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The Effect of Human Capital Determinants on Sustainable Entrepreneurship Across Economies

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Abstract

This work examines the effects of human capital determinants, i.e. experience and education, on the sustainability orientation of entrepreneurs. Cross-sectional data from the GEM 2009 APS is used to help determine the sign of this effect for a sample of 48 countries. The results of this work support the notion that both experience and levels of education are positively correlated to sustainability orientation. Education does not seem to follow an upward trend where more is better, as having a secondary degree has a larger positive effect than having a post secondary degree. Furthermore, using interaction terms for the stage of economic development of a country, I find that the effect of enjoying some secondary education in efficiency-driven economies is larger than in factor-driven economies. The effect of having a secondary degree is larger in factor-driven economies than in innovation-driven economies. Finally, experience is negatively correlated to sustainability orientation in factor-driven economies, while the relationship is positive for innovation-driven economies.

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1 Introduction

In a world where over 700 million people still live in extreme poverty (The World Bank, 2016) and where apparent climate change is an ever-more pressing issue on policy agendas everywhere (Stern, 2008), the need for more sustainable development and other solutions is dire. Sustainable development can be described as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). In practice, this means that natural resources and ecosystems should not be exploited to the point of depletion, for at that point they can no longer function as a source of income or provision. This is especially important in developing countries, considering the economies of low-income rural communities are heavily reliant on those natural resources (TEEB, 2008). The United Nations Environment Program identifies the same need, and calls for a reallocation of investments to acquire more natural capital such as fish stock and forests. This may in turn benefit the rural poor and create entrepreneurial opportunities through the enhancement of new sectors and technology. It is generally agreed upon in the literature that entrepreneurship affects economic growth (Brinkman, 1995; Van Stel et al., 2005). A green economy –which respects planetary boundaries- is also said to support economic growth, especially in the long run (UNEP, 2011).

Although there is an abundant amount of studies exploring entrepreneurship in general (Terjesen et al., 2016), and the factors that drive individuals to create new ventures (Gianetti & Simonov, 2004; Parker, 2009), the research on sustainable entrepreneurship in developing economies is rather scarce. To date, the majority of works on entrepreneurship has applied established theories from developed countries with little regard for the context of emerging economies. In other words, it was often assumed that the theories that proved fruitful in developed countries would to the same extent provide clarification in developing nations (Bruton et al., 2008), while research in other domains has shown that the theories and findings for developed economies may not be equally applicable in developing economies, for example in the field of strategy (Peng, 2000). More specifically, studies find that individual characteristics have different impacts on entrepreneurial orientation depending on the type of motivation, whether that be necessity-driven or opportunity-driven (Ardagna & Lusardi, 2008). Several consecutive GEM Reports show that necessity-driven self-employment is higher in less developed economies, whereas opportunity entrepreneurship tends to be higher in developed economies. This warrants the notion that there may indeed be significant differences with regard to the impact of individual characteristics on entrepreneurship between economies.

In conclusion, because of the potentially unexploited contribution to economic growth that sustainable entrepreneurship can provide, and the lack of empirical works exploring the factors that influence the level of sustainable orientation in entrepreneurs, there is a strong need for works that investigate the conditions under which entrepreneurship can be a driver of economic growth, while also advancing

sustainability goals (Hall et al., 2010). This research paper will try to fill part of that void in literature by examining the drivers of sustainable entrepreneurship in developing as well as developed countries. The focus of this work in particular will be on the human capital determinants of sustainable entrepreneurship, i.e. education and experience. The research question that is derived from this is as follows:

Research question: *What is the effect of human capital factors on the level of sustainability orientation in entrepreneurs, and does this differ depending on the economic stage of a country?*

To determine the level of sustainability orientation in an entrepreneur, a dataset provided by the Global Entrepreneurship Monitor is used. This dataset contains the answers provided by several thousand respondents in a total of 54 countries to a survey on entrepreneurship. The survey includes entrepreneurial orientation questions, which allow the respondent to allocate a total of 100 points to either societal, environmental or commercial values. In this work, the cumulative of points attributed to societal and environmental values will be used to establish the degree of sustainability orientation for an entrepreneur.

This work is constructed as follows. First, relevant contributions of earlier researchers in the field of entrepreneurship are discussed. In specific, research on sustainable entrepreneurship, the individual determinants of entrepreneurship, and entrepreneurship across economies is investigated. Based on the findings of these works several hypotheses are formulated. After this, the GEM 2009 APS dataset is introduced and elaborated upon. This dataset provides the necessary information to perform a linear multiple regression analysis with sustainability orientation as the dependent variable, and several education and experience as independent variables. The last section of this paper will discuss the implications of this research, as well as the limitations and some suggested directions for future research.

