

A Binary Logistic Regression Model for Entrepreneurial Motivation Among University Students – A UAE Perspective

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Abstract *Entrepreneurial motivation has been a subject of numerous studies with the general understanding being that measuring a person's intent or motivation towards entrepreneurship is the best predictor of it occurring in future. (Carsrud & Brännback, 2011). The present study is conducted to explain the probability of entrepreneurial motivation among university students based on certain extrinsic variables that serve as indicators for the same. Logistic regression is a preferred methodology by researchers of social sciences due to its practical utility, less restrictive assumptions and the use of probabilities for predictions. This study was conducted to develop a probability index for entrepreneurial motivation (EMI) among students pursuing their bachelors program (in varied disciplines) based on variables that serve as indicators for the same. The study explores and examines the relationship between the response variable (Score for entrepreneurial motivation) and the explanatory variables concerning the same. This study results could lead to a better understanding of how entrepreneurial aptitude can be encouraged and honed among students bearing in mind the effect of the predictor variables. The study while providing important theoretical insights to the issue will also help policy makers, academicians and universities in assessing the potential for entrepreneurship in their areas in future.*

Keywords: *Entrepreneurial motivation, extrinsic variables, education, binary logistic regression, motivational index;*

1. Introduction

Companies like GE, IBM, Microsoft, Shell Oil, AT&T, Merck, Johnson & Johnson, Sun Microsystems, Skype, Kodak, Polaroid, HP, and Adobe have in one thing in common—they all were started during an economic downturn, some during the Great Depression (Draper, 2009). Entrepreneurship and its importance to the economy have found resurgence as an aftermath to recession with Draper suggesting that it is the best time for entrepreneurs to start their venture. Realizing the importance of entrepreneurship, almost every economy is creating a more enabling environment for its growth and trying to know the potential for entrepreneurship, especially among the youth during this period. However, each economy has not only to see if they have potential entrepreneurs but also if these potential entrepreneurs are motivated enough to start their new venture.

The present study considers the individual entrepreneur as the locus of entrepreneurship and examines the various factors that affect him to be motivated. While a number of research has been on motivation (Maslow, 1943) (Herzberg, 1964) and entrepreneurial motivation (McClelland D. C., 1961) (McClelland D. , 1965), research on extrinsic variables that effect motivation of potential entrepreneurs has not been studied, especially for UAE, the only one found by the authors being a study on value creation through entrepreneurship in UAE (Sikdar & Vel, 2011). This paper will examine the entrepreneurial motivation index (EMI) of potential entrepreneurs in UAE. Subjects are university students as they represent a significant share of the pool of potential entrepreneurs for any country. A two-equation model is developed where one explains the effect that each independent extrinsic variable will have on the probability of motivation and the second, the effect that five of the extrinsic variables would have on probability of motivation.

2. Literature Review

2.1. Entrepreneurship and Economy

The theories of entrepreneurship and its relation to economic growth should be considered from the studies of (Schumpeter, 1934) according to whom the entrepreneurs are involved in 'creative destruction' by changing the existing production or the market systems in an economy and creating something new. Thus, the process of creative destruction is built on dynamic, deliberate entrepreneurial efforts to change market structures and create profit opportunities. Based on the concept of creative destruction, Schumpeter formulated his theory of long waves of business cycles and economic growth (UNCTAD, 2005). The entrepreneurs create a ripple in the economy by involving more number of suppliers and customers, thus resulting in growth in economy. Entrepreneurs' importance has been historically crucial for economic recovery and growth by contributing to job creation and social progression (Davidsson, 1991)

A number of studies (Caree & Thurik, 2003); (Acs, Audretsch, Braunerhjelm, & Carlson, 2004) and (Wennekers, 1999) relate entrepreneurial activity to economic growth. (Wennekers, 1999) study shows a model distinguishing entrepreneurship between three levels of analysis: the individual level, the firm level and the macro level. Entrepreneurs are the sole individual responsible for entrepreneurship activity and hence economic growth. The individual being the locus, his attitudes, motives and perceptions would guide him for the entrepreneurial activity. But the entrepreneur's activity is also affected by the context of his actions which are greatly influenced by cultural and institutional factors, the business environment and macroeconomic conditions (UNCTAD, 2005). The Global Entrepreneurship Monitor (GEM) too confirms to these studies as it has been found that every country with entrepreneur activity shows a high economic growth. The government of UAE is also taking up a number of initiatives to develop entrepreneurship as a basis for economic growth. The establishment of Sheikh Rashid Establishment for Young Business Leaders and the Centre of Excellence for Applied Research and Training (CERT) are examples in this direction. In a study (Ramavarman, 2009) it was found that a number of people are keen to take up entrepreneurship as an alternative to Emiratization and the effects of recession. A number of policies and programs are initiated by the government to develop an entrepreneurial culture in general in UAE. "The UAE will harness the full potential of its National human capital by maximizing the participation of Emiratis, encouraging entrepreneurship, and nurturing home-grown public and private sector leaders while attracting and retaining the best talent", Vision 2021 (UAE Government, 2011)

