The Identification of Sustainable Opportunities in Existing Enterprises

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Abstract

Entrepreneurs can make an impact on reducing environmental and societal problems. This study empirically explores when entrepreneurs become more likely to identify sustainable opportunities. How do their existing business arrangements enable or constrain the identification of sustainable opportunities and how is this influenced by interactions in the entrepreneurial team? We find that some perceived constraints have positive, and others have negative effects on identifying sustainable opportunities. The effect of some constraints only becomes visible after we take the negatively moderating effect of the functional diversity of the entrepreneurial team into account. We observe that having a diversified team turns the positive effect of both prior sales decreases and constraints in marketing and sales capabilities into a negative effect on the identification of sustainable opportunities.
INTRODUCTION

Never waste a good crisis, the proverb says. Entrepreneurs could use the resource constraints due to such economic crises to come up with innovative solutions and explore new opportunities (Katila & Shane, 2005; Mosakowski, 2002). As multiple governments are trying to transform the economy bit by bit to a more environmentally friendly system, for instance by providing financial incentives for climate-friendly investments, entrepreneurs could profit from such ‘green deals’ by exploring sustainable opportunities. Sustainable opportunities are “opportunities that sustain the natural and/or communal environment as well as provide development gain for others” (Patzelt & Shepherd, 2011: 2). These sustainable opportunities only recently caught the attention of scholars, who started theorizing and exploring this concept (Hall, Daneke, & Lenox, 2010; Pacheco, Dean, & Payne, 2010; Patzelt & Shepherd, 2011).

The proposed explanations for the fact that some entrepreneurs do identify and pursue sustainable opportunities are related to individual level-factors such as the knowledge of the natural and communal environment, the perception of threat to the natural and communal environment, and altruism toward others (Patzelt & Shepherd, 2011). Moreover, at the market level, perceiving sustainable opportunities may be influenced by the existence of market failures which detract from environmental and social concerns (Cohen & Winn, 2007; Dean & McMullen, 2007) as well as the potential to capture economic value by using or altering government policies, taxes, and other incentives (Dean & McMullen, 2007). In addition, the embeddedness of an entrepreneur in a social network and within a particular industry could impact identifying and pursuing sustainable opportunities (Lichtenstein, 2011).

The majority of these explanations is still theoretical, or based on case evidence, but not validated by large-scale empirical work in this area. Therefore, our study aims to empirically
explore when entrepreneurs become more likely to identify sustainable opportunities. In general, opportunity identification is explained by ‘context’ factors and from ‘cognitive’ processes (Sarason, Dean, & Dillard, 2006; Shane, 2003). A very relevant context-factor is the availability of resources for the entrepreneur (Baker & Nelson, 2005; Haynie, Shepherd, & McMullen, 2009). In particular, we are interested in exploring when entrepreneurs, who run an existing business in times of economic crises, identify sustainable opportunities. While entrepreneurs who severely experience the effects of the crisis, for instance in terms of dropping demand, may feel triggered to identify sustainable opportunities (cf. Hoegl, Gibbert, & Mazursky, 2008), entrepreneurs embedded in a still prosperous businesses may have the tendency to continue the existing path, which can impede the identification of new, sustainable opportunities (Mosakowski, 2002; Uzzi, 1997).

A dominant cognitive influence on opportunity identification is the interaction in the venturing team. In particular, the team composition in terms of functional diversity (as a proxy for cognitive diversity) seems to have a positive influence on creative processes (Jackson, Joshi, & Erhardt, 2003; Joshi & Roh, 2009), as it facilitates coming up with novel combinations. Most entrepreneurship studies find functional and cognitive diversity to be positively related to team-level creativity (Fern, Cardinal, & O’Neill, 2012), the number of identified opportunities (Gruber, MacMillan, & Thompson, 2010), and performance (Eisenhardt & Schoonhoven, 1990; Ensley & Hmieleski, 2005; Steffens, Terjesen, & Davidsson, 2012). Yet, studies also report that functional diversity can hamper creative processes (Hmieleski & Ensley, 2007), as team-members might be attracted to similarity rather than diversity (Williams & O’Reilly, 1998). Team-members may decide to withhold their input in such a heterogeneous team, or other team members may shoot down new and rather different proposals (Price, David A Harrison, &
Gavin, 2006; Shin, Kim, Lee, & Bian, 2012). As cognitive diversity appears to have in particular more positive effects in situations where diversity is perceived necessary, such as in uncertain and dynamic environments (Hmieleski & Ensley, 2007; Shin et al., 2012), perceiving constraints might also favor the positive role of team heterogeneity in opportunity identification (see Hoegl et al., 2008).