2 Literature Section

2.1 Entrepreneurship and sustainable entrepreneurship

The field of entrepreneurship has often defined the entrepreneur as a person who starts a new business, bearing financial risk in the pursuit of profit (Moore, 1986). Venkataraman and Shane (2000) expanded upon this definition by not only considering individuals starting a business, but also including the opportunity aspect, and the varying abilities of individuals to recognize and capitalise on those opportunities, or in their own words "...[we] define the field of entrepreneurship as the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated and exploited" (Venkataraman & Shane, 2000, p218).

For a long time the research has focused at large on the commercial aspect of entrepreneurship. However, in recent years, there has been a growing interest towards forms of entrepreneurship that are induced by incentives other than monetary gains (Austin et al. 2006). One of such forms is social entrepreneurship, which can be regarded as an important driver of insitutional change, because social entrepreneurs create opportunities for commercial entrepreneurs to act upon, inducing higher development levels and economic growth (McMullen, 2011; Estrin et al., 2013). Social entrepreneurs can be differentiated from nonprofits and philanthropists by the innovative mechanisms they employ in solving (social) problems. Also, they are aware that they can not reach their goals without some financial means, so they balance the pursuit of their social values with business savy (Vega & Kidwell, 2007). In many ways closely related to social entrepreneurs are the entrepreneurs who start a business out of environmental considerations. These individuals lay the foundation for environmental entrepreneurship. Dean & McMullen (2007, p58) provide the following definition for environmental entrepreneurship: “The process of discovering, evaluating and exploiting economic opportunities that are present in environmentally relevant market failures.” They too recognize the importance of the opportunity aspect, and their attribution of these opportunities to market failure is not new. Indeed, Cohen & Winn (2007) provide evidence for the notion that market failures are the cause for both environmental degradation and the entrepreneurial opportunities that result from this.

The cumulative of social and environmental entrepreneurship is often referred to as sustainable entrepreneurship (Cohen & Winn, 2007). Although a considerable amount of research has been done on entrepreneurship in general and on the topic of social entrepreneurship and its determinants (Griffiths et al. 2013; Hoogendoorn, 2016), the number of works investigating the individual determinants of environmental or sustainable entrepreneurship is still rather scarce. In particular, there is a need for documentation on the dynamics and drivers of entrepreneurship, both commercial and sustainable, in developing countries (Hall et al., 2010). This current work focuses on the individual determinants of sustainable entrepreneurship, and therefore encompasses both social and environmental entrepreneurship.

2.2 Entrepreneurship in developing and developed economies

Porter et al. (2002) identified three major phases of economic development. Factor-driven economies make up the lowest level of economic development, and these economies are characterised by a large agricultural sector with a strong dependence on labour and natural resources. Efficiency-driven economies possess a more efficient production process and higher product quality. Finally, innovation-driven economies represent the highest stage of economic development. This type of economy is more knowledge-intensive and has a large service sector. In this research paper, innovation-driven economies

will also be referred to as developed countries, while efficiency-driven and factor-driven economies are interchangeably used with developing countries. This is done so that previous works that distinguish between developing and developed economies, but not between factor-driven, efficiency-driven or innovation-driven economies can also be incorporated and discussed in the literature section. The distinction of several types of economies in this work is justified because there is reason to believe that due to cultural bounds and other factors, the determinants for entrepreneurship in developed economies may not be as relevant in developing economies (Bruton, 2008; Ratten, 2014). This section will cover some of the previous works discussing the differences between developed and developing countries regarding entrepreneurship.

In spite of the fact that entrepreneurship has since long been renowned for its transformative nature and its capacity to enhance and sustain economic growth (Brinkman, 1995), developing countries have historically favored a top-down approach involving policy and regulation on the macro level, to a bottom-up approach where the entrepreneur is enabled and encouraged to conduct business, creating jobs and opportunities in the process (McMullen, 2011). This may mean that the positive externalities of (sustainable) entrepreneurship are not fully exploited if education and experience turn out to have a positive effect on sustainable entrepreneurship, but the attainment of these human capital factors by individuals is not enhanced by governments.