2.2. Entrepreneurial Motivation

Motivations being a multidimensional framework, entrepreneurs are affected by a variety of factors. Being a complex area, the classification of factors varies among the different authors. McClelland is among the most known scholars who has analyzed the concept of entrepreneurship from a psychological point of view (McClelland D. C., 1961) (McClelland D., 1965). Basically the psychological studies on entrepreneurship concentrate on studying who and why an entrepreneur is an entrepreneur, which is due to the trait or characteristics he may have intrinsically. Emphasizing the importance of the *motivational aspect* of the entrepreneur, McClelland shows that entrepreneurial behavior is driven by the need for personal achievement leading to a clear thrust towards entrepreneurship. McClelland also suggests that, regardless of variations in economic development, entrepreneurs with high motivation will almost always find ways to maximize economic achievement. The competencies as identified by the author are shown in Figure 1 (McClelland 1961 cited in UNCTAD, 2005).



Figure 1

The intrinsic motivation is also implying the meaning of intention on which several studies have focused. The models on intentional entrepreneurial behavior is dominated by the work of (Ajen, 1991) theory of planned behavior (TPB). Considering intention to be an antecedent to behavior, the model uses a person's attitude toward the act of becoming an entrepreneur, subjective norms, and the person's perception of his self-efficacy to predict the intention to follow an entrepreneurial career. Studies have shown that attitudes explain about 50% of the variance in intentions, and intentions explain approximately 30% of the variance in behavior. (Frazier & Niehm) The TPB has been used by several researchers as a framework to explore attitudes towards Entrepreneurial Intention (Turker & Selcuk, 2009), (Paço, Ferreira, Raposo, Rodrigues, & Dinis, 2011) (Krueger & Carsrud, 1993).

While both these schools of thought link motivation to the behavior, intention and attitudes of the entrepreneur which are intrinsic by their nature, a theory called "Self-Determination Theory" claimed that human behavior can be driven both by internal and external sources of the individual (Ryan & Deci, 2000). In Self-Determination Theory there are different types of motivation based on the different reasons or goals that give rise to an action. The most basic distinction is between intrinsic motivation and extrinsic motivation. Intrinsic motivation is defined as the execution of a task or activity because of the inherent satisfaction arising from it rather than due to some separate outcome (Çınar, Bektaş, & Aslan, 2011). Hence despite theorists claiming the intrinsic factors or the inner drive to be the leading motivation factors, (Ryan & Deci, 2000) have shown that this propensity appears to be expressed only under specifiable conditions. (Mak, Sim, Sockel, & Sands, 2011)

2.3. Extrinsic Variables of Motivation

In their study, (Ryan & Deci, 2000) found that extrinsic rewards can in fact decrease intrinsic motivation. The extrinsic rewards could be linked to the threats or opportunities in the environment, and the entrepreneur's perception of them. The sense of freedom, perception of opportunity would help in increasing the intrinsic motivation because of the sense of autonomy linked to them (Mirabela & Maria Madela, 2011). Reinholt (Reinholt, 2006) argues that the organizational science literature on motivation has for long been polarized into two main positions; the organizational economic position focusing on extrinsic motivation and the organizational behavior position emphasizing intrinsic motivation. According to her study both intrinsic motivation and extrinsic motivation are needed to analyze and understand motivation and behavior in organizations. Mirabela-Constanta, & Maria-Madela (2011) in their study to understand the relationship between intrinsic and extrinsic motivation and performance among students found both to be equally relevant and also interdependent (Mirabela & Maria Madela, 2011). Extrinsic factors, according to Çınar, O., et al. (2011) could be in the form of external regulations, approval from others in society or education (Çınar, Bektaş, & Aslan, 2011). Entrepreneurship scholars { (Bird, 1988)B; (Shaper, 1982) (Mueller, Thomas, & Jaeger, 2002)} have theorized that an array of external factors such as the social, political, and economic context of a region or country influence entrepreneurial intentions and subsequent nascent behavior.

