within entrepreneurship research (Pittaway & Cope 2007; Liñán & Fayolle 2015; Gast et al. 2017). The SLR is considered transparent, well-documented and replicable. It consists of three stages: planning the review, conducting the review and reporting the review. The first phase of the planning stage was to address the need for the review and a review protocol. The need that was formulated is now incorporated in the introduction. Second, a review planning and protocol were developed. Following the review protocol, all papers that were selected had to be peer-reviewed papers. Books, book chapters and other materials were excluded to ensure the quality of the reviewed papers. The search engines that were used to select papers for this review are Smartcat, Sciencedirect, EconLit, Business Source Premier, Academic Source Premier and Google Scholar. Furthermore, several leading management journals were searched: Journal of Business Venturing, Journal of Business Ethics, Academy of Management Journal, Entrepreneurship Theory & Practice, Small Business Economics, International Business Review and Journal of International Business Studies. The journals and databases were searched for the terms “sustain”, “sustainable” and “entrepreneur” for the years 1990-2017 (2017 only including January and February). The literature search was conducted in February and March 2017.

The second stage of the review process is the actual review. The initial paper search following the protocol described above yielded 265 papers that are related to sustainable entrepreneurship. After the search phase, the 265 papers were assessed on whether they addressed individual factors. 63 papers were found that discussed individual drivers for
sustainable entrepreneurship in some way. Another selection round identified whether these individual factors relate to a start-up, innovation or opportunity recognition process. Papers discussing factors for sustainable entrepreneurship in general are also discussed, as these could relate to the start-up process as well. This final selection yielded 37 papers. Following Tranfield et al. (2003), a quality assessment would follow, but because a quality assessment was included in the research protocol it was not included in the second stage of the review. Consequently, a table containing all the paper data was created. The papers were classified on whether they were conceptual or empirical, after which the method (qualitative, quantitative or mixed methods) was determined. Further classification included content and was part of the next stage: synthesis. In the synthesis stage, the papers were first summarized by the researcher. The dependent and independent variables of the research and research topic were determined and listed in the table. Furthermore, the summaries include the theories, concepts, narratives and generalizations that are the result of the research. These were also included in the table. In the final phase of stage two of the review, meta-analysis was performed. Groups and sub-groups were created based on similarities in the concepts of the different papers. These groups and sub-groups are discussed in the findings of this paper.

This paper reporting the findings is part of stage three of the SLR, the dissemination of results. Before discussing the findings, however, some notes on the reviewing process are discussed. In the review process, we came across social entrepreneurship papers that addressed sustainable development or both ecological entrepreneurship and social entrepreneurship. Papers on social entrepreneurship that stated sustainable development as a business purpose or that included sustainable or ecological entrepreneurs were also included in the analysis. These papers were included because social entrepreneurship has both social and economic goals, but when ecological goals are included as well or if the goal is sustainable development, it can also be seen as sustainable entrepreneurship. Furthermore, a paper on hybrid business was included, because this paper discusses the trade-off between multiple logics or goals, which in the case of the included paper concerns sustainability logics and economic logics (Hahn & Ince 2016). The next section discusses our findings.
**FINDINGS**

The reviewed literature review yielded four groups of findings, which are psychological – internally focused, psychological – externally focused, competences and demographics. Some of the reviewed papers reported results in more than one group. The demographic cluster reports eight papers, the individual psychological cluster reports 31 papers, the external psychological cluster reports ten papers and the competences cluster reports 12 papers. The papers we found mainly concern start-up activities, although we also included papers on entrepreneurial intentions, corporate entrepreneurship, innovation and opportunity recognition. Furthermore, papers that analyse characteristics of sustainable entrepreneurs are included, as these characteristics could influence sustainable entrepreneurship. Table 1 lists the different conceptual groups and subgroups and the subgroups’ papers.

