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# Empirical Study on Sustainable Opportunities Recognition. A Polyvinyl Chloride (PVC) Joinery Industry Analysis Using Augmented Sustainable Development Process Model

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**Abstract:** This paper analyzes factors influencing recognition of sustainable opportunities by using an augmented sustainability process model. The conceptual model used two main factors, Knowledge and Motivation, and one moderating variable, Social embeddedness. We investigated entrepreneurs from PVC joinery industry and concluded that while market orientation and sustainable entrepreneurial orientation definitely and positively influence sustainable opportunity recognition, others variables like knowledge of the natural/communal environment, awareness of sustainable development or focus on success have less support. Among all variables analyzed, perception of the threat of the natural/communal environment and altruism toward others have the poorest impact on opportunity recognition. Finally, we concluded that social embeddedness has a moderating effect on sustainable opportunity recognition, even though the results were mixed.

**Keywords:** opportunity recognition; sustainable opportunity; sustainable entrepreneurship; augmented sustainable development process model

## 1. Introduction

Entrepreneurship is a process centered on discovery, creation, and exploitation of opportunities by entrepreneurs [1]. Hence, at the core of all entrepreneurial activities is identification or recognition of viable business opportunities. As such, entrepreneurship is involving a correlated set of creative and strategic actions build around opportunities [2], while entrepreneurs are assuming risks and act in a proactive and innovative way to make use of them [3].

Although entrepreneurship has a significant contribution to economic growth and sustainable development, it is also responsible for negative environmental effects [4]. Hence, scholars and practitioners have asserted that entrepreneurs had to take an active role on the matter by balancing their profit based actions with environmental goals of community or society [5,6]. Unfortunately, their business—small and medium sized enterprises (SMEs)—has to cope with scarcity of natural resources available [7] which, coupled with environmental problems caused by their operations [4] makes entrepreneurs' engagement in sustainable entrepreneurial initiatives problematic in terms of interest and resources, even though this does not necessary mean that entrepreneurs ignore environment.

Often, their initiatives contribute to improvements in society by providing employment [8] or by contributing to sustainable development [6,9,10].

There is still a significant lack of understanding regarding entrepreneurs and entrepreneurship's role in ensuring sustainability. While entrepreneurship has long been recognized as a facilitator or even determinant for social changes, little is known on how entrepreneurs recognize and use sustainable opportunities [4].

While most of the research regarding sustainable entrepreneurship has focused on developed countries [1–5], less developed economies like Romanian one are ignored. Even though Romania is a peripheral economy in European Union, with different characteristics compared to developed countries, testing various theories and models of sustainable entrepreneurship in specific contexts can validate them [11,12]. We also should consider that most of the sustainable entrepreneurship literature is conceptual [9] and prescriptive [13], often lacking empirical validation.

Our research is based on augmented sustainability process model [14] which argue that entrepreneurs' capacity to recognize sustainable opportunities is influenced by a set of factors, among the most important being Knowledge and Motivation. We also test Social embeddedness as a moderating factor in opportunity recognition. The model was chosen because it is one of the few models that explicitly incorporates sustainable opportunities identification, while most scholars seem to put aside this critical step in sustainable entrepreneurship. According to our knowledge, this is the first time this model is empirically tested.

The study is conducted in the Polyvinyl Chloride (PVC) joinery industry, which is an interesting case for sustainable entrepreneurship due to use of PVC based materials, raising environmental concerns. At the same time, the market is dominated by several large companies, while smaller companies make up the rest, with little external pressure or incentive to behave in a sustainable manner. As such, this industry allows us to test augmented sustainability process model, as sustainability is largely driven by the entrepreneurs' choice and not predetermined by European Union or Romanian government influences.

This paper aims to develop entrepreneurship literature and particularly its sustainable entrepreneurship side. Our findings will advance understanding of factors influencing sustainable opportunities recognition, enabling scholars and practitioners to better understand this process.

## 2. Sustainable Entrepreneurship

Sustainable entrepreneurship has emerged as an increasingly important concept in academic research in the last decade [15–21]. Due to potentially negative impact of economic activities on the environment [4], scholars have increasingly begun to incorporate sustainability and environmental concerns into comprehensive and integrated approaches [5]. Investigations of SMEs negative impact of economic activities incorporate consumption of non-renewable energy sources, environmental degradation or pollution incidents [22]. In this paper, we consider sustainable entrepreneurship as “the discovery, creation, and exploitation of opportunities to create future goods and services that sustain the natural and/or communal environment and provide development gain for others” [13].

SMEs have an essential role in sustainable entrepreneurship due to their number, contribution to economic and sustainable development or flexibility to cope with environmental and social problems [23]. Unfortunately, despite this potential, most entrepreneurs do not put sustainability at the core of their operations [22,23]. Environmental awareness and action is insufficient [24], entrepreneurs usually ignore their business environmental impact since by definition SMEs have limited resources, while tackling environmental issues put an additional strain on them, and are unwilling or unable to act due to time and resource constraints [22]. This, however, does not mean that all SMEs ignore sustainability [25], since there is evidence of SMEs aligned with ecological paradigms [26], especially small and young SMEs [27].

In the literature, the focus of sustainability studies has been on environmental side while the social side has been rarely investigated [28]. Significant conceptual problems persist, mainly due to concept

novelty and multidimensionality, which has to be considered [15,16,25,29,30]. The relationship between entrepreneurship and environment have been examined by various scholars and addressed by different concepts [18,27] such as sustainability entrepreneurship [31], sustainable entrepreneurship [6,8,32–34], environmental entrepreneurship [10,20,35], ecopreneurship and green management [25,29,30,36] or green entrepreneurship [37] which, broadly, relates roughly to the same concept. As a consequence, various scholars assert that entrepreneurs had to play an active role in balancing economic and ecological goals [6].

Even though there are many definitions of sustainable entrepreneurship [4,6,8,20,27,32,33,38], there is no consensus in the literature. Surveying various definitions, we concluded that sustainable entrepreneurship is either environmentally-oriented [30,35,39] or sustainability-oriented [6,8,20,31,34].

- a. Environmentally-oriented entrepreneurship emphasizes the entrepreneurs' attitudes concerning their business' environmental goals and policies, the ecological characteristics of their results and management of environmental issues [30,39]. As such, environmentally-oriented entrepreneurs follow their motivation to earn financial benefits by actions focused on reducing environmental problems and ecological degradation [20,27,35,40]. These entrepreneurs are needed to address present environmental challenges [5], which led to an increase in their incidence [41]. SMEs managed by these entrepreneurs are engaged in sustainable initiatives seeking to minimize the negative impact of economic activities on the environment, provide improvements for local communities, ensure purposeful employment [8], and find solutions to balance business goals with sustainability and environmental management [6]. Entrepreneurs are sensitive and committed to ecological matters and include them in decision making process, build their strategy around them or adapt their strategy proactively towards ecological sustainability.
- b. Sustainability-oriented entrepreneurship explores the relationship between sustainable development and entrepreneurship [34] and focuses on entrepreneurs' efforts and achievements towards sustainability [8]. Sustainable entrepreneurs typically seek to solve societal and environmental problems through their entrepreneurial activities [27]. As such, they focus on environmental, social, and economic goals simultaneously [34].

Companies, and among them SMEs, contribute most to the sustainable development of an economy and society if their core business deals with solutions to environmental and social problems, if they supply environmentally superior products and if their innovations influence the mass market and society substantially [27]. Environmentally superior products or services have been created by SMEs in industries like constructions [42], food [43] or mining [44]. These firms can in principle be small start-ups, but also large incumbent firms that have significant market share in their industry [27].

In terms of approaches, we found out that there are two main approaches of sustainable entrepreneurship.

- a. The first one emphasizes *conventional entrepreneurship with a distinct focus on environmental friendly, responsible business activities*. This approach explores how conventional entrepreneurship can satisfy growing ecological needs (such as the providing clean water, local tourism, health services, cleanup residual waste) while simultaneously retain its focus on identification of opportunities leading to profit [4,20,45]. Hence, this approach has focused on how SMEs can reduce their environmental impact and how sustainable development affects their competitive advantage while simultaneously assuming that entrepreneurs are by definition driven by self-interested profit-seeking motives. Ambec and Lanoie [46] argue that environmental responsibility determines many financial benefits for SMEs, like better access to markets, differentiated products, increased revenue from green technology sale, and lower cost of energy, capital and labor. Entrepreneurs engage in corporate social responsibility initiatives, improve firm reputation through cleaner production, dematerialization, industrial ecology or eco-efficiency, or by reducing environmental and social negative outcomes [47].

- b. Simultaneously, in a second approach, a *new form of entrepreneurship* emerges, seen as a solution for environmental and social issues [13,15,48]. This led to the emergence of a new perspective on business profitability, referred to as firm performance in a sustainability-driven context, where social and environmental values are instrumental [49]. Results such as achieving collective benefits or preserving communities are determined by the entrepreneurs' perception of desirability and feasibility and by their recognition as business performance inputs [33,50,51]. This approach emphasizes the role or impact of social and environmental entrepreneurs [52–55] and argues that entrepreneurship may be a solution for many social and environmental problems [56], in line with a distinctive trend both for consumers and producers to try to make the world a cleaner and greener place to live in [29,57] and growing commitment to sustainable principles [37,57].

### 3. Sustainable Opportunity in the Context of Sustainable Entrepreneurship

SMEs focus on the identification of opportunities and implementing strategies to make use of them and achieve competitive advantage. Opportunity identification is a major topic for the entrepreneur because he is concerned with opportunity-seeking behaviors resulting in value for the business. This determines the entrepreneur to exploit current advantages while concurrently exploring new opportunities that sustain business's ability to create value across time [58].

Opportunity identification is a core concept of entrepreneurship [45,59]. In terms of sustainable opportunities, also known as sustainable development opportunities, the literature consider them as those opportunities which are not focused on profit, unlike traditional business opportunities, but aim to sustain the natural environment and provide development gains for others, too, not exclusively for entrepreneur [13]. As such, the gain may be economic, environmental and social [60], with an ideal situation when all these are met simultaneously. Sustainable opportunity seeks to generate social and environmental goods towards satisfying society's most pressing quality-of-life needs [31], which in turn constitute an extensive source of venture opportunities [4,20] and are becoming increasingly attractive as potential sources of new products, services, markets, profits and competitive advantage. Opportunity identification sources are prior knowledge of markets [61,62], technology [63] and business in general [64].

