

ENTREPRENEURIAL INTENTION OF ENGINEERING STUDENTS IN MALAYSIAN POLYTECHNICS INSTITUTIONS: A THEORY OF PLANNED BEHAVIOR APPROACHED

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ABSTRACT

The issue on unemployment graduates is a serious issue in this era of globalization. To address this problem and in line with the goals of Vision 2020, entrepreneurship is one area that is given special attention by the Malaysian government in employment creation. In accordance with government's seriousness in developing potential entrepreneurs as building blocks for a more resilient economy, undertaking this study is deemed timely in order to identify the level of entrepreneurial intentions among students. Thus, the study was conducted to determine whether the final year diploma students in the area of engineering at the Malaysian Polytechnic Institutions have the intention to become entrepreneur upon graduation. Therefore, this study proposed the entrepreneurial intention among students can be explained by Ajzen's (1991) Theory of Planned Behavior. This study also trying to investigate the role of attitudinal factors such as attitudes, subjective norms and perceived behavioral control, mediate the relationship between psychological characteristics and entrepreneurial intention. For the purpose of this study, survey method was employed and 217 questionnaires were used in the statistical analyses. Based on regression analysis it was found that the hypothesized linkage between psychological characteristics and entrepreneurial intention was fully supported, while, the role of attitudinal factors mediate the relationship between psychological characteristics and entrepreneurial intention was partially supported. Implications and limitations of the findings are specified. Finally, the findings of this study are suggested for future study.

Keywords: Entrepreneurial Intention, Psychological Characteristics, Theory of Planned Behavior.

INTRODUCTION

In the Outline Perspective Plan 3 (2001-2010), the Malaysian government's aspiration is to produce knowledgeable human resource with high moral values and Malaysia enable to become a fully developed nation by the year 2020. It also acts as a catalyst to enable the nation to compete in the era of globalisation as well as to deal with the challenges of the current global economic scenario.

At present, the Malaysian government has built more than twenty public universities throughout the country and until 2007 a total of nearly five hundred thousand graduates have successfully obtained a degree in their field. Similarly, in 2008, a total of 19,060 polytechnic diploma graduates have successfully completed their studies (www.mohe.gov.my). Apparently this condition is forced graduates to compete for more limited job opportunities. Additionally, as indicated by Human Resources Minister Datuk Dr. S. Subramaniam, there were 40,000 unemployed graduates failing to find a suitable job.

The above scenario shows that one of the main social development problems facing the Malaysian government is unemployment graduates. Thus, entrepreneurship is seen as a potential career to solve and reduces the unemployment problem (Utusan Malaysia, May 22, 2008). According to Amanat Tahun 2009 by the Minister of Higher Education, Dato' Seri Mohamed Khaled Nordin, about training, internship and entrepreneurship programmes must be encouraged to the Malaysian University Students to changing their mindset as to view self-employment as a viable alternative to salaried employment. This is in line with the finding of previous studies in entrepreneurship has been seen as a major source of job creation (McMullan *et al.*, 1985) and economic development (Gibb, 2002). However, the reverse occurs when the percentage of polytechnic graduates become entrepreneur tends

to decrease from the year 2003 to 2007 at around 16 percent down to 8 percent (MOHE, 2008). Why is the percentage of polytechnic graduates who enter the entrepreneurship sectors still small?

During recent years, the process-based approach of studying entrepreneurial intentions has become increasingly widely used (Davidsson, 1995). Most studies related to the intention towards a more entrepreneurial focus to business management students who already had exposure in the basic knowledge of entrepreneurship (Kolvereid and Moen, 1997). For example, as the study conducted by Mahmood and Bakar (2002) which seeks to identify whether there is a final year student majoring in Business Management has an interest in the entrepreneurship after graduation. Hence, the question arose, with the minimum exposure in the basic knowledge of entrepreneurship will affect the entrepreneurial intention among engineering students. Thus, this study focuses on entrepreneurial intention among engineering students in the Malaysian Polytechnics Institutions. This study also indicated particularly the influence of psychological characteristics on entrepreneurial intention which mediates by attitudinal factors such as attitudes, subjective norms and perceived behavioral control (Ajzen and Fishbein, 1980).

