

Effects of Risk Attitude, Entrepreneurship Education and Self-Efficacy on Entrepreneurial Intentions: A Structure Equation Model Approach to Entrepreneurship

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Abstract

Entrepreneurship increases national competitiveness and is an important driver for economic growth. Researchers have tried to predict future entrepreneurial behavior, particularly through the study of entrepreneurial intentions. This study is based in an international sample of 264 respondents and analyses the effect of risk attitude, entrepreneurship education and entrepreneurial self-efficacy on entrepreneurial intentions. The proposed Structure Equation Model shows that entrepreneurship education and entrepreneurial self-efficacy have a positive effect on the intention to become an entrepreneur, whilst risk averseness has a strong negative effect on entrepreneurial intentions. These findings can be used for the effective promotion of entrepreneurship by focusing on the factors that have the biggest effect on entrepreneurial intentions.

Key Words: *Entrepreneurship, Entrepreneurial Intentions, Risk, Education, Self-Efficacy, Structure Equation Modeling.*

Introduction

Entrepreneurship increases national competitiveness and drives economic growth (Zahra, 1999), through job creation and bringing innovation to the market (Shane & Venkataraman, 2000). Countries therefore would like to increase the rate of entrepreneurship to promote economic and social development (Peng et al. 2012). It is widely accepted that future entrepreneurial behavior can be predicted via entrepreneurial intentions (Krueger et al. 2000) and is considered to be the first critical step in the process of becoming an entrepreneur (Bird, 1988; Harris, Gibson, Nabi, & Holden, 2008; Nabi & Holden, 2008). Therefore understanding which factors affect entrepreneurial intentions can help enhance the rate of entrepreneurship and consequently a country's prosperity. Our purpose is to understand how risk adversity, entrepreneurship education and entrepreneurial self-efficacy affect entrepreneurial intentions.

New business creation is considered to be a risky endeavor, as there is a high level of uncertainty regarding the chances of success. Risk propensity is a personality trait that assesses the willingness to take courses of action or make decisions that are uncertain in their outcome (Jackson 1994). Results until now are

inconclusive about the effect of risk propensity in entrepreneurial intentions. Some researchers have found that risk taking behaviors influence the interest and motivation to start a new business (Gerry et al. 2008), as well as the entrepreneurial intentions (Gurel et al. 2010). Whilst other researchers have found that risk taking does not relate to the entrepreneurial intentions (Busenitz & Barney, 1997; Douglas & Fitzsimmons, 2008). Our first hypothesis is therefore that risk aversion will negatively impact the entrepreneurial intention of the respondents.

Entrepreneurial self-efficacy is based on an individuals' self-perception of their skills and abilities to accomplish a specific course of action or to achieve a desired outcome (Bandura, 1997). It is this perception, rather than the objective ability of individuals, that motivates individuals to behave entrepreneurially (Markman, Balkin, & Baron, 2002). Numerous studies have shown a positive impact of entrepreneurial self-efficacy on the entrepreneurial intentions (Boyd and Vozikis 1994; Krueger et al. 2000; Zhao et al. 2005). Our second hypothesis is that entrepreneurial self-efficacy will positively influence entrepreneurial intentions.

It is also important to consider contextual factors such as education, which are amongst the most important elements in the development of human resources (Turker et al. 2009). A number of authors have linked education and entrepreneurship (Galloway and Brown 2002; Gorman et al. 1997). Our third hypothesis will therefore be that entrepreneurial education will positively influence entrepreneurial intentions.

Research Methodology

Structure Equation Modeling (SEM) is one of the most widely used methods for analyzing data in the social and behavioral sciences (Rengiah & Sentosa, 2014). It allows for the study of theoretical constructs that cannot be observed or measured directly and allows for the testing of the effect of a set of variables that may be interdependent (Blaikie, 2003). The aim of our study is to find which variables have an effect on the entrepreneurial intention of the respondents and what weight do these variables impose on the final decision of becoming an entrepreneur.

Entrepreneurial intentions research started in the 1980s by exploring an individual's intention and personal attitudes on their entrepreneurship behavior. This research was found to be more effective and have a higher explanatory ability to predict entrepreneurial behavior (Ajzen, 1987) than previous studies that focused on differentiating personality characteristics of entrepreneurs. Since then it has become a popular tool in the social and behavioral sciences (Reis & Stiller, 1992), being a powerful and robust quantitative methodology with higher predictive validity (Krueger et al. 2000).

The initial intentions models explored the Entrepreneurial Event Model (Shapero & Sokol, 1982), or the Theory of Planned Behavior (Ajzen, 1991). Intentions have proven to be the best predictor of planned behavior and new businesses require considerable planning, making intentions models ideally suited for the study of entrepreneurship (Krueger et al. 2000).

Since the initial models other researchers have contributed to the field by analyzing the influence of a number of factors on entrepreneurial intentions such as individual attitudes (Ajzen, 1991), the subjective norms and perceived expectations (Krueger & Carsrud, 1993), and the effect of self-efficacy (Chen et al. 1998). Additionally, the effect of social and environmental factors (Stephen et al. 2005), such as legal rules or government supports have been found to have both supporting and hindering effects on entrepreneurial intentions (Franke & Luthje, 2003). Nevertheless, the effect of the risk adverse behavior on entrepreneurial intentions has been inconclusive until now. Our paper aims to fill this gap by gathering empirical data and testing a new Structure Equation Model that explains the effect of risk averseness on entrepreneurial intentions

Research Sample

Our sample included 268 respondents, obtaining a response rate of 32,6%. After deleting unengaged and incomplete responses, the total number of responses was of 264. The gender distribution was of 44% female and 56% male respondents, and 92% of respondents were aged between 18 and 30.

Studies of intention require a systematic comparison of respondents with a broad spectrum of intentions and attitudes towards entrepreneurship (Krueger et al. 2000). Additionally, intentional processes are highly sensitive to initial conditions (Kim & Hunter, 1993), therefore it becomes necessary to study entrepreneurial phenomena before they occur, as if we study the phenomenon in retrospective it may be biased towards the opinion of successful entrepreneurs or may show self-justification bias (Carter, Gartner, Shaver, & Gatewood, 2003). With this in mind, University students (62%) with and without interest in entrepreneurship were selected before entering the labor market. Furthermore, the sample also included recent graduates (38%) early in careers other than entrepreneurship and also explored their entrepreneurial intention prospectively.

Our sample included 31 countries, with the main responses coming from Japan (20%), Spain (20%) and the United States (14%), whilst the remaining 46% came from 28 other countries. The three main countries included in our sample show different levels in the key indicators considered conducive to entrepreneurship (GEM consortium, 2014). The United States shows the most conducive indicators whilst Japan appears to have the least conducive characteristics and Spain shows an intermediate position. The respondents have different backgrounds, cultures, and attitudes towards entrepreneurship. Conducive entrepreneurial cultures have been found to have weak uncertainty avoidance, low power distance, tend to be masculine, individualistic, achievement-oriented, and universalistic (Hofstede, 2001). We are interested to see if despite these differences, we can find a model that fits the entrepreneurial intentions of the respondents.

Research Instrument

Our survey instrument was designed to study entrepreneurial intentions as the dependent variable as well as measure entrepreneurship education, entrepreneurial self-efficacy and risk averseness as the independent variables. We used a combination of research items that had been previously used and validated throughout entrepreneurial literature. The questionnaire was tested on a pilot of 20 respondents and the final items we used can be found in Table 1.

The questionnaire was developed in English and later translated into Japanese and Spanish from the original version.

Our survey instrument measured the degree of agreement of respondents to certain statements using a five point Likert scale (1: strongly disagree to 5: strongly agree). The items measured the intention to behave entrepreneurially (Franke & Luthje, 2003), the perceived educational support (Turker et al. 2009), risk taking behavior and entrepreneurial self-efficacy characteristics (Bosma, Coduras, Litovsky, & Seaman, 2012). The constructs were analyzed by using multi-item probe questions to increase reliability et al. 2012) and reduce errors (Chen et al. 1998; Van Gelderen et al. 2008).

We used reversal questions to test for awareness and concentration (Rengiah & Sentosa, 2014) of the respondents. The questionnaire was preceded by a brief explanation about the purpose of the study and measures were taken to maintain the privacy and confidentiality of the respondents.