The apparent absence of descriptive studies on (sustainable) entrepreneurship in developing countries may be in part due to the large informal sector present in those countries, i.e. the aggregate of entrepreneurs who operate their ventures without ever publicizing any record of their activities (Acs & Virgill, 2010). A study that focused on developing countries in particular was conducted by Azmat & Samaratunge (2009), who suggest that the current level of Corporate Social Responsibility (which has close ties to sustainable orientation) for some small-scale individual entrepreneurs (SIE's) in developing countries is sub-optimal, mainly due to the constraining contextual realities that the ineffective regulatory frameworks and low levels of economic development and public awareness provide.

2.3 Individual determinants entrepreneurship and sustainable entrepreneurship

This section will discuss the individual determinants that influence entrepreneurship, to help construct meaningful explanatory variables and relevant control variables for the analysis in this work. Instrumental in determining the individual factors that may affect entrepreneurship is the work of Parker (2009). He conducted a literature review on a large scale, examining the determinants of entrepreneurship and the sign of their relationship across a large number of works. Some of the factors that carry significant support across works and that are positively related to entrepreneurship are age, experience, entrepreneurship status of parents, and personal wealth. For a number of factors the sign of the

relationship varied across works, the most notable one being education. The only individual factor that was distinctively negatively correlated to entrepreneurship in all studies was the level of risk aversion. Mead & Liedholm (1998) find that in most developing countries, the majority of Micro and Small Enterprises (MSEs) are owned and operated by women. This study will focus on the relationship between human capital (i.e., experience and education) and the sustainability-orientation of entrepreneurs.

Parrish (2010) provides insights into the particular expertise that successful sustainability entrepreneurs appear to have. First, the author suggests that the entrepreneurial skills that are required to be successful may be different depending on the motives of the entrepreneur. A second implication that is drawn from this research is that aspiring sustainability entrepreneurs do not just require the right skills and values, but also the right practical experience. Bearing this in mind, we may expect to see more sustainable-oriented entrepreneurs amongst the individuals that perceive themselves to be experienced and skilful enough to start an enterprise. Parker (2009) comes to the same conclusion. He argues –based on an extensive number of studies- that older, and therefore more experienced people may be more likely to become entrepreneurs, because they possess human capital requirements and sufficient financial means to start an enterprise, whereas younger individuals are more likely to be deprived of this. In addition, older people have had time to create networks, and to identify valuable opportunities (Parker, 2009). Estrin et al. (2016) argue that social entrepreneurs may require more skills and experience than regular entrepreneurs, because their goals are more complex: Social entrepreneurs have to not only seek out opportunities that provide financial profit, but that can also generate positive external effects. Like social entrepreneurship, perhaps even to a larger extent because of the inclusion of environmental considerations, sustainable entrepreneurship combines several logics and thus may provide more challenging goals, which in turn require more skills and experience. To my knowledge, no research to date has set out to find the relationship between experience and sustainable entrepreneurship. Therefore, building on the work of Parrish (2010) with regards to the skills and expertise required for sustainable entrepreneurship and extrapolating the work of Estrin et al. (2016) from social entrepreneurship to sustainable entrepreneurship, the following hypothesis is formulated:

Hypothesis 1: Experience is positively related to sustainability orientation of entrepreneurs

The next variable that will be tested for its impact on sustainability orientation is education. The majority of the works favours the argument that education and entrepreneurship are positively correlated (Parker, 2009). For instance, Robinson & Sexton (1994) show that the total number of years of formal education is on average one year higher for self-employed workers than for wage workers, and they find support for the argument that the number of years of formal education increases the probability of becoming self-employed. Estrin et al. (2013) come to a similar conclusion, in showing that both

secondary and tertiary education are positively related to social and commercial start-ups. In a more recent paper, Estrin et al. (2016) discuss the two-fold socialising effect of education: Education enhances abilities such as flexibility, openness and independent thinking, while it also shapes and enhances personal motivation and pro-social actions such as volunteering and political activism. Through this socialising effect, we can expect to see higher values of sustainability orientation amongst the more educated individuals. Considering this we can formulate the following hypothesis:

Hypothesis 2a: Education is positively related to the sustainability orientation of entrepreneurs

The literature is however not unambiguous, and Hörisch et al. (2017) come to a different conclusion whilst researching the relationship between education and environmental orientation. It is worth noting that, like the current work, the authors employ the GEM 2009 APS. Their results indicate that higher degrees of environmental orientation are less likely to occur among entrepreneurs with more education. Although this is not in line with the majority of findings in traditional entrepreneurship literature, we must bear in mind that the literature on sustainable entrepreneurship is rather scarce. A possible explanation for this relationship is provided by the authors: The dataset used measures the formal level of education, while it does not take into account specific (entrepreneurship-enhancing) education (Hörisch et al, 2017). Another explanation can be found in the theory of opportunity costs: As individuals attain more education, the value of paid employment increases, which makes entrepreneurship a relatively less attractive career option (Parker, 2009).

