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RESEARCH PAPER

Examine influence of Student's Non-Cognitive trait and Cognitive Heuristic on the Entrepreneurial Ventures' initial set up decision.

Abstract

The present study is designed to examine the influence of non-cognitive characteristics, and cognitive heuristic i.e. learned by experience, demographic factors, entrepreneurial education and others on the entrepreneurial initial set up decision.

Research inference is derived from the samples of 150 entrepreneurial program students during the period 2011-2012 selected from University Malaysia Kelantan (UMK), University Putra Malaysia (UPM) and University Utara Malaysia (UUM).

Previous studies have endeavored to measure the effects of one or more variables on the key decision taking ability of entrepreneurs, but while the main implication of this study is to collect all related variables in an integrated model and to investigate cumulative effects of these variables on the entrepreneurial key decision taking ability of entrepreneurs. The present study findings are based on the cumulative effects of entrepreneur's non-cognitive attributes and cognitive notions and heuristics on the ability of entrepreneurial key decision taking ability which have not been investigated in previous studies yet.

Keywords: entrepreneurial key decision taking ability, Non-cognitive characteristics, Cognitive notions and Heuristics, Demographic factors.

Introduction

Today, entrepreneurship is regarded as one of the best economic development strategies to develop country's economic growth and sustain the country's competitiveness in facing the increasing trends of globalization (Schaper and Volery 2004; Venkatachalam and Waqif 2005). For most people, the popularity of entrepreneurship is largely due to the positive effects it has on many countries as a catalyst that creates wealth and the generation of job opportunities (Postigo and Tamborini 2002; Othman, Ghazali et al. 2005; Gurol and Atsan 2006). More specifically, entrepreneurship is a major engine driving many nations' economic growth, innovation and competitiveness (Scarborough and Zimmerer 2003; Kuratko and Hodgetts 2004). At the same time, most studies have shown there is a positive relationship between entrepreneurship and economic growth in terms of job creation, firm survival and technological change (Gorman, Hanlon et al. 1997; Lena and Wong 2003; Karanassios, Pazarskis et al. 2006).

Hence it is the aim of this research to contribute to the current literature by identifying the variables of entrepreneurship education that influence students' inclination towards entrepreneurship specifically in Malaysian settings. Taking the above statement into account, this paper primarily investigates if entrepreneurship education can be adequately influenced Malaysian university students' inclination towards entrepreneurship. Particularly, this paper aims and attempts to identify the influence of cognitive heuristic and non cognitive trait towards entrepreneurial inclination among Malaysian university students in UMK, UPM, UUM of the Peninsular Malaysia. The following section briefly discusses each attribute of non cognitive trait and cognitive heuristic that could have influence university students' inclination towards entrepreneurship. Each attribute is succinctly explained and followed by the hypothesized propositions for the study.

Literature review

Non Cognitive Factors Influencing Entrepreneurial disposition

Entrepreneurial Education

This, in turn, has increasingly made entrepreneurship emerged as one of the most popular research domain in academic circles to study on the importance and contributions of entrepreneurship (Lee, Chang et al. 2005). Courses in entrepreneurship are also becoming a popular at college and university levels (Brown 1999). An exponential interest in entrepreneurship studies has increased amongst both undergraduate and graduate students over the last decade (Solomon, Weaver et al. 2005). One of the key factors explaining this unparalleled phenomenon is the fact that wages employment or 'secure' employment is no longer a guarantee especially in the public sector for university graduates (Collins, Hannon et al. 2004; Kamau-Maina 2006; Postigo, Iacobucci et al. 2006).

Students are now apparently searching for a business education that can equip them with the necessary entrepreneurial knowledge and skills to succeed in running businesses or to create a job from seizing existing entrepreneurial opportunities (Brown 1999; Henry 2003). Therefore many universities and colleges around the world have responded to this demand by introducing entrepreneurial courses to students in an effort to promote entrepreneurship as well as a professional entrepreneurship career (Postigo and Tamborini 2002). For instance, in the United States, there are more than 1500 colleges and universities that offer courses in entrepreneurship and small business management to some 15,000 students (Scarborough and Zimmerer 2003; Kuratko 2005). Many dialogues, forums and training programmes organized by educational institutions are all in favour of entrepreneurship development apart from being the subject taught at colleges and universities (Landstrom 2005). Undoubtedly, all these are being done with one major goal, namely to foster entrepreneurial spirit and expect attitude change in students, after undertaking entrepreneurial courses. Students are also expected to value entrepreneurship as a personal and future career development alternative (Kantis, Postigo et al. 2002). Thus the hypothesis was developed:

H1: The entrepreneurial education increases the likelihood of Malaysian university students' to take entrepreneurial ventures' initial set up decision.

Attitudinal Characteristics and Demographic Factors Influencing Entrepreneurial inclination

Risk Propensity

Students personal attributes such as risk propensity was categorized under cognitive heuristic.

Risk-taking propensity has been 'conceptualized as one's orientation toward taking chances in a decision-making situation' (Sexton and Bowman 1985, p. 13) For example, Shane's (1996) historical study of the period from the late 19th through to the late 20th centuries found a positive relationship between risk-taking propensity and growth in the US national rate of entrepreneurship. Simon et al. (2000) suggest that factors affecting an individuals' perceived risk assessments include cognitive biases such as, overconfidence and the illusion of control. In their study, heuristics were stated to play a role in risk evaluation and it follows that an individual's previous entrepreneurial experience would be an important factor in this process. Thus the hypothesis was developed:

H2: The risk propensity increases the likelihood of Malaysian university students' to to take entrepreneurial ventures' initial set up decision.

Tolerance for Ambiguity

Students personal attributes such as tolerance for ambiguity was categorized under cognitive heuristic. Tolerance for ambiguity is found to be related to personal creativity (Zimmer, 1998) and the ability to produce more ideas during brainstorming. Wilkinson (2006) calls this ambiguity tolerance as "emotional resilience". Thus, individuals who are capable of making defensible decisions under uncertainty (when crucial pieces of information are unavailable or too costly to obtain) and view these situations as attractive rather than uncomfortable or threatening (while understanding the serious issue facing him or the organization) have a high level of tolerance towards ambiguity (Cresson Wood, 2008; Teoh & Foo, 1997). This ambiguity towards tolerance is quite vital when a business is set up for the first time since an unpredictable number of problems crop up and so it is important for the entrepreneur to be in possession of this trait (Shane et al., 2003). However, many studies show that entrepreneurs and those who are entrepreneurially inclined have a significantly greater capacity to tolerate ambiguity and hence it is believed that tolerance of ambiguity is an entrepreneurial characteristic (Koh, 1996; Schere, 1982) Thus the hypothesis was developed:

H3: The tolerance for ambiguity increases the likelihood of Malaysian university students' to take entrepreneurial ventures' initial set up decision.

Self Confidence

Students personal attributes such as self confidence was categorized under cognitive heuristic. Entrepreneurs are typically described as having self-confidence. Because they seek out and complete demanding tasks it is unlikely that they could do this successfully if they had low confidence. As noted by Cromie (2000), perhaps self-confidence is an outcome rather than a determinant of entrepreneurship. In the literature on entrepreneurship, it is stated that entrepreneurs demonstrate a higher degree of self-esteem with respect to others (Koh, 1996; Robinson et al., 1991). Self-confidence is an individual's believe in his own resources and abilities. In general, individuals who believed they are able and that they can and will do well are more likely to be motivated in terms of effort, persistence behavior than individuals who believe they are less able and do not expect to succeed (Pintrich, 2003). Ho and Koh (1992) have suggested that self-confidence is a necessary entrepreneurial characteristic and that it is related to other psychological characteristics. Empirical studies in the entrepreneurship literature have found entrepreneurs to have higher degree of self-confidence relative to non-entrepreneurs (Ho and Koh, 1992, Robinson et al., 1991a).

Thus the hypothesis was developed:

H4: The self confidence increases the likelihood of Malaysian university students' to take entrepreneurial ventures' initial set up decision.

Locus of Control

Locus of control refers to an individual's generalized expectations concerning where control over subsequent events resides. In other words, who or 'what is responsible for what happens. It is analogous to, but distinct from attributions. According to Rotter (1966), there are two aspects of locus of control: internal and external. Internal control expectations occur when an individual has got direct control over his life and when the outcome of his actions depends on his own performance or characteristics. External control expectations occur when an individual believe that life's events are the result of external factors such as fate, chance or luck. Rotter argued that internal locus of control is related to learning and so those individuals with an internal locus of control are more likely to be motivated and to strive for achievement than those with an external locus of control. An external locus of control hampers learning and encourages passivity. According to Wong and Sproule (1984), positive external control boost personal control and hence increases the expectation of success, while a negative external control hinders personal control. Levenson (1981), in his research on the locus of control construct, differentiated between internality, powerful others and chance, thus splitting external control into two separate dimensions. Withstanding all this disagreement on dimensions, a common picture that emerges from studies is that entrepreneurs generally have an internal locus of control and believe that they have the potential to influence their own destiny (Koh, 1996; Utsh & Rauch, 2000). Additionally, there are studies which reported that this characteristic can distinguish between entrepreneurs and non-entrepreneurs (Mueller & Thomas, 2000), between successful and

unsuccessful entrepreneurs (Brockhaus & Horwitz, 1986) as well as between entrepreneurially inclined and non-entrepreneurially inclined university students (Gurol & Atsan, 2006). Other studies found that locus of control did not distinguish between founders and managers (Begley, 1995) and between owners of new business and managers (Brockhaus, 1982)

Through the internal locus of control, an individual's attitude in handling his or her daily affairs influences his decisions and actions. Thus, one's internal locus of control is one's belief in one's ability to control one's future, self-confidence, commitment, and creativity, among many other things. Past research has down-played this attitude in determining individual's involvement level in entrepreneurship (Hisrich and Peters 1998). Hence, the internal locus of control is considered an important attitude and has an impact on choosing entrepreneurship as a career (Ab. Aziz and Zakaria 2004; van Praag et al. 2004). Thus the hypothesis was developed:

H5: The locus of control influences the likelihood of Malaysian university students' to take entrepreneurial ventures' initial set up decision

Need For achievement

Personality trait characterized by an enduring and consistent concern with setting and meeting high standards of achievement. This need is influenced by internal drive for action (intrinsic motivation), and the pressure exerted by the expectations of others (extrinsic motivation). Measured by thematic appreciation tests, need for achievement motivates an individual to succeed in competition, and to excel in activities important to him or her.

McClelland's (1961) theory of the need for achievement proposes that individuals who have a need to achieve seek to excel progress and perform. Such individuals set high but obtainable target and strive to attain them through their own efforts, are more concerned with the personal achievement rather than with the rewards of success, need regular feedback to monitor their progress of achievement and generally prefer to work alone or with other high achievers. This theory suggests that individuals that have a high need of achievement are more likely to seek out an entrepreneurial job rather than other roles. In fact, many studies have shown that entrepreneurs have a higher need for achievement than non-entrepreneurs (Robinson et al., 1991; Steward et al., 2003) and that entrepreneurially inclined persons have a greater need for achievement than those who are not entrepreneurially inclined (Gurol & Atsan, 2006). However, it has also been reported that this characteristics is not as effective in making the difference between firm founders and managers but could be helpful in determining entrepreneurial activity (Collins, Locke & Hanges, 2000).

The need for achievement is an important determining factor in choosing entrepreneurship as a career, as individuals' desire for appreciation corresponds to the needed motivation for becoming a successful entrepreneur (Davidsson 1995; McClelland 1961; Moorman and Halloran 1993). In this context, the

individual that possesses this need is said to be inclined to partake in exploratory efforts and be able to become a very successful entrepreneur (McClelland 1961). This characteristic, as shown by past research, increases self-satisfaction, readiness in facing challenges, and the freedom to determine the amount of effort needed to succeed in the chosen field (Ab. Aziz and Zakaria 2004).

Thus the hypothesis was developed:

H6: The need for achievement influences the likelihood of Malaysian university students' to take entrepreneurial ventures' initial set up decision

Demographic Factors Influencing Entrepreneurial inclination

Father's occupation

According to Scott *et al* (1988) and Plaschka (1990) those who want to own their own business are usually more likely to have parents as role models. Rosa (1993) and Morrison (1990) agreed with this, believing family play a significant role in helping new entrepreneurs with opportunities and resources such as finance and business contacts. Garavan *et al* (1997) further acknowledge the importance of parents to entrepreneurship, believing parents are the primary role models in the development of entrepreneurial personality and future career attitude. The importance of others was also noted by Curran (1996) as cited by Henderson and Robertson (2000) who found the attitude of family, friends, and neighbors are an essential influence on the young student when forming an attitude or perception. Phan, Wong and Wang (2002) agreed with this, finding attitude to be of extreme importance in the encouragement of entrepreneurship, arguing that educational effort should be made to develop the right attitudes and motivations towards entrepreneurship.

Shapiro (1975, 1982) argued that attitudes toward entrepreneurship depend on exogenous factors like demographics, traits, skills, culture, and social and financial support. Prior exposure to entrepreneurial activity would be included as one such factor. Prior exposure could be in the form of early exposure to a family business, which influences attitudes toward entrepreneurship (Krueger 1993 Drennan, Kennedy, and Renfrow (2005) found that those who reported a positive view of their family's business experience perceived starting a business as both desirable and feasible. They found that other childhood experiences that involved facing adversity or frequent relocation also had a positive effect on individuals' perceived autonomy and attitude toward self-employment. At the same time, it can be argued prior exposure in the form of direct experience in starting or attempting to start a new business would affect attitudes and perceptions about entrepreneurship as a career.

Besides the influence of demographic characteristics, there have been strands of studies revealing that an individual's family business background has a vital role in terms of influencing, motivating and

providing support for an individual's intention to be involved with entrepreneurial activity (Matlay 2005b; Rajjman 2001). For many people, family is a main source of information and provides funds as well as networks (Cuervo 2005; Sergeant and Crawford 2001). Furthermore, having being brought up by parents who owned a business, the children of these business-owning parents are expected to possess higher propensity to launch a business in the future (Rajjman 2001; Schindehutte et al. 2003; Van Auken et al. 2006; Veciana et al. 2005). Phan et al. (2002) indicate that Singaporean students who have parents with businesses are more likely to start up businesses after graduation compared to those whose parents have no business background. Breen (1998) supports Phan et al.'s findings, showing that Australian teenagers' family business background does influence their interest in becoming self-employed. The parents, in this instance, tend to be seen as good examples and potential sources of financial and unpaid labour for their children's ventures (Rajjman 2001; Sanders and Nee 1996). More specifically, numerous studies have shown that fathers' self-employment has stronger influence on their children's decisions to become entrepreneurs than mothers' self-employment (e.g., Dunn 2004; Kirkwood 2007). Thus the hypothesis was developed:

H7: The father's occupation influences the likelihood of Malaysian university students' to take entrepreneurial ventures' initial set up decision.

Working Experiences

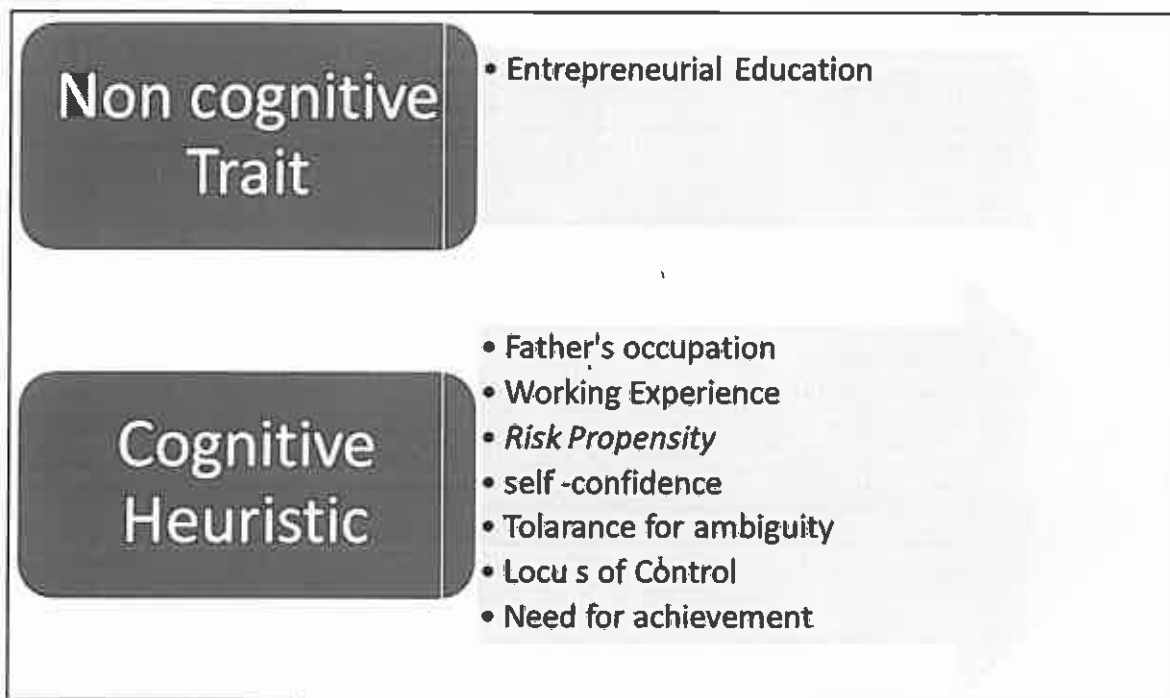
Dyer (1994) found working for an entrepreneur or knowing an entrepreneur had a positive impact on entrepreneurial career choice. Matthews and Moser (1995) found work experience an important factor in the encouragement of entrepreneurial activity, especially in small businesses. Madsen, Neergaard and Ulhoi (2003) agreed with this, recognizing the importance of work experience in the development of a business idea. It is suggested by Carter and Cachon (1988), as cited by Morrison (1998), that entrepreneurs often share common features and experiences of a social context, which distinguish them from other individuals. Nevertheless, there is a need to recognize the heterogeneous and diverse nature of entrepreneurship (Carson *et al.*, 1995).

Experience may have two different and opposite effects on entrepreneurial performance. On one hand, it can provide the entrepreneur with a set of guidelines or knowledge conducive to performance; on the other hand, it may create habits that are hard to change and may act as obstacles to adaptation and better performance (pp. 62–63). Taking Gasse's first remark, much research (e.g., Gasse 1982; Henry et al. 2003; Lena and Wong 2003; Mukhtar et al. 1999) has recognised that individuals' previous working experience positively or negatively influences entrepreneurial performance. Successful entrepreneurs may have acquired the necessary knowledge and skills to succeed in the ventures that they are already familiar with, and so would be able to capitalise on their experience in new ventures. Mukhtar et al. (1999) conclude that individuals with previous working experience tend to have higher inclination towards small- and medium-sized employment. Similarly, when studying MBA students'

preparedness for entrepreneurship at the Australian Graduate School of Entrepreneurship, Swinburne University, Thandi and Sharma's (2004) findings demonstrate that students who had working experience of at least five years considered themselves better prepared for entrepreneurial ventures than those with less or no working experience. However, in their study of entrepreneurial intention among university students, Kristiansen and Indarti (2004) found no statistically significant differences among Indonesian and Norwegian students with entrepreneurial intention in relation to whether or not they had work experience. Thus the hypothesis was developed:

H8: The working experience influences the likelihood of Malaysian university students' to take entrepreneurial ventures' initial set up decision.

CONCEPTUAL FRAMEWORK



Research Methodology

This paper aims to investigate the effects of entrepreneurs' motivational and attitudinal characteristics, their cognitive biases and heuristic and demographic factors on the entrepreneurial inclination. For this purpose, research implication was derived from implementing descriptive survey method, and since the main objective of the research was to test specific models of relations between variables, structural equation modeling (SEM) applied as research methodology.

The Sample, Data and Questionnaire

Unit of analysis in this study includes the top owner managers of superior Iranian entrepreneurial enterprises. The sample was selected from University Malaysia Kelantan's, University Putra Malaysia's and University Utara Malaysia's student's from the Faculty of Entrepreneurship and Business (related to 2010 and 2011) Student's in the sample were selected using simple random sampling which is a subset of individuals chosen from a larger set (Yates et al, 2008). Each individual was chosen randomly and entirely by chance, such that each individual had the same probability of being chosen during the sampling process.

A total of 150 surveys were distributed, and after analyzing the extent and pattern of missing data, the sample of 150 usable questionnaire were preserved by using the combined method of imputation (following the procedure from Antoncic and Hisrich, 2001).

The questionnaire which was released from an exploratory research conducted by Naila (2011) was addressed to the students of Bachelor's of Entrepreneurship program and anonymity was guaranteed.

Entrepreneurial program students were chosen as the key informants since they were likely to be the most knowledgeable with respect to the overall situation, activities, and orientations of their Entrepreneur's requirement . Completed questionnaires representing a response rate of 100%. Respondents with age 20- 30 formed 94% of the participant which mean the highest followed by age below 20 formed 4.7% and above 30 formed 1.3%. Male resspndent in this survey formed 28.7% of while female respondent formed 71.3% of the total respondent. Table 1 and 4 summarize the key demographic characteristics of the study sample.

Table 1: Age of Respondent

Age	Frequency	Percent	Cumulative Percent
Below 20	7	4.7	4.7
20-30	141	94	98.7
Above 30	2	1.3	100
Total	150	100	

In terms of age, the participants were categorized into 3 groups (Below 20, 20-30, Above 30). As the data shows in table 1, maoximum frequency relates to age group 20-30, followed by Below 20 and minimum frequency relates to age group 30 and above.

Table 2: Gender of Respondent

Gender	Frequency	Percent	Cumulative Percent
Male	43	28.7	28.7

Female	107	71.3	100
Total	150	100	

In terms of gender of respondents, as seen in Table 2 the maximum number of participants were females and less number of males.

Table 3: Father's occupation of the respondent

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid entrepreneur	3	2.0	2.0	2.0
government	43	28.7	29.3	31.3
private	22	14.7	15.0	46.3
self-employed	62	41.3	42.2	88.4
unemployed	17	11.3	11.6	100.0
Total	147	98.0	100.0	
Missing System	3	2.0		
Total	150	100.0		

In terms of father's occupation, participant's were categorized into five groups. As shown in Table 3, maximum frequency relates to respondent's father's being self-employed, followed by government occupation, and then private jobs, unemployed and finally the lowest frequency is the entrepreneur.

Table 4: Respondent's view of entrepreneurial education in the university

university	Mean	N	Std. Deviation
umk	3.7167	50	.97546
upm	3.5200	50	.56908
uum	3.5374	50	1.00073
Overall	3.5917	150	.86893

The overall score means of entrepreneurial education variables from respondent's from 3 different universities in Malaysia, ranging from 3.52 to 3.71 which is close to maximum mean i.e. 5.0, indicate that entrepreneurship education is an important tool in encouraging university

students to get involved with entrepreneurial activities. Specifically good exposure to entrepreneurship education among university students' seemingly create a positive image of entrepreneurship among them.

Case Processing Summary

		N	%
Cases	Valid	150	100.0
	Excluded ^a	0	.0
	Total	150	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.522	.588	6

Inter-Item Correlation Matrix

	Risky cha	making- decision	Take decision	Business exp	Be own master	Challenge myself
Risky challenges	1.000	-.246	.540	.291	.610	.472
Making decisoin	-.246	1.000	-.299	-.022	-.221	-.103
Take decision	.540	-.299	1.000	.126	.539	.350
Business experience	.291	-.022	.126	1.000	.273	.157
Be own master	.610	-.221	.539	.273	1.000	.414
Challenge myself	.472	-.103	.350	.157	.414	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Risky challenges	16.6600	6.749	.567	.497	.343
Making decision	17.8333	10.355	-.237	.105	.721
Take decision	16.6533	7.557	.387	.391	.431
Business experience	17.2600	6.623	.272	.108	.484

Be own master	16.4533	6.437	.538	.459	.337
Challenge myself	16.8067	7.419	.420	.255	.416

Mean	Variance	Std. Deviation	N of Items
20.3333	9.888	3.14454	6

Validity and Reliability

To measure validity of the questionnaire, first a sample of 150 questionnaires were sent to students selected from the university randomly. Students were requested to answer the questions and simultaneously express any ambiguity or error existing in the questionnaire. After receiving these modifications, the final questionnaires were prepared and applied for the final test.

In addition, in order to determine the reliability coefficient of questionnaire, Cronbach's Alpha method was applied and result showed that reliability coefficient for questionnaire is 95%, which indicates an acceptable reliability for questionnaire. Cronbach's Alpha for each variable listed in table 5.

Table 5: Reliability by Cronbach's Alpha Method

Variables (UMK+UPM+UUM)		Alpha's coefficient
1	Risk Propensity of the respondent	0.343
2	Tolerance for Ambiguity of the respondent	0.721
3	Self confidence of the respondent	0.431
4	Working experience of the respondent	0.484
5	Leadership of the respondent	0.337
6	Need For Achievement	0.416
	Overall	0.522

Cronbach's Alpha can take values between 0 and 1. The closer to 1, the more reliable the scale of our variables. There are a number of interpretations of what should be to ensure reliability of variable. In general most researchers agree 0.7 is acceptable. In our research, Alpha= 0.522 (refer ot Reliability Statistic table above), so the scale of our research is reliable.

Data Analysis and Findings

In order to measure and analyze Integrated model. A two-step procedure recommended by Anderson and Gerbing (1988) was applied. In the first step, confirmatory factor analysis method (CFA) conducted to develop measurement model and to demonstrate that this model fits to the data properly. Measurement model described the nature of the relationship between numbers of manifest indicators, which their role is to measure main variable.

In second step, the structural model was tested and revised until a theoretically meaningful and statistically acceptable model was found. It should be noted that we applied LISREL8.7 for SEM analysis and SPSS18 for descriptive analysis of participants (See table 2-4).

Confirmatory Factor Analysis Findings

Because there is no clear consensus as the best fit indices for the evaluation of measurement model, confirmatory factor analysis were used to establish an acceptable measurement model and to determine whether mediating indicators can properly measure variables which are integrated in the model.

As mentioned earlier integrated model includes eight variables. Each of them was measured by some mediating indicators. CFA analysis showed that factor loadings for indicators related to risk propensity are between 65% and 92%. Factor loadings for indicators related to tolerance for ambiguity are between 99% and 118%. Factor loadings for indicators related to self-efficacy are between 65% and 92% and factor loadings for indicators related to need for cognition are between 72% and 88%.

Also, Factor loadings for indicators related to the age are between 13% and 94%, for education are between 83% and 94%, for overconfidence are between 55% and 90%, for leadership is between 62% and 110% and finally factor loadings for indicators related to entrepreneurial strategic decision making are between 73% and 93%. Also, it should be noted that all the factor loadings of the mediators were statistically significant at the .05 level. So according to these findings, measurement model demonstrated an acceptable fit to the data and mediating indicators properly measure variables in the integrated model.

Also, it should be noted that all the factor loadings of the mediators were statistically significant at the .05 level. So according to these findings, measurement model demonstrated an acceptable fit to the data and mediating indicators properly measure variables in the integrated model.

Findings from Structural Equation Modeling Analysis

As mentioned earlier, structural equation modeling applied for testing and estimating causal relations between variables, using a combination of statistical data and qualitative causal assumptions. Also it should be noted that assessment of fit is a basic task in SEM modeling which means forming the basis for accepting or rejecting models. So in this part the integrated model was tested against the obtained measurement data to determine how well the model fits the data.

As Bollen and Long (1993) stated, the output of structural equation modeling includes matrices of the estimated relationships between variables in the model. So in present study assessment of fit calculated to clarify how the predicted data are similar to matrices containing the relationships in the actual data. Fit indices which are listed in table 6 have been developed for these purposes. It is worth to note that each variables of the model can also be examined within the structural equation modeling in order to see how well the proposed model fits the driving theory. Actually structural equation modeling makes such tests of the integrated model possible.

Table 6: Fit Indices for Model

Fit Index	Acceptable Limit based on Various Studies	Results for model
Adjusted Goodness of Fit Index (AGFI)	Between 0-1, but leaning towards 1 is better	
Goodness of Fit Index GFI	Between 0-1, but leaning towards 1 is better	
Comparative Fit Index (CFI)	Larger than 90% is acceptable and shows the fitness of model	
Root Mean Square Error of Approximation (RMSEA)	For good models, it is equal to or less than 0.05	
Incremental Fit Index (IFI)	Between 0-1, but leaning toward 1 is better	
Normative Fit Index (NFI)	Larger than 90% is acceptable and shows the fitness of model	

Based on structural equation modeling, adjusted goodness of fit index is

Discussion and Conclusion

The present study undertook to investigate attitudinal characteristics, cognitive biases and heuristics and demographic factors on the quality of entrepreneurial strategic decision making.

As mentioned earlier, each of the previous studies attempted to measure the effect of one or more of these variables (Risk propensity, Tolerance for ambiguity, Self-efficacy, Need for cognition, Representation, Overconfidence, Experiences, Age, and Education) on the quality of

entrepreneurial strategic decision making. While the main implication of this study is to collect all related variables in an integrated model and to investigate the cumulative effects of these variables on the quality of entrepreneurial strategic decision making. Thus, our findings are based on cumulative effects of entrepreneurs' motivational and attitudinal characteristics, cognitive biases and heuristics and demographic factors on the quality of entrepreneurial strategic decision making, which have not been investigated by previous studies yet. As a result the findings of this study differ from previous studies. The results are clearly described in the following:

Based on the findings obtained from confirmatory factor analysis, measurement model demonstrated an acceptable fit to the data and the mediating indicators properly measure variables in the integrated model.

Regarding the evidence resulted by applying structural equation modeling, there are causal relationships between variables in the integrated model. Also based on relevant Indices for model specially AGFI =0.92, RMSEA=0.97, NFI=0.97, IFI =0.90, and CFI=0.98, it is established that integrated model has acceptable consistency with the data. Acceptable integrated model based on present research with proper indices are shown in figure 2.