Examining entrepreneurial intention through cognitive approach using Malaysia GEM data

Article *in* Journal of Change Management · November 2013

DOI: 10.1108/JOCM-03-2013-0035

3 authors, including:

S.R. Xavier
Universiti Tun Abdul Razak (UNIRAZAK)
21 PUBLICATIONS **436** CITATIONS
SEE PROFILE

Abdul Rahim Abu Bakar
Prince Sultan University
25 PUBLICATIONS **1,172** CITATIONS
SEE PROFILE

The current issue and full text archive of this journal is available at
www.emeraldinsight.com/0953-4814.htm

Examining entrepreneurial intention through cognitive approach using Malaysia GEM data

Syed Zamberi Ahmad
Management Department, College of Business Administration, Abu Dhabi University (ADU), Abu Dhabi, United Arab Emirates
Siri Roland Xavier
Bank Rakyat School of Entrepreneurship, University Tun Abdul Razak (UNITAR), Kuala Lumpur, Malaysia, and
Abdul Rahim Abu Bakar
Marketing Department, College of Business Administration, Prince Sultan University (PSU), Riyadh, Kingdom of Saudi Arabia

Received 19 March 2013
Revised 26 June 2013
27 October 2013
Accepted 1 November 2013

Abstract

Purpose – The purpose of this paper is to explore entrepreneurial intentions among Malaysia adult population through the cognitive approach model.

Design/methodology/approach – This paper is based on Global Entrepreneurship Monitor nation-wide survey which includes questions about entrepreneurial perceptions of the country's population.

Findings – Three kinds of perceptions are identified: individual perceptions, perceptions about entrepreneurial opportunities and socio-cultural perceptions. Their effect on intentions is tested along with some control variables.

Practical implications – The result of this study provides empirically rigorous evidence for understanding the entrepreneurial intention of individuals in Malaysia.

Originality/value – This study is very relevant as it attempt to close this gap by not only providing further insights and understanding of the entrepreneurial intention, but also for the more general understanding of the economic development in developing nation.

Keywords Malaysia, Developing country, Entrepreneurialism, Cognitive model, Global Entrepreneurship Monitor (GEM)

Paper type Research paper

Introduction

The question of what separates those who choose to pursue entrepreneurial pursuits from those who opt not to be entrepreneurs is an intriguing issue (Gartner, 1989), and investigating the role of individual differences in entrepreneurial behaviour and intentions is a growing field of research (Kim, 2008; Krueger *et al.*, 2000; Liñán and Chen, 2009; Van Auken *et al.*, 2006). Entrepreneurship begins when an individual decides to undertake new venture. In order to foster more entrepreneurship, it is therefore necessary to understand how people make that decision (Autio *et al.*, 2001). Over the last 15 years there has been increasing interest in understanding entrepreneurship through the lens of cognitive theory perspective (Baron, 2004; Wadeson, 2006). The cognitive

The authors wish to thank the journal's anonymous reviewers for their constructive comments, insightful contributions and valuable feedback on the content of this paper on many occasions.

Journal of Organizational Change Management
Vol. 27 No. 3, 2014
pp. 449-464

0953-4814
DOI 10.1108/JOCM-03-2013-0035

approach to the study of entrepreneurs emerged as an option to the trait orientation because although the latter has produced important results, many of these have been clearly contradictory, generating the displacement of researchers to other personal aspects of the individual (Baron and Markman, 1999; Bouckenooghe *et al.*, 2005; Vecchio, 2003). Infact, some authors suggest that the future of entrepreneurship research should be focused on the study of cognitive social categories (Sánchez, 2011). Researchers using this approach believe that cognitive theory perspectives are the elements that distinguish entrepreneurs from non-entrepreneurs (Mitchell *et al.*, 2002). These cognitive theory perspective ranges from their beliefs to their values, cognitive styles and mental processes. These perspectives have improved an understanding of what has driven people's perception and behavioural change (Krueger *et al.*, 2000; Krueger, 2003).

Until now, the cognitive entrepreneurship literature, has studied the influence exerted by some perceptions on the intentions of individuals to start-up a new business venture, however, findings remain inconclusive (Kim, 2008). In the Malaysian context, studies are restricted to the analysis at an individual level and using small samples size, generally made up of universities students at undergraduate or postgraduates level (see Ramayah and Harun, 2005; Yusof *et al.*, 2008; Sandhu *et al.*, 2011). Generally, there are limited entrepreneurship studies covering developing countries. This paper offers a novel perspective in the strand of cognitive model to examine empirically the formation of entrepreneurial intention using 2011 Malaysia Global Entrepreneurship Monitor (GEM) national survey. The Malaysia National GEM data has the advantage of helping to overcome some of the above-mentioned limitations, since it is based on a large national survey of the general adult population. In this respect, the present study is probably among the few to use these data to explain the entrepreneurial intention of the general adult population. This is, in our opinion, the greatest contribution that may be expected from this paper. This study is very relevant as it attempt to close this gap by providing further insights and understanding of the entrepreneurial process in this developing country.

Theoretical background

Entrepreneurial cognitions and intentions

The relevance of cognitive approach theory in shaping the behavioral of individual's in entrepreneurial decisions and actions has been confirmed by a number of various studies (Gaglio, 2004; Baron, 2004; Krueger 2000; Mitchell *et al.*, 2002). The cognitive theory tries to understand the development of competencies and the regulation of actions of individuals. Since being a successful entrepreneur requires competencies, and entrepreneurship is a planned action, social cognitive theory is relevant for the study of entrepreneurial intentions (Krueger *et al.*, 2000). Baron (1998) argued that cognitive perspectives could contribute to entrepreneurship research and he suggested that several cognitive processes such as counterfactual thinking, planning fallacy, attribution style and self-justification might explain why and when entrepreneurs think differently than non-entrepreneurs. A few empirical studies have shown the effect of cognitive theory on entrepreneurial decisions (see Mitchell, 1994; Shane *et al.*, 2003; Armitage and Conner, 2001).

Within entrepreneurial cognition research, the cognitive approach perspective – defined as a stable characteristic way in which individuals process and evaluate information, solve problems and make decisions (Hayes and Allinson, 1994; Goldstein and Blackman, 1978) has been identified as promising in explaining entrepreneurial behaviours (Carland *et al.*, 2002; Mitchell *et al.*, 2000). Two main lines can be differentiated

within the cognitive literature: the study of cognitive structures and the study of cognitive processes. Several studies have attempted to identify the knowledge structures that entrepreneurs use to make assessments, judgements or decisions, in evaluating opportunities, and in the creation and growth of businesses (Gaglio and Katz, 2001; Mitchell *et al.*, 2000). Other types of research are based on the idea that whatever the individual thinks, says or does is influenced by the cognitive processes through which individuals acquire, use and process information (Baron and Markman, 1999; Kruger and Evans, 2004). This perspective suggests that entrepreneurs think and process information differently from non-entrepreneurs and such differences may help to distinguish people who create or aim to establish businesses (entrepreneurs) from people who do not create and will not create companies (non-entrepreneurs). Cognition research offers multiple mechanisms, both theory-driven and empirically robust, to build a deeper, richer understanding of how we learn to see opportunities and further assess our skills and abilities along the entrepreneurial intentions process. Guided by cognitive approach theory, this paper will discuss three different categories of perceptions that may be affecting the individual's entrepreneurial intention.

Individual perceptions towards entrepreneurial intentions

Bandura's (1977) work has emphasised the relevance of two important perceptions in social learning: role model perception and self-efficacy. These have consistently been introduced into entrepreneurial cognitive research (Krueger *et al.* 2000; Kolvereid, 1996). First, role model theory explains the process of learning by copying the action of other persons through observing them doing it. Individual decisions to engage in a certain behavior are often influenced by the behavior and opinions of others, the demonstration of their identity and by the examples they provide (Ajzen, 1991; Akerlof and Kranton, 2000). Individual are assumed to learn in a social context through the observation of others with whom they can identify and who perform well in an area in which they, themselves, also wish to be involved or in which they want to excel, i.e. learning by example (or modelling). This also holds for the occupational choice of individuals and, more specifically, the decision to engage in entrepreneurship (Arenius and Minniti, 2005). According to Van Auken *et al.* (2006) and Van Auken *et al.* (2006), role models may enhance the desire to become an entrepreneur and the entrepreneurial self-efficacy of individuals. This may, in turn, positively influence entrepreneurial intentions and, ultimately, entrepreneurial activity (Krueger *et al.*, 2000). In this study, we define entrepreneurial intention as a cognitive representation of the actions to be implemented by individuals to either establish new independent ventures.

On the other hand, self-efficacy or self-confidence refers to a person's belief in his/her capability to perform a given task (Bandura, 1977). According to Ryan (1970), self-perception plays an important role in the development of intention. Cromie (2000) stated that self-efficacy affects a person's beliefs regarding whether or not certain goals may be attained. Higher self-efficacy is associated to entrepreneurship and creation (Krueger and Brazeal, 1994; Segal *et al.*, 2002; Frazier and Niehm, 2006). Individuals with high entrepreneurial self-efficacy also have higher degrees of belief that they possess a viable idea for a new business. Self-efficacy is theoretically proposed to lead towards entrepreneurial intentions and behaviour (Boyd and Vozikis, 1994), and has been empirically found to relate positively to entrepreneurial intentions (Chen *et al.*, 1998). Similar incorporation of self-efficacy into proposed models of entrepreneurial

career intentions (Krueger *et al.*, 2000; Shapero and Sokol, 1982) have been rigorously tested (Krueger, 1993) and shown to have strong predictive ability.

Entrepreneurship is historically associated with risk taking. In one of the earliest examples, Chantilon (1755) indicates in his work, that the main factor in differentiating entrepreneurs from employed workers was the uncertainty and risk taken by the former (Entrialgo *et al.*, 2000; Thomas and Mueller, 2000). Douglas and Shepherd (2002) found that a more positive attitude towards risk and independence leads to stronger entrepreneurial intentions.

Summarising, the following hypotheses are established:

H1a. In the Malaysian context, individuals who have higher level of knowing a role model will exert a positive effect on entrepreneurial intentions.

H1b. In the Malaysian context, individuals who have higher level of self-efficacy towards entrepreneurship will exert a positive effect on entrepreneurial intentions.

H1c. In the Malaysian context, individuals who perceived low risk (individual perceptions) will exert a positive effect on entrepreneurial intentions.

Perceptions of economic opportunities towards entrepreneurial intentions

Besides these individual perceptions, it is important to consider other factors related to the individual's environment which can also influence entrepreneurial intentions. In this sense, the effect of perceptions on economic opportunities could be highlighted. According to Ahmad and Xavier (2012), the entrepreneurial economic conditions in a nation may influence the creation of new firms. The Global Entrepreneurship Monitor Report 2005 data found that, when a nation or region experiences stable macro-economic conditions and sustained economic growth, the form of entrepreneurship being manifested is also of a higher likelihood value to society (Reynolds *et al.*, 2005). The contribution of entrepreneurial activity differs according to the country's stage of development and a number of other conditions (Carree and Thurik, 2003; Wennekers and Thurik, 1999). Both a positive and a negative relationship have been confirmed between economic growth and the rate of entrepreneurship (Audretsch *et al.*, 2002; Carree *et al.*, 2002). A positive correlation between entrepreneurship rates and economic development is detected in high-income countries, while in low and middle-income countries, these correlations tend to be negative (Tang and Koveos, 2004). The level of entrepreneurial activity tends to be higher for very affluent and very poor countries, while countries with moderate income levels tend to have less entrepreneurially active people in the adult population. Entrepreneurial activity actually decreases as a country transits from less to more affluent conditions. After some threshold is reached, the entrepreneurial activity rate tends to rise again; however, even countries with the highest gross domestic product do not match the indices of low-income countries (Pfeifer and Sarlija, 2010). The GEM Report 2005 show large differences between countries like Japan, France, Belgium and Sweden with low entrepreneurial activity and countries like the USA, Canada, Australia and South Korea with high entrepreneurial activity. Some developing countries like Brazil and Mexico top the list of countries with high entrepreneurial activity (Reynolds *et al.*, 2005). In this sense, the general economic condition will have a macro-economic effect on the aggregate level of entrepreneurial intentions and on the overall start-up rate (Thurik *et al.*, 2002).

Therefore, these arguments lead to the following hypothesis:

H2. In the Malaysian context, individuals who have a positive perception about the existence of entrepreneurial opportunities will exhibit a positive level of personal attitude towards entrepreneurship.

Socio-cultural perceptions affecting entrepreneurial intentions

Finally, the entrepreneurship literature has also studied the influence of cultural and sociological aspects on opportunity recognition and entrepreneurial intention through cognitive mechanisms. Hofstede defines culture as "the collective programming of the mind which distinguishes the members of one human group from another" (Hofstede and Hofstede, 2005). Cultural embeddeness shapes the way in which efficacy beliefs are developed, the purpose to which they are put, and the social structure arrangements through which they are best exercised. According to the literature, culture may influence entrepreneurship both through social legitimation and through promoting certain positive attitudes related to firm creation in individuals (Davidsson 1995; Liñán and Santos, 2007). As Hofstede (1980) pointed out, culture shapes people's cognitive schemes, programming behavioural patterns which are consistent with the cultural context. Moreover, these cognitive schemes derived from culture can help entrepreneurs in several aspects (Busenitz and Lau, 1996): reducing the uncertainty of making a decision, identifying cause/effect relationships to advance the development of ideas and opportunities; facilitating forecasts and predictions about outcomes; and, what is most important in this study, increasing the start-up intention. Davidsson (1995) identifies two views regarding the relationship between cultural values and entrepreneurial behaviour. The first view is a culture's effects on the social legitimisation of entrepreneurship. The second view involves the suitability of the aggregate psychological traits of a nation in supporting entrepreneurship. From an empirical point of view, studies about the cultural influence on entrepreneurial behaviours (Hayton *et al.*, 2002; McGrath *et al.* 1992; Mueller and Thomas 2001; Wennekers *et al.* 2005) have most often used Hofstede's (1980) four dimensions of national culture. These four dimensions are:

(1) power distance (PDI) – i.e. the extent of power inequality among members of an organisational society;

(2) uncertainty avoidance (UAV) – i.e. the extent to which members of an organisational society feel threatened by and try to avoid future uncertainty or ambiguous situations;

(3) individualism and collectivism (IND) – which describes the relationship between the individual and collectivity that is reflected in the way people live together; and

(4) masculinity and femininity (MAS) – i.e. the extent of roles division between sexes to which people is a society put different emphasis on work goals and assertiveness as opposed to personal goals and nurturance.

McGrath *et al.* (1992) argue that individual entrepreneurs would tend to exhibit certain levels of those dimensions: high power distance (PDI+), low uncertainty avoidance (UAV–), high individualism (IND+) and high masculinity (MAS+). Busenitz and Lau (1996) transfer these assumptions to the national level, suggesting that cultures high on those values would favour the entrepreneurial activity of its members.

Mueller *et al.* (2002) share this view, except for the PDI index. Thus, low power distance (PDI–) cultures would favour entrepreneurship (Liñán and Chen, 2009). Huisman (1985) noted wide variance in entrepreneurial activity across cultures and concluded that cultural values influence entrepreneurial behaviour.

Therefore, this leads to the following hypothesis:

H3. In the Malaysian context, individuals who have strong entrepreneurial cultural values, such as perceived social legitimation, will exert a positive influence on the entrepreneurial intention.

The factors which affect the entrepreneurial intent are described in Figure 1.

Methodology

As we pointed out in the introduction section, the empirical analysis was based on Malaysia 2011 National GEM data. The main interest of this paper mainly focused on the analysis of entrepreneurial intentions among adults in the context of Malaysia. The three theoretical hypotheses are tested with four binary logistic regressions. Each group of dependent variables will be introduced in a subsequent logit model. The first model includes only demographic and socio-economic characteristics as independent variables. Model 2 includes individual perceptions. Model 3 adds perceptions on entrepreneurial opportunities and Model 4 includes socio-cultural perceptions.

Data collection, sample and variables

The data used for the analysis was obtained from the GEM Malaysia National team. The 2011 APS Data: Individual Level includes a total of 2,053 observations. A depuration process was carried out to eliminate all observations with missing data in any of the selected variables. Additionally, since our target population is the potential entrepreneur, all individuals involved in any stage of entrepreneurial activity (nascent and established entrepreneurs) were excluded.

The empirical study tries to identify significant variables that help to estimate the likelihood of an individual intention to start a business ventures within three years. That is to say, potential entrepreneurs (Krueger and Brazeal, 1994). The specific variables used to measure concepts developed in the theory section are as follows:

(1) Entrepreneurial intention (dependent variable): respondents were ask whether they intend to start a business within three years (0 = no, 1 = yes).

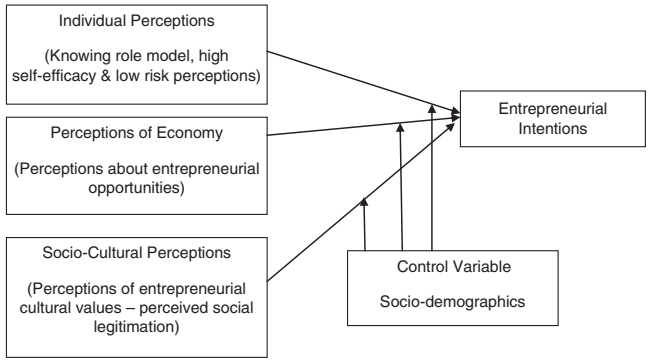

Figure 1.
Research framework

(2) Individual perceptions:

- Role model: respondents were asked whether they personally knew someone who had started a business in the two years preceding the survey (0 = no, 1 = yes).
- Self-efficacy: respondents answered if they believed they had the required skills and knowledge to start a business (0 = no, 1 = yes).
- Risk perception: whether fear of failure would prevent them from setting up a business or not (0 = no, 1 = yes).

(3) Perceptions on economic (entrepreneurial) opportunities: respondents stated if they thought there would be good opportunities to start a firm in the area where they live in the six months following the survey (0 = no, 1 = yes).

(4) Socio-cultural perceptions:

- Desirable career choice: respondents' perception that in their country, most people consider starting a new business a desirable career choice (0 = no, 1 = yes).
- Status and respect: agreement with the statement that in their country, those successful at starting a new business have a high level of status and respect (0 = no, 1 = yes).
- Public media: agreement with the statement that in their country, they will often see stories in the public media about successful new businesses (0 = no, 1 = yes).

(5) Control variables: demographic and economic variables:

- Age: range of age at time of interview, the respondents were asked to identify their age range.
- Gender: (0 = female, 1 = male).
- Education level: respondents were asked to provide the highest education level they had gained. The GEM coordination unit harmonizes responses across all countries into a seven-category variable (0 = no education, 1 = primary, 2 = lower secondary education, 3 = upper secondary, 4 = post-secondary non-tertiary, 5 = first stage of tertiary, 6 = second stage of tertiary).
- Annual income level: respondents were asked to provide information about their annual household income. (0 = lower, 1 = middle, 2 = upper income group).
- Work status: respondents were asked to provide their occupational status (0 = full time, 1 = part time or not working).

Proposed regression model

The logit regression model estimates the probability of an individual belonging to a certain group (dependent = 1), or not (dependent = 0). It also identifies the most important variables explaining the differences between both groups. Additionally, logit models do not make assumptions about the statistical distribution of the variables

(Greene, 2002). In this empirical study, therefore, the use of a logit model would be fully justified on three grounds:

- the dependent variable is dichotomous;
- the great majority of independent variables are also dichotomous or categorical; and
- it allows analysing the effect of a certain level of the independent variables on the probability of the studied event being present (in this case, being a potential entrepreneur).

The goodness-of-fit of the models is assessed by the Omnibus test for model coefficients, the Hosmer-Lemeshow test, the rate of correct classification and the pseudo-R^2 statistics. The significance of individual independent variables was tested using the Wald statistics. A collinearity analysis was also performed to avoid biased estimations of the coefficients. The variance inflation factor (VIF) and condition indexes were used for this purpose.

Results

Initially, descriptive statistics was run on the sample. Table I illustrates the profiles of the sample.

Profiles	Frequency	Total	%
Gender			
Male	1087	2053	52.9
Female	966		47.1
Age			
18-24	331		16.1
25-34	474		23.1
35-44	498		24.3
45-54	405		19.7
55-64	345	2053	16.8
Annual income: (RM)			
Below 6,000	164		8.0
6,000-11,999	279		13.6
12,000-17,999	370		18.0
18,000-23,999	344		16.8
24,000-29,999	358		17.4
30,000-35,999	184		9.0
36,000-41,999	121		5.9
42,000-47,999	43		2.1
48,000-59,999	73		3.6
More than 60,000	117	2053	5.7
Education			
None	108		5.3
Primary	279		13.6
Lower secondary	349		17.0
Upper secondary	896		43.6
Post-secondary non-tertiary	278		13.5
First stage of tertiary	129		6.3
Second stage of tertiary	14	2053	0.7
Employment			
Full-time	854		41.6
Part-time	1199	2053	58.4

Table I.
Profile of the respondents

The respondents comprise of a fair number of male and female with an equivalent number of representatives from the different age group starting from 18 years old to 64 years old. In terms of household income, the sample represented a normal distribution where respondents of a yearly income of RM24,000-RM29,999 represented the mean.

In the theory section, three hypotheses are derived regarding the influence of perceptual variables in the entrepreneurial intention of the adult population. They are tested by introducing each group of variables into a subsequent logit model. The multicollinearity test was satisfactory, since the highest VIF was 1.3, and the highest condition index was 5.5, well below the 20.0 threshold suggested by Belsley *et al.* (1980). Subsequently, four binary logistic regressions have been performed, as shown in Table II. The first one includes only demographic and socio-economic characteristics as independent variables. Model 2 includes individual perceptions. Model 3 adds perceptions on entrepreneurial opportunities, whereas Model 4 includes socio-cultural perceptions.

	Model 1		Model 2		Model 3		Model 4	
	B	Exp (*B*)	*B*	Exp(*B*)	*B*	Exp(*B*)	*B*	Exp(*B*)
Socioeconomic variables								
Gender	0.609***	1.838	0.260	1.297	0.279	1.322	0.227	1.255
Occupation (full/part)	−1.359***	0.257	−1.070***	0.343	−0.1.063***	0.345	−1.031***	0.357
Age (1)	0.674*	1.962	0.362	1.436	0.347	1.414	0.325	1.384
Age (2)	1.019***	2.771	0.720**	2.055	0.730**	2.076	0.730**	2.076
Age (3)	0.892***	2.441	0.635*	1.887	0.644*	1.905	0.667*	1.948
Age (4)	−0.336	0.715	−0.295	0.745	−0.293	0.746	−0.155	0.856
Annual income (1)	0.048	1.049	−0.474	0.622	−0.521	0.594	−0.450	0.638
Annual income (2)	0.114	1.120	−0.263	0.769	−0.308	0.735	−0.242	0.785
Annual income (3)	−0.018	0.982	−0.254	0.776	−0.320	0.726	−0.240	0.787
Annual income (4)	0.048	1.049	−0.255	0.775	−0.331	0.718	−0.190	0.827
Annual income (5)	0.245	1.278	−0.193	0.825	−0.275	0.760	−0.230	0.795
Annual income (6)	0.520	1.682	−0.012	0.988	−0.109	0.897	−0.014	0.986
Annual income (7)	−0.051	0.951	−0.664	0.515	−0.737	0.479	−0.715	0.489
Annual income (8)	0.941*	2.562	0.236	1.266	0.143	1.154	0.228	1.256
Annual income (9)	0.931*	2.536	0.527	1.694	0.476	1.609	0.531	1.701
Highest education (1)	0.877	2.404	0.342	1.408	0.311	1.365	0.364	1.439
Highest education (2)	0.552	1.736	0.247	1.045	0.009	1.009	0.063	1.066
Highest education (3)	0.845	2.329	0.498	1.280	0.209	1.232	0.299	1.349
Highest education (4)	1.053*	2.866	0.498	1.645	0.488	1.629	0.541	1.717
Highest education (5)	1.066	2.905	0.450	1.569	0.452	1.572	0.504	1.656
Highest education (6)	0.931	2.538	−0.162	0.851	−0.153	0.858	−0.233	0.792
Individual perceptions								
Role model			0.447*	1.564	0.385*	1.469	0.410*	1.506
Self-efficacy			1.935***	6.923	1.838***	6.283	1.770***	5.869
Risk aversion			−0.071	0.931	−0.025	0.975	−0.116	0.891
Economic perceptions								
Entre_opportunities					0.375*	1.036	0.321	1.379
Cultural perceptions								
Good career choice							0.883***	2.418
Respected							0.226	1.253
Public media							−0.350	0.705
Constant	−3.613***	0.027	−3.581***	0.028	−3.611***	0.027	−4.078***	0.017

Notes: ***,**,*Significant at $p < 0.001$; $p < 0.01$; $p < 0.05$, respectively

Table II.
Logistic regressions on entrepreneurial intention

The findings in Table III depicted that the Omnibus test is always significant ($p < 0.0005$), denoting acceptance of the hypothesis that β coefficients are different from zero. The test gives an overall indication that the model is performing well. Nevertheless, the variables considered here only explain a limited fraction of the variance in entrepreneurial intentions (pseudo-R^2 statistics). Additional variables are probably needed to complement those included in Models 1-4. In this analysis, the Hosmer-Lemeshow test is the most reliable test of model fit available in SPSS. In this test, poor fit is indicated by a significance value < 0.05. For that matter, the results demonstrate that the Model 1 (which includes the demographic and socio-economic characteristics) was not significant. On the other hand, all the other Models (2, 3 and 4) showed a significant results where the significant value was > 0.05.

The Cox and Snell R^2 and the Nagelkerke R^2 values provide an indication of the amount of variation in the independent variable explained by the model. These are described as pseudo-R^2 statistics. In Model 1 of this analysis, only 4.9 and 9.9 per cent of the variability is explained by the demographic and socio-economic characteristics. Subsequently, as the model includes more variables based on our hypothesis, the variability explained increased from 12.6 to 25.8 per cent in Model 2, 12.8 to 26.2 per cent in model 3 and finally 14.2 to 29.1 per cent in Model 4.

To explain the findings of this study in more detail, Table II illustrates the score of the binary logistic regression. Initially, Model 1 is the basic model including only variables related to socio-demographic characteristics. As visible, gender, work status, age and the specific income and education significantly contribute in explaining the entrepreneurial intention of respondents, with the expected signs. A linear effect for age was observed with the exception when the respondents reached 55-64. Most probably, one would be too old to take the risk of involving in business or prefer to continue on a status quo after so many years doing similar activities. Regarding gender, males are 1.838 times more likely than females to declare a positive intention (odds ratio). In terms of work status, it seems that those who are working either part time or may not be working at all are more prone to start a business than those who work full time. This is expected as the individuals are forced to find an income and they are more likely to be potential entrepreneurs. Meanwhile, the effect of income showed that those who are in the high range of income (annual income of RM42,000-RM47,999) are associated with positive entrepreneurial intentions. This scenario could be link to source of capital as most entrepreneurs started off using their own personal capital. Finally, in terms of education level, it was observed that those in the upper secondary are highly associated with higher intentions with odds ratios of 2.866.

Model 2 tries to verify *H1* where role model, self-efficacy and risk aversion are proposed to influence the intention to start a business. The results showed that only two individual perceptions (role model and self-efficacy) have significant coefficients

Table III.
Goodness-of-fit statistics

Test	Model 1	Model 2	Model 3	Model 4
Omnibus test (sig. level)	0.000	0.000	0.000	0.000
Cox and Snell pseudo-R^2	0.049	0.126	0.128	0.142
Nagelkerke pseudo-R^2	0.099	0.258	0.262	0.291
Hosmer-Lemeshow test (sig. level)	0.001	0.621	0.376	0.371
% correct	89.4	89.6	89.5	90.0

with the expected signs. In particular, the effects of self-efficacy are the strongest of all variables tested and knowing a role model trailing behind it (odds ratios are 6.923 and 1.564, respectively). On the other hand, although perceiving a higher risk of failure did not show a significant coefficient, the score illustrates a negative sign showing decreasing entrepreneurial intentions. However, the contribution of socio-demographic characteristics changes slightly where gender, income and education were not significant. It can be argued from the results that once the effect of these perceptions has been considered, people who are not working full time and matured (35 and above) exhibit a higher intention to become entrepreneurs. The demand and pressures during this life stage forces one to become entrepreneurs as a solution towards their predicament.

Model 3 includes an additional variable measuring the individuals' perceptions of the existence of entrepreneurial opportunities to start a firm in their area of residence. *H2* is satisfactorily confirmed, since this variable has a significant and positive β coefficient of a odds ratio of 1.036. Besides, the signs, level and significance of all the other variables are similar to those in Model 2. Finally, to test *H3*, the three socio-cultural perceptions (entrepreneur as a good career choice, entrepreneurs are respected and entrepreneurs get public media coverage) were tested in Model 4. The results showed that only entrepreneurship considered as a good career choice has a significant coefficient with the expected signs and a odds ratio of 2.418. These results partially support *H3*.

Discussion and conclusions

The objective of this research is to ascertain if individual's cognitive perceptions is able to predict entrepreneurial intention in Malaysia. Before we delve in great detail the findings of the study, it is important to highlight that our analysis comprises of sample from the general population derived from the widely acknowledged GEM National data. Initially, although the basic model comprising of the demographic and socio-economic factors were not significant, it illustrates few interesting notion. Although Malaysia's strive towards modernity includes gender equality in almost all areas of economic contribution, it still shares some commonality with the rest of the developing economies. Male is more likely to exhibit entrepreneurial intention in line with the patriarchal expectations of the society. While the findings of the study showed that starting a business is considered as a desirable career choice, the paradox is those who "choose" to start a business are mainly unemployed who are "forced" out of desperation. Naturally, this group comprises of between young adults to middle age.

With respect of the influence of role model and self-efficacy, the findings corroborate previous assertions and findings that support these variables as an important construct towards entrepreneurial intention (Markman *et al.*, 2002; Krueger, 2003; Segal *et al.*, 2005; Van Auken *et al.*, 2006). Bosma *et al.* (2011) argued that role models provide living evidence that certain goals are achievable and it enhance the desire to become an entrepreneur by providing legitimisation and encouragement to turn entrepreneurial ambitions into reality (Arenius and De Clercq, 2005; Koellinger *et al.*, 2007; Mueller, 2006). Therefore, it is important that the classic "rags to riches" entrepreneurs are highlighted in the country to serve as a role model. In the Malaysian scenario, few entrepreneurs such as the like of billionaire Robert Kuok and Syed Mokhtar to name a few; serve as role models of how one strives to realise their dream to become billionaires. On the more modest role model, the story of Ramly Burger and the story of a widow, a single mother and a rubber taper who manufactures multimillion cosmetic products have inspired many to start a business. In schools,

figures such as Abdul Rahman Bin Auf – the companion of the prophet Muhammad (p.b.u.h.) was also highlighted to promote the idea that to start a business is in line with Islam.

Meanwhile, the study found self-efficacy to be a good predictor of entrepreneurial intentions. This supports Shane *et al.* (2003) argument that self-efficacy was probably the "single best predictor in the entire array of variables" to study entrepreneurial intentions. Throughout the existing body of work there is a strong view that self-efficacy is a good thing for entrepreneurs to have (Drnoviaek *et al.*, 2010). For example, scholars such as Shane *et al.* (2003) have argued that an entrepreneur who is high in self-efficacy is likely to "exert more effort for a greater length of time, persist through setbacks, and develop better plans and strategies for the task". In addition, the self-efficacy construct has also been closely linked to important entrepreneurial outcomes such as start-up intentions (Krueger *et al.*, 2000) and new venture growth, as well as personal success of entrepreneurs (Markman *et al.*, 2002).

Finally, the results of the findings of individual perceptions of entrepreneurial opportunities and entrepreneurial intention were not entirely conclusive. The study depicted that only the item "entrepreneurship considered as a good career choice" was significantly influencing entrepreneurial intentions. As we have argued earlier the finding may be quite paradoxical, we believe that there might be a possibility that some members of the public viewed that some of the entrepreneurs appear to be within the cronyism that enables them to rise up in the business extra ordinarily. Hence, these entrepreneurs may not get the respect from the public or the public media coverage was considered more of a publicity stunt.

In conclusion, the influence of these different perceptions on entrepreneurial intentions has usually been empirically tested on small samples of university students. The earlier results have been very promising but it was necessary to carry out additional analyses at the aggregate level on samples from the general population (Arenius and Minniti, 2005). In particular, the GEM Malaysia National project provides a good platform to perform this kind of analysis since it collects data on different aspects of the firm-creation process from all the states in the country.

Limitations and suggestions for future research

The present study has several research limitations. First, the intention-based model of entrepreneurship was actually derived from the Western-culture countries. Individual in Malaysia may not fully share the same frame of reference as their Western counterparts regarding definitions of cognitive constructs and thought patterns (Schaffer and Riordan, 2003). However, current findings point to the importance of studying socio-demographic factors from the cognitive approach and suggest future entrepreneurial cognitive research to operationalise socio-demographic with cultural contingency. Second, educational level may affect approval and disapproval beliefs. A majority (80 per cent) of the sample education level are upper secondary and below. Therefore, the results may likely be susceptible to an influence of the skewed educational level of the respondents.

Finally, the present study cannot determine whether respondents that formed entrepreneurial intentions remain stable over time. Future research employing a longitudinal approach, which takes at least two measures for intention and behavior or decision and reveals situational factors such as economy and family support (Summer, 2000) that may cause the subsequent formation of entrepreneurial behaviour from intention, is therefore suggested.

References

Ahmad, S.Z. and Xavier, S.R. (2012), "Entrepreneurial environments and growth: evidence from Malaysia GEM data", *Journal of Chinese Entrepreneurship*, Vol. 4 No. 1, pp. 50-69.

Ajzen, I. (1991), "The theory of planned behaviour", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.

Akerlof, G.A. and Kranton, R.E. (2000), "Economics and identity", *The Quarterly Journal of Economics*, Vol. 115 No. 3, pp. 715-753.

Arenius, P. and De Clercq, D. (2005), "A network-based approach on opportunity recognition", *Small Business Economics*, Vol. 24 No. 3, pp. 249-265.

Arenius, P. and Minniti, M. (2005), "Perceptual variables and nascent entrepreneurship", *Small Business Economics*, Vol. 24 No. 3, pp. 233-247.

Armitage, C.J. and Conner, M. (2001), "Efficacy of the theory of planned behavior: a metaanalytic review", *British Journal of Social Psychology*, Vol. 40 No. 4, pp. 471-499.

Audretsch, D.B., Carree, M.A., Van Stel, A.J. and Thurik, R. (2002), "Impeded industrial restructuring: the growth penalty", *Kyklos*, Vol. 55 No. 1, pp. 81-97.

Autio, E., Keeley, R.H., Klofsten, M., Parker, G.G.C. and Hay, M. (2001), "Entrepreneurial intent among students in Scandinavia and in the USA", *Enterprise and Innovation Management Studies*, Vol. 2 No. 2, pp. 145-160.

Bandura, A. (1977), *Social Learning Theory*, Prentice-Hall, Englewood Cliffs, NJ.

Baron, R.A. (1998), "Cognitive mechanisms in entrepreneurship: why, and when, entrepreneurs think differently than other persons", *Journal of Business Venturing*, Vol. 13 No. 4, pp. 275-294.

Baron, R.A. (2004), "The cognitive perspective: a valuable tool for answering entrepreneurship's basic 'why' questions", *Journal of Business Venturing*, Vol. 19 No. 2, pp. 221-239.

Baron, R.A. and Markman, G.D. (1999), "Cognitive mechanisms: potential differences between entrepreneurs and non-entrepreneurs", in Reynolds, P.D. and Bygrave, W.D. (Eds), *Frontiers of Entrepreneurship Research*, Babson College, Wellesley, MA.

Belsley, D.A., Kuh, E. and Welsch, R.E. (1980), *Regression Diagnostics: Identifying Influential Data and Sources of Collinearity*, Wiley, New York, NY.

Bosma, N., Hessels, J., Schutjens, V., van Praag, M. and Verheul, I. (2011), "Entrepreneurship and role models", discussion paper, Tinbergen Institute, Amsterdam, pp. 1-28.

Bouckenooghe, D., Van den Broeck, H., Cools, E. and Vanderheyden, K. (2005), "In search for the heffalump: an exploration of the cognitive style profi les among entrepreneurs", Working Paper Series No. 4, Vlerick Leuven Gent Management School, Gent.

Boyd, N.G. and Vozikis, G.S. (1994), "The influence of self-efficacy on the development of entrepreneurial intentions and actions", *Entrepreneurship Theory and Practice*, Vol. 18 No. 4, pp. 63-77.

Busenitz, L.W. and Lau, C.M. (1996), "A cross-cultural cognitive model of new venture creation", *Entrepreneurship Theory and Practice*, Vol. 20 No. 4, pp. 25-39.

Carland, J., Carland, J. and Ensley, M. (2002), "Hunting the Heffalump: the theoretical basis and dimensionality of the Carland entrepreneurial index", *Academy of Entrepreneurship Journal*, Vol. 7 No. 2, pp. 51-84.

Carree, M.A. and Thurik, R. (2003), "The impact of entrepreneurship on economic growth", in Audretsch, D.B. and Acs, Z.J. (Eds), *Handbook of Entrepreneurship Research*, Kluwer Academic Publishers, Boston, MA/Dordrecht, pp. 437-471.

Carree, M.A., Van Stel, A.J., Thurik, R. and Wennekers, S. (2002), "Economic development and business ownership: an analysis using data of 23 OECD countries in the period 1976-1996", *Small Business Economics*, Vol. 19 No. 3, pp. 271-290.

Chen, C.C., Greene, P.G. and Crick, A. (1998), "Does entrepreneurial self-efficacy distinguish entrepreneurs from managers?", *Journal of Business Venturing*, Vol. 13 No. 4, pp. 295-316.

Cromie, S. (2000), "Assessing entrepreneurial inclinations: some approaches and empirical evidence", *European Journal of Work and Organizational Psychology*, Vol. 9 No. 1, pp. 7-30.

Davidsson, P. (1995), "Culture, structure and regional levels of entrepreneurship", *Entrepreneurship and Regional Development*, Vol. 7 No. 1, pp. 41-62.

Douglas, E.J. and Shepherd, D.A. (2002), "Self-employment as a career choice: attitudes, entrepreneurial intentions, and utility maximization", *Entrepreneurship Theory and Practice*, Vol. 26 No. 3, pp. 81-90.

Drnoviaek, M., Wincent, J. and Cardon, M.S. (2010), "E start-up: developing a multi-dimensional definition", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 16 No. 4, pp. 329-348.

Entrialgo, M., Fernandez, E. and Vazquez, C. (2000), "Characteristics of managers as determinants of entrepreneurial orientation: some Spanish evidence", *Enterprise and Innovation Management Studies*, Vol. 1 No. 2, pp. 187-205.

Frazier, B.J. and Niehm, L.S. (2006), "Predicting the entrepreneurial intentions of non-business majors: a preliminary investigation", paper presented at the USASBE/SBI Conference, Tucson, AZ, January, pp. 14-17.

Gaglio, C.M. (2004), "The role of mental simulations and counterfactual thinking in the opportunity identification process", *Entrepreneurship Theory and Practice*, Vol. 28 No. 6, pp. 533-552.

Gaglio, C.M. and Katz, J.A. (2001), "The psychological basis of opportunity identification: entrepreneurial alertness", *Small Business Economics*, Vol. 16 No. 2, pp. 95-111.

Gartner, W.B. (1989), "Who is an entrepreneur? Is the wrong question", *Entrepreneurship Theory and Practice*, Vol. 13 No. 4, pp. 47-68.

Goldstein, K. and Blackman, S. (1978), *Cognitive Style: Five Approaches and Relevant Research*, Wiley, New York, NY.

Greene, W.H. (2002), *Econometric Analysis*, 5th ed., Prentice Hall, New York, NY.

Hayes, J. and Allinson, C. (1994), "Cognitive style and its relevance for management practice", *British Journal of Management*, Vol. 5 No. 1, pp. 53-71.

Hayton, J., George, G. and Zahra, S.A. (2002), "National culture and entrepreneurship: a review of behavioral research", *Entrepreneurship Theory and Practice*, Vol. 26 No. 4, pp. 33-52.

Hofstede, G. (1980), *Culture's Consequences: International Differences in Work-Related Values*, Sage, Beverly Hills, CA.

Hofstede, G. and Hofstede, G.J. (2005), "Cultures and organizations, software of the mind', McGraw-Hill, New York, NY.

Huisman, D. (1985), "Entrepreneurship: economic and cultural influences on the entrepreneurial climate", *European Research*, Vol. 13 No. 4, pp. 10-17.

Kim, G. (2008), "Entrepreneurship and self-employment: the state-of-the-art and directions for future research", *New England Journal of Entrepreneurship*, Vol. 11 No. 1, pp. 39-52.

Koellinger, P., Minniti, M. and Schade, C. (2007), "I think I can, I think I can: overconfidence and entrepreneurial behaviour", *Journal of Economic Psychology*, Vol. 28 No. 4, pp. 502-527.

Kolvereid, L. (1996), "Prediction of employment status choice intentions", *Entrepreneurship Theory and Practice*, Vol. 21 No. 1, pp. 47-57.

Krueger, N.F. (1993), "The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability", *Entrepreneurship Theory and Practice*, Vol. 18 No. 1, pp. 5-21.

Krueger, N.F. (2000), "The cognitive infrastructure of opportunity emergence", *Entrepreneurship Theory and Practice*, Vol. 24 No. 3, pp. 5-23.

Krueger, N.F. (2003), "The cognitive psychology of entrepreneurship", in Acs, Z.J. and Audretsch, D.B. (Eds), *Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction*, Kluwer, London, pp. 105-140.

Krueger, N.F. and Brazeal, D.V. (1994), "Entrepreneurial potential and potential entrepreneurs", *Entrepreneurship Theory and Practice*, Vol. 19 No. 3, pp. 91-104.

Krueger, N.F., Reilly, M.D. and Carsrud, A.L. (2000), "Competing models of entrepreneurial intentions", *Journal of Business Venturing*, Vol. 15 Nos 5/6, pp. 411-432.

Kruger, J. and Evans, M. (2004), "If you don't want to be late, enumerate: unpacking reduces the planning fallacy", *Journal of Experimental Social Psychology*, Vol. 40 No. 5, pp. 586-598.

Liñán, F. and Chen, Y.W. (2009), "Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions", *Entrepreneurship Theory and Practice*, Vol. 33 No. 3, pp. 593-617.

Liñán, F. and Santos, F. (2007), "Does social capital affect entrepreneurial intentions?", *International Advances in Economic Research*, Vol. 13 No. 4, pp. 443-453.

McGrath, R., MacMillan, I. and Scheinberg, S. (1992), "Elitists, risk-takers, and rugged individualists? An exploratory analysis of cultural differences between entrepreneurs and non-entrepreneurs", *Journal of Business Venturing*, Vol. 7 No. 2, pp. 115-135.

Markman, G.D., Balkin, D.B. and Baron, R.A. (2002), "Inventors and new venture formation: the effects of general self-efficacy and regretful thinking", *Entrepreneurship Theory and Practice*, Vol. 27 No. 2, pp. 149-166.

Mitchell, R., Smith, B., Seawright, K and Morse, E. (2000), "Cross-cultural cognitions and the venture creation decision", *Academy of Management Journal*, Vol. 43 No. 5, pp. 974-993.

Mitchell, R.K. (1994), "The composition, classification, and creation of new venture formation expertise", PhD dissertation, Management Department, University of Utah, Salt Lake City, UT.

Mitchell, R.K., Busenitz, L., Lant, T., McDougall, P.P., Morse, E.A. and Smith, J.B. (2002), "Toward a theory of entrepreneurial cognition: rethinking the people side of entrepreneurship research", *Entrepreneurship Theory and Practice*, Vol. 27 No. 2, pp. 93-104.

Mueller, P. (2006), "Entrepreneurship in the region: breeding ground for nascent entrepreneurs?", *Small Business Economics*, Vol. 27 No. 1, pp. 41-58.

Mueller, S. and Thomas, A. (2001), "Culture and entrepreneurial potential: a nine country study of locus of control and innovativeness", *Journal of Business Venturing*, Vol. 16 No. 1, pp. 51-75.

Mueller, S.L., Thomas, A.S. and Jaeger, A.M. (2002), "National entrepreneurial potential: the role of culture, economic development and political history", in Hitt, M.A. and Cheng, J.L.C. (Eds), *Managing Transnational Firms: Resources, Market Entry and Strategic Alliances*, Vol. 14. JAI Press, Amsterdam, pp. 221-257.

Pfeifer, S. and Sarlija, N. (2010), "The relationship between entrepreneurial activities, national and regional development and firm efficiency-global entrepreneurship monitor (GEM)-based evidence from Croatia", *The Journal of Entrepreneurship*, Vol. 19 No. 1, pp. 23-41.

Ramayah, T. and Harun, Z. (2005), "Entrepreneurial intention among the students of USM", *International Journal of Management and Entrepreneurship*, Vol. 1 No. 1, pp. 8-20.

Reynolds, P., Bosma, N., Autio, E., Hunt, S., De Bono, N., Servais, I., Lopez-Garcia, P. and Chin, N. (2005), "Global entrepreneurship monitor: data collection design and implementation 1998-2003", *Small Business Economics*, Vol. 24 No. 3, pp. 205-231.

Ryan, T.R. (1970), *Intentional Behavior: An Approach to Human Motivation*, The Roland Press Company, New York, NY.

Sandhu, M.S., Sidique, S.F. and Riaz, S. (2011), "Entrepreneurship barriers and entrepreneurial inclination among Malaysian postgraduate students", *International Journal of Entrepreneurial Behaviour and Research*, Vol. 17 No. 4, pp. 428-449.

Sánchez, J.C. (2011), "Entrepreneurship as a legitimate field of knowledge", *Psicothema*, Vol. 23 No. 3, pp. 427-432.

Schaffer, B.S. and Riordan, C.M. (2003), "A review of cross-cultural methodologies for organizational research: a best practices approach", *Organizational Research Methods*, Vol. 6 No. 2, pp. 169-215.

Segal, G., Borgia, D. and Schoenfeld, J. (2005), "The motivation to become an entrepreneur", *International Journal of Entrepreneurial Behaviour and Research.*, Vol. 11 No. 1, pp. 42-57.

Segal, G., Borgia, D. and Schoenfeld, J. (2002), "Using social cognitive career theory to predict self-employment goals", *New England Journal of Entrepreneurship*, Vol. 5 No. 2, pp. 47-56.

Shane, S., Locke, E.A. and Collins, C.J. (2003), "Entrepreneurial motivation", *Human Resource Management Review*, Vol. 13 No. 2, 257-279.

Shapero, A. and Sokol, L. (1982), "The social dimensions of entrepreneurship", in Kent, C., Sexton, D. and Vesper, K. (Eds), *The Encyclopaedia of Entrepreneurship*, Prentice Hall, New York, NY, pp. 72-90.

Summer, D.F. (2000), *The Formation of Entrepreneurial Intentions*, Garland Publishing, New York, NY.

Tang, L. and Koveos, P. (2004), "Venture entrepreneurship, innovation entrepreneurship, and economic growth", *Journal of Developmental Entrepreneurship*, Vol. 9 No. 2, pp. 161-171.

Thomas, A.S. and Mueller, S.L. (2000), "A case for comparative entrepreneurship: assessing the relevance of culture", *Journal of International Business Studies*, Vol. 31 No. 2, pp. 287-301.

Thurik, A.R., Uhlaner, L. and Wennekers, S. (2002), "Entrepreneurship and its conditions: a macro perspective", *International Journal of Entrepreneurship Education*, Vol. 1 No. 1, pp. 25-64.

Van Auken, H., Fry, F.L. and Stephens, P. (2006), "The influence of role models on entrepreneurial intentions", *Journal of Developmental Entrepreneurship*, Vol. 11 No. 2, pp. 157-167.

Van Auken, H., Stephens, P., Fry, F.L. and Silva, J. (2006), "Role model influences on entrepreneurial intentions: a comparison between USA and Mexico", *International Entrepreneurship and Management Journal*, Vol. 2 No. 3, pp. 325-336.

Vecchio, R.P. (2003), "Entrepreneurship and leadership: common trends and common threads", *Human Resource Management Review*, Vol. 13 No. 2, pp. 303-327.

Wadeson, N.S. (2006), "Cognitive aspects of entrepreneurship: decision-making and attitudes to risk", in Casson, M. (Ed.), *The Oxford Handbook of Entrepreneurship*, Oxford University Press, Oxford and New York, NY, pp. 91-113.

Wennekers, S. and Thurik, R. (1999), "Linking entrepreneurship and economic growth", *Small Business Economics*, Vol. 13 No. 1, pp. 27-56.

Wennekers, S., Wennekers A., Thurik, R. and Reunolds, P. (2005), "Nascent entrepreneurship and the level of economic development", *Small Business Economics*, Vol. 24 No. 3, pp. 293-309.

Yusof, M., Sandhu, M.S. and Jain, K.K. (2008), "Entrepreneurial inclination of university students: a case study of students at UNITAR", *UNITAR E-Journal*, Vol. 4 No. 1, pp. 1-14.

Further reading

Cantillon, R. (1755), *Essai sur la Nature du Commerce in Général (Reprinted in – Essay on the Nature of Trade in General (1892)*, Harvard University, Boston.

Corresponding author

Dr Syed Zamberi Ahmad can be contacted at: drszamberi@yahoo.com