**Internally focused psychological drivers**

Most papers in this section concern psychological constructs such as attitudes, values and orientations. Also, altruism, environmental commitment, belief in a cause, perception of threat, ethics and identity are mentioned as determinants for sustainable entrepreneurship. This section presents these constructs and shows interrelations between them. Furthermore, it discusses other psychological concepts that have been linked to sustainable entrepreneurship, such as entrepreneurial self-efficacy.

**Values**

From the psychology literature we know that values are desirable trans-situational goals that vary in importance and serve as a guiding principle in the life of persons or other social entities (Schwartz, 1992). In this paragraph, nine papers that include values for entrepreneurship are discussed. Biospheric, social or sustainable values are a crucial factor for sustainable entrepreneurship (Gast et al. 2017; Klewitz & Hansen 2014; Spence et al. 2011; Stevens et al. 2015; Patzelt & Shepherd 2011). These values have their origin in the
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<th>Concept</th>
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<td>Psychological internal</td>
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<td>Knowledge and competences</td>
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childhood of the entrepreneur (Gast et al. 2017) or an inspiring event (Nelson et al. 2013). They can be considered other-regarding or altruistic values, but self-regarding or egoistic values are also part of the equation (Stevens et al. 2015). An example of one of the other-regarding values is, for instance, compassion (Hechavarría et al. 2016). The balance between self-regarding and other-regarding values determines propensity to sustainable entrepreneurship versus conventional entrepreneurship. Self-regarding values concern making money, being comfortable and taking care of your family. The study by Spence et al. (2011) is also worth highlighting as it compares propensity for sustainable entrepreneurship across different nations with different economies and cultures and found that values always play a central role in determining propensity for sustainable entrepreneurship. Spreading their green values, educating society following their green passion and building a value-centred corporate culture were found as goals related to the sustainable values of entrepreneurs (Gast et al. 2017; Choi & Gray 2008; Keskin et al. 2013).

Identity and personality

The identity of a person determines their behaviour, as individuals act in line with how they perceive their own identity. Sustainable entrepreneurs have two identities and need to make a weigh-off between the two in their business. Their identities are: 1) utilitarian/commercial and 2) normative/social/ecological (York et al. 2016). The utilitarian identity concerns mostly economic aspects while the normative identity concerns
sustainability. The extent to which they prioritize one of the two logics depends on the strength of the two identities and on the entrepreneur’s priority of coupling these two identity types (York et al. 2016). Research on personality traits found that agreeableness, openness and conscientiousness have a positive influence on sustainable entrepreneurship. Neuroticism on the other hand has a negative influence (Koe et al. 2010).

**Attitudes**

An attitude is a mental disposition that determines whether a person evaluates a person, place, thing or event with favour or disfavour. Four papers refer to the importance of a favourable attitude towards sustainability for sustainable entrepreneurship (Koe et al. 2015; Koe et al. 2014; Krueger 2005). However, in a tourism student survey, the authors find a discrepancy between favourable attitudes towards sustainability and sustainable entrepreneurship and actual behaviour of the students (Badulescu et al. 2014). Therefore, a positive attitude enables sustainable entrepreneurship, but does not inevitably lead to sustainable entrepreneurship.

**Orientation**

Innovation orientation, entrepreneurial orientation, environmental protection orientation and social orientation positively influence sustainable entrepreneurship (Crnogaj et al. 2014; Hooi et al. 2016). Sustainability orientation is most often seen as a predictor of sustainable entrepreneurship and conventional entrepreneurship (Koe & Majid 2014; Gast et al. 2017; Kuckertz & Wagner 2010; Muñoz & Dimov 2015; Choongo et al. 2016). We argue that it is an aggregation of the environmental protection orientation and social orientation as mentioned by Crnogaj et al. (2014), since sustainability entails both environmental and social value. An orientation towards societal transformation and value creation is also mentioned (Hahn & Ince 2016). Kuckertz and Wagner (2010) found that business experience negatively moderates or even destroys the effect of sustainability orientation on entrepreneurship. Therefore, there is an influence of the entrepreneur’s competences on their orientation. Gast
et al. (2017) refer to orientation as being influenced by values and attitudes and as recognition of the importance of environmental issues facing their firm. Finally, Koe & Majid (2014) refer to time orientation. Whether the entrepreneur is oriented towards the short term or the long term is another determinant of sustainable entrepreneurship. Entrepreneurs with a longer time frame are more likely to be sustainable entrepreneurs.