Unfortunately, so far, existing literature has failed to systematically analyze opportunities identification, with few exceptions [14,38]. In terms of sustainable business opportunities, existing conceptual frameworks have concentrated either on environmental [30] or sustainability issues [6,27]. Schaltegger [30] has proposed five basic positions of entrepreneurs, out of which bioneers and ecopreneurs are closest to the position of this paper, while other scholars [6] developed a model of how new ventures engage in sustainable entrepreneurship and pursue sustainability-related opportunities, the so called Davids and Goliaths. Patzelt and Sheperd [13] argue that identification of sustainable opportunities is determined by motivation and knowledge, with entrepreneurial knowledge acting as a moderator. In Ghali et al. (2017), the authors model the identification of industrial synergy opportunities as a knowledge-driven process in which social-embeddedness is the main driver of knowledge diffusion [65].

Venkataraman [1] stresses the need to deepen our understanding of entrepreneurial opportunities and their sources. Sarasvathy et al. [66] delineate three distinctive but not mutually exclusive views of entrepreneurial opportunities.

- a. *The allocative view*, emphasizing opportunity recognition, considers opportunities to exist when there is potential to redistribute resources for the improvement of some without making others worse (the Pareto efficiency) [20,66].
- b. *The discovery view*, emphasizing opportunity discovery, considers that entrepreneurial opportunities arise from information asymmetries with respect to the true value of resources and the resulting value of the combination of those resources into outputs [66].

- c. *The creative view*, emphasizing opportunity creation, considers that entrepreneurs seek to maximize the utility functions of multiple stakeholders and that opportunities can only truly be identified ex-post [66].

Kuckertz and Wagner [9] explore the problem of how sustainability orientation influences entrepreneurial intentions.

A further issue worth mentioning is whether entrepreneurs are more likely to pursue sustainability-oriented opportunities than traditional opportunities. Dean and McMullen [20] point out that it is the very nature of environmental problems that argue for entrepreneurial solutions. Shane [67] argues that knowledge and experience are instrumental in opportunity identification since entrepreneurs rely on available information. This is corroborated by others [44], who go further and identify factors influencing opportunity identification, among the most interesting in the context of our paper being cognition, learning, prior knowledge, experience and business experience.

#### 4. Model

Modelling sustainable entrepreneurship is not easy. Various scholars [54,55,68] argue that scholars are increasingly exploring if and how modified and completely new models can help achieve economic prosperity by either radically reducing negative external effects or creating positive external effects for the natural environment and society.

Early work on sustainability models aim to search for a new language to express the expansion of sustainable values in business practices, such as TBL or 3BL model envisaging three main value creating aspects in the sustainable conduct: economic prosperity, environmental quality and social justice. These have further evolved into “3P”, namely “people, planet and profit”, the general organizational foundations of corporate sustainability [69] or rethinking products based on the consideration of the full or even multiple life-cycle. More recent studies are dedicated to specific technologies [70], industries [71], low-income markets [72,73] or detailed analyses of the particularities of the business models of SMEs and sustainable entrepreneurs [31,39].

In the literature there are several models of sustainable entrepreneurship, most of them focusing on the environmental side of sustainable entrepreneurship [4,10,20,35] while neglecting its social dimension. However, in terms of models encompassing sustainable opportunities recognition, there are not many. Patzelt and Shepherd [13] develop a model that focuses on knowledge, skills and motivation. They argue that the current theory of opportunity identification, based on entrepreneurial knowledge and profit focus, is flawed. So far, this is the single model envisaging sustainable opportunities identification which has been empirically tested, with mixed results [44].

The Gray model, also called the augmented sustainable development process model, is a development of Patzelt and Sheperd aimed to correct its most significant weakness, namely the fact that entrepreneurship knowledge moderates the recognition of opportunities. In line with Shane [67], it argues that entrepreneurial knowledge, skills and experiences are antecedents to opportunity recognition and exploitation. The model also introduced chance occurrences and critical incidents that may provide inspiration [74], while contextual factors are acknowledged as important [75–77]. The authors argue that social embeddedness [78] can help explain how external factors enable or constrain the identification and exploitation process.

Gray model rely on *Knowledge and skills*, on the one hand, and *Motivation*, on the other hand, to identify sustainable development opportunities. These variables are moderated by three others, namely *Institutional enablers and barriers*, *Critical incidents and trends* and *Social Embeddedness*. The model go further than Patzelt and Shepherd model since it enhances *Knowledge / skills* and *Motivation* factors, but also by introducing exploitation of sustainable development opportunities aside of recognition of sustainable development opportunities, based on a loop ensured by organizational learning (See Figure 1).

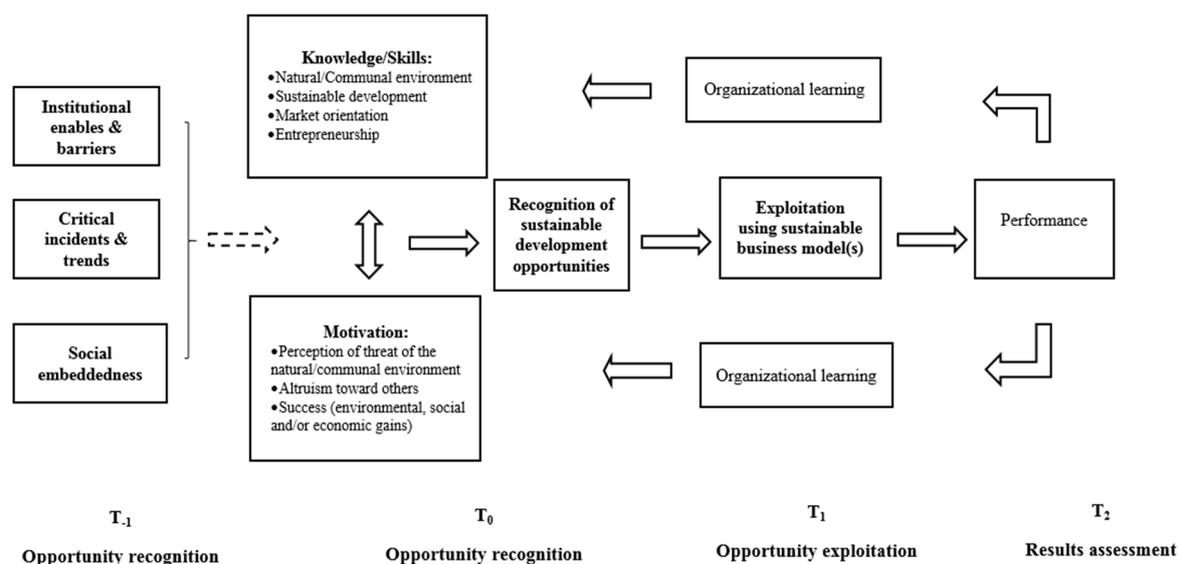


Figure 1. Augmented sustainable development process model (Adaptation after [14]).

Our choice for augmented sustainability process model was not easy considering that it has not been tested empirically so far. First, while there are various sustainable entrepreneurship models [6,21,79], they fail to provide any insights in terms of sustainable opportunity identification. Augmented sustainability process model is one of the few models that explicitly conceptualize this matter. Second, the model is more complex than others in terms of variables defined, introducing, for instance, *Market orientation*, *Entrepreneurship* or *Success*. Third, the model is very new, very comprehensive and as such has to be empirically tested to prove its value.

#### 4.1. Knowledge

Knowledge is an important factor in opportunity identification, with existing studies focusing on traditional knowledge related to markets [62,67,80], technology [63], ways to serve markets [67], how to run a business [52] or customers problems [67]. In augmented sustainability process model, Knowledge has four components:

##### 4.1.1. Natural/Communal Environment

An entrepreneur's knowledge of natural and communal environment plays an important role in the recognition of sustainable opportunities [81]. Once the entrepreneurs acquire knowledge about their natural and communal environment, it is likely to focus their attention on those environments, making possible for them to recognize new opportunities [82]. Variations in environment knowledge may explain entrepreneurs' awareness on various situations occurring in natural and communal environment, influencing their recognition of sustainable development opportunities [13] since individuals will choose or focus on those opportunities related to their own prior knowledge for a given aspect of their natural or communal environment [45]. Hence, environment focused education seems to be important for entrepreneurs by enhancing their awareness about sustainable entrepreneurship and improving their ability to identify sustainable opportunities [25,83,84].

Thus, we argue that:

**Hypothesis 1 (H1a).** *The greater entrepreneur's knowledge of the natural/communal environment, the more likely he/she will recognize a sustainable business opportunity.*

#### 4.1.2. Sustainable Development

Gray et al. [14] argue that sustainable development requires education in order to raise awareness and contribute to sustainable opportunities recognition. Sustainable development is an emerging field that focuses on future innovations, particularly long-term solutions to environmental, social and/or economic problems [4,38]. As such, sustainable development also provides a conceptual link between sustainable entrepreneurship and the broader concept of entrepreneurship [31]. Since any natural system has limits and any attempts to improve human well-being must be done according to those limits [15], sustainable entrepreneurs should focus on what should be sustained (nature, sources of life support and communities) and what should be developed (economic, health and sociocultural gains) [38].

Other scholars argue that, more than education, attitude and behavior are important in opportunity recognition [85]. A study on this topic [85] demonstrated that attitude toward sustainable development is vastly more influential than education, with the highest level of general education more important for explaining favorable sustainable development behavior than specific knowledge of sustainable development concepts. Another study [86] found out that different factors override attitudes, opinions and intentions as indicators of behavior and there are often important gaps between sustainability intentions and sustainable behavior.

Thus, we argue that:

**Hypothesis 1 (H1b).** *The greater entrepreneur's awareness of sustainable development the more likely he/she will recognize a sustainable business opportunity.*

#### 4.1.3. Market Orientation

In our paper, we consider the Mitchell approach to market orientation [87], namely a mode of business management, based on "understanding present and potential customer needs is fundamental to providing superior customer value; encouraging the systematic gathering and sharing of market information regarding present and potential customers, competitors as well as other related constituencies and instilled the sine qua non of an integrated organization-wide priority to respond to changing customer needs and competitor activities to exploit opportunities and circumvent threats".