This paper explores the influence of the resource constraints due to economic crisis and their interaction with the diversity of the entrepreneurial team on the identification of sustainable opportunities. Thus, our study contributes to the entrepreneurship literature in several ways. First, we empirically assess when some entrepreneurial teams identify sustainable opportunities (Patzelt & Shepherd, 2011; Shepherd & Patzelt, 2011) by focusing on something that is often negative for firms, namely resource constraints. Second, we explore how team-level diversity moderates the effect of constraints on the identification of these new opportunities.

THEORETICAL BACKGROUND

Identifying Sustainable Opportunities

Environmental and societal issues are broadcasted widely in the current society. Newspapers, TV programs and other news and communication channels frequently cover the negative effects of pollution, global warming and environmental degradation in general. The broad public as well as governmental bodies are aware of these threats to sustainable life, and are more and more ready to take action. As entrepreneurship is often viewed as the economy’s change engine, policy makers and academics expect that entrepreneurial ventures might cause a paradigm shift towards a more sustainable economy (Kuckertz & Wagner, 2010).
Therefore, researchers recently started to investigate the topic of sustainable entrepreneurship. As Hall et al. (2010) have noted, there are many theoretical and prescriptive but little empirical and descriptive studies of sustainable entrepreneurship. In particular the study of the identification and/or creation of sustainable opportunities, as a central concept in entrepreneurship theories (Sarason et al., 2006; Shane & Venkataraman, 2000), is a promising research direction (Hall et al., 2010). We lack a good understanding of why some entrepreneurs focus on sustainable opportunities (Shepherd & Patzelt, 2011). An entrepreneurial opportunity is defined here as an idea or dream that is discovered or created by an entrepreneur (Short et al. 2010). Entrepreneurs can identify sustainable opportunities from different sources, such as technological developments, government policies, resource price increases or changes in customer preferences (Eckhardt & Shane, 2003; Pacheco et al., 2010). Moreover, entrepreneurs may also more or less create opportunities, as they envision the ability to alter policies and economic incentive systems in their own benefit (Pacheco et al., 2010; Sarason et al., 2006).

Recent studies have proposed explanations for the fact that some entrepreneurs do identify and pursue such opportunities to prevent environmental and community degradation when others do not (Patzelt & Shepherd, 2011; Shepherd & Patzelt, 2011). As established in many studies, entrepreneurs typically identify opportunities in line with their existing knowledge base (Fern et al., 2012; Gruber et al., 2010; Shane, 2000), and thus prior knowledge of individual entrepreneurs forms an important predictor for the identification of particular types of opportunities. Therefore, the knowledge of the natural and communal environment, prior knowledge of markets, ways to serve markets and the awareness of customer problems could impact recognizing opportunities for sustainable development (Patzelt & Shepherd, 2011). In addition, those entrepreneurs who perceive a threat to the natural and communal environment
and have high altruism towards others are more likely to identify and pursue sustainable opportunities (Hall et al., 2010; Patzelt & Shepherd, 2011; Spence, Gherib, & Biwolé, 2011).

At the market and industry level, studies have looked into classical economic mechanisms, such as market failure, to explain the presence and identification of sustainable opportunities (e.g., Cohen & Winn, 2007; Hall et al., 2010; Hockerts & Wüstenhagen, 2010; York & Venkataraman, 2010). Market failures in preserving the environment and community can open up opportunities for new businesses. For instance, entrepreneurs may imagine the potential to overcome the market power of incumbent firms by employing environmentally superior business methods, or by serving environmental market niches which are not on the radar of existing market players (Dean & McMullen, 2007). To respond to these market failures, entrepreneurs can capture economic value by creating or altering government policies, tax regulations and other incentive structures (Dean & McMullen, 2007).

Market failure is caused by opportunities that are neglected by existing firms. Such existing firms and successful entrepreneurs may perceive difficulties to recognize the potential of sustainable opportunities, as they are often overembedded in their existing value chains, social networks, and industries (Lichtenstein, 2011). Being embedded in a successful firm’s operations and existing business network could increase the tendency to proceed with existing operations and thereby reduce the chance of identifying new and sustainable opportunities (Levinthal & March, 1993). Moreover, the intention to exploit sustainability-oriented entrepreneurial opportunities seems to vanish as more business experience is gained (Kuckertz & Wagner, 2010). Yet, most studies assume that entrepreneurs start off with a clean sheet and are not blinded by their backgrounds and previous experiences. However, many entrepreneurs engage in serial or portfolio entrepreneurship (Westhead, Ucsbasaran, & Wright, 2005), and thus their
previous or existing venture(s) may impact their ability to identify sustainable opportunities. Therefore, it is very relevant to explore how the healthiness of the existing venture impacts the identification of sustainable opportunities.

The Effect of Resource Constraints

The literature on the effect of resource constraints implies that entrepreneurs who experience that the survival of their existing venture is at stake are more inclined to identify new and promising opportunities. When people perceive constraints or boundaries, the human mind will be more productive, resulting in identifying more and more diverse opportunities (Goldenberg, Lehmann, & Mazursky, 2001; Moreau & Dahl, 2005). This way, resource constraints appear to make entrepreneurs more resourceful and more open towards exploring new opportunities (Baker & Nelson, 2005). Whereas successful operations and slack resources may turn an entrepreneurs’ activities into routines and core rigidities (Mosakowski, 2002), resource-constrained entrepreneurs are rather forced to break away from exploiting their current opportunities and to imagine new entrepreneurial ideas (Musso & Schiavo, 2008). Some studies find opposite results, as a shortage of financial resources may hinder ventures’ exploration and experimentation as these activities becomes unaffordable (Agarwal, Sarkar, & Echambadi, 2002; Van Praag, Wit, & Bosma, 2005). This could in particular be the case in economic downturns and other tough environments that require entrepreneurs to become penny-pinching (Bradley, Shepherd, & Wiklund, 2011; De Carolis, Yang, Deeds, & Nelling, 2009). Typical constraints in such times of economic crises are reduced margins and reduction of customer demand (Filippetti & Archibugi, 2011). Moreover, capability constraints can have a direct negative impact on opportunity
identification and it takes more time to train people or attract new human capital (Mellahi & Wilkinson, 2010; Rauch, Frese, & Utsch, 2005).

Nevertheless, in view of promising opportunities, entrepreneurs seem to imagine overcoming the resource constraints by collecting more resources (Baker, 2007; Baker & Nelson, 2005; Haynie et al., 2009). Thus, we expect that the general effect of resource constraints is that entrepreneurs become more open to the identification of new opportunities:

Hypothesis 1: Resource constraints positively relate to the identification of sustainable opportunities.

Cognitive Team Diversity

Often, key decisions are made by a venture team rather than by individual entrepreneurs (Harper, 2008). In new ventures and in small and medium-sized enterprises, these top management or venture teams typically incorporate all the key decision makers in the venture and they control the venture’s assets (Steffens et al., 2012). These teams have a decisive influence on a venture’s performance and the composition of their set of skills and backgrounds shape a venture’s strategy (Amason, Shrader, & Tompson, 2006; Delmar & Shane, 2006; Fern et al., 2012). Therefore, the venture team and its composition is important, as the team’s composition impacts opportunity identification and creativity (e.g., Joshi & Roh, 2009; Shin et al., 2012; Shin & Zhou, 2007) as well as performance (e.g., Amason et al., 2006; Ensley & Hmieleski, 2005; Jehn, Northcraft, & Neale, 1999).