Because sustainable entrepreneurship is defined as the cumulative of social and environmental entrepreneurship, and the findings of Hörisch et al (2017) show that education and environmental entrepreneurship are negatively correlated, this paper will also consider the following alternative hypothesis:

Hypothesis 2b: Education is negatively related to the sustainability orientation of entrepreneurs

Furthermore, Hörisch et al (2017) employed a dummy variable for OECD countries. The interaction effect of postsecondary education with the OECD dummy was negative and significant, suggesting that the negative effect of (higher) education on environmental orientation is larger in developed countries. A recent study by Iakovleva, Kolvereid and Stephan in 2011 supports a similar notion. They compared the entrepreneurial intentions between students in developing countries and students in developed countries. The results show that students in developing countries have stronger entrepreneurial intentions as compared to students from developed countries, which may be due to the fact that students in developing countries can not expect the same demand for wage workers as students in developed countries. Hypothesis 2c is formulated to help investigate the different impact education may have

across economies. It is important to note that the hypothesis does not suggest a positive or negative sign of the correlation, because the above findings suggest that a potential negative effect of education is larger in developed countries, while the potential positive effect of education is larger in developing countries. This translates to the following hypothesis:

***Hypothesis 2c:** The effect of education on sustainability-oriented entrepreneurship is more positive (higher positives, lower negatives) in developing countries.*

3 Data and Methodology

3.1 Data

To test the hypotheses, data from the Global Entrepreneurship Monitor Adult Population Survey (GEM APS) in 2009 is used in this research. The Global Entrepreneurship Monitor is the world's foremost study of entrepreneurship and a trusted resource for organizations such as the United Nations, World Economic Forum and The World Bank (Global Entrepreneurship Monitor, 2018a). The dataset of 2009 had a special focus on sustainability goals of entrepreneurs, and as such it is of particular interest for this research. The following introduction and question are provided in the survey: *Organizations may have goals according to the ability to generate economic value, societal value and environmental value. Please allocate a total of 100 points across these three categories as it pertains to your goals. For example, an organization's goals may allocate 80 points for economic value, 10 points for societal value, and 10 points for environmental value.* In answering this question the respondents displayed their preference and the degree to which their enterprise is focused on sustainability goals.

The dataset contains data from 180,000 individuals living in 54 different countries. In this work the sample will be restricted to the respondents who indicated they currently own or manage an enterprise, are self-employed, or sell goods and services to others (*ownmge* – these individuals will be referred to as owner-managers). Furthermore, individuals who did not respond to the question what their age is are omitted from the sample. Entrepreneurs that were unable to allocate points to *Sustainable orientation for owner-managers* were also omitted. Finally, the values of the individuals for whom the variable education could not be coded are dropped from the sample. This leaves a total of 17,181 observations in 48 countries, where N = 15 for the country with the lowest number of observations.

The countries in the sample are classified as either factor-driven economies, efficiency-driven economies, or innovation-driven economies (Porter et al., 2002) to help determine whether there are any differences in the impact of human capital on sustainability orientation across economies. The dataset does not allow for a distinction between these types of economies, so the countries are manually

attributed to either one of the three classifications (see Table 1). This is done with the help of the Global Competitiveness Report of 2009 – 2010, a yearly report by the World Economic Forum (WEF). According to WEF, factor-driven economies are the least developed, with a heavy reliance on labour and natural resources. Countries in this stage of economic development are characterized by a large agricultural sector and extraction business. Efficiency-driven economies are more competitive, with higher efficiency in production processes and a higher product quality. Innovation-driven economies make up the most developed stage of economic development. The service sector expands, and businesses are more knowledge-intensive (WEF, 2009).