Sustainable market orientation is different from other sustainable business strategies by emphasizing marketing management aspects of the business and taking a more pronounced stakeholder approach to management [87]. By using sustainable management principles the business is able to achieve objectives such as market competitiveness and profitability through the application of economically, socially, and environmentally responsible value systems [87], better anticipate and meet client expectations [87] and generate positive, long-run outcomes in economic, social, and environmental terms [87]. Gray et al. [14] argue that including sustainable market orientation as a determinant of sustainable business opportunities is important as customers ultimately decide how valuable new product or service innovations are. Entrepreneurial orientation encompasses organizational behavioral characteristics of engaging in product-market innovation, promoting innovative behaviors, undertaking risky ventures and implementing proactive innovations [87,88]. In today's business environments in which product and business model life cycles are shortened and in which the future profit streams from existing operations are uncertain and businesses need to constantly explore new opportunities [89], such entrepreneurial characteristics are found to be positively related to firm growth and enhanced performance in a wide range of research contexts, including the growth of SMEs [90].

Thus, we argue that:

**Hypothesis 1 (H1c).** *The more pronounced entrepreneur's sustainable market orientation the more likely he/she will recognize a sustainable business opportunity.*

#### 4.1.4. Entrepreneurship

Gray et al. envisage entrepreneurship in terms of innovative projects that address cultural, ecological and economic sustainability issues [14], all considered as entrepreneurial orientation. Entrepreneurial orientation has been the focus of systematic inquiry in the management literature [91]. Wang and Altinay [92] argue that it consists of three elements: proactiveness, risk-taking and innovativeness. Proactiveness refers to the extent to which an organization anticipates and acts on future needs by seeking new opportunities, namely organizational ability to introduce new products and services to capitalize on market opportunities. Risk-taking refers to the degree to which entrepreneurs are willing to make large and risky resource commitments [92]. Innovativeness explicitly focuses on product-market [93] and refers to a business's tendency to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services, or technological processes. Research has found that these factors are decisive in entrepreneurial focus of an organization, even though the exact combination is a matter of debate [94–96].

Although sustainable entrepreneurship could be viewed as an umbrella term for community, social and environmental entrepreneurship that is focused on enduring benefits, this implies that related disciplines have a short-term focus. This is debatable, given that some definitions of community entrepreneurship [76,96], social entrepreneurship [97] and environmental entrepreneurship [27] focus on enduring solutions to market, government and institutional failures.

Thus, we argue that:

**Hypothesis 1 (H1d).** *The greater entrepreneur's sustainable entrepreneurial orientation the more likely he/she will recognize a sustainable business opportunity.*

#### 4.2. Motivation

Motivation is another factor, along knowledge, which explains entrepreneurial opportunities recognition [82,98]. Perception of threat refers to actions occurring as response by entrepreneur to ensure his economic well-being [99] or originating in declining natural and communal environments [14]. Similarly, altruism toward others is consistent with literature on social entrepreneurship that emphasizes altruism and the desire to help others as motivating entrepreneurial action that creates social gain [100,101].

Augmented sustainability process model argues that Motivation is a mix of three variables:

##### 4.2.1. Perception of Threat of the Natural/Communal Environment

Natural and communal environment issues like natural resource degradation or pollution reduce the well-being of both people and animals [13]. For some people, these threats may determine them to become defensive [102], while others become more concerned and support the natural/communal environment. Patzelt and Sheperd [13] argue that declining natural and communal environments may determine specific needs for entrepreneurs. This is congruent with other approaches [103,104]. Increasingly poor environmental conditions may lead entrepreneurs to reconsider their inability to sustain the natural and communal environment, increasing their sensitivity for sustainable opportunities [13,44].

Thus, we argue that:

**Hypothesis 2 (H2a).** *The greater entrepreneur's perception of threat of the natural/communal environment, the more likely he/she will recognize a sustainable business opportunity.*

##### 4.2.2. Altruism toward Others

In our case, *Altruism toward others* refers to entrepreneur's motivation to enhance the well-being of others and not necessary his own [105,106]. Hence, it distances itself from traditional entrepreneurial approach centered on entrepreneur's self-interest. Altruism occurs when individuals experience

empathy and sympathy for others [13,107,108], determining altruistic motivations that aim to improve the welfare of the humans [107,108] or animals [109]. These situations trigger the identification of sustainable opportunities [13,14]. Empathizing entrepreneurs are able to think, feel, and experience for themselves similar emotions to those experienced by others [107], while sympathizing entrepreneurs can think and feel themselves into others but experience emotions different to the others' emotions [107].

Thus, we argue that:

**Hypothesis 2 (H2b).** *The greater entrepreneur's altruism toward others the more likely he/she will recognize a sustainable business opportunity.*

#### 4.2.3. Success

Sustainable development literature emphasizes economic, environmental, and social gains as important development goals [60]. We consider them closely connected and interrelated. *Economic gains* improve the socioeconomic status of people and lead to humans and animals psychological [110] and physical health [111]. This in turn may determine *Social gains*, since discovery of entrepreneurial opportunities yield economic gain for people and the society in which they live [112]. Social gains include child survival, life expectancy, education, equity, and equal opportunity [113] while simultaneously concern people—care for employees and society [32]. *Environmental gains*, in terms of improvement of conditions of the natural environment, are an important development goal in societies that are confronted with diminished natural resources. Poor environmental conditions can lead to psychological and physiological health problems and further to social problems [112]. As such, seeking success in terms of sustainable development may determine entrepreneurs to identify sustainable opportunities.

Thus, we argue that:

**Hypothesis 2 (H2c).** *The greater entrepreneur' focus on success the more likely he/she will recognize a sustainable business opportunity.*

#### 4.3. Social Embeddedness

Embedding is an important aspect of entrepreneurial activities. *Social embeddedness* [78] may explain how external factors enable business opportunity identification. Relevant literature increasingly investigated embedding processes and entrepreneurship [78,114–116] with mixed, sometimes contradictory results [117–119]. Studies concluded that embeddedness can increase entrepreneurial success by providing access to resources and competitive advantage without significant capital investment [119,120], may determine entrepreneurs to engage in networking activities [121] while allowing entrepreneurs to become part of the local structure and therefore have the potential to identify opportunities [78]. However, other studies [122–124] took a more prudent stance, considering that further investigation concerning SMEs and the contexts in which they are embedded is required [77]. This came as a result of often one directional approaches, since most studies focus on the personal contact networks of the founding entrepreneurs [119], while few consider the involvement of employees in the embedding process [125,126]. Similarly, limited understanding of the impact of founding conditions and networking activities on embedding processes and firm development is recorded [114,126–128]. While access to resources is a well-documented outcome [120,129], other aspects of networking are less well understood, such as the interactions needed to acquire network benefits or the role of entrepreneurial agency in embedding processes [130,131].

Emerging studies have offered mixed, but nonetheless, important insights into the complexity of contextual embeddedness. Numerous studies illustrate the benefits of embeddedness, including access to resources, information and emotional support [118,132,133]. Research has also shown that embeddedness can be a liability when social responsibilities supersede economic imperatives [115].

Whatever its consequences, embeddedness has proven to have a disproportionate impact on the sustainability and growth of SMEs due to their reduced bargaining power, smaller scale and limited market share [116,119]. Clearly, embeddedness is significant for SMEs [122,134], requiring deeper examination of the dynamics between them and their contexts. Indeed, few studies have empirically investigated this relationship [78,123], as it is challenging to operationalize the concept of embeddedness [115]. For example, Jack and Anderson [78] study the effects of embeddedness on entrepreneurial processes while Manning [135] analyze network formation, others explore how nascent entrepreneurs build legitimacy when entering new markets [136] and to understand how they acquire resources [137].

Seelos [138] argue that there are 3 orientations related to social embeddedness:

- a. *Collective action orientation*, where organizations co-opt the local community as an active partner in the entrepreneurial effort, like in the case of community-based entrepreneurship [96].
- b. *Market-based orientation*, where organizations rely on exchange mechanisms and harness market forces to pursue their objective. They identify and exploit market opportunities by offering products and/or services whereby local realities considerably shape the design of the specific business model [139];
- c. *Social giving orientation*, where organizations rely on external financial and human resources to support their activities.

Thus, we argue that:

**Hypothesis 3 (H3a).** *Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's knowledge of the natural/communal environment.*

**Hypothesis 3 (H3b).** *Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's awareness of sustainable development.*

**Hypothesis 3 (H3c).** *Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's sustainable market orientation.*

**Hypothesis 3 (H3d).** *Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's sustainable entrepreneurial orientation.*

**Hypothesis 3 (H3e).** *Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's perception of threat of the natural/communal environment.*

**Hypothesis 3 (H3f).** *Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's altruism toward others.*

**Hypothesis 3 (H3g).** *Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's focus on success.*

Augmented sustainability process model includes another 2 factors, *Institutional enablers and barriers* and *Critical Incidents* which moderates *Sustainable opportunity identification*. However, these were not considered or tested in our research.

## 5. Methodology

### 5.1. Study Context: Romanian PVC Joinery Industry

In the last decades, polyvinyl chloride (PVC) has become a major material for construction and building industry, with global production now exceeding 30 million tons per year [140]. Environmental

literature related to PVC is significantly negative, emphasizing substantial environmental and human health hazards determined by manufacture, use, and disposal of PVC and its by-products [140–145]. This led the public decision makers to recognize the risks of PVC, restricting certain uses of PVC based products for environmental reasons [140].

Among the most common negative effects of PVC use in relation to construction and building industry in general, but also with joinery industry, one can mention:

- (a) *Health hazards for both adults and children*, such as damage the reproductive system, infertility and, in extreme cases, disruption of the endocrine system, impair child development or cause birth defects. Three separate epidemiological studies have found that human exposure to PVC interiors causes a significant risks of asthma and other pulmonary conditions.
- (b) *Pollution*, since among the most important by-products of the PVC lifecycle are dioxin and phthalates, both acknowledged as global pollutants. Simultaneously, PVC production facilities are major polluters, causing contamination of groundwater and local waterways or a particularly dangerous form of pollution, mercury pollution since chlorine production process is based on mercury.
- (c) *Environmental hazards* because PVC is a highly environmentally hazardous material. During its lifecycle environmental discharge of various hazardous substances may occur. By-products of PVC production are highly persistent, bio accumulative, and toxic. At the same time, PVC is difficult to recycle because each PVC product contains a unique mix of components, making post-consumer recycling difficult. In the most advanced region in terms of PVC recycling, European Union, less than 3 percent of post-consumer PVC is recycled, while by 2020, only 9 percent of all post-consumer PVC waste in Europe is expected to be recycled.
- (d) *Waste of resources*, especially energy, since PVC production consumes large amounts of energy. Production process is highly energy-intensive, consuming about 1 percent of the world's total electricity output, an estimated 47 billion kilowatt hours per year—equivalent to the annual total output of eight medium-sized nuclear power plants [140].
- (e) *Community risks*, since workers and communities are exposed to toxic substances in the PVC production. As such, occupational exposure remains extremely high, negatively affecting the respective communities.