Motives and motivation

Motives and motivation for sustainable entrepreneurship take the form of a goal, mission, purpose or cause. The next paragraphs discuss these different types of motives and motivations. Goals and mission are most often mentioned and thus discussed in separate headings below. Hahn & Ince (2016) indicate that sustainable entrepreneurs have immaterial motives. An entire list of motivations, mainly based on conventional entrepreneurship literature, is discussed by Zaman et al. (2012). They mention: personal autonomy and self-fulfilment; the freedom to decide on one’s working place and time; other reasons; taking advantage of business opportunities; avoiding employment insecurity and community service opportunities. Other motivations are the desire to have a motivated workforce, build relationships and increase profits (Vives 2006). Besides the focus of some papers on conventional entrepreneurship theory, there is also one paper that focuses on non-profit behaviour. The authors discuss belief in the cause, joy of giving, liking to be asked, altruism, sympathy, pride, obligation, reciprocity, nostalgia, commemoration, personal history and life changes (Katre & Salipante 2012). These motivations are also linked to values, such as altruism and events in their past. Belief in impact can also be a motivator, which refers to a belief among some sustainable entrepreneurs that companies can catalyse a larger societal change than NGOs can (Simon et al. 2013). Other motivators include religion and ethics (Spence et al. 2011; Vives 2006).

Among sustainable entrepreneurs, there are differences in their goals. Some entrepreneurs aim to improve sustainability while others aim to create a new, more sustainable world (Jolink & Niesten 2015). Due to a relative dominance of economic goals
sustainable entrepreneurs choose to start a business. Individuals with weaker economic goals start a non-profit organization. This is in line with the literature discussed in the paragraph on identity. It is indicated that environmental entrepreneurs (i) are motivated by identities based in both commercial and ecological logics and (ii) prioritize commercial and/or ecological venture goals depending on the strength and priority of these two identity types (York et al. 2016). The mission of an entrepreneur is related to his or her goals. Whereas a conventional entrepreneur is characterized by an economic mission, sustainable entrepreneurs have a dual mission. Besides an economic mission, they have a social or sustainable mission that is related to their values, goals, normative identity and their desire to create social value (Stevens et al. 2015).

**Self-efficacy**

Self-efficacy concerns the abilities of the entrepreneurs and their own perception of it. It is a predicting variable in conventional entrepreneurship, as it describes the entrepreneur’s beliefs in his or her own abilities. In the case of entrepreneurship, self-efficacy concerns the belief in the ability to become an entrepreneur (Lans et al. 2014; Krueger 2005; Mioara & Mihai 2014). Besides entrepreneurial self-efficacy, self-efficacy for sustainable entrepreneurship also concerns the entrepreneurs’ perceived sustainability capabilities (Koe et al. 2014). A prerequisite for sustainable self-efficacy is that the entrepreneur has a favourable attitude towards sustainability (Koe et al. 2015).

**Externally focused psychological drivers**

Although this paper focusses on individual drivers of entrepreneurship, the environment of the entrepreneur is discussed as well. The way in which an entrepreneur experiences the external environment varies according to individual perception. Every entrepreneur creates their own image of the environment according to their perception. This perception influences the behaviour of the entrepreneur (Baron & Ensley 2006). This section
focusses on the entrepreneur’s perception of their environment. It explains contextual drivers, institutional drivers and social drivers as they are perceived by the entrepreneur.

**Value creation opportunities**

Related to self-efficacy as discussed in the internally focused drivers, the belief that there is an exploitable opportunity in the environment is key. However, it is discussed as an external driver, as it relates to an opportunity in the environment of the entrepreneur. The process concerning opportunity beliefs is as follows: First, an opportunity exists in the entrepreneur’s environment. Second, the entrepreneur needs to believe that there is an opportunity for someone else in the environment. Third, they need to realize that this is an opportunity for themselves, that they can exploit as an entrepreneur (Shepherd 2015). We consider this process to be related to self-efficacy, as it concerns the entrepreneur’s perception on their ability to exploit an opportunity.