The quantitative nature of the data we gathered allows for the validation of a model of entrepreneurial intentions by analyzing how the empirical data fit the proposed model. The hypothesized model was empirically tested through the use of Structure Equation Modeling with the Statistical Software SPSS AMOS 22.0.

Analysis and Results

Exploratory Factor Analysis

As a first step, we performed an Exploratory Factor Analysis (EFA) using the Maximum Likelihood extraction method, as AMOS SPSS software uses this method to test and estimate the derived model. EFA is performed to interpret self-reporting questionnaires, in order to reduce a large number of variables into a smaller and more manageable set of underlying factors. In EFA no a priori theory about which items belong to which constructs is applied, following a more exploratory approach. We used the Kaiser Mayer-Olkin (KMO) measure of sampling adequacy (0.789) and Bartlett test of sphericity (chi-square: 1238.048; Significance: $p < 0.000$) to measure if the data were adequate and suitable for conducting EFA (Field, 2009). We found both tests to be significant, Table 1 details the results from the EFA.

Reliability Analysis

Reliability refers to the consistency of item-level errors within a single factor. This means a reliable variable would consistently load on the same factor every time, making the measurement scales stable and consistent (Hair, Black, Babin, Anderson, & Tatham, 2006). The Cronbach's alpha value for each construct is shown in Table 1. The alpha value for three of the factors was above the 0.70 threshold and for the remaining one, it was relatively close (0,653). The factor "Entrepreneurial Self-efficacy" was initially composed of three items but in the posterior Confirmatory Factor Analysis (CFA) we deleted an item due to problems with reliability and validity. The deletion fixed the abovementioned problems but as a consequence, the Chronbach's alpha value was reduced.

Table 1: Item description and EFA results.

Factor Name	Items	Eigenvalue	% of Variance	Cronbach Alpha
Entrepreneurial Intentions	<ul style="list-style-type: none"> - I would rather be my own boss than have a secure job (EI1) - I would rather found a new company than be a manager of an existing one (EI2) - Starting my own business is an attractive idea to me (EI3) - I plan to establish my own business or be self-employed in the foreseeable future (EI4) 	3.820	29.383	0.829
Entrepreneurship Education	<ul style="list-style-type: none"> - My university develops my entrepreneurial skills and abilities (U1) - My university provides the necessary knowledge about entrepreneurship (U2) - My university encourages me to develop creative ideas for being an entrepreneur (U3) 	2.599	19.995	0.847
Risk averseness	<ul style="list-style-type: none"> - I don't like facing uncertainty (R1) - Fear of failure would prevent me from starting my own business (R2) - I tend to be risk averse (R3) - I am unable and unwilling to take risks (R4) 	1.375	10.578	0.753
Entrepreneurial Self-efficacy	<ul style="list-style-type: none"> - I can manage a company successfully (S1) - I have good financial and management skills (S2) 	1.102	8.479	0.653

Validity Analysis

Convergent validity is achieved when the variables within a single factor are highly correlated. The four selected factors demonstrate sufficient convergent validity, as their loadings were all above the recommended minimum threshold of 0.350 for a sample size of 250 (Hair et al., 2006). Discriminant validity refers to the extent to which the factors are distinct and uncorrelated. The factors also demonstrate sufficient discriminant validity, as the correlation matrix shows no correlations above 0.700 between factors, and there are no problematic cross-loadings, as all items loaded in a single factor (Table 2). Additionally, the factors present face validity, meaning that factors that are similar in nature are loading together on the same factor.