The proponents of PVC highlight the advantages of using it, providing sometimes arguments contrary to the ones presented above. They argue that all materials, and PVC is no exception, have sustainability issues, arising both from their specific properties but also from the ways in which they are used and disposed of across their life cycle. Their arguments include lower carbon footprint of PVC by-products, when compared with metal or glass products of the same application, energy efficiency through low thermal conductivity (for instance, PVC window profiles have three times the heat insulation efficiency of aluminum profiles), require less natural resources to make, durability since PVC based products do not rust or corrode, lasting for over 50 years, or arguing that PVC is 100% recyclable, having the longest history of recycling among plastics.

The joinery industry as a whole in Romania has been steadily declining for the last 5 years. It stood at around 840 million Euros for 2015, a decrease of 6% from 2014 (896 million Euro), also in 6% decline compared to 2013 (see Figure 2).

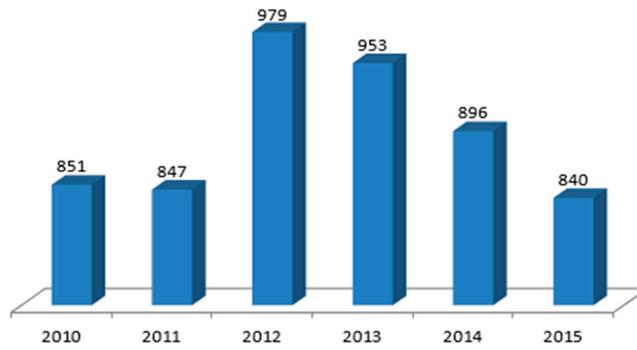


Figure 2. Romanian joinery industry trend (in million Euro). (Source: [146]).

The situation is explained by the general economic context that has limited investments and the reduction of government funded thermal rehabilitation programs, but the market is starting to stabilize after 2015, especially after residential building industry come back as a result of new residential projects emergence. The perspective of the market is positive, with Romania with the highest economic growth among European countries [147,148], the local joinery production trends are optimistic, with an annual growth rate of 6% expected as a result of the growth of both residential and non-residential construction market, as well as the increase in the average income [148].

In 2015, total joinery production in Romania reached 4.43 million units, amounting to 327.6 million Euros and in 2016, 4.66 million pieces and 345 million Euros. For the year 2017, there are forecasts of 4.93 million units, which correspond to the value of 365 million Euros and in 2018 the domestic production will amount to 5.24 million units, amounting to 387.6 million Euros. For 2019, an internal production of 5.58 million units and 412.8 million Euros are expected (see Figures 3 and 4).

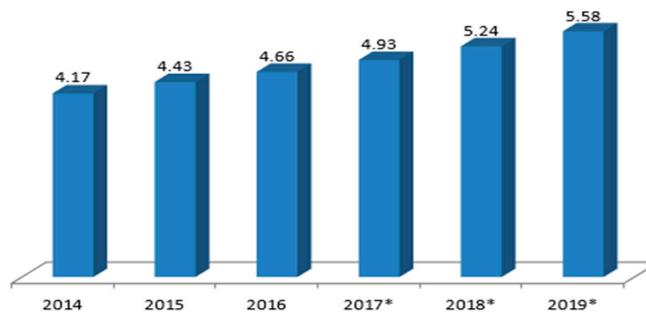


Figure 3. Joinery production (in million units). (\* = forecasted value).

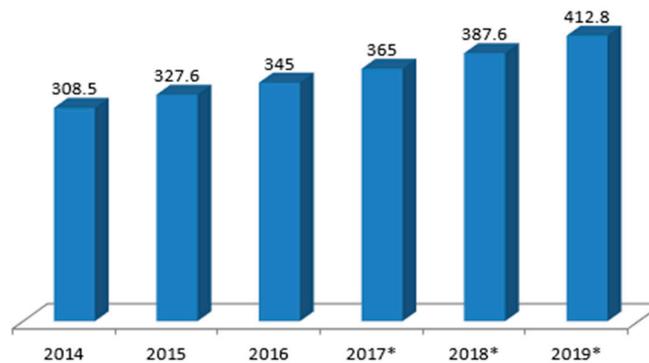


Figure 4. Joinery production (in million Euro). (\* = forecasted value).

Source: for both figures [149] Zaharia, F. Analysis of PVC industry in Romania using Porter Model. Master’s Thesis, The Bucharest University of Economic Studies, Bucharest, Romania, 2017.

In terms of number of companies, there are 619 windows and doors manufacturers, 55 companies involved in assembly and 100 glazing manufacturers [146]. However, at the national level, only 70 companies out of 619 (11.3% of the total) specialized exclusively on PVC based joinery products, 17 companies (2.7%) produce exclusively aluminum based assemblies, and 17 companies (2.7%) producing only laminated woodwork and composite materials (aluminum-wood) [146], with the rest of companies produce a mix.

Local PVC joinery production has been on the rise since 2015, with a relatively constant annual average, both in terms of quantity and monetary value, which means that the sales price will not experience significant fluctuations [149] (see Figure 5). However, it should be noted that joinery market cannot generally develop at a higher rate than the construction market. The PVC joinery manufacturers segment is characterized by a strong concentration of around 8 players, together holding a market share of 53% of the total domestic market [149].

Regarding types of products, in terms of quantity, the market shares in 2016 indicate the preponderance of PVC based joinery, 89.7%, followed by aluminum assemblies, by 4.7%, wood (4.3%) and steel (1.3%) [149]. As a value, PVC windows and doors have a 75.9% level, aluminum ones have 11.5%, wood assemblies reach 8%, and steel up to 4.5% [148]. In terms of monetary value, PVC window market amounts to 261.9 million Euros in 2016, forecasted to reach 313 million Euros by 2019 (see Figure 6).

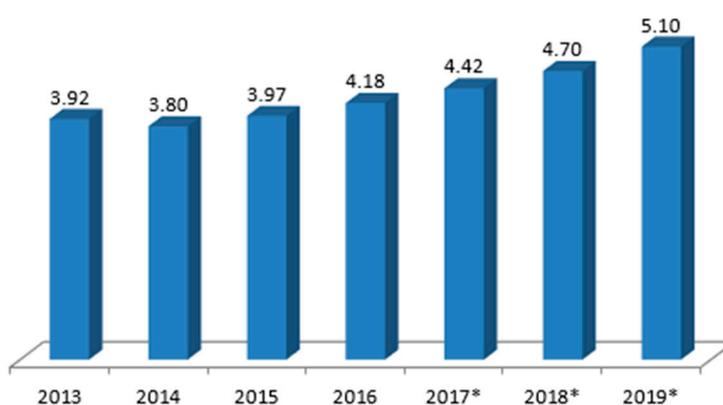


Figure 5. PVC based joinery industry (in million units). (\* = forecasted value).

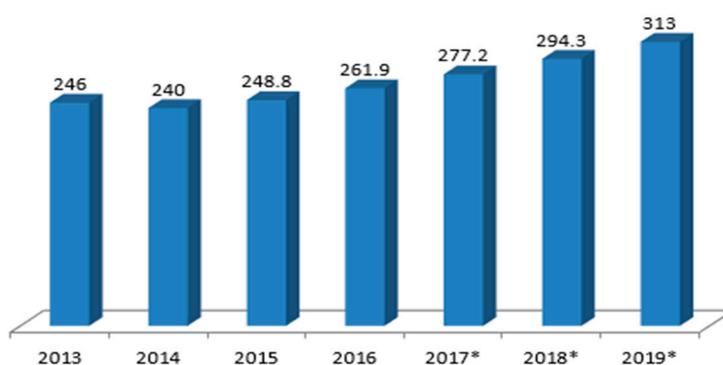


Figure 6. PVC based joinery industry (in million Euro). (\* = forecasted value).

Source: for both figures [149] Zaharia, F. Analysis of PVC industry in Romania using Porter Model. Master's Thesis, The Bucharest University of Economic Studies, Bucharest, Romania, 2017.

Local manufacturers prefer to export due to better prices for their products, since local market is highly dependent on price and much less on quality. The average local price is maintained in the range of 61-63 Euros with a slight average annual decrease of 0.5% between 2015 and 2017. Exports

helped Romanian manufacturers to diminish the negative effects generated by decrease of internal market. In the last couple of years, exports grow with an annual average of 35.4%, reaching a value of 91 million Euros [149]. However, in terms of number of units fewer were exported, which means that the foreign customers bought fewer units but more expensive. Most assemblies continue to be sold in Italy (36%), followed by France (32%), Czech Republic (16%), Germany and Austria (6%), Belgium (%), while in 2014 the recipient countries were in order Italy (38%), France (26%), Czech Republic (14%), Bulgaria (12%), Germany (6%) and Belgium (4%).

Regarding the type of glass used for, the overwhelming majority of Romanian clients prefer the double glazing type (81%), while the triple glazing is the second in their preferences (18%). Simple glass is rarely demanded (1%) [146]. One third of the windows installed in newly built homes and about half of non—residential locations contain triple glazing [146].

In the last four years, PVC profile systems remain the top of consumer preferences, due both to increased demands for increasing the energy performance of buildings and increasing purchasing power in a context where appetite for investment in construction increases from one period to the next.

## 5.2. Sampling

The sample for empirical research was selected from SMEs operating in joinery industry. The initial selection of SMEs was based on 4 criteria:

- (a) *all selected companies have to operate in PVC joinery industry*, regardless if it was their main activity or not and involvement production process (actual production, assembly etc.) Previous documentation [146] revealed that at national level there are only 70 companies out of 619 (11.3% of the total) make 100% PVC based joinery, while 55 companies provide PVC assemblies. Therefore, the statistical population was 125 companies of all sizes.
- (b) *all selected companies have to be SMEs*. We consider EU recommendation 2003/361, classifying companies in medium sized, small and micro (see Table 1).

**Table 1.** SMEs classification.

Company Category	Staff Headcount	Turnover
Medium-sized	<250	≤50 million Euro
Small	<50	≤10 million Euro
Micro	<10	≤2 million Euro

This further reduced the population to 112 companies.