Table 1 List of countries per stage of economic development

Type Economy	Country
Factor-driven N = 8	Morocco, Algeria, Uganda, Guatemala, Venezuela, Jamaica, Syria, Saudi Arabia
Efficiency-driven N = 21	Russia, South Africa, Hungary, Romania, Peru, Argentina, Brazil, Chile, Colombia, Malaysia, China, Tunisia, Latvia, Serbia, Croatia, Bosnia and Herzegovina, Panama, Ecuador, Uruguay, Dominican Republic, Jordan
Innovation-driven N = 19	United States, Greece, Netherlands, Belgium, Spain, Italy, Switzerland, United Kingdom, Denmark, Norway, Germany, Japan, Korea, Iceland, Finland, Slovenia, Hong Kong, United Arab Emirates, Israel

3.1.1 Dependent variable

The dependent variable in this cross-sectional study is sustainability orientation. Individuals were asked to allocate a total of 100 points to societal, environmental and economic values of the enterprise, as it pertains to their goals. Although not present in the original dataset, sustainability orientation was created through simple addition of the values attributed to societal and environmental goals. I.e., if an individual assigned 50 points to economic value, 20 to societal, and 30 to environmental, then the total value of sustainability orientation would be $20 + 30 = 50$. Therefore, this continuous variable will always have a value that is within the $[0, 100]$ interval.

The dataset contains the 100 points allocation question for both individuals who are in the process of creating a business (nascent entrepreneurs), and for entrepreneurs who are owner-manager of an established firm. This work's focus is in the first place on existing entrepreneurs, and will therefore only employ the allocation question for the latter group.

3.1.2. Independent variables

In this work two explanatory variables are employed to determine the impact they may have on sustainability orientation. The first one is experience, which is based on the following question in the survey: “*You have the knowledge, skill and experience required to start a new business.*” The dataset codes the response to this question as a dummy variable that can take on either value 1 or 0, where 1 indicates that the individual deems him or herself competent enough to start a business. It has to be noted that this question invokes a response that is not objective, as experience is self-reported. The second explanatory variable indicates the level of education of the entrepreneur. Education in the survey is presented as a categorical variable, where respondents are asked to report the highest level of education they have completed. The following options are available: No education (*None*), some secondary education, but no degree (*Some secondary*), secondary education with a degree (*Secondary degree*), post secondary education (*Post secondary*), and graduate experience (*Graduate experience*). To properly incorporate education in the regression model, the different education levels are transposed to dummy variables, where “*None*” equals the base category.

Also included are some control variables, i.e. a dummy variable for gender (male = 1) and risk aversion (fear of failure = 1), and a continuous variable for age, that can take on any value between 16 and 99 years. These variables are added to reduce omitted variable bias, because previous works have shown that they exert influence on the orientation of entrepreneurs (Parker, 2009; Hörisch et al., 2017). Finally, several dummy variables are introduced to see if the results vary depending on the phase of the enterprise. In specific, the following variables are added to the model: Nascent entrepreneurs (suboanw = 1), owner-managers of firms younger than 42 months (babybuso = 1), and for entrepreneurs that are owner-manager of an established firm (estbbuso = 1), i.e. a business that is older than 42 months. For convenience purposes, these three dummy variables are added to the model under one variable name (*Type of entrepreneur*).

3.1.2 Descriptive Statistics

Table 2 Descriptive statistics of dependent variable and independent variables

Variable	Obs.	Freq.	Mean	Std. Dev.
Sustainability orientation	17,181	-	33.84	26.36
Age	17,181	-	43.16	12.10
Experience	17,181	13,731	0.7992	0.4006
No education	17,181	2,402	0.1398	0.3468
Some secondary education	17,181	3,417	0.1989	0.3992
Secondary degree	17,181	5,439	0.3166	0.4652

Post secondary degree	17,181	5,348	0.3113	0.4630
Graduate experience	17,181	575	0.0335	0.1800
Male	17,181	10,833	0.6305	0.4827
Fear of failure	17,181	4,521	0.2631	0.4404
Nascent entrepreneurs	17,181	1,659	0.0966	0.2954
Owner-managers - Young	17,181	4,944	0.2878	0.4527
Owner-managers – Estb.	17,181	10,788	0.6279	0.4834
Factor-driven economy	17,181	3,521	0.2049	0.4037
Efficiency-driven economy	17,181	5,603	0.3262	0.4688
Innovation-driven economy	17,181	8,057	0.4698	0.4991

As can be read in Table 1, the mean average age of entrepreneurs in the sample is an approximate 43 years old. The average value of sustainable orientation for entrepreneurs is 34 (on a scale of 0 - 100). Around 20% of the respondents has enjoyed some secondary education, 31% finished a secondary degree, 31% has a post secondary degree, and 3% has graduate experience. Of the respondents in the sample, 63% is male. 26% reported positively to the question whether fear of failure prevented them from starting a business, while nearly 80% thought they had the knowledge, skill and experience required to start a new business. 1,659 of the individuals that mentioned they are owner-manager of a company were actively involved in a start-up effort, but enjoyed no wages yet. 4,944 out of 17,181 individuals manages and owns a business that is up to 42 months old. The remaining 10,788 entrepreneurs were owner-manager of a firm that is older than 42 months old.