Team composition is usually described in terms of different types of team diversity. Relations-oriented diversity includes immutable personal characteristics such as age, sex and ethnicity (Jackson, May, & Whitney, 1995), which primarily shapes interpersonal relationships (Jackson et al., 2003). Task-oriented diversity captures attributes relevant for the team’s task,
including education, company tenure, and function (Jackson et al., 1995). This paper will focus on task-oriented diversity, and more precisely on functional diversity, which can be viewed as an indicator of the cognitive heterogeneity necessary for venture development (Ucbasaran, Lockett, Wright, & Westhead, 2003; see also Bantel, 1993). Moreover, task-oriented diversity, and primarily functional diversity, is in particular relevant for outcomes such as creativity and strategy formation (Fern et al., 2012; Shin & Zhou, 2007).

The effect of team diversity on creativity and other output measures is in some studies positive and in other studies negative. The *value-in-diversity argument* explains the positive effect of team diversity and the *similarity attraction thesis* argues for a negative effect (Williams & O’Reilly, 1998). According to the value-in-diversity argument, differences between team-members are valuable because they enable tapping into diverse information sources and using different perspectives. In particular, cognitive diversity is likely to enhance creative processes, as creativity requires finding new solutions by combining multiple perspectives, using unique information and experimenting with the ideas of team-members with diverging perspectives (Jehn et al., 1999; Joshi & Roh, 2009; Shin et al., 2012).

Although most team diversity studies focus on teams within larger organizations, the results of a number of studies in the entrepreneurship context support the value-in-diversity thesis. In a recent study, Fern et al. (2012) found that unique knowledge in the founding team directs important choices by the team. Unique knowledge is positively related to product market choice, geographic market choice and resource choice, whereas the effect of shared knowledge in the team is only related to geographical market choice. Because divergent thinking might lead to identifying and constructing better business ideas (see Gielen, Frese, Graf, & Kampschulte, 2012), functional diversity can increase the chances of getting venture capital funding and IPO
(Beckman, Burton, & O’Reilly, 2007; Zimmerman, 2008) and it is also associated with higher venture performance, as some studies report (Eisenhardt & Schoonhoven, 1990; Ensley & Hmieleski, 2005; Steffens et al., 2012).

In contrast, the similarity attraction argument assumes that team-members like the attributes they share with other individuals and dissimilarity leads to reduced acceptance of another’s strengths and suggestions (Ruef, Aldrich, & Carter, 2003; Shin et al., 2012). Diversity then leads to categorization processes (Williams & O’Reilly, 1998), in which the ideas of the ‘dissimilar’ individuals are earlier rejected and team-members may decide to withhold their input, thus leading to less creative team output (Jehn et al., 1999; Mannix & Neale, 2005). Some studies in the entrepreneurship context report findings that at least partly corroborate this thesis. Hmieleski and Ensley (2007) found that the direct effect of team diversity is that the performance of the venture goes down. Relatedly, entrepreneurship studies report that they did not find a direct effect of team diversity on the identification of market opportunities (Gruber et al., 2010), the quality of the entrepreneurial ideas (Foo, Kam Wong, & Ong, 2005) or on team effectiveness (Chowdhury, 2005). Thus, entrepreneurial team diversity often has no or even a negative influence on the outcomes of the team process. According to the similarity attraction argument, the identification of sustainable opportunities may be subject to social categorization processes, as the individual who first comes up with a sustainable opportunity might be categorized as an unworlly visionary or environmentalist (see Hall et al., 2010). Therefore, we predict the following:

Hypothesis 2: Functional team diversity negatively relates to the identification of sustainable opportunities.