- (c) *availability* (willingness to participate in the study). When we contacted SMEs representatives, we found out that some of them closed or reconsider their activity, contact data was outdated etc. Therefore, for the subsequent fieldwork, convenience sampling was used based on whether we could access the firms. Respondents also helped us by referring us to other firms.
- (d) *geographical distribution*. We wanted to cover all Romania's development regions (South-East, South, South-West, West, Bucharest–Ilfov, North-East, North-West and Center). Again documentation study [146] proved useful, allowing us to calibrate the sample according to geographical distribution of SMEs from PVC joinery industry.

By fulfilling these four criteria, we ensured that our sample is specific to context [149]. Questionnaires were administered to 104 SMEs. In the end, we had 72 valid questionnaires, resulting in a 69.23 response rate. The sample structure was (see Table 2):

Table 2. Sample structure.

Characteristics	Share in the Sample	Characteristics	Share in the Sample		
Country Development Region	South-East	12.50%	Less than 5 years old	25.00%	
	South	8.33%	SME' age (years)	5–10 years old	34.72%
	South-West	1.39%	10–15 years old	25.00%	
	West	20.83%	More than 15 years old	15.28%	
Region	Bucharest–Ilfov	30.56%	Entrepreneur gender	Male	88.89%
	North-East	5.56%	Female	11.11%	
	North-West Center	1.39% 19.44%	Entrepreneur Education	ISCED 4 or less *	2.78%
Organizations' size (no. employees)	Micro (<10)	31.94%	ISCED 5 and 6 *	79.17%	
	Small (10–49)	38.89%	ISCED 7 or more *	18.06%	
	Medium (50–249)	29.17%	Entrepreneur age	Young (<30 years old)	11.11%
			Middle aged (31–50 years old)	84.72%	
			Old (>50 years old)	4.17%	

\* ISCED = International Standard Classification of Education. ISCED 4 or less is roughly equivalent up to post-secondary non-tertiary education. ISCED 5 and 6 is equivalent to short-cycle tertiary education and bachelor or equivalent. ISCED 7 or more represent master or doctoral.

### 5.3. Data Collection

Initially, we performed questionnaire validation through face-to-face and group interviews with the entrepreneurs. We used semi-structured, open interviews. The interviews were conducted from January to June 2017 and lasted from 30 min for face-to-face interviews to 3 h for group interviews. Altogether, 9 entrepreneurs participated. The purpose of interviewing them was to identify potential new variables that could be added to the model factors and make sure they fully understood the questions.

To check the respondents understanding of the meaning of more difficult concepts, like sustainable opportunity and social embeddedness, we provide them lists of examples or discussed those specific concepts, encouraging them to provide other examples.

For sustainable opportunity, the examples included “We provide information to customers about by-products created and released to the environment during the incineration of hazardous wastes from PVC production”, “We prohibit incineration of vinyl based products in the waste stream”, “We implement actions to responsible recycling of vinyl-containing metal products by combustion”, “We implement procedures to assess level of dioxins for assemblies delivered by suppliers”, “We do not use products including more than 30% phthalate plasticizers”, “We do not use PVC additives that are particularly hazardous as lead, cadmium, and organotins”, “We have contracts with specialized PVC recyclers”, “We avoid downcycle PVC scraps”, “We provide safe working environment for employees”, “We are supporting our employees during special events (birth of child, funeral of a family member etc.)”, “We are sponsoring community based projects such as sports, educational, traditional events etc.”, “We are providing our products free of charge for disadvantaged community members”, “We are providing our products at special prices for employees”.

For social embeddedness, we discussed each of the statements.

- Social embeddedness assists identification of economic, social and ecological concerns.* For this statement, we explained that social embeddedness determines entrepreneurs to make a paradigmatic shift in their decision-making from prioritizing a single, usually financial goal towards focusing on a shared goal of financial, social, and environmental sustainability.
- Social embeddedness assists development of an open innovation system where value is co-created with stakeholders.* For this statement, we explained that stakeholders' inputs modify the innovation according to their information and resources. According to Sarasvathy [66], “if values are shared, then goals can be flexible and attempts to satisfy consensual preferences can manifest as various actions”.

- c. *Core values of founders are embedded in the business.* For this statement, we explained that the entrepreneurs may face conflicting logics in their network of stakeholders and have to make a choice. In these cases, the choice is determined by their core values, which are mainly cultural determined and based on local prescribed values, norms and practices.
- d. *Networking skills of entrepreneur enable strong partnerships with a wide variety of stakeholders and collaborators.* For this statement, we explained that sustainable entrepreneur triple goals—economic, social and environmental—implies interacting with more stakeholder groups, and hence conducts to higher complexity in the entrepreneurial process. As such, sustainable entrepreneurs are future-oriented by meeting the needs of present stakeholders without compromising the ability to meet the needs of future stakeholders.
- e. *Networking skills of entrepreneur enable business to identify and exploit new market opportunities.* For this statement, we provided several examples of new market opportunities in PVC joinery industry.
- f. *Performance gains for clients are both social and economic.* For this statement, we explained that the entrepreneurs must acknowledge that not all potential clients or supporters hold strong organic and/or sustainable values and goals, with some focusing on more exploitative business strategies. This must be included in their strategy and financial results, financial gain losing its traditional significance.

The subsequently improved questionnaire was discussed prior to widespread distribution with five experts with academic background, familiarized with the industry. Based on this, we made small adjustments and concluded the concepts were clear and understandable. Afterward, we distributed them via email. Contact data for authors were provided, if the surveyed entrepreneurs might have questions.

### 5.3.1. Variables

The study includes 2 independent factors, Knowledge with 4 variables: *Natural/Communal Environment*, *Sustainable development*, *Market orientation* and *Entrepreneurship* and Motivation with 3 variables: *Perception of threat of the natural/communal environment*, *Altruism toward others* and *Success*, 1 moderating variable, *Social Embeddedness* and 1 dependent variable, *Sustainable opportunity identification*. All items were measured on a 5-point scale Likert scale ranging from 1 = *Strongly disagree*; 2 = *Disagree*; 3 = *Neutral*; 4 = *Agree*; and 5 = *Strongly agree*, except *Perceived threat* and *General threat* which were measured on a 5-point scale Likert scale ranging from 1 = *Not dangerous at all* to 5 = *Extremely dangerous*.

#### a. Independent Variables

Knowledge includes (see Table 3):

*Natural/Communal Environment* variable was measured on a 6 item scale based on the work by Patzelt and Shepherd [13] and Choongoo [44]. Three items relate to the knowledge of the Natural environment and the other three relate to the knowledge of the *Communal environment*.

*Sustainable development* variable was measured on a 12 item scale based on United Nations report [150].

*Market orientation* variable was measured on a 6 item scale based on Viswanathan et al. [151]. Two items relate to purposive understanding of marketplaces, two items were addressing consumer needs and welfare while the last two relate to implementing business plans through social good.

*Entrepreneurship* variable was measured on a 3 item scale based on Kuratko et al. [152].

The second factor, Motivation, includes (see Table 4):

*Perception of threat to The Natural/Communal Environment* variable was measured using a 9 item scale adopted from Oreg and Katz-Gerro [153].

*Environmental concern*. International Social Survey Programme (ISSP) questionnaire items have been used extensively to construct indices of environmental concern [153]. For our study, we selected only those items that addressed the extent to which people are concerned about the future of the

environment. We therefore chose two items: “People worry too much about the future of the environment” and “People worry too much about human progress harming the environment”.

*Perceived threat.* Perceived threat was measured using two adapted set of items based on Oreg and Katz-Gerro [153]: “Pollution is dangerous to the environment of my community” and “Pollution is dangerous to myself”.

*General threat* not under personal control was measured using five items asking respondents to evaluate how dangerous to the environment are air pollution by industry, pesticides in farming, river and lake pollution, the rise in the world’s temperature, and modifying the genes of certain crops. Response options for both subscales ranged from 1 (not dangerous at all) to 5 (extremely dangerous).

*Altruism towards others* variable was measured using and adapted de Groot and Steg scale [154]. Respondents were asked to rate the frequency of their *Egoistic orientation*, namely social power, wealth, authority and influence, their *Altruistic orientation*, namely equality, a world at peace, social justice and desire to help others, and *Biospheric orientation*, namely preventing pollution, respecting the earth, unity with nature and protecting the environment.

*Success* variable was constructed based on the “3P” concept, namely “people, planet and profit”, the general organizational foundations of corporate sustainability [69]. As such, we use Soto-Acosta et al. [155] measurement indicators for corporate sustainability, divided in three types of gains: *Economic, Environmental* and *Social*.

Table 3. Variables for Knowledge.

Factor 1. Knowledge	Measurement	
<b>Variable 1: Natural Environment</b>		
<b>a. Natural Environment</b>		
I have knowledge about biodiversity in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree.
I am able to identify sources of pollution in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I have knowledge about ecosystem of my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>b. Communal Environment</b>		
I have knowledge about cultural issues in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I have knowledge about social issues in my community,	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I have knowledge about demographic issues in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>Variable 2: Sustainable Development</b>		
<b>a. Environmental development</b>		
I am aware of temperature deviations from normal temperatures in my community area.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of ground-level ozone and fine particulate concentrations.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of quality-adjusted water availability in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of fragmentation of natural habitats in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of greenhouse gas emissions in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of smog-forming pollutant emissions in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of nutrient loadings to water bodies in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of conversion of natural habitats to other uses in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>b. Social development</b>		
I am aware of enrolment in post-secondary educational institutions.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of changes in age-specific mortality and morbidity for people of my community for people of my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of percentage of the population with postsecondary education in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am aware of health-adjusted life expectancy in my community.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>Variable 3: Market Orientation</b>		
<b>a. Purposive understanding of marketplaces</b>		
Our products/services are designed understanding life circumstances.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
Our products/services improve welfare.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree

Table 3. Cont.

Factor 1. Knowledge	Measurement	
<b>b. Addressing consumer needs and welfare</b>		
Our products/services display fairness and trustworthiness.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
Our products/services put emphasis on individual and community welfare.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>c. Implementing business plans through social good</b>		
Our business works with diverse groups.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
At the core of our business is social good as common denominator.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>Variable 4: Entrepreneurship</b>		
<b>a. Entrepreneurial orientation</b>		
In our organization, the number of improvements implemented without organizational approval has increased in the last year.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
In our organization, the number of new ideas increased greatly.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
In our organization, the number of new ideas implemented without official organizational approval was on the increase in the last year.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree

Table 4. Variables for Motivation.