Table 2: Pattern Matrix

	Factor			
	1	2	3	4
EI1	.784			
EI2	.752			
EI3	.700			
EI4	.699			
U1		.912		
U2		.804		
U3		.699		
R1			.823	
R2			.637	
R3			.594	
R4			.489	
S2				.894
S1				.546

Extraction Method: Maximum Likelihood. Rotation Method: Promax with Kaiser Normalization.^a

Measurement and Structural Equation Modeling

We followed (Hair et al., 2006) recommendation and used a two-step approach to Structural Equation Modeling (SEM). The first step tests the reliability and construct validity of the proposed measurement model, through the use of Confirmatory Factor Analysis (CFA). CFA allows for the determination of the factor structure of a dataset that has been extracted through EFA. The second step is to test the hypothesis by using structural theory and the structural model that best fits our data. (Saeid et al. 2011)

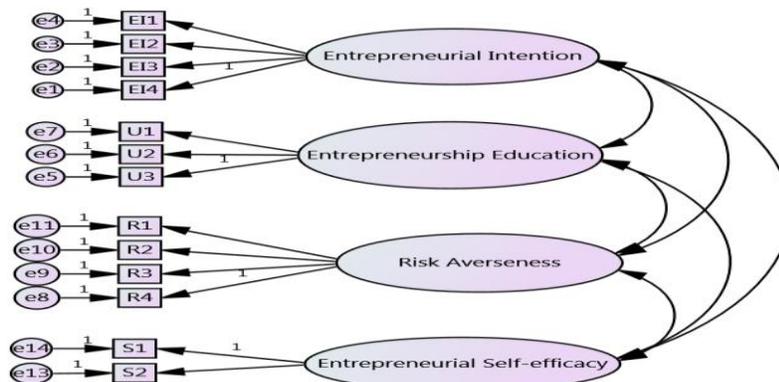


Figure 1: Measurement model

Model fit of the Measurement Model

The model fit assesses how well the proposed model accounts for the correlations between variables in a dataset. The model fit can be evaluated by various goodness of fit indices. As shown in Table 3, the goodness of fit for our measurement model is reasonably high, thus the hypothesized model of four constructs is a suitable measurement model for this study.

Table 3: Goodness-of-fit indices for the measurement model

Model	cmin/df	CFI	RMSEA	PCLOSE	SRMR
Measurement Model	1.897	0.955	0.058	0.192	0.063

Construct Validity and Reliability

The construct reliability assesses the degree of consistency of an instrument whilst the validity assesses its accuracy. To test for reliability, we analyzed the Composite Reliability (CR), and found it to be above the 0.7 threshold for all factors, indicating that the selected factors are reliable. To test for convergent validity we calculated the Average Variance Extracted (AVE). The AVE for all factors was above 0.50 except in the case of the factor “Risk Averseness”, which had a value of 0.437. We tried to increase the AVE of this construct by deleting each of the component items sequentially and re-testing to see if the convergent validity was improved. Despite these attempts, the AVE was never above the 0.5 threshold. We therefore decided to keep all constructs and as the reliability score (0.756) is above 0.700, we felt it was an admissible solution (whilst this construct is not specially strong internally, it is a reliable and distinct construct within our model) (Gaskin, 2013).

Table 4: Construct validity and reliability

	CR	AVE	Risk	Intentions	Education	Self-efficacy
Risk	0.756	0.437	0.661			
Intentions	0.829	0.549	-0.624	0.741		
Education	0.852	0.660	0.159	0.112	0.813	
Self-efficacy	0.716	0.578	-0.127	0.338	0.180	0.760

Structural Model Assessment

We tested the Structural model and found that it fits the empirical data well (Table 5). The proposed model is therefore an acceptable Structure Equation Model. We then tested each of our null hypotheses with the path coefficient and corresponding t-value (Table 6). The three factors were found to statistically significantly affect entrepreneurial intentions.

Our first hypothesis, that risk averseness will have a negative effect on entrepreneurial intentions has been supported (-1.08, $p < 0.001$).

Our second hypothesis has also been proven, thus entrepreneurial self-efficacy positively influences the entrepreneurial intentions (0.22, $p < 0.001$).

Thirdly, our last hypothesis is also supported; entrepreneurial education positively influences the entrepreneurial intentions (0.24, $p < 0.001$).

These three factors, entrepreneurship education, entrepreneurial self-efficacy and risk propensity, account for 63% of the total variance in entrepreneurial intentions.

Table 5: Goodness-of-Fit Indices for the Structural Equation Model

Model	cmin/df	CFI	RMSEA	PCLOSE	SRMR
Measurement Model	2.624	0.948	0.035	1.000	0.045
Recommended	1 – 3	>0.950	<0.060	>0.050	<0.090

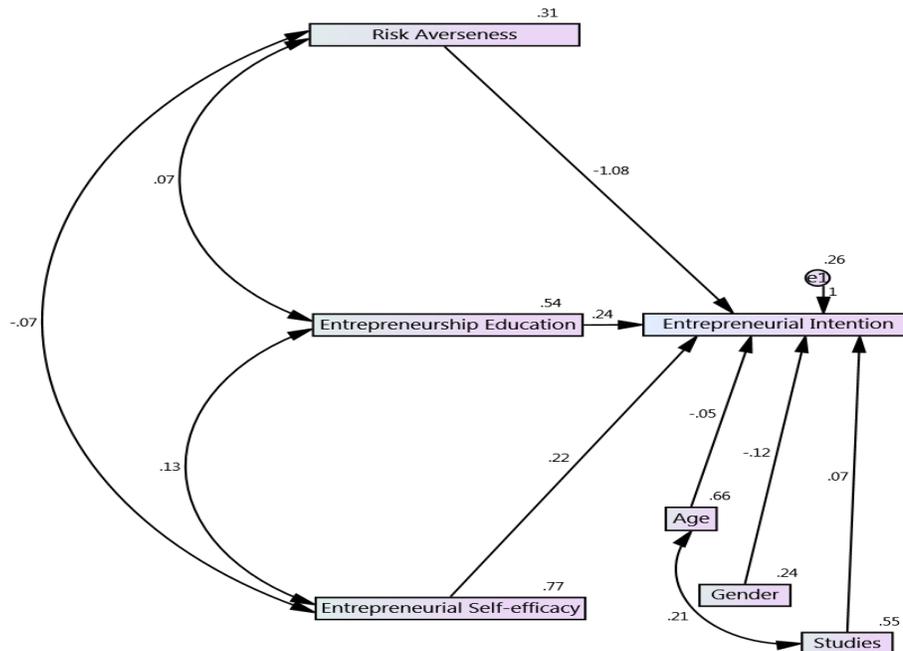


Figure 2: Structural model

Table 6: Structure Equation Modeling results

			Estimate	S.E.	C.R.	P
Entrepreneurial Intentions	<---	Risk Averseness	-1.079	.059	-18.409	***
Entrepreneurial Intentions	<---	Entrepreneurship Education	.238	.045	5.296	***
Entrepreneurial Intentions	<---	Entrepreneurial Self-efficacy	.218	.037	5.818	***
Entrepreneurial Intentions	<---	Age	-.046	.041	-1.100	.271
Entrepreneurial Intentions	<---	Studies	.071	.045	1.568	.117
Entrepreneurial Intentions	<---	Gender	-.125	.064	-1.957	.050

Discussion

Our results indicate that entrepreneurial intentions are positively influenced by entrepreneurship education and entrepreneurial self-efficacy, whilst the fear of failure has a strong negative impact on the decision to become an entrepreneur. Additionally, age, gender and education were found to have no significant impact on entrepreneurial intentions or its influencing factors. In the future we would like to include a larger sample to achieve higher statistical power. Additionally, although our sample included a total of 31 countries, there were not enough respondents per country to find statistically significant differences across countries. In future studies we hope to address this issue by examining if different countries have different weights in the factors that affect entrepreneurial intention.

Conclusion

We hope that our research will help in the allocation of resources to promote entrepreneurship in a more effective manner, towards the factors that have a greater effect on entrepreneurial intentions. Particularly, encouraging entrepreneurship education to students from a variety of backgrounds can increase the rate of entrepreneurship. Additionally, we have provided empirical proof of the negative effect risk aversion can have in entrepreneurial intentions. Countries that present higher fear of failure and risk aversion will inherently have lower rates of entrepreneurship and thus competitiveness.

Addressing this mindset is a challenging task that must be addressed at a societal level to achieve an increased level of entrepreneurship. We hope this paper will serve to guide the actions of decision-makers towards the encouragement and stimulation of entrepreneurial interest amongst students and the whole of the population. Entrepreneurial intentions should be considered of great social and economic relevance, as the choices made by the students of today will shape the societal and economic wellbeing of tomorrow.

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