LITERATURE REVIEW

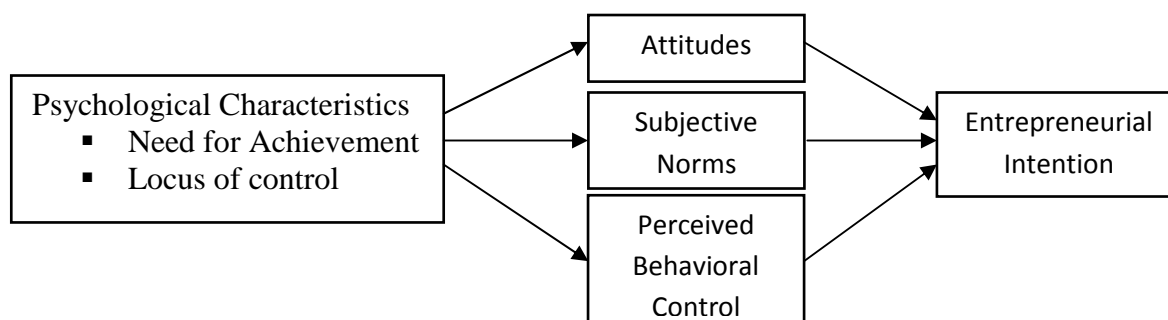
Theory of Planned Behavior based on the premise that all human behavior is planned and because it is preceded by the intention of the behavior (Fishbein and Ajzen 1975). Intention is a function of the device three factors: attitude, subjective norms, and perceived behavioural control. Attitudes are defined as the beliefs and perceptions about the willingness to personal behavior, which in turn related to expectations about the impact of personal decisions as a result of behaviour. Then, subjective norms or perceived social norms are defined as the perceived perception about individual values, confidence, and norms held by those who they think are important respect or individual desire to comply with the norms. An individual's perception of social normative pressures, or relevant other's beliefs that he or she should or should not performed such behavior. Next, perceived behavioral control is defined as personal confidence about the ability to plan and implement behavior perception that behavior in the decision-making control. An individual's perceived ease or difficulty to maintain the behavior. In sum, as forecast by TPB, attitudes, subjective norms, and perceived behavioral control towards entrepreneurship all displayed statistically significant positive correlations with entrepreneurial intent (Gird and Bagraim, 2005). The independent variables in TPB also all show significant positive correlations with one another.

Entrepreneurship can be viewed as a process that occurs over time (Kyro, 2003). In this understanding, entrepreneurial intentions will be the first step in developing and sometimes download from long-term business creation (Lee and Wong, 2004). For the purpose of start-up, then, will be the first decisive element of entrepreneurial behavior (Fayolle *et al.*, 2006). Additionally, intention to behave will be one of the best predictive tools for behavior (Fishbein and Ajzen, 1975). Since the decision to become an entrepreneur can be considered reasonable as voluntary and conscious (Krueger *et al.*, 2000), it seems reasonable to analyze how the decision was taken. A number of conceptual models structure the various factors that influence this process (Bygrave, 1998).

Need for achievement (McClelland, 1961) and locus of control by Rotter (1966) are among the characteristics that have received the most attention in the entrepreneurship literature (Shaver and Scott, 1991). Studied by McClelland (1961) suggested the key to entrepreneurial behaviour lie in achievement motivation. Individuals who have a strong need to achieve are among those who want to solve their own problems, set goals and strive to achieve these targets through their own efforts, show higher performance in tasks that challenge and innovative in finding meaning for new and better ways to improve their performance (Littunen, 2000). While, locus of control as studied by Leone and Burns (2000) is a psychological characteristic that is related to the generalized expectations of a person on whether he or she will be able to control the events in life. Individual who are reluctant in believing in their ability to control the environment though their actions would also be expected to be reluctant to assume the risks that starts a business entails (Mueller and Thomas, 2000).