Factor 2. Motivation	Measurement	
<b>Variable 5: Perception of Threat to the Natural/Communal Environment</b>		
<b>a. Environmental concerns</b>		
People worry too much about the future of the environment.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
People worry too much about human progress harming the environment.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>b. Perceived threat</b>		
Pollution is dangerous to the environment of my community.	Likert scale, from 1–5	Range from 1 = Not dangerous at all to 5 = Extremely dangerous
Pollution is dangerous to myself.	Likert scale, from 1–5	Range from 1 = Not dangerous at all to 5 = Extremely dangerous
Pollution is dangerous to family.	Likert scale, from 1–5	Range from 1 = Not dangerous at all to 5 = Extremely dangerous
<b>c. General threat</b>		
Air pollution by industry is dangerous to the environment.	Likert scale, from 1–5	Range from 1 = Not dangerous at all to 5 = Extremely dangerous
Pesticides in farming is dangerous to the environment.	Likert scale, from 1–5	Range from 1 = Not dangerous at all to 5 = Extremely dangerous
River and lake pollution is dangerous to the environment.	Likert scale, from 1–5	Range from 1 = Not dangerous at all to 5 = Extremely dangerous
The rise in the world’s temperature is dangerous to the environment.	Likert scale, from 1–5	Range from 1 = Not dangerous at all to 5 = Extremely dangerous
Modified genes of certain crops is dangerous to the environment.	Likert scale, from 1–5	Range from 1 = Not dangerous at all to 5 = Extremely dangerous
<b>Variable 6: Altruism toward Others</b>		
<b>a. Egoistic orientation</b>		
I exert control over others.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I like material possessions and money.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I have the right to lead or command	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I enjoy having an impact on people and events.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>b. Altruistic orientation</b>		
I accept equal opportunity for all.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I seek world free of war and conflicts.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I help and take care of the poor or weak.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am working for the welfare of others.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>c. Biospheric orientation</b>		
I am protecting natural resources.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I live in harmony with other species.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am fitting into nature.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
I am preserving nature.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree

Table 4. Cont.

Factor 2. Motivation	Measurement	
<b>Variable 7: Success</b>		
<b>a. Economic Gains</b>		
In terms of yearly turnover, our business may be described as profitable.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
In terms of customer attraction and retention, our business may be described as effective.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
In terms of market share, our business may be described as competitive.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>b. Environmental Gains</b>		
Our products and/or services are meant to be harmless in terms of environmental issues.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
It is important for our firm to adopt responsible policies in terms of material and energy resources usage.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
In the current activities, we try to rely on green technologies as much as possible.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
<b>c. Social Gains</b>		
It is important for our business to contribute to the welfare of the workforce.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
It is important for our business to be actively involved in the community development.	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
It is important for our business to build long-term cooperative relationships with partners in our market(s).	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree

## b. Moderating Variable

In our study, moderating variable was *Social embeddedness* (see Table 5). According to Gray et al. [14], embedding provides a mechanism for bridging resources and for filling information gaps while, simultaneously, creating opportunities. These opportunities exist within the local structure but only become manifest by the action of embedded entrepreneurial agency. Embedding, therefore, creates a link between the economic and the social spheres [14], enabling entrepreneurs to exploit economic opportunities more effectively.

**Table 5.** Social embeddedness.

Moderating Variable: <i>Social Embeddedness</i>	Measurement	
Social embeddedness assists identification of economic, social and ecological concerns	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
Social embeddedness assists development of an open innovation system where value is co-created with stakeholders	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
Core values of founders are embedded in the business	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
Networking skills of entrepreneur enable strong partnerships with a wide variety of stakeholders and collaborators	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
Networking skills of entrepreneur enable business to identify and exploit new market opportunities	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree
Performance gains for clients are both social and economic	Likert scale, from 1–5	Range from 1 = Strongly disagree to 5 = Strongly agree

## c. Dependent Variable

Sustainable opportunity identification variable was measured in terms of the number of sustainable opportunities perceived by respondents and was adapted from Ucbasaran et al. [52] (see Table 6).

**Table 6.** Sustainable opportunity identification.

Dependent Variable: <i>Sustainable Opportunity Identification</i>	No. of Opportunities	Likert Scale	Percentage %	Category
How many sustainable opportunities have you identified within the last five years?	0	1	1.39%	Low opportunity identification
	1–2	2	6.94%	
	3–5	3	47.22%	
	6–9	4	36.11%	High opportunity identification
	>10	5	8.33%	

The five sustainable opportunity identification categories were divided, for further analysis, in two categories: low sustainable opportunity identification (up to 5 opportunities) and high sustainable opportunity identification (at least six opportunities), in accordance with other studies [44,53]. As a result, 55.56% were in the low opportunity category and 44.44% in the high sustainable opportunity category, which provides an overall indication of low sustainable opportunity identification.

### 5.3.2. Scale Validation

Exploratory factor analysis (EFA) with varimax rotation was applied for assessing the validity of the measurement scales. Table 7 shows rotated factor loadings and reliability tests for all variables.

**Table 7.** Survey questions and scale validation.

<b>Knowledge</b>						
<b>Variable 1: Natural/Communal Environment</b>						
<b>Factor 1. Natural Environment</b>	<b>Factor Loadings</b>	<b>Cronbach's <math>\alpha</math></b>	<b>Factor 2. Communal Environment</b>	<b>Factor Loadings</b>	<b>Cronbach's <math>\alpha</math></b>	
I have knowledge about biodiversity in my community.	0.781	0.732	I have knowledge about cultural issues in my community.	0.754	0.726	
I am able to identify sources of pollution in my community.	0.868		I have knowledge about social issues in my community,	0.816		
I have knowledge about ecosystem of my community.	0.735		I have knowledge about demographic issues in my community.	0.749		
<b>Variable 2: Sustainable Development</b>						
<b>Factor 1. Environmental development</b>	<b>Factor Loadings</b>	<b>Cronbach's <math>\alpha</math></b>	<b>Factor 2. Social development</b>	<b>Factor Loadings</b>	<b>Cronbach's <math>\alpha</math></b>	
I am aware of temperature deviations from normal temperatures in my community area.	0.742	0.749	I am aware of enrolment in post-secondary educational institutions.	0.833	0.719	
I am aware of ground-level ozone and fine particulate concentrations.	0.706		I am aware of changes in age-specific mortality and morbidity for people of my community for people of my community.	0.703		
I am aware of quality-adjusted water availability in my community.	0.856		I am aware of percentage of the population with postsecondary education in my community.	0.747		
I am aware of fragmentation of natural habitats in my community.	0.712		I am aware of health-adjusted life expectancy in my community.	0.722		
I am aware of greenhouse gas emissions in my community.	0.789					
I am aware of smog-forming pollutant emissions in my community.	0.952					
I am aware of nutrient loadings to water bodies in my community.	0.693					
I am aware of conversion of natural habitats to other uses in my community.	0.702					
<b>Variable 3: Market Orientation</b>						
<b>Factor 1. Purposive understanding of marketplaces</b>	<b>Factor Loadings</b>	<b>Cronbach's <math>\alpha</math></b>	<b>Factor 3. Implementing business plans through social good</b>	<b>Factor Loadings</b>	<b>Cronbach's <math>\alpha</math></b>	
Our products/services are designed by understanding life circumstances.	0.942	0.893	Our business works with diverse groups.	0.842	0.814	
Our products/services improve welfare.	0.912		At the core of our business is social good as common denominator.	0.796		
<b>Factor 2. Addressing consumer needs and welfare</b>	<b>Factor Loadings</b>	<b>Cronbach's <math>\alpha</math></b>				
Our products/services display fairness and trustworthiness.	0.928	0.916				
Our products/services put emphasis on individual and community welfare.	0.906					
<b>Variable 4: Entrepreneurship</b>						
<b>Factor 1. Entrepreneurial orientation</b>	<b>Factor Loadings</b>	<b>Cronbach's <math>\alpha</math></b>				
In our organization, the number of improvements implemented without organizational approval has increased in the last year.	0.869	0.895				
In our organization, the number of new ideas increased greatly.	0.909					
In our organization, the number of new ideas implemented without official organizational approval was on the increase in the last year.	0.856					

Table 7. Cont.

Motivation					
Variable 5: Perception of Threat to the Natural/Communal Environment					
Factor 1. Environmental concerns	Factor Loadings	Cronbach's $\alpha$	Factor 3. General threat	Factor Loadings	Cronbach's $\alpha$
People worry too much about the future of the environment.	0.765	0.815	Air pollution by industry is dangerous to the environment.	0.775	0.862
People worry too much about human progress harming the environment.	0.822		Pesticides in farming is dangerous to the environment.	0.716	
Factor 2. Perceived threat	Factor Loadings	Cronbach's $\alpha$	River and lake pollution is dangerous to the environment.	0.689	
Pollution is dangerous to the environment of my community.	0.901	0.875	The rise in the world's temperature is dangerous to the environment.	0.853	
Pollution is dangerous to myself.	0.872		Modified genes of certain crops is dangerous to the environment.	0.726	
Pollution is dangerous to family.	0.843				
Variable 6: Altruism toward Others					
Factor 1. Egoistic orientation	Factor Loadings	Cronbach's $\alpha$	Factor 3. Biospheric orientation	Factor Loadings	Cronbach's $\alpha$
I exert control over others.	0.701	0.779	I am protecting natural resources.	0.719	0.701
I like material possessions and money.	0.733		I live in harmony with other species.	0.774	
I have the right to lead or command	0.793		I am fitting into nature.	0.682	
I enjoy having an impact on people and events.	0.726		I am preserving nature.	0.696	
Factor 2. Altruistic orientation	Factor Loadings	Cronbach's $\alpha$			
I accept equal opportunity for all.	0.758	0.786			
I seek world free of war and conflicts.	0.754				
I help and take care of the poor or weak.	0.779				
I am working for the welfare of others.	0.719				
Variable 7: Success					
Factor 1. Economic Gains	Factor Loadings	Cronbach's $\alpha$	Factor 3. Social Gains	Factor Loadings	Cronbach's $\alpha$
In terms of yearly turnover, our business may be described as profitable.	0.869	0.849	It is important for our business to contribute to the welfare of the workforce.	0.712	0.738
In terms of customer attraction and retention, our business may be described as effective.	0.909		It is important for our business to be actively involved in the community development.	0.752	
In terms of market share, our business may be described as competitive.	0.856		It is important for our business to build long-term cooperative relationships with partners in our market(s).	0.702	
Factor 2. Environmental Gains	Factor Loadings	Cronbach's $\alpha$			
Our products and/or services are meant to be harmless in terms of environmental issues.	0.701	0.720			
It is important for our firm to adopt responsible policies in terms of material and energy resources usage.	0.748				
In the current activities, we try to rely on green technologies as much as possible.	0.713				
Moderating Variable: Social Embeddedness					
Factor 1. Social embeddedness				Factor Loadings	Cronbach's $\alpha$
Social embeddedness assists identification of economic, social and ecological concerns.				0.881	0.856
Social embeddedness assists development of an open innovation system where value is co-created with stakeholders.				0.711	
Core values of founders are embedded in the business.				0.947	
Networking skills of entrepreneur enable strong partnerships with a wide variety of stakeholders and collaborators.				0.872	
Networking skills of entrepreneur enable business to identify and exploit new market opportunities.				0.939	
Performance gains for clients are both social and economic.				0.852	

Regarding *Natural/communal environment* two factors were extracted (KMO = 0.742), the first factor comprising three items related to *Natural environment* (Cronbach's  $\alpha = 0.732$ ) while the second factor with three items relates to *Communal environment* (Cronbach's  $\alpha = 0.726$ ).

Regarding *Sustainable development* two factors were extracted (KMO = 0.756), the first factor comprising eight items related to *Environmental development* (Cronbach's  $\alpha = 0.749$ ) while the second factor, *Social Development*, with four items (Cronbach's  $\alpha = 0.719$ ).

Regarding *Market orientation* three factors were extracted (KMO = 0.842), the first factor comprising two items related to *Purposive understanding of marketplaces* (Cronbach's  $\alpha = 0.893$ ), the second factor with two items relates to *Addressing consumer needs and welfare* (Cronbach's  $\alpha = 0.916$ ) while the third factor has two item related to *Implementing business plans through social good* (Cronbach's  $\alpha = 0.814$ ).

Regarding *Entrepreneurship* one factor was extracted (KMO = 0.762), with three items related to *Environmental orientation* (Cronbach's  $\alpha = 0.760$ ).

Regarding *Perception of threat to the Natural/Communal Environment* three factors were extracted (KMO = 0.831), the first factor comprising two items related to *Environmental concerns* (Cronbach's  $\alpha = 0.815$ ), the second factor with three other items relates to *Perceived threat* (Cronbach's  $\alpha = 0.875$ ) while the third with five items relates to *General threat* (Cronbach's  $\alpha = 0.862$ ).

Regarding *Altruism toward others* three factors were extracted (KMO = 0.746), the first factor comprising four items related to *Egoistic orientation* (Cronbach's  $\alpha = 0.779$ ), the second factor with four items relates to *Altruistic orientation* (Cronbach's  $\alpha = 0.786$ ) while the third factor with four items relates to *Biospheric orientation* (Cronbach's  $\alpha = 0.701$ ).

Regarding *Success* scale three factors were extracted (KMO = 0.769), the first factor comprising three items related to *Economic Gains* (Cronbach's  $\alpha = 0.849$ ), the second factor with three items relates to *Environmental Gains* (Cronbach's  $\alpha = 0.720$ ) while the third factor with three items relates to *Social Gains* (Cronbach's  $\alpha = 0.738$ ).

For *Social embeddedness*, one factor (*Social embeddedness*) was extracted (KMO = 0.736).

All items in Table 7 had factor loadings of 0.65 or higher, the acceptable threshold for samples size of 70 [155], thereby indicating satisfactory levels of convergence and discriminant validity. The scales had sufficient reliability levels as shown by the Cronbach's alpha values. The KMO values were above 0.7, and the Bartlett's test was significant ( $p = 0.000$ ) for each of the measurement scales, therefore our analysis was appropriate.

## 6. Results

The descriptive statistics and correlations for all variables are reported in Table 8. The variance inflation factor (VIF) scores suggest that multicollinearity is not an issue in the model. In this case, all VIF values are below 10 and most correlations in Table 8 are insignificant. This implies that the estimated effects in Table 9, are not biased by high correlations between independent variables. Since the dependent variable, *Sustainable opportunity identification* was divided in two categories: low sustainable opportunity identification (up to 5 opportunities) and high sustainable opportunity identification (at least six opportunities), linear regression becomes inappropriate due to its assumption of normality of residuals. Consequently, hierarchical logistic regression analysis was used.

Model 1, in which only control variables were considered, was not statistically significant ( $\text{Chi}^2 = 1.543, p > 0.1$ ), and the influence of all three control variables (*Age, Gender, Education*) was also insignificant. Thus, the control variables do no influence recognition of sustainable opportunities. This is partially consistent with other studies [43,44,156–160]. Results are shown in Table 9.

Table 8. Descriptive statistics and correlation matrix.

	Mean	Std. Dev.	VIF	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Sustainable Opportunities Identification	46.3%	0.50		1.000																					
Entrepreneur's Age	2.23	0.61	1.48	0.069	1.000																				
Entrepreneur's Gender	1.87	0.38	1.12	0.062	0.139 *	1.000																			
Entrepreneur's Education	2.97	0.64	1.12	0.031	0.011	0.090	1.000																		
Social Embeddedness	4.12	0.74	1.53	0.136 *	0.018	0.062	0.095	1.000																	
Natural Environment	3.96	0.65	1.67	0.084	0.009	0.092	0.039	0.087	1.000																
Communal Environment	4.26	0.63	1.54	0.097	0.008	0.037	0.064	0.238 **	0.094	1.000															
Environmental development	4.24	0.65	1.72	0.084	0.009	0.056	0.041	0.223 **	-0.024	0.058	1.000														
Social development	3.67	0.63	1.64	0.097	0.015	0.097	0.092	0.018	-0.053	0.049	0.092	1.000													
Purposive understanding of marketplaces	5.28	0.82	1.96	0.167	-0.077	0.084	0.047	-0.065	0.219 **	0.082	0.018	0.014	1.000												
Addressing consumer needs and welfare	6.41	0.96	1.35	0.225 **	0.116	0.037	0.014	0.152 *	0.148 *	0.037	0.053	0.041	-0.026	1.000											
Implementing business plans through social good	6.67	0.88	1.36	0.043	0.078	0.055	-0.112	0.093	0.202 **	0.088	0.065	0.329 **	0.057	0.346 **	1.000										
Entrepreneurial orientation	6.88	0.84	1.58	0.096	0.076	0.054	0.042	0.051	0.229 **	0.042	0.084	-0.019	0.036	-0.018	0.154 *	1.000									
Environmental concerns	3.57	0.96	1.97	0.223 **	-0.114	0.046	0.109	0.168 *	0.247	0.082	-0.068	-0.041	0.067	0.048	0.052	0.063	1.000								
Perceived threat	3.82	0.63	2.18	0.064	-0.059	0.141 *	0.321 **	0.067	0.062	0.023	-0.042	-0.056	-0.077	0.084	0.047	-0.065	-0.219	1.000							
General threat	4.72	0.70	2.32	0.143	-0.113	0.019	-0.039	0.276 **	0.047	0.068	0.087	0.032	0.116 *	0.077	0.014	0.152 *	0.130	0.037	1.000						
Egoistic orientation	3.58	0.75	2.54	0.152 *	0.071	0.092	-0.018	-0.057	0.036	0.018	0.084	0.071	-0.010	0.343 **	0.084	0.009	0.092	0.041	0.033	1.000					
Altruistic orientation	3.12	0.82	2.16	0.083	0.065	0.005	0.025	-0.096	0.084	0.021	0.037	0.062	-0.053	0.007	0.097	0.015	0.097	0.092	0.098	0.099	1.000				
Biospheric orientation	3.92	0.64	1.99	0.031	0.011	0.090	-0.036	0.040	0.097	0.012	-0.055	-0.045	0.009	0.011	0.016	0.032	0.038	0.044	0.045	0.052	0.056	1.000			
Economic Gains	6.87	0.51	1.35	0.115	0.016	0.047	0.038	0.062	0.046	0.016	0.093	0.054	0.009	0.092	0.041	0.223 **	-0.024	-0.058	-0.084	0.009	0.092	0.086	1.000		
Environmental Gains	6.38	0.61	1.12	0.137	0.027	0.052	0.045	0.068	0.097	0.015	0.084	0.065	0.015	0.097	0.092	0.418 **	-0.053	-0.049	-0.097	0.008	0.037	0.075	0.084	1.000	
Social Gains	6.59	0.66	1.67	0.140	0.020	0.086	0.064	0.073	0.167	0.077	0.062	0.066	-0.077	0.084	0.047	-0.065	-0.219	0.082	-0.031	0.011	0.028	0.036	0.044	0.064	1.000

\*\* Correlation is significant at the 0.01 level (2-tailed); \* Correlation is significant at the 0.05 level (2-tailed). N = 72.

Table 9. Logistic regression analysis summary.

Variable	Model 1	Model 2	Model 3	Model 4
<b>Control variables</b>				
Age	0.239 (0.399)	0.374 (0.144)	0.377 (0.174)	0.371 (0.249)
Gender	−0.253 (0.427)	−0.318 (0.436)	−0.227 (0.495)	−0.233 (0.482)
Education	0.163 (0.483)	0.364 (0.422)	0.258 (0.238)	0.232 (0.404)
<b>Natural/Communal Environment</b>				
Natural Environment		0.337 (0.239)	0.507 (0.117)	0.263 (0.399)
Communal Environment		0.454 (0.014) **	0.412 (0.013) **	0.456 (0.014) **
<b>Sustainable development</b>				
Environmental development		0.573 (0.015) **	0.524 (0.008) **	0.427 (0.004) **
Social development		0.172 (0.519)	0.188 (0.616)	0.193 (0.547)
<b>Market orientation</b>				
Purposive understanding of marketplaces		0.429 (0.012) **	0.462 (0.013) **	0.464 (0.015) **
Addressing consumer needs and welfare		0.437 (0.012) **	0.457 (0.010) **	0.594 (0.012) **
Implementing business plans through social good		0.489 (0.013) **	0.512 (0.014) **	0.734 (0.016) **
<b>Entrepreneurship</b>				
Entrepreneurial orientation		0.523 (0.013) **	0.484 (0.012) **	0.473 (0.012) **
<b>Perception of threat to the Natural/Communal Environment</b>				
Environmental concerns		0.342 (0.113)	0.568 (0.122)	0.392 (0.431)
Perceived threat		−0.165 (0.612)	−0.101 (0.728)	−0.018 (0.846)
General threat		0.522 (0.014) **	0.903 (0.007) **	0.061 (0.004) **
<b>Altruism toward others</b>				
Egoistic orientation		−0.453 (0.261)	−0.668 (0.102)	−0.387 (0.412)
Altruistic orientation		0.469 (0.014) **	0.412 (0.013) **	0.455 (0.014) **
Biospheric orientation		0.348 (0.117)	0.511 (0.119)	0.463 (0.382)
<b>Success</b>				
Economic Gains		0.618 (0.005) **	0.976 (0.005) **	0.927 (0.005) **
Environmental Gains		0.445 (0.012) **	0.512 (0.010) **	0.594 (0.011) **
Social Gains		−0.138 (0.243)	−0.189 (0.323)	−0.234 (0.341)
<b>Moderation effects</b>				
Natural Environment* Social embeddedness			−0.377 (0.363)	−0.283 (0.514)
Communal environment* Social embeddedness			0.654 (0.031) **	0.546 (0.042) **
Environmental development* Social embeddedness			0.727 (0.036) **	0.620 (0.054) **
Social development* Social embeddedness			0.083 (0.724)	0.161 (0.711)
Purposive understanding of marketplaces* Social embeddedness			0.785 (0.046) **	0.416 (0.012) **
Addressing consumer needs and welfare* Social embeddedness			0.773 (0.041) **	0.404 (0.012) **
Implementing business plans through social good* Social embeddedness			0.712 (0.038) **	0.486 (0.012) **
Entrepreneurial orientation* Social embeddedness			0.793 (0.048) **	0.524 (0.012) **
Environmental concerns* Social embeddedness			0.442 (0.398)	0.351 (0.493)
Perceived threat* Social embeddedness			−0.232 (0.529)	−0.382 (0.371)
General threat* Social embeddedness			0.665 (0.045) **	0.637 (0.010) **
Egoistic orientation* Social embeddedness			−0.092 (0.829)	−0.157 (0.720)
Altruistic orientation* Social embeddedness			0.552 (0.038) **	0.782 (0.011) **
Biospheric orientation* Social embeddedness			0.366 (0.511)	0.453 (0.482)
Economic Gains* Social embeddedness			0.865 (0.42) **	0.915 (0.010) **
Environmental Gains* Social embeddedness			0.727 (0.048) **	0.920 (0.012) **
Social Gains* Social embeddedness			−0.103 (0.731)	−0.354 (0.386)
<b>Social embeddedness</b>				
Social embeddedness				1.094 (0.004) **
Logistic Regression Constant	0.203	−0.158	−0.129	−3.572
Chi <sup>2</sup>	1.543	33.118	38.693	48.003
Cox & Snell R <sup>2</sup>	0.005	0.116	0.173	0.238

Note: \*  $p < 0.10$ ; \*\*  $p < 0.05$ .  $N = 72$ .

Model 2, which incorporated independent variables for testing hypothesis H1a–d and H2a–c is significant ( $\text{Chi}^2 = 33.118$ ,  $p < 0.05$ ). Results are shown in Table 9. Of the 17 variables introduced in Model 2, 10 are significant, namely: *Communal Environment* ( $\beta = 0.454$ ), *Environmental development* ( $\beta = 0.573$ ), *Purposive understanding of marketplaces* ( $\beta = 0.429$ ), *Addressing consumer needs and welfare* ( $\beta = 0.437$ ), *Implementing business plans through social good* ( $\beta = 0.489$ ), *Entrepreneurial orientation* ( $\beta = 0.523$ ), *General threat* ( $\beta = 0.522$ ), *Altruistic orientation* ( $\beta = 0.469$ ). The remaining variables did not demonstrate any significant influence on the sustainable opportunities recognition. Hence H1a–d and H2a–c were partially supported.

Model 3 included control variables, independent effects and the interaction effects between *Social embeddedness* and independent variables. The model is significant ( $\text{Chi}^2 = 38.693, p < 0.001$ ). Results are shown in Table 9. The same variables as in the previous model are significant, therefore, Hypotheses H3a–g are partially supported.

Finally, Model 4 included direct effects of *Social embeddedness*. The model is significant ( $\text{Chi}^2 = 48.003, p < 0.001$ ) and the moderating variable, *Social embeddedness*, is statistically significant ( $\beta = 1.094; p < 0.05$ ). Results are shown in Table 9.

## 7. Discussion

Results of our study can be described as mixed. While for two variables of the model their positive influence on recognition of sustainable opportunities was fully demonstrated, namely entrepreneur's *Market orientation* and *Entrepreneurial orientation*, all others fell short of decisively influencing identification of opportunities (see Table 10).

**Table 10.** Results after testing the hypothesis.

Factors associated with <i>Knowledge</i>	H1a: The greater entrepreneur's knowledge of the natural/communal environment, the more likely he/she will recognize a sustainable business opportunity.	Partially supported
	H1b: The greater entrepreneur's awareness of sustainable development the more likely he/she will recognize a sustainable business opportunity.	Partially supported
	H1c: The more pronounced entrepreneur's sustainable market orientation the more likely he/she will recognize a sustainable business opportunity.	Fully supported
	H1d: The greater entrepreneur's sustainable entrepreneurial orientation the more likely he/she will recognize a sustainable business opportunity.	Fully supported
Factors associated with <i>Motivation</i>	H2a: The greater entrepreneur's perception of threat of the natural/communal environment, the more likely he/she will recognize a sustainable business opportunity.	Partially rejected
	H2b: The greater entrepreneur's altruism toward others the more likely he/she will recognize a sustainable business opportunity.	Partially rejected
	H2c: The greater entrepreneur's focus on success the more likely he/she will recognize a sustainable business opportunity.	Partially supported
Moderating effects of <i>Social Embeddedness</i>	H3a: Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's knowledge of the natural/communal environment.	Partially supported
	H3b: Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's awareness of sustainable development.	Partially supported
	H3c: Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's sustainable market orientation.	Fully supported
	H3d: Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's sustainable entrepreneurial orientation.	Fully supported
	H3e: Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's perception of threat of the natural/communal environment.	Partially rejected
	H3f: Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's altruism toward others.	Partially rejected
	H3g: Social Embeddedness has a positive moderating effect on identification of sustainable opportunities by entrepreneur's focus on success.	Partially supported

Considering *Natural/Communal Environment*, it seems knowledge of *Natural environment* does not affect opportunity recognition, while entrepreneur's knowledge of *Communal environment* is positively associated with it. The results are mixed, being different than other studies [8,13,20,157,161] but consistent with others [44].

In terms of *Sustainable development*, they are much more aware of *Environmental development* rather than *Social development*, probably since emergence of new materials or technologies, or new regulations in terms of environment protection may affect their business. At the same time, *Social development*, which address employees' expertise, which is more linked with, seems not to be an issue for entrepreneurs since technological processes are performed by machines and are standardized.

Both *Market orientation* with all three variables, *Purposive understanding of marketplaces*, *Addressing consumer needs and welfare* and *Implementing business plans through social good* and *Entrepreneurship* with *Entrepreneurial orientation* tested positive and are important for opportunity recognition. This is in line with other studies [9,50,157,162–164].

In the case of *Perception of threat to the Natural/Communal Environment*, since only *Environmental concerns* tested positive we argue that it is not influencing sustainable opportunity recognition.

For *Altruism toward others*, two out of three factors considered, *Egoistic orientation* and *Biospheric orientation* are not significant. Hence, we argue that *Altruism toward others* is not influencing sustainable opportunity recognition, result which is consistent with other studies [44].

Finally, entrepreneurs focus on *Success* is positively associated with opportunity recognition.

In terms of *Social Embeddedness*, its moderating effects is made clear in relationship with sustainable market orientation and entrepreneur's entrepreneurial orientation. A positive embeddedness allows entrepreneurs to adapt their products and services to local conditions in terms of specifications, prices and quality. Even though the most qualitative products are triple glazing, for instance, Romanian customers prefer double glazing due to cost/price. Surveyed SMEs products/services put emphasis on individual and community welfare, which relates to local conditions (PVC based joinery products are used due to quality/cost ratio), allowing customization according to individual specific needs, a detail important to all surveyed entrepreneurs.

Role of social embeddedness seems linked with entrepreneur's knowledge of the natural/communal environment, and awareness of sustainable development and focus on success. Therefore, even though Romanian entrepreneurs are aware and concerned about environment, still their focus is on economic side of their business. This may be the result of their businesses size, in our sample more than 70% of the sample being small companies. This corroborates with lack of altruism toward others in terms of sustainable opportunity recognition.

## 8. Conclusions

This study aimed to analyze the factors positively influencing sustainable opportunities recognition as well as to empirically test augmented sustainability process model [14] in a context where sustainability issues are quite pressing, namely the PVC joinery in Romania. We focused on two main factors, Knowledge which included *Natural/Communal Environment*, *Sustainable development*, *Market orientation* and *Entrepreneurship*, and Motivation, which included *Perception of threat to the Natural/Communal Environment*, *Altruism toward others* and *Success*, while *Social embeddedness* was a moderator.

Our research makes two main contributions to the domain of sustainable entrepreneurship. First, these results provide useful insights of how entrepreneurs identify sustainable opportunities. Second, our study analyzes moderating influence of *Social embeddedness*, a difficult factor to assess. Our study shows that augmented sustainability process model can predict the identification of sustainable opportunities. However, it is difficult to assess its validity in various settings, like various industries, type of SMEs, countries etc. There are many hypotheses, which are only partially supported, which may be an indication that sustainable opportunities models are very sensitive to context. This further validates our results, since *Social embeddedness* was found to positively moderate sustainable opportunity recognition.

In terms of limitations, we have to mention: (1) difficulty in defining most of the variables, since the model is not very conceptually evolved; (2) the small sample; (3) the fact that we only consider the first part of the model, namely opportunity recognition; (4) lack of additional studies, since this is the first empirical test of augmented sustainability process model.

In terms of future research, we plan to extend it by including the second part of the model, sustainable opportunity exploitation. Regarding sustainable opportunity recognition, the other two variables of the model, not tested in our study, Critical incidents and trends and Institutional Enablers

& Barriers should be investigated. We also intend to test the augmented sustainable development process model in various context—geographical, industry, etc.—to further test its validity.

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