The authors (Biju & Vardhan, 2011) in their previous study had taken into account both extrinsic and intrinsic variables to understand the entrepreneurial motivational drivers. The present study in the same direction however, considers the probability of entrepreneurial motivation among graduate students in relation to extrinsic factors through development of a model based on extrinsic variables. To the various external variables listed in a number of studies could also be added the effect of education on entrepreneurial motivation, the role of gender, whether the potential entrepreneur has a family background in business, the perception of UAE market conditions, and lastly if the potential entrepreneur is aware of the opportunities and risks of entrepreneurship.

2.3.1. Role of gender

Motivation factors have been studied by a number of researches basing on the role of gender (Okafor & Amalu, 2010). The studies reveal different empirical results by different researches. Studies indicate that among the would-be entrepreneurs the goals and motivations differ significantly between the males and the females (Wilson, Marlino, & Kickul, 2004). The study by Wilson reveals that teen boys interested in entrepreneurship are significantly more motivated by autonomy than girls with the same career interest. (Kourilsky & Walstad, 1998) found gender differences for interest in entrepreneurship among teens, with girls responding less positively than boys (Kourilsky & Walstad, 1998). While in their study (Mirabela & Maria Madela, 2011) and Burke (2002) found no significant differences between male students and female students in terms of their motivation towards entrepreneurship, the percentage of men who were intrinsically motivated were higher than that of women, (Cromie, 1987) suggests that both the genders possess similar intrinsic traits for successful entrepreneurial behavior. Using a multiple paradigm approach, Kirkwood found that in terms of gender,

women did not have underlying desires to start a business and therefore were not as motivated as men were by pull factors (Kirkwood, 2007).

In all these studies it was found that girls in general place more importance to social factors than the boys who place more emphasis on the independence and money as their motives for starting their own business. The reason behind the differences in gender is due to the challenges that women face (Okafor & Amalu, 2010). Kantor rightly argued that women often experience greater constraints on their economic actions relative to men (Kantor, 1999). Mayoux also noted that even though there may be opportunities available, women cannot take advantage of them, due to the limitations of social and cultural norms (Mayoux, 2001).

2.3.2 Education

Knowledge and its acquiring through formal education have been a topic for debate for entrepreneurial motivation. Entrepreneurial knowledge specifically in the areas of marketing, finance and management greatly increased the self-efficacy and intentions of the students has been found in some studies (Lussier & Pfeifer, 2001); and (Wilson, Marlino, & Kickul, 2004) where entrepreneur with higher education level, industrial and managerial experience, and business exposure have greater chance of succeeding in their business as they would be better able to cope with the complexities. The authors while acknowledging the role of education through universities for the entrepreneurs, also considers the knowledge provided by role models and society in general. Further they suggest that universities should adapt their curricula to increase interest among teens and empower the future entrepreneurs.

2.3.3 Family Background

An important variable for would be entrepreneurs is the background of the family they come from. This provides them with an early social network for the potential entrepreneur to learn the social and cultural norms of a business. A study (Sequeira, Mueller, & McGee, 2007) especially dealt with the social network which provides the fundamental resources necessary for starting a business- this includes friends, family and relatives. In his model he offers hypotheses and tests it for the relationship between intentions, nascent behavior and personal network ties. A social network is made up of persons to whom the individual primarily relates on a social level. Such individuals include family, friends or acquaintances (Szarka, 1990). The structure of a social network may be characterized in several ways. While Sequeira, Mueller & McGee considers the entire social network with different categorizations and structures for his study, we limit our research only to the influence that family background in business will have on future entrepreneurship. *"A generally held belief is that the information needed to start a business is passed to the small business owner through an existing social network of friends and acquaintances"*. (O'Donnell, Gilmore, Cummins, & Carson, 2001). The authors in their study also argue how the personal ties, strong and supportive network can affect the entrepreneurial intention.

2.3.4 Opportunities and Risk Perception

A basic assumption of the entrepreneurial characteristics is that the entrepreneurs are driven by achievement motivation and gain success by exploiting an opportunity. Distinguishing between opportunistic and necessity entrepreneurs (Carsrud & Brännback, 2011) consider that though the intention of the entrepreneur and the pursuit of the recognized opportunity are critical, it still requires motivation to drive those intentions or exploit those opportunities. Commercially oriented entrepreneurs are working to earn money, power, prestige, and/or status, but these might not be the only motivations. In contrast the necessity entrepreneurship could inhibit opportunistic entrepreneurship rather than foster it. (Carsrud & Brännback, 2011)

Studies have also invariably ascertained the fact that entrepreneurs had a greater propensity for risk taking than managers (Carland, Carland, Carland, & Pearce, 1995). Relating the entrepreneurs' perceptions of the current recession, the researchers found in their study that it is related and dependent upon the context and the wider social structures that might facilitate or hinder their functioning (Papaoikonomou, Segarra, & Li, 2012). The perception of opportunity and risk is widely dependent on the government policies, competition, investor opportunities and on the basis of those perceptions, opportunities are identified and strategies are shaped (Kitching, Smallbone, & Athayde, 2009) which takes us more directly to the specific context of our research, the perception of the UAE market.

2.3.5 UAE Market

A recent study by Global Entrepreneurship Monitor (GEM, 2009) on the entrepreneurial activities in the UAE has placed the UAE in an advanced position on the "Entrepreneurial Environment Scoreboard", rating it as one of the most supportive environments for entrepreneurial activities. Market of different economies has been researched by various studies. Mueller (2002) for example identified three environmental factors that could affect entrepreneurial intention in transition countries-culture, religion and level of economic development. In the study comprising 17 transition economies, the differences in entrepreneurial potential were found to be more because of economic development of a country and not its culture or religion. Studies on entrepreneurs in Japan, (Rahman, 2011), Philippines (Uy, 2011) and India (LavanyaLatha & Murthy) each refer to the economic factors, government support or availability of capital as factors affecting entrepreneurship. Taormina (2007) examines the psychological as well as environment characteristics that might influence entrepreneurship in China and realizes that regional economic growth does not only depend on the individual and collective efforts of entrepreneurs, but also on the support they receive from institutions (Taormina & LAo, 2007). A recent study (Papaoikonomou, Segarra, & Li, 2012) also suggest that new entrepreneurial firms also seek these facilities from the economy: credit facility, training centers, infrastructure, banking facilities. The UAE has successfully established itself as an attractive destination for entrepreneurs. In the UAE, three-quarters of young respondents say that their communities are good places to live for entrepreneurs forming new businesses. Such perceptions are similar to those expressed by young respondents in the U.S. (73%) and the U.K. (71%).

Dubai's status as an emerging market makes it an ideal place for entrepreneurship. The Dubai government strongly supports entrepreneurs through the Mohammed Bin Rashid Establishment for Young Business Leaders and the Mohammed bin Rashid Al Maktoum Foundation. Both of these organizations seek to motivate young Arab leaders to become integral parts of their region's economy (www.dubai.ae). Also, the Centre of Excellence for Applied Research and Training (CERT), which started in 1996 as the commercial arm of the Higher Colleges of Technology (HCT), is now the largest private education provider in the Middle East and also the largest MENA (Middle East North Africa) investor in the discovery and commercialization of technology. CERT is just one example of the exceptional work being done to advance entrepreneurship in the region.

3. Model of Entrepreneurial Motivation

3.1 Survey & Variable description

This study was conducted to develop a probability index for entrepreneurial motivation (EMI) among students pursuing their bachelors program (in varied disciplines) based on extrinsic variables that serve as indicators for the same. The study explores and examines the relationship between the response variable (Score for entrepreneurial motivation) and the explanatory variables concerning the same. This study results could lead to a better understanding of how entrepreneurial aptitude can be encouraged and honed among students bearing in mind the effect of the predictor variables. 290 questionnaires were self administered to under graduate and post graduate students pursuing their studies in the UAE, chosen through convenient sampling. With a response rate of 82% , 238 fully responded forms were received.

The latent variable which is the observed response variable is a sum total of 10 response indicative of the student's entrepreneurial motivation. Students responded to each statement in the construct according to whether they show strong agreement (5) to little/no agreement (1). The total of observed values in this construct hence ranges between 10 and 50. The responses were transformed into the response variable (Y) indicative of two categories of High and Low scores. Based on the review findings, six explanatory variables have been used in the model. The potential explanatory variables that are to be included in the model were examined through literature reviews. Responses to queries on Ownership of Business by family (X1) and Gender(X2) are dichotomous in nature. Each of the remaining explanatory variable is a cumulative of a set of indicative questions; the responses of which are on a scale of 1(little or no agreement) to 5 (strong agreement). To suit the logistic regression model, these responses were further dichotomized into two categories of high/low (Table 1)

Table 1

Variable name	Variable description	Nature of the variable	Response/ Variable value
EMI & Y	Motivation for entrepreneurship (10 indicator statements)	Continuous between 10 and 50. Dichotomous after categorizing	Sum of responses range between 10 and 50; A score less than 30 indicates 'low =0' and that more than or equal to 30 is 'high = 1'
X1	Family Owns a business	Dichotomous	Yes = 1/ No = 0
X2	Gender	Dichotomous	Male = 1 / Female = 0
X3	Education for entrepreneurship (19 indicator statements)	Continuous between 19 and 85. Categorical after classifying	Sum of Responses range between 19 and 85; Categorized on a scale of 1 (least agreement) to 5 (highest agreement)
X4	Perception about the UAE market (10 indicator statements)	Continuous between 10 and 50. Categorical after classifying	Sum of responses range between 10 and 50; Categorized on a scale of 1 (least agreement) to 5 (highest agreement)
X5	Opportunity and Risk awareness (10 indicator statements)	Continuous between 10 and 50. Categorical after classifying	Sum of responses range between 10 and 50 Categorized on a scale of 1 (least agreement) to 5 (highest agreement)

The questionnaire is a re-designed version of one previously used (Biju & Vardhan, 2011) in a study by the authors.

3.2 Theoretical background of Binary Logistic regression (Tarling, 2009) (Healy M, 2006)

Regression analysis is a multivariate statistical methodology to investigate cause and effect associations. Linear regression models are developed on the assumptions that the response variables are continuous in nature and also that the underlying distribution of the variable is Gaussian. Logistic regression resolves the inconsistencies associated with these assumptions and that of ordinary sum of squares regression methods. With logistic regression the response variable is an indicator of some (binary) characteristic. Based on the logit transformation of the dependent variable, the binary logistic regression model quantifies the 'odds' of the occurrence of an event. The outcome probabilities for each dependent variable value are the basis of the model.

Let π be the probability of the occurrence of an event, then $1-\pi$ is the probability of its non-occurrence. Thus the odds of the event is given by

$$\text{odds} = \frac{\pi}{1-\pi} \quad (1)$$

The logit function based on a single predictor variable is defined as

$$\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 x \quad (2)$$

The general linear logistic model can be now written as

$$\log \text{it} \pi_j = \log\left(\frac{\pi_j}{1-\pi_j}\right) = X_j^T \beta \quad (3)$$

$$\text{Where } \pi_j = \frac{e^{X_j^T \beta}}{1 + e^{X_j^T \beta}} \quad (4)$$

And X_i is a vector of measurements corresponding to covariates and dummy variables corresponding to factor levels. The independent variables may be dichotomous, categorical or continuous. The MLEs of the estimates of the parameters β and consequently π_j are obtained by maximizing the log-likelihood function. The use of binary logistic regression model here is to evaluate the probability of a high index for entrepreneurial motivation based on a set of explanatory variables (all dichotomous in nature. i.e. to estimate $P(Y = 1 / \tilde{X})$ where \tilde{X} , is the known vector of explanatory variables

4. Data Analysis

4.1 Descriptive statistics

The response group consisted of 125 (52.5%) female respondents and 113 (47.5%) male respondents. 140 (58.8%) of them responded by saying that they or their parent did not own any business while 98 (41.2%) of the respondents were affirmative of the fact that their family owned a business. Based on the bifurcation 162 (68.1%) respondents indicated a high response score to the motivation construct. 188 (79%) of them agreed or strongly agreed to education playing a catalyst to entrepreneurial motivation. 102 (42.9%) of the respondents showed a high agreement to their perceptions of the UAE market. SPSS version 15.0.1 was used for the analysis (SPSS for windows, Rel. 15.0.1, 22 November 2006, SPSS Inc., Chicago, IL, USA)

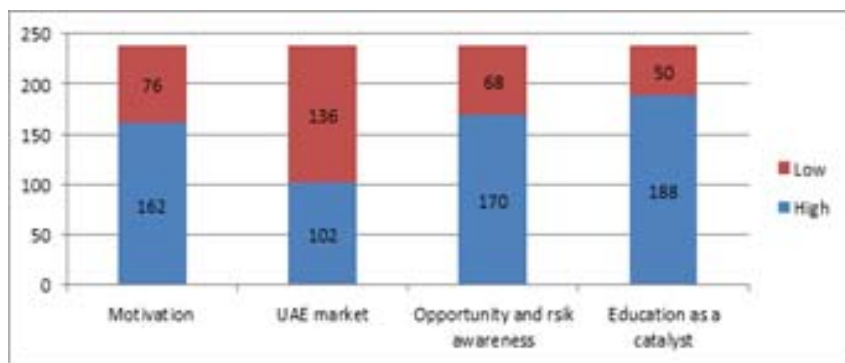


Figure 2

4.2 Model building

A step-by-step development of the model is illustrated in this study. Models have been developed in two forms:

- A: Motivation index as a function of single predictors
- B: A multivariate binary logistic model for motivation index

4.2.1. The individual logistic regression lines using each indicator as a single predictor

Table 2

A1: X1 – Family Business

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a X1_Family_Business	1.049	.308	11.602	1	.001	2.855
Constant	.376	.172	4.772	1	.029	1.456

a. Variable(s) entered on step 1: X1_Family_Business.

Interpretation : From the predicted model the probability of an event can be estimated as in equation (4). The predictor variable X1 has only two levels (Coded 0 and 1) ;

If the respondent does not come from a family with a business background then X1=0; and the model will have a score

$$\beta_0 + \beta X_1 = 0.376 + (1.049 \times 0) = 0.376 \tag{5}$$

Thus the predicted probability P(Y=1 given X1=0)

$$\pi_{(y=1/x_1=0)} = \frac{e^{0.376}}{1 + e^{0.376}} = 0.5929 \tag{6}$$

Alternatively at $X_1=1$ the model will have a score

$$\beta_0 + \beta X_1 = 0.376 + (1.049 \times 1) = 1.425 \quad (7)$$

The predicted probability

$$\pi_{(y=1/x_1=1)} = \frac{e^{1.425}}{1 + e^{1.425}} = 0.8061 \quad (8)$$

Further

$$\begin{aligned} \pi_{(y=0/x_1=0)} &= 1 - 0.5929 = 0.4071; & \pi_{(y=1/x_1=1)} &= 1 - 0.8061 = 0.1939 \\ \text{odds}(y=1/x=0) &= \frac{0.5929}{0.4071} = 1.4564 & \& \text{ odd}(y=1/x=1) = \frac{0.7286}{0.2714} = 4.1573 \\ \therefore OR &= \frac{4.1573}{1.4564} = 2.8545 \end{aligned} \quad (9)$$

The value of OR is reflected in exp(B) in Table 2. The analysis also shows that X_1 is significant. ($p < 0.05$). A student who hails from a business oriented family background ($X_1 = 1$) increases the odds of Y being rated 1 by 2.8545. The odds of a high index for Entrepreneurial Motivation are 185.45 % times higher for a student from a business oriented family. (The results of the remaining 4 variables have been summarized in Table 7)

Table 3

A2: X2 - Gender

	B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 ^a X2_Gender	.477	.282	2.850	1	.091	1.611
Constant	.541	.185	8.503	1	.004	1.717

a. Variable(s) entered on step 1: X2_Gender.

Table 4

A3: X3 - Education for entrepreneurship

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a X3_edu	2.124	.356	35.688	1	.000	8.366
Constant	-.847	.309	7.538	1	.006	.429

a. Variable(s) entered on step 1: X3_edu.

Table 5

A4: X4 - Perception about UAE market

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a X4_UAE	1.148	.308	13.890	1	.000	3.152
Constant	.326	.174	3.527	1	.060	1.386

a. Variable(s) entered on step 1: X4_UAE.

Table 6

A5 : X5 - Awareness of opportunities and risks

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a X5_risks_opp	1.482	.306	23.467	1	.000	4.400
Constant	-.236	.244	.937	1	.333	.789

a. Variable(s) entered on step 1: X5_risks_opp.

Table 7

Predictor variable	Value	$\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 x$	$\pi = \frac{e^{\beta_0 + \beta_1 x}}{1 + e^{\beta_0 + \beta_1 x}}$ $= P(y = 1 / x)$	$1 - \pi$	$odds(y = 1 / x)$	OR
(1)	(2)	(3)	(4)	(5)	(6)	(7)
X1 Family owns Business	X=0 NO	0.376	0.5929	0.4071	1.4564	2.955
	X=1 YES	1.425	0.8061	0.1939	4.1573	
X2* Gender	X=0 FEMALE	0.541	0.632	0.368	1.7174	1.611
	X=1 MALE	1.081	0.7346	0.2654	2.7679	
X3 : Education for Entrepreneurship	X=0 LOW Score	-0.847	0.3001	0.6999	0.4288	8.361
	X=1 HIGH Score	1.277	0.7819	0.2181	3.585	
X4 : UAE market perception	X=0 LOW Score	0.326	0.5808	0.4192	1.3855	3.152
	X=1 HIGH Score	1.474	0.8137	0.1863	4.3669	
X5 : Risk and opportunity awareness	X=0 LOW Score	-0.236	0.4413	0.5587	0.7898	4.400
	X=1 HIGH Score	1.246	0.7766	0.2234	3.4737	

* Beta coefficient insignificant at 5% los ($p > 0.05$)- (refer Table 3)

4.2.4 A single model based on all indicators:

The SPSS output is as follows:

Table 8

Variables in the Equation

	B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 ^a X1_Family_Business	.983	.369	7.098	1	.008	2.672
X2_Gender	.995	.360	7.635	1	.006	2.704
X3_edu	2.324	.426	29.800	1	.000	10.217
X4_UAE	.421	.372	1.281	1	.258	1.524
X5_risks_opp	1.350	.367	13.512	1	.000	3.856
Constant	-2.871	.544	27.824	1	.000	.057

Variables in the Equation

	B	S.E.	Wald	Df	Sig.	Exp(B)
Step 1 ^a X1_Family_Business	.983	.369	7.098	1	.008	2.672
X2_Gender	.995	.360	7.635	1	.006	2.704
X3_edu	2.324	.426	29.800	1	.000	10.217
X4_UAE	.421	.372	1.281	1	.258	1.524
X5_risks_opp	1.350	.367	13.512	1	.000	3.856
Constant	-2.871	.544	27.824	1	.000	.057

a. Variable(s) entered on step 1: X1_Family_Business, X2_Gender, X3_edu, X4_UAE, X5_risks_opp.

As can be seen in Table 8, all explanatory variables except that of X4 ($p > 0.05$) are significantly different from zero. Dropping the same from the model we have the following output table

Table 9

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a X1_Family_Business	1.042	.365	8.157	1	.004	2.835
X2_Gender	.966	.357	7.334	1	.007	2.626
X3_edu	2.409	.420	32.899	1	.000	11.126
X5_risks_opp	1.455	.357	16.630	1	.000	4.286
Constant	-2.859	.543	27.754	1	.000	.057

a. Variable(s) entered on step 1: X1_Family_Business, X2_Gender, X3_edu, X5_risks_opp.

As can be seen, the Beta values of all the regressor variables are significantly different from zero ($p < 0.05$). Education for entrepreneurship shows the greatest impact for a high motivation for entrepreneurship (the odds are 11.1 times greater with respect to students who do not derive from education). A strong awareness of the risks and opportunities of an entrepreneur increases the odds of a high entrepreneurial motivation to 4.286. Table 10 shows the probabilities of a high motivational index for the various (combination) values of the explanatory variables

Table 10

X1	X2	X3	X5	$\log\left(\frac{\pi}{1-\pi}\right) = X'\beta$	$\pi = \frac{e^{X'\beta}}{1+e^{X'\beta}} = P(y=1/\tilde{x})$
0	0	0	0	-2.859	0.0542
0	0	0	1	-1.404	0.1972
0	0	1	0	-0.45	0.3894
0	0	1	1	1.005	0.7320
0	1	0	0	-1.893	0.1309
0	1	0	1	-0.438	0.3922
0	1	1	0	0.516	0.6262
0	1	1	1	1.971	0.8777
1	0	0	0	-1.817	0.1398
1	0	0	1	-0.362	0.4105
1	0	1	0	0.592	0.6438

1	0	1	1	2.047	0.8856
1	1	0	0	-0.851	0.2992
1	1	0	1	0.604	0.6466
1	1	1	0	1.558	0.8261
1	1	1	1	3.013	0.9532

5. Results and Discussion

When treated in isolation all except Gender ($p > 0.05$; refer Table 3) show significant effect on the response variable. The Exp(B) column of each table (Table 2 to Table 6) is used to infer about the effect of a high rating of the predictor variable for a high rating of the response variable as is also reflected in column 7 of Table 7. Family ties and supportive network as Sequeira's study points out can affect entrepreneurial intention (Sequeira, Mueller, & McGee, 2007). The model suggests that students from business oriented families have a 1.8545 chance of being highly motivated, this when the model is based on this single variable (Table 2). This chance is almost the same (1.835) when considered in a full model with all explanatory variables (Table 9). There is a 3.4 greater chance for students who are strongly aware of the risks and opportunities for an entrepreneur to show a high probability for entrepreneurial motivation.

Mayoux and Kanto in their respective studies have argued about the constraints women experience in their economic activities relative to men (Kanto, 1999) (Mayoux, 2001). The results of this study reiterate these findings in a rather different perspective. With the effect of all influencing variables in the model, there is an apparent effect due to gender. Being male increases the chances for high motivation index 1.626. However, keeping all other factors as non-existent, gender shows no significant effect (Table 3). The model suggests Education has the maximum effect. Students who agree that education acts a catalyst for honing entrepreneurial abilities and also seek the same have a 7.36 times greater chance of being motivated for entrepreneurship (Table 4). This effect is even higher as reflected in the full model with 10.126 higher chances for a high motivation index (Table 9). An awareness of the opportunities and risk is undoubtedly essential and as studied by Carsrud et. al is reiterated in the model (Table 6). Students who perceive themselves as well informed of this criteria show a 3.4 times greater chance of being highly motivated. In the full model this chance is 3.286 times higher than those who are not aware of the risks and opportunities (Table 9). Knowing the economy and its dynamism is imperative for budding entrepreneurs. The study showed Students who are more aware of the UAE market and have strong perceptions of the same have a 2.15 greater chance of being highly motivated (Table 5). However, statistically this variable was insignificant ($p > 0.05$) when considered in a full model and so was included in the final model (Table 9). Could this mean that although the students are not quite aware of the market they do nurture the same level of motivation to being an entrepreneur? A study in this regard can follow this article.

6. Conclusion

This paper essentially is a reiteration of the importance of select extrinsic variables on entrepreneurial motivation among students. This is further justified by the use of a Binary logistic regression model to quantify the effect of these variables in expecting a high Entrepreneurial Motivation Index (EMI). Family owing business, Gender, Education for entrepreneurship, Opportunity and risk awareness and Perception of the UAE market were identified as the five extrinsic variables. The response variable Y is a transformed variable from a score cumulative. Y takes a value 1 if the motivation score is high and 0 otherwise. Two parallel models were established. Models based on single variables showed all the variables to be statistically significant except that of Gender. This implying that putting all other effects aside, women and men students is equally motivated! Alternatively, in a full model, the perception of the UAE market showed statistical insignificance. It is hoped that the study would be of help to policy makers and academicians to understand the Entrepreneurial motivation index in their areas particularly in these times of challenging economic environment.

While researchers and EFL teachers in several countries have discussed a great deal on the topics of learners' characteristic differences in learning English, and language learning styles have been one of the most popular aspects researchers have focused on; little attention has paid to this field in Vietnam. Up to now, only a few studies have been found. Some researchers such as Nguyen (1989), Dao (1982), and Le (1982) in their studies referred to learning strategies in general. Le (1999) studied the differences in language learning strategies of learners of English in Hue City and Nguyen (2005) investigated the different reading style preferences of the ESP students at Ton Duc Thang University. In other words, in Vietnam, the field of perceptual learning style preferences in language learning has been ignored in the learning process. The majority of the teachers are unaware of their students' learning styles. They are also unaware of the importance to identify learning styles. Thus, there is a need to assess the learning styles of the students as well as

other relevant variables such as gender, age, language experience, or English proficiency to accommodate different learners.

This study aims to explore students' perceptual learning style preferences as well as whether any linkages between language learning styles and such variables as field of study, study length, gender, age, language learning experience, and English proficiency level subsist.

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Further references will be provided on request