The plurality (46.98%) of respondents lives in a country that can be classified as an innovation-driven economy. The percentages of individuals living in factor-driven economies and efficiency-driven economies are 20.49% and 32.62% respectively.

3.2 Methodology

Several Ordinary Least Squares (OLS) regression models are applied to analyze the effects of human capital determinants on sustainability orientation for start-ups. In Model 1, Y denotes the dependent variable, sustainability orientation of entrepreneurs. The variables that follow are introduced in the data section of this paper. Finally, the residual ε is added, which follows an independent and normal distribution. In formula, all this is depicted as follows:

$$\text{Model 1: } Y = \beta_0 + \beta_1 (\text{Experience}) + \beta_2 (\text{Education}) + \beta_3 (\text{Age}) + \beta_4 (\text{Male}) + \beta_5 (\text{Fear of failure}) + \beta_6 (\text{Type of entrepreneur}) + \beta_7 (\text{Type of economy}) + \varepsilon$$

In Model 2, the interaction terms β_8 (*Experience * Type of economy*) and β_9 (*Education * Type of economy*) are added to analyze whether the explanatory power of the human capital determinants change based on the type of economy the individual is situated in.

$$\text{Model 2: } Y = \beta_0 + \beta_1 (\textit{Experience}) + \beta_2 (\textit{Education}) + \beta_3 (\textit{Age}) + \beta_4 (\textit{Male}) + \beta_5 (\textit{Fear of failure}) + \beta_6 (\textit{Type of entrepreneur}) + \beta_7 (\textit{Type of economy}) + \beta_8 (\textit{Experience * Type of economy}) + \beta_9 (\textit{Education * Type of economy}) + \varepsilon$$

In the results section of this paper, the outcomes of Model 2 are as follows (Table 4). The first column represents the results for factor-driven economies, the base category. In column two and three the interaction effects are added for respectively efficiency-driven and innovation-driven economies.

4 Results

In Table 3 the results of the first regression model are displayed. For the explanatory variables, all results are significant on the 0.01 level. The first explanatory variable that was tested is experience, which was a dummy. All else being equal, if an individual perceives her or his own knowledge, skills and experience as being adequate for starting a business (*Experience = 1*), the value of sustainability orientation increases with 1.35. Hypothesis 1, stating that experience is positively correlated to sustainability orientation, is not rejected.

The second explanatory variable, education, shows a positive correlation for all levels of education relative to the base category of no education. With the exception of individuals who have a post secondary degree, the higher levels of education correlate to a higher level of sustainability orientation. Although little can be said about the direction or causality of this relationship, these results show that higher values of sustainability orientation are more common amongst more educated entrepreneurs. This is in line with earlier research on entrepreneurship in general (Robinson & Sexton, 1994) and on social entrepreneurship (Estrin et al., 2013). Hypothesis 2b is rejected, whilst hypothesis 2a is not. It is worth noting that regressing for environmental orientation in stead of sustainability orientation still results in a positive correlation between education and the dependent variable for all levels, a result that seemingly contradicts the findings of Hörisch et al. (2017).

In this work, no hypotheses have been constructed for the control variables. Nonetheless, it may be interesting to try and interpret the results. First of all, age and the dependent variable show a positive relationship. Second, gender appears to be of some influence to the dependent variable. In line with the findings of Hörisch et al. (2017), men on average appear to have lower values of sustainability orientation. The sign of the relationship between fear of failure and the dependent variable is negative.

It was readily established in the entrepreneurship literature that risk aversion, a concept closely related to fear of failure negatively affected the choice of becoming an entrepreneur (Parker, 2009), but now it can be said that it also correlates negatively with an individual's choice to conduct sustainable entrepreneurship.

The regression results support the argument that sustainability orientation diminishes as a business matures: Nascent entrepreneurs show the highest values of sustainability orientation, while the value decreases for owner-managers of young firms, and it drops even further for owner-managers of established firms. Furthermore, there is a positive relationship between the level of development in an economy and the level of sustainability orientation: Efficiency-driven economies display higher values for sustainability orientation relative to the base category of factor-driven economies, and innovation-driven economies show even higher values. These findings suggest that sustainability orientation in entrepreneurs is higher if the country is in a higher stage of economic development.

Table 3 Multiple Linear Regression: Effects of experience and education on sustainability orientation of entrepreneurs

Variables	
Experience	1.35*** (0.50)
Education	
Some secondary education	4.80*** (0.70)
Secondary degree	6.47*** (0.66)
Post secondary degree	5.60*** (0.68)
Graduate experience	8.88*** (1.21)
Age	0.09*** (0.02)
Male	-2.82*** (0.41)
Fear of failure	-1.09** (0.45)
Nascent entrepreneur	2.44*** (0.83)
Owner-manager - Young	-1.86** (0.89)
Owner-manager – Estb.	-3.62*** (0.86)
Type of economy	
Efficiency-driven	1.14* (0.57)
Innovation-driven	9.18*** (0.58)
Constant	24.01*** (1.33)
Number of observations	17,181
Adjusted R-squared	0.0490

*Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$*

According to hypothesis 2c, we should expect to find a more positive relationship between education and the dependent variable in countries that are not yet classified as developed. Table 4 presents the results from the multiple linear regression model with interaction effects (Model 2), where the columns represent the values of the coefficients of respectively factor-driven, efficiency-driven and innovation-driven economies. This section will interpret these results. The base value of sustainability orientation for entrepreneurs equals 28.74, this value is out of a total of 100 points that could be allocated to sustainability goals.

The results for experience show that experience is negatively correlated to sustainability orientation in factor-driven economies, while the correlation is positive for efficiency-driven economies. More specifically, individuals in factor-driven economies that indicated they had adequate skills and experience for starting a business (*Experience = 1*) attributed on average 3.30 points less to sustainability orientation, while entrepreneurs in efficiency-driven economies reported values that were on average 7.73 points higher if they perceived themselves to be experienced. This can be interpreted as follows: Experienced entrepreneurs are –*ceteris paribus*- likely to have lower values of sustainability orientation than inexperienced entrepreneurs in factor-driven economies. For efficiency-driven economies the reverse holds. The results for innovation-driven economies was not significantly different from the base category, factor-driven economies.

All levels of education are positively correlated to sustainability orientation, and all of these results are significant on the 0.1 level, part of them on the 0.05 and 0.01 level. However, the relationship between education and sustainability orientation in factor-driven economies does not follow a clear trend, as individuals with a post secondary degree display lower values than the individuals with a secondary degree. The effect of enjoying some secondary education is larger in efficiency-driven economies than in factor-driven economies. The result for innovation-driven economies are not significant on the 0.1 level, and are therefore not significantly different from the base category. Having a secondary degree in innovation-driven economies enlarges the chance that an individual has high values for sustainability orientation (average increase of 4.08), but the effect is not as strong as it is for factor-driven economies (average increase of 7.93).

Based on the above findings, there is inconclusive evidence for the argument that the effect of education is more positive in developing countries: This statement only holds for individuals with a secondary degree in factor-driven economies as compared to individuals with a secondary degree in innovation-driven economies.

Table 4 Effects of experience and education on sustainability orientation of entrepreneurs - with interaction effect for stage of the economy

Variables	Factor-driven	Efficiency-driven	Innovation-driven
Experience	-3.30*** (1.16)	7.73***	-3.49
Education			
Some secondary education	2.05* (1.13)	7.42***	2.52
Secondary degree	7.93***(1.16)	6.29	4.08**
Post secondary degree	4.74*** (1.37)	6.62	3.26
Graduate experience	8.43** (4.17)	2.73	11.53
Age	0.07*** (0.02)		
Male	-2.72*** (0.41)		
Fear of failure	-1.34*** (0.45)		
Nascent entrepreneur	2.29*** (0.83)		
Owner-manager - Young	-1.78** (0.89)		
Owner-manager – Estb.	-3.52*** (0.86)		
Type of economy			
Efficiency-driven	-8.25*** (1.57)		
Innovation-driven	11.02*** (1.93)		
Constant	28.74*** (1.67)		
Number of observations	17,181		
Adjusted R-squared	0.0582		

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

5 Discussion

5.1 Implications

This paper set out to determine the relationship between human capital factors (education and experience) and the sustainability orientation of entrepreneurs, i.e. the degree to which an entrepreneur is oriented on societal and environmental goals, as opposed to economic goals. Based on previous works as discussed in the literature section of this paper, I expected a positive relationship between experience and sustainability orientation. The evidence presented in this paper indeed points towards a positive relationship between these two variables, which may be explained using the work of Estrin et al. (2016), who state that sustainable entrepreneurs may require more experience and skills because their goals are more complex: Next to accomplishing financial goals, sustainable entrepreneurs have to seek ways to generate positive externalities in the process.

For education, a positive relationship was expected based on the work done in the fields of commercial and social entrepreneurship, while a negative relationship was expected based on the work in environmental entrepreneurship (Hörisch et al, 2017). The latter was not found, which may be due to the fact that in this work only the GEM 2009 APS was used, while Hörisch et al. merged the GEM 2009 APS with another dataset. A positive relationship between education and sustainability orientation was found, which was consistent for every level of education, although the adagum ‘more education is better’ (as was expected based on the work of Robinson & Sexton, 1994) did not apply.

The usage of an interaction term for the stage of economic development a country was in did not yield many significant results, i.e. there is inconclusive evidence to state the efficiency-driven and innovation-driven economies are significantly different from factor-driven economies in the impact they have on human capital effects. It has to be noted that the hypothesis was based on a scarce amount of literature.

In the introduction and literature section of this paper it was specified how entrepreneurship, and sustainable entrepreneurship in particular, can bring about positive change in economies (see also Brinkman, 1995; Van Stel et al., 2005; UNEP, 2011). It is therefore incumbent upon governments to create an entrepreneurial climate that invites skilled people to participate, and that prepares the individuals that do not yet possess the right set of skills. Moreover, sustainable entrepreneurship should be promoted, not only because of the value it creates in solving social and environmental problems, but also because it acts as a route into entrepreneurship for individuals who would otherwise be in employment (Estrin et al., 2016). In this work, a positive relationship between human capital factors and the sustainability orientation of entrepreneurs is found. If a country is to reap from the benefits that sustainable entrepreneurship has to offer, it would have to consider offering tools and courses that empower individuals to successfully seek out the opportunities that are inherent to entrepreneurship, and that often create jobs and other positive spill-overs in the process.

5.2 Limitations and future research

One of the limitations of this research is that the respondents of the survey had to self-report their commercial, social and environmental orientation. Cassar (2007) noted that established entrepreneurs attach less value to financial motivations in a matured phase of their enterprise than when they were in the initial stage of their venture. It can be argued that established entrepreneurs do this to save face when their start-up does not perform as well as expected (Parker, 2009). Despite the fact that we observe higher values of sustainable orientation for start-ups than for owner-managers, the results may still be biased because of the above.

Furthermore, the variable used for experience is not an objective measurement, as individuals had to self-report whether or not they had the knowledge, skills and experience to start a business, which may also be classified as self-efficacy. Although correlation between experience and self-efficacy is

suggested (Schunk & Pajares, 2001), the results might differ if a more objective measurement of experience is used.

Another limitation lies in the fact that all countries are classified in one of three phases for economic development: factor-driven, efficiency-driven and innovation-driven. The problem inherent in this division is that it does not account for differences between countries within the same group. This work focused on the human capital determinants of sustainable entrepreneurship, and analysed the difference between developing and developed countries. However, the data suggest that even countries in similar stages of economic development differ strongly in their rates of entrepreneurial activity (Van Stel et al., 2005), and therefore quite possibly in the impact of human capital determinants.

There could be bias caused by individual factors that exert influence on sustainable orientation and the independent variables, but that were not included in the dataset and therefore in this research.

The scope of this study was limited to finding out some of the determinants of entrepreneurship on the individual level. Future research could establish the determinants of sustainable entrepreneurship on the macro level, and research the role that institutions play in facilitating a favourable entrepreneurial climate. Also, it would be interesting to further elaborate on the difference in entrepreneurial orientation that different economic stages pose.

6 Conclusion

The main contribution of this paper is to add to the growing field of sustainable entrepreneurship research, through quantifying the effects of experience and education on the sustainability orientation of owner-managers of firms. This work finds considerable support for the argument that human capital determinants are positively correlated to sustainability values in enterprises. An interesting sidetrack lies in the question whether these results differ depending on the stage of the economy that the individual is in. Unfortunately, most of the results for this interaction effect are rendered statistically insignificant, and therefore no conclusive remarks can be made about the trend of this relationship.

7 References

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