Related to the concepts of self-efficacy and opportunity efficacy, desired value creation or perceived possibility for value creation is often found as a factor for sustainable entrepreneurship. Knowledge, orientation and intention influence desired value creation (Muñoz & Dimov 2015), just like independence and autonomy (Gast et al. 2017). There is a difference between the perceived possibility to create value and the mission, social purpose or cause to create value. The mission is a first in this process, after which the perceived possibility to create value is a next cause towards the actual behaviour of sustainable entrepreneurship.

**Social drivers**

The social networks of the entrepreneur can be considered an external factor for entrepreneurship. The entrepreneur’s perception of his or her social network and support, however, is individual. Perceived social and business support, perceived social norms, perceived desirability and concern about social pressure are considered social drivers or restrictors for sustainable entrepreneurship (Muñoz & Dimov 2015; Koe et al. 2015; Koe et al.
Furthermore, having entrepreneurs among family members and friends also stimulates entrepreneurship (Zaman et al. 2012). When the social status of conventional entrepreneurship is perceived as low by entrepreneurs, they are more likely to have an environmental business orientation (Hörisch et al. 2016). Concerning the norm for sustainable entrepreneurship, there are two types of reactions to perceived social support and perceived business support: conformist and insurgent (Muñoz & Dimov 2015). When entrepreneurs perceive much support, some act according to the sustainability norm and are thus conformist in their behaviour. These conformists do not act if they perceive low support. Others, however, are insurgent in a non-supportive context for sustainability. They want to create sustainable value and are willing to act against the social norm for it. These entrepreneurs are less affected by their perception of low support or even find it a cause to rebel against the norm (Muñoz & Dimov 2015). To conclude, social drivers work in two ways, depending on the conformist or insurgent nature of the entrepreneur. Conformist entrepreneurs, however, are more prevalent than insurgent entrepreneurs.

**Institutional drivers**

Institutional drivers concern the existing structures within which the entrepreneur has to operate. Key in their interaction with the institutional environment are the entrepreneurs’ perceptions. Their perceptions of risks and awards are dependent on market, legislation and culture (Klewitz 2015; Hechavarría 2016; Urban & Nikolov 2013; Mioara & Mihai 2014). When they consider the institution of the market, they can see a gap in the market due to personal interests (Lewis & Pringle 2015). Furthermore, a perceived lack of appropriate employment opportunities and perceived favourable economic climate influences sustainable entrepreneurship in a positive way (Zaman et al. 2012).

**Contextual drivers**

Contextual drivers concern the environment of the entrepreneurs outside of the social and institutional sphere. They concern the physical environment and the entrepreneur’s
perception of it. A perception of threat to the (living) environment of an entrepreneur (Patzelt & Shepherd 2011; Choongo et al. 2016) is a contextual driver of sustainable entrepreneurship. Muñoz and Cohen (2016) consider synchronicity as well, which is the entrepreneur’s ability to synchronize with the rhythmic patterns of the environment. Note, however, that synchronicity concerns the entrepreneur’s biophysical environment, but also the interaction of the biophysical environment with the social environment.

**Knowledge and competences**

*Competences*

This section discusses the knowledge and competences of the entrepreneur. Knowledge and competences determine whether the entrepreneur has the ability to recognize opportunities, influence their self-efficacy and determine their success. The reviewed papers mention many competences that have a positive influence on entrepreneurship in general. All competences related to opportunity recognition (Dean & McMullen 2007) and innovation (Keskin et al. 2013) has a positive influence. Entrepreneurial competences are social competences, business competences and industry-specific competences (Lans et al. 2014). Also, human resource management was found to be a facilitating competence for sustainable entrepreneurship (Keskin et al. 2013). Managers are often entrepreneurs and entrepreneurs are often managers. Therefore, entrepreneurs often have or need management competences. General management skills are mentioned as a predictor of sustainable entrepreneurship (Lans et al. 2014), but the authors do not go into more depth about what these management competences entail. Besides management competences, sustainable entrepreneurs also have sustainability competences. Sustainable competences differ from conventional business competences, since sustainability requires fore-sighted thinking (Lans et al. 2014). Sustainable entrepreneurs are skilful legitimacy seekers, who balance their own values, beliefs and identity with those of others in their social environment (Choi & Gray 2008). To have a sustainable identity and goals in the first place requires normative competences (Lans et al. 2014). Related to this is the skill to set idealistic objectives (Choi & Gray 2008).
**Knowledge**

General entrepreneurial knowledge as well as environmental knowledge is coined as determinants of sustainable entrepreneurship. Knowledge is related to attitudes, motivation and enhances self-efficacy. It is a prerequisite to opportunity recognition (Shepherd 2015). A lack of interest in sustainability, for instance, also leads to a disinterest in sustainability knowledge (Mioara & Mihai 2014). Dean & McMullen (2007) propose that there are individual differences in awareness of market opportunities due to the different knowledge entrepreneurs have. Sustainable entrepreneurs need general entrepreneurial knowledge as well as communal and environmental knowledge (Gast et al. 2017). Patzelt and Shepherd (2011) proposed that general entrepreneurial knowledge is a moderator between knowledge of natural and communal environments and sustainable entrepreneurship, however, empirical testing did not confirm this relationship (Choongo et al. 2016). To conclude, both general entrepreneurial knowledge and sustainability knowledge have a positive effect on sustainable entrepreneurship start-up activity.

**Experience**

The number of previously established businesses has a positive effect on conventional entrepreneurship, but not on the environmental or social dimensions of entrepreneurship (Hosseininia & Ramezani 2016). Furthermore, sustainability orientation has a positive effect on general entrepreneurial intention, but business experience negatively moderates this relation entirely (Kuckertz & Wagner 2010). To conclude, the relation between business experience and sustainable entrepreneurship is negative.

**Demographic**

Eight studies investigate the demographic characteristics of sustainable entrepreneurs, or include demographic control variables. It must be noted, however, that some of these characteristics may overlap with other variables. Especially level of education is
noteworthy, because it has a direct influence on knowledge and competences. Furthermore, income likely affects many other variables discussed in the findings, such as competences, values and the entrepreneurs’ perception of the environment. Also, it influences these other variables. Concerning gender, Gast et al. (2017, Hechavarria et al. (2016) and Hörisch et al. (2016) indicate that sustainable entrepreneurs are more often female than conventional entrepreneurs. Stephan et al. (2015) on the other hand found that men are more likely to engage in social entrepreneurship. Katre & Salipante (2012) report gender in their analysis, but do not provide an explanation. They report 18 female and 13 male sustainable entrepreneurs. Although the majority of studies report that women are more likely to be sustainable entrepreneurs, the results are unambiguous.

Two studies show that, as income increases, the potential for sustainable entrepreneurship decreases (Hörisch et al. 2016). Furthermore, age is an often used control variable. Hörisch et al. (2016) report that older entrepreneurs generally have a higher environmental orientation. Stephan et al. (2012) included age as a control variable but do not report on it. They find opposing effects for the variables age and age-squared.

Concerning education, multiple sources report a positive effect of education (Stephan et al. 2015; Hosseininia & Ramezani 2016). Furthermore, lack of education can be a hurdle for sustainable entrepreneurship (Mioara & Mihai 2014). However, another study reports a lower degree of environmental orientation among more educated entrepreneurs (Hörisch et al. 2016). Therefore, there is no consensus about the role of education as it is.

DEVELOPING A CONCEPTUAL MODEL

The concepts discussed in the groups above all influence sustainable entrepreneurship in one way or the other. Many variables are only noted to produce higher prevalence rates of sustainable entrepreneurship, while others specifically influence innovation or opportunity recognition. Testing these variables on opportunity recognition can help determine which variables influence which stage of the start-up process. This section discusses how the
concepts discussed in the review findings influence the opportunity recognition process for sustainable entrepreneurship, after which a conceptual model is proposed.

**Internally focused psychological drivers**

The section on the internally focused drivers discusses many psychological constructs which influence the other constructs and possibly overlap. This section discusses some of the concepts that are expected to influence opportunity recognition based on previous literature. The values and orientation discussed above have a long tradition in social psychology literature. Of particular note is the value-belief-norm theory of environmental behaviour, which proposes a causal chain in which values influence orientation (Stern et al. 1999). In the model, both values and orientation influence environmental behaviour such as activism. The model has an element of environmental consequence awareness, which stresses the need for a certain environmental behaviour. This process is similar to the opportunity recognition process, in which recognition of a need can lead to recognition of an opportunity. Therefore, it is expected that values, through recognition of need, have an effect on opportunity recognition.

In the psychological strand of entrepreneurship research, Ajzen’s (1991) theory of planned behaviour is widely used to explain entrepreneurial behaviour. It explains how a person’s attitude, subjective norm and perceived behavioural control lead to a behavioural intention. From this intention stems the actual behaviour. Ajzen’s model has been widely applied in entrepreneurship research, see for instance (Kautonen et al. 2013). Thus, we expect a relation between attitude and opportunity recognition.

Finally, we expect that sustainable self-efficacy might affect the opportunity recognition process. Considering the description of the opportunity recognition process by Shepherd (2015) that was described above, the entrepreneur first sees opportunity for someone else in the environment, before considering it possible to be an opportunity for him or herself. Self-efficacy can be crucial here in recognizing that the opportunity is also exploitable by him or herself.
Externally focused psychological drivers

Considering perceived value creation opportunities, there is expected to be a difference in perceived value creation for sustainable and conventional entrepreneurship due to different perceptions of need in the environment. In relation to sustainable opportunity recognition specifically, different value creation opportunities will exist in the environment. The social environment can influence perceived support and perhaps has a bigger effect on the process after opportunity recognition. However, convergence effects in social capital can lead to convergence of values, norms, knowledge and behaviour (Durlauf & Fafchamps, 2004). Therefore, the social network can either be facilitating or restricting (De Vaan 2011). This depends on the other actors and how they perceive sustainable and entrepreneurial behaviour. The role of the institutional drivers is largely dependent on the perception of the entrepreneur, but also on the institutions that exist. These influence opportunity recognition as the perception and present state of the market influence a perception of market need (Lewis & Pringle 2015). This need perception can lead to an opportunity recognition (Ardichvili et al. 2003).

Contextual drivers can be key to the need perception that was also discussed in the previous paragraph. We argue that when the physical environment of the entrepreneur has been much damaged, the entrepreneur could perceive a particularly high need for a sustainability innovation. Furthermore, to be close to an environmental issue could also increase knowledge of it and thus lead to better opportunity recognition.

Knowledge and competences

Concerning knowledge and competences, especially knowledge is expected to have a large effect on opportunity recognition. Both sustainable and entrepreneurial knowledge is required for sustainable entrepreneurship (Gast et al. 2017) and there is likely a balance between those two. Some competences, like fore-sighted thinking and moral competence could have a positive influence on opportunity recognition. Fore-sighted thinking can help
the entrepreneur assess the opportunity and how it develops in the future. Moral competence is expected to help the entrepreneur recognize a need or a moral imperfection in the market. Other competences, such as managerial competences are expected to influence the start-up process at a later stage.

Considering experience, we expect it to have a mixed effect on sustainable opportunity recognition, depending on the kind of experience. Conventional business experience might facilitate a lock-in effect in which the entrepreneur is trapped in a conventional business paradigm, as occurs in some forms of social capital (De Vaan 2011). Sustainable business experience, however, is expected to have a positive effect on opportunity recognition for new sustainable business.

**Demographic**

Although there are overall more male entrepreneurs and also social entrepreneurs (Stephan et al., 2015), to be female is expected to have a positive effect due to rising rate in female entrepreneurship and more sustainable orientations of females in general (Braun 2010). Age is expected to be related to experience and to have a shared effect with this factor.

**CONCEPTUAL MODEL**

Based on the conceptual groups in the findings and the discussion above, the conceptual model in figure 1 is developed. It must be noted that this model does not fully capture the complexity of the sustainable entrepreneurial opportunity recognition. Although we recognize system complexity in entrepreneurship this is a ceteris paribus model. Furthermore, the literature showed that there are many interrelations between the subgroups in the conceptual groups. For clarity, these are not included in the model. The many relations between the sub-conceptual groups are briefly discussed below, to touch upon the complex relations the model’s concepts.

As discussed in the findings, there are multiple interrelations between the conceptual groups in the model. Competences and knowledge influence the goals of entrepreneurs, while
demographics such as education influence competences and internally focused psychological traits. Furthermore, the perception of the environment (external psychological) is much influenced by self-efficacy and knowledge (individual psychological and competences). Competences also influence self-efficacy. Finally, the entrepreneurs’ perception of support influences values, due to a convergence of values in social networks (De Vaan 2011).

Looking at the model, we note that it has a similar structure as Ajzen’s (1991) TPB. The external psychological factors relate to Ajzen’s (1991) concept of the subjective norm and the individual psychological factor in figure 1 includes concepts similar to or influenced by the concept of attitude and perceived behavioural control that Ajzen (1991) uses. The concept of attitude discussed in four of the reviewed papers. Perceived behavioural control relates to the self-efficacy that is discussed as an internal concept in this review. In Ajzen’s (1991) model the concept of perceived behavioural control is based on the concept of self-efficacy. The research question “What are determinants of Sustainable Entrepreneurship on the individual level?” is thus answered with: the determinants can be grouped into individually oriented psychological factors, externally oriented psychological factors, demographics and knowledge and competences. However, there are more sub-concepts in this review. For a full overview of all sub-concepts included in this review, see figure 1.

![Figure 1. A model of sustainable opportunity recognition](image-url)
CONCLUSIONS

This paper maps the individual factors for sustainable entrepreneurship opportunity recognition. It provides a conceptual model for sustainable entrepreneurship research on opportunity recognition. The paper argues that externally oriented psychological factors, internally oriented psychological factors, knowledge and competences and demographics influence opportunity recognition for sustainable entrepreneurship. The conceptual model presented in the paper can aid researchers in research on successful opportunity recognition for sustainable development.

Directions for future research

One of the contributions of this literature review is that it shows differences in opportunity recognition based on attributes that are specific for sustainable entrepreneurs such as sustainable self-efficacy, normative identity and fore-sighted thinking. Future research can expand on this by considering how attributes that foster sustainable entrepreneurship can be promoted or generated. Furthermore, there would be great value in determining which attributes determine different parts of the start-up process, so that specific training opportunities can be created, sustainable policy can be focused on facilitating these attributes and practitioners can evaluate their own attributes in relation to their sustainable business intentions.

Furthermore, it would be interesting to uncover why business experience has such a negative effect and even destroys the effect of sustainability orientation on sustainable entrepreneurship. There seems to be an interrelation between (conventional) business experience and sustainability orientation. This could be a potential issue for sustainable entrepreneurship in general, as the experienced entrepreneurs are less interested in sustainability. Uncovering the interrelationship between experience and orientation could be valuable so that this issue can be addressed. Related to this is the question of how to find a good balance for business competences and sustainability orientation and values in education.
To conclude this paper we want to note that for many determinants it is not clear what the role is on opportunity recognition, only that they have a higher prevalence rate of sustainable entrepreneurship. For all concepts discussed in this paper, it is very useful to determine whether these variables affect the opportunity recognition process. Possibly, they have an effect on other crucial processes in entrepreneurship. Therefore, we invite sustainable entrepreneurship scholars to address the effects of internal and external psychological factors, demographics, knowledge and competences on sustainable opportunity recognition.
REFERENCES