From the literature reviews, the following theoretical framework and hypotheses are formulated.

Figure 1: Theoretical framework



- H1: Psychological characteristics will have a direct and positive effect on intention to become entrepreneur.
- H2: Psychological characteristics will have a direct and positive effect on attitudes.
- H3: Psychological characteristics will have a direct and positive effect on subjective norms.
- H4: Psychological characteristics will have a direct and positive effect on perceived behavioral control.
- H5: Attitudes will have a direct and positive effect on intention to become entrepreneur.
- H6: Subjective norms will have a direct and positive effect on intention to become entrepreneur.
- H7: Perceived behavioral control will have a direct and positive effect on intention to become entrepreneur.
- H8: Attitudes will mediate the influence of the psychological characteristics on intention to become entrepreneur.
- H9: Subjective norms will mediate the influence of the psychological characteristics on intention to become entrepreneur.
- H10: Perceived behavioral control will mediate the influence of the psychological characteristics on intention to become entrepreneur.

METHODOLOGY AND RESEARCH DESIGN

Survey based methodology was employed in this study and 217 students have been chosen as respondents. The study population consisted of all the final year diploma students in the field of engineering and were registered during the academic year 2010-2011. The sample was selected randomly among the final year students from the seven Malaysian Polytechnic Institutions in Malaysia. The questionnaire consists of four sections which were personal details, entrepreneurial intention, psychological characteristics and attitudinal factors. All questionnaires were usable for data analysis.

Factor analyses were undertaken for the study variables. Then, the reliability coefficients, and inter-correlations for each factor were computed. Additionally, most of the inferential statistical techniques require the fulfilment of the fundamental assumptions of normality. Finally, the hypotheses were subsequently tested using hierarchical regression analysis (Cohen & Cohen, 1975). The regression tests of mediation that were used in this study was a causal-steps test by Baron and Kenny's (1986), will looked the critical factors of entrepreneurial intention among the students in this study.

RESULTS

Principal component factor analysis with varimax rotation was conducted to validate whether the psychological characteristics are conceptually distinct while confirmatory factor analysis was

conducted to validate attitudinal factors and entrepreneurial intention and all items were forced into one factor. After deleting certain question items, the Kaiser-Meyer-Olkin values for every variables exceed 0.6, the Bartlett's Test of Sphericity is greater than 0.05, the anti-image correlation of items is greater than 0.05, the communalities of items greater than 0.05, the minimum factor loading is 0.50 considered significant, and the eigenvalues is more than 1 for factor analysis extraction. On the other hand, a cut-off point of 0.35 is observed for cross-loadings (Igbaria et al., 1995).

When observed on reliability test in this study found that all the Cronbach's alpha values for the constructs were ranged from 0.718 to 0.937 and acceptable since they exceed the minimum recommended level of 0.6 (Sekaran, 2003). Hence, data collected from the study are reliable and obtained acceptable level of internal consistency.

All the correlation coefficient of the psychological characteristics and attitudinal factors had significant positive correlations with entrepreneurial intention. The results of the skewness show that the normal curve was bell-shaped and was within +/- 3.5 standard deviations from its mean (Hair, 2010). Most of the kurtosis values do not exceed the threshold of +/- 10 (Hoyle, 1995) and from the both tests the data can be described as reasonably normal.

Through a series of hierarchical regression analyses, a four-step procedure in mediation analyses suggested by Baron and Kenny (1986) were employed in order to test the hypotheses in this study. The regression results are shown in Table 1 to Table 4.