**Functional Team Diversity and Resource Constraints**
Having a diverse team can be more valuable in times of industry dynamism and in contexts with high uncertainty and under resource constraints, as such a context requires diversity of information and different perspectives in the team to quickly come up with creative solutions (Hmieleski & Ensley, 2007; Hoegl et al., 2008; Kearney, Gebert, & Voelpel, 2009; Shin et al., 2012). Indeed, Joshi and Roh (2009) showed in a meta-analysis using data from 39 studies that task-oriented diversity was positively related to performance in dynamic high-technology industry settings, and unrelated to performance in more stable manufacturing or service settings. Specifically with regard to entrepreneurial ventures, Hmieleski and Ensley (2007) showed that in dynamic industry environments, startups with diversified top management teams perform better.

However, Amason et al. (2006) report results indicating the opposite, as in their study for firms offering high novelty products or services functional diversity has a negative impact on sales growth, while the direct effect and a low-novelty moderation effect are not significant. Under resource constraints, teams can be pressed to come up with ways to solve the problems, which might invoke conflict due to cognitive and functional differences (Jehn et al., 1999). In particular when the constraints are related to the effect of an economic crisis, resulting in decreasing sales and margins, team members can categorize some team members (e.g., ‘underperforming’ sales representatives) as dysfunctional and therefore reject their suggestions. In particular, somewhat ‘altruistic’ and ‘unworldly’ ideas like opportunities for sustainable development can be rejected. In the end, team conflict and categorization effects will reduce the identification of sustainable opportunities under resource constraints. Thus, we expect that:

**Hypothesis 3:** Team diversity will negatively moderate the relationship between resource constraints and sustainable opportunity identification.
METHODS

The study sample includes 209 Dutch and Belgian small and medium-sized (SME) firms, which are defined as companies with no more than 250 employees, an annual maximum turnover of 50 million Euro or a balance sheet total of no more than 43 million Euro (European Commission, 2003). The ventures were invited to participate in a project focused on strategic renewal of existing SMEs through mailings, SME fairs and existing networks of project partners, consultants and employers’ organizations.

According to the project’s protocol, information regarding existing businesses, network, products, services and capabilities constraints was collected by an in-depth interview and a follow-up survey with the lead entrepreneurs. In the interview, information was collected about the company in general, its customers and products, and the strategic changes that took place in the company over the past 10 years. The questionnaire contained financial and sales questions. The results from the interview and survey were discussed during a strategic conversation session with the venture’s management team, involving all key persons. The group discussion was managed by professional consultants, who first received a thorough introduction in the project’s procedures and were supervised by two of the authors of this study. The strategic discussion session was finished by composing a ranking of five firm-specific strengths, weaknesses, opportunities and threats.

Dependent Variable

Sustainable opportunities are defined as opportunities related to preventing degradation of the natural and/or communal environment and helping sustain this environment (Dean & McMullen, 2007; Patzelt & Shepherd, 2011). A count measure for such opportunities was derived from the
strategic conversation sessions, in which the opportunities as perceived by the SMEs venture team were discussed and finally the team listed a maximum of five most interesting opportunities (irrespective of their type). Entrepreneurship literature emphasizes that entrepreneurial opportunities are perceived and/or recognized by the entrepreneurs. Thus, our measure for opportunities as perceived and reported by the entrepreneurial team fits with existing entrepreneurship theory (see Short, Ketchen, Shook, & Ireland, 2010; Vaghely & Julien, 2010). The opportunities reported by each venture team were coded by two raters. These coders used standardized coding instructions, which were developed by exploratory coding a number of interviews and by interaction with existing entrepreneurship literature (see Locke, 2001; Miles & Huberman, 1994). The coding instructions differentiated between seven different types of opportunities (cf. Eckhardt & Shane, 2003): competition-relation opportunities, customer-related opportunities, macro-economic opportunities, new market segments, political opportunities, technological opportunities, and sustainable opportunities. Table 1 shows examples of expressions that are coded as sustainable opportunities. QSR NVivo software was used to maintain the coding database. The simple inter-rater agreement between the two raters was 76% while Cohen’s K was 0.72, confirming that the coding was reliable (Fleiss, 1981). Remaining differences in coding were subsequently resolved by discussions, involving the other authors as independent coders, until consensus was reached.

**Independent Variables**

We used the Teachman/Shannon index to compute functional team diversity (Teachman, 1980), which is also employed in other entrepreneurship studies (e.g., Gruber et al., 2010; Ucbasaran et al., 2003). The Teachman index is appropriate for categorical variables (Harrison & Klein, 2007).
and calculated as $- \sum [p_k \cdot \ln(p_k)]$, where $p$ is the proportion of team members in the $k$th category. As the maximum possible variation in this index calculation increases with team size, we included team size in the analysis, measured as the total number of people present during the strategic conversation session.

We focused on constraints that are likely to arise due to the economic crisis. From the questionnaire, we included decreasing margins compared to competitors (Likert scale, ranging from 1 to 5). Marketing and sales capability constraints refer to perceived weaknesses in the marketing and sales function of the firm, as discussed during the strategic conversation session. These constraints were coded using a protocol similar to the one employed for coding the sources of opportunities. Table 1 illustrates the coding process. The reliability of the coding was confirmed by the inter-rater agreement of 79%, which corresponds to a Cohen’s K of 0.86. Prior sales decreases refer to perceived sales decreases from two years ago to one year before the date of filling out the questionnaire and recent sales decreases refer to sales decreases from one year before the measurement date. As these constraints were reported by the entrepreneurs themselves, they measured perceptions of the entrepreneurs and the venturing teams. This is an important advantage, because the effect of the availability of resources depends on the perceived value to the beholder rather than the actual amount of resources at hand (Hoegl, Weiss, & Gibbert, 2010; Patzelt & Shepherd, 2011; Penrose, 1959).

**Control Variables**

First, we controlled for the consultant involved in the strategic conversation sessions, since these consultants might have an influence on the team discussion, although they were thoroughly and systematically trained in the project’s methodology. We included a variable indicating whether
consultants belonged to one of the Big Four consulting firms or to more local and small consultancy firms, as Big Four consultants could be more likely to apply ‘routine templates’ (see Suddaby & Greenwood, 2001). We also included controls for country effects, for family firms (Craig & Dibrell, 2006), for firm age, firm size and the type of industry. Finally, we controlled for the percentage of new products and services recently introduced since firm innovativeness may be positively related to the identification of sustainable opportunities (Lichtenstein, 2011).

RESULTS

These data enable us to explore the relationship between the perceived quality of the existing business and team diversity on the identification of sustainable opportunities. Table 2 displays descriptive statistics and a correlation matrix for all the variables. The dependent variable measures the number of identified opportunities representing an integer count without a normal distribution, and thus ordinary least squares regression becomes inappropriate since it relies on the assumption of normality of the residuals (Hair, Tatham, Anderson, & Black, 1998). Therefore, negative binomial regressions were used to test the predicted relationships more accurately (see Gardner, Mulvey, & Shaw, 1995; Gruber, MacMillan, & Thompson, 2008). Although the number of opportunities that could be identified during the strategic session was restricted to a maximum of five opportunities, the range of sustainable opportunities appeared not as right-censored since only 0, 1 or 2 sustainable opportunities were identified by the teams.

The overview of the negative binomial regression results can be found in Table 3. We build the models hierarchically, starting with Model 1 with control variables only. In Model 2 we add team-related variables and constraints. In Model 3 to 6 we test for a set of moderating effects of team diversity with the four constraints due to economic crisis. The significance of the
model’s improvement after adding the new variables was assessed by the differences between the Chi-square statistics of the models, calculated on the basis of two times the difference between the log likelihood of the two models, with degrees of freedom equal to the number of added variables. Compared to Models 1, the Models which add a variable with a significant relationship with the number sustainable opportunities show indeed a significant overall model improvement (i.e., Model 2 compared to Model 1 and Model 4 and 5 compared to Model 2).

Hypothesis 1 predicts that resource constraints positively relate to the identification of sustainable opportunities. Table 3 shows that recent sales decreases indeed have a positive effect on the identification of opportunities. However, decreasing margins appear to have a strong negative effect on the identification of sustainable opportunities. Thus, it appears that different constraints have different effects on opportunity identification and not a univocal positive effect.

Hypothesis 2 predicts that functional team diversity negatively relates to the identification of sustainable opportunities. This hypothesis is not supported, as the results show that team diversity does not have a direct effect on the identification of sustainable opportunities.

Hypothesis 3 predicts that team diversity will negatively moderate the relationship between resource constraints and sustainable opportunity identification. Models 3-6 in Table 3 show the different interaction effects of team diversity with the resource constraints. In Model 3 and 6, we observe that there is no significant moderation effect for the constraints that have a direct effect on opportunity identification (decreasing margins and marketing and sales capability constraints). Interestingly, Model 4 and 5 display that the team diversity moderation effect takes away heterogeneity in the effect of the marketing and sales capabilities constraints and prior sales decreases on opportunity identification. In particular, the main effect of these constraints becomes significantly positive while the interaction with team diversity is significantly negative.
Thus, this largely supports hypothesis 3. Overall, the results support the idea that resource constraints influence the identification of sustainable opportunities and that this effect is negatively moderated by the functional diversity of the venture’s team.

**DISCUSSION AND CONCLUSION**

This study responds to the call for studies that draw on the growing literature of opportunity identification to explore when entrepreneurs pursue sustainable ventures and identify opportunities for sustainable development (Hall et al., 2010; Patzelt & Shepherd, 2011). By exploring when entrepreneurs, who run an existing business, identify sustainable opportunities, this study shows the influence of different business arrangements under which new opportunities are identified (cf. Shane, 2012). In particular, we contribute to the sustainable entrepreneurship literature by showing that perceived resource constraints sometimes trigger the identification of sustainable opportunities. Moreover, we show that cognitive team-level diversity negatively moderates the positive effect of constraints on the identification of these new opportunities.

As an important context condition, and consistent with the literature on resource constraints (see Bradley, Johan Wiklund, & Shepherd, 2011; Hoegl et al., 2008), we find that sometimes perceived constraints rather than perceived strengths lead to identifying sustainable opportunities. Specifically, sales decreases and perceiving marketing and sales capability constraints have a positive effect on imagining opportunities related to environmental and community preservation. This indicates that firm’s past success and having good sustainability prospects can make an entrepreneur overembedded in the current business structures, thus impeding the identification of sustainable opportunities. However, we also consistently find that decreasing margins have a negative effect on the identification of sustainable opportunities.
Apparently, a certain degree of healthiness of the cash-flow or even financial slack is needed to identify sustainable opportunities. This is in line with previous studies that found different effects of the availability of different types of resources (e.g., Mellahi & Wilkinson, 2010; Mishina, Pollock, & Porac, 2004). Yet, most studies find that the lack of adequate financing rather stimulates resourcefulness (Patzelt & Shepherd, 2011) and creative bootstrapping strategies (Carter & Van Auken, 2005), while this seems not the case for the identification of sustainable opportunities. In this respect, sustainable opportunities may be considered by the entrepreneurs in our sample as a ‘luxury option’, which identification and prioritization is triggered by other types of constraints, but prevented by reduced margins.

Although we could not control for individual-level factors such as the knowledge of the natural environment and the perceived threat toward the natural environment (Patzelt & Shepherd, 2011), we do show that the situation of the entrepreneurial team impacts sustainable opportunity identification. While most studies focus on individual entrepreneurs and individual-level cognitive effects (Harper, 2008), this study explored the effect of cognitive team diversity on opportunity identification. In line with a number of previous studies, our results do not show a direct effect of team diversity (see Chowdhury, 2005; Foo et al., 2005; Gruber et al., 2010). Thus, the effect of individual cognitive differences seems to be limited. The social categorization effect, although maybe more relevant with regard to sustainable opportunities, does not lead to a direct negative effect, nor does the value-in-diversity effect result in identifying more sustainable opportunities.

Nevertheless, social categorization seems to be going on in the teams, as precisely for those constraints that do not have a direct positive effect in the analyses without moderating effects, team diversity negatively moderates the relationship with the identification of sustainable
opportunities. At the same time, there is a direct effect of the constraints in marketing and sales capabilities and prior sales decreases, which are not moderated by team diversity. Interestingly, this contrasts with studies that propose and find that environmental dynamism and complex tasks requires more diversity teams (Hmieleski & Ensley, 2007; Hoegl et al., 2008; Joshi & Roh, 2009; Kearney et al., 2009). Our results indicate that as soon as the crisis impacts the team and venture itself, in terms of human resource constraints (marketing and sales capabilities) or sales decreases, team diversity has a negative effect. This highlights the importance of taking into account the contextual conditions of teamwork and the effect of both factors on the identification of sustainable opportunities.

The findings of this study are subject to a number of limitations. First, the study design did not allow for directly measuring the team interaction in terms of conflict and categorization processes. Therefore, we can only theorize about the mechanisms underlying the effects of team diversity. In addition, this study could not include the team’s experiential learning processes in the identification of opportunities (Corbett 2005; Lumpkin and Lichtenstein 2005). Therefore, more in-depth studies of the team interaction and the opportunity identification process under the condition of different constraints could rule out the effect of the team interaction and the experiential learning processes during the team discussions. Second, marketing and sales capability constraints were derived from the same data source (namely strategic sessions) as the dependent variables, implying that the results may be subject to common method bias. The bias seems to be limited since the other three types of constraints derived from a different data source show consistent results.

In sum, our study provides an important contribution to the largely conceptual literature regarding the identification of entrepreneurial opportunities that sustain the natural and/or
communal environment. We highlight the importance of the interaction of the firm and the entrepreneur with existing operations, as they impact the likelihood of identifying sustainable opportunities. In addition, team-level diversity negatively influences the effect of perceived resource deficiencies. These explanations open new areas for research on sustainable opportunities, for instance to explore in-depth the effect of resource constraints and the interaction with social categorization effects.
REFERENCES


| **Sustainable opportunity** | Opportunities related to preventing degradation of the natural and/or communal environment and to helping sustain this environment (Dean & McMullen, 2007; Patzelt & Shepherd, 2011). | “Corporate social responsibility is becoming increasingly important in the current economy, and we can anticipate this by using sustainable wood for our products”  
“The emergence of green energy makes it possible to make our company more cost-effective.” |
| **Marketing and sales capability constraints** | Perceived weaknesses in the marketing and sales function of the firm. | “The marketing of the products is difficult since there is no sales force. The company misses sales experience and sales skills. One does not have experience with defining a sales strategy.”  
“We lack a marketing plan. There is inadequate knowledge about segments and product-market combinations and there is a need for a proper marketing policy.” |
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*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).
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<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
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<td>-4.57 (1.01)***</td>
<td>-5.20 (2.26)*</td>
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<td>0.37 (0.21)†</td>
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<td>0.847 (0.52)</td>
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<td>0.19 (0.12)</td>
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<td>0.01 (0.01)</td>
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<tr>
<td>Recent sales decrease</td>
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<td>0.01 (0.01)†</td>
<td>0.01 (0.01)†</td>
<td>0.01 (0.01)†</td>
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<td>Team diversity x decreasing margins</td>
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<td>Team diversity x marketing &amp; sales cap. constr.</td>
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<td>56.65 / 14***</td>
<td>64.89 / 14***</td>
<td>64.18 / 14***</td>
<td>56.93 / 14***</td>
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</table>

The coefficients are exponentiated betas. Standard errors are in parentheses.
† p≤0.10; * p<0.05; ** p<0.01; *** p<0.001