Table 1: Regression Analysis between Psychological Characteristics and Entrepreneurial Intention

Independent to Dependent Effects	Entrepreneurial Intention		
	Attitudes (N=217)	Subjective Norms (N=216)	Perceived Behavioral Control (N=216)
	Std. β	Std. β	Std. β
Need for Achievement	0.243***	0.253***	0.253***
Locus of Control	0.192**	0.186**	0.206**
R ²	0.161	0.164	0.178
Adj. R ²	0.153	0.156	0.171
F Value	20.510***	20.885***	23.115***

*** $p < 0.01$ and ** $p < 0.05$ and * $p < 0.10$

Table 1 presents the regression results of testing H1. The R² value range of 0.16 to 0.18 was obtained suggesting that 16% to 18% of the variance in entrepreneurial intention explained by the psychological characteristics. Both variables in psychological characteristics were found significant and positive effects on entrepreneurial intention: need for achievement ($\beta = 0.24$ to 0.25 , $p < 0.01$), and locus of control ($\beta = 0.19$ to 0.21 , $p < 0.05$). Thus, H1 was fully supported.

Table 2: Regression Analysis between Psychological Characteristics and Attitudinal Factors

Independent to Mediating Effects	Attitudes (N=217)	Subjective Norms (N=217)	Perceived Behavioral Control (N=214)
	Std. β	Std. β	Std. β
Need for Achievement	0.217**	0.200**	0.189**
Locus of Control	0.185**	0.160*	0.242***
R ²	0.137	0.110	0.159
Adj. R ²	0.129	0.102	0.151
F Value	16.989***	13.221***	19.886***

*** $p < 0.01$ and ** $p < 0.05$ and * $p < 0.10$

As shown in Table 2, to test H2, H3 and H4, psychological characteristics were regressed on attitudinal factors. The R² value of 0.14 was obtained suggesting that 14% of the variance in attitude explained by psychological characteristics. Need for achievement ($\beta = 0.22$, $p < 0.05$) and locus of control ($\beta = 0.19$, $p < 0.05$) were found significant and positive effect on attitude. Therefore, H2 was fully supported.

For H3, the R² value of 0.11 was obtained suggesting that 11% of the variance in subjective norms explained by psychological characteristics. Both variables of psychological characteristics: need for achievement ($\beta = 0.20$, $p < 0.05$) and locus of control ($\beta = 0.16$, $p < 0.10$) were found significant and positive effect on subjective norms. Hence, H3 was fully supported.

The R² value of 0.16 was obtained suggesting that 16% of the variance in perceived behavioral control explained by psychological characteristics. Need for achievement ($\beta = 0.19$, $p < 0.05$) and locus of control ($\beta = 0.24$, $p < 0.01$) were found significant and positive effect on perceived behavioral control. Thus, H4 was fully supported.

Table 3: Regression Analysis between Attitudinal Factors and Entrepreneurial Intention

Mediating to Dependent Effects	Entrepreneurial Intention		
	Std. β	Std. β	Std. β
Attitudes (N=217)	0.636***		
Subjective Norms (N=216)		0.675***	
Perceived Behavioral Control(N=217)			0.568***
R ²	0.405	0.456	0.322
Adj. R ²	0.402	0.454	0.319
F Value	146.096***	179.484***	102.195***

*** $p < 0.01$ and ** $p < 0.05$ and * $p < 0.10$

Table 3 illustrates attitudinal factors reveal significant statistical influence on entrepreneurial intention: attitudes ($\beta = 0.64$, $p < 0.01$), subjective norms ($\beta = 0.68$, $p < 0.01$), and perceived behavioral control ($\beta = 0.57$, $p < 0.01$).

The R² value of 0.41 was obtained suggesting that 41% of the variance in entrepreneurial intention explained by attitudes, 46% of the variance in entrepreneurial intention explained by subjective norms (R² = 0.46) and 32% of the variance in entrepreneurial intention explained by perceived behavioral control (R² = 0.32). Therefore, H5, H6 and H7 are accepted.

From Table 4 below, to test the mediating effects of attitudinal factors in the relationship between psychological characteristics and entrepreneurial intention as required in H8, H9 and H10.

Table 4: Regression Analysis between Psychological Characteristics and Attitudinal Factors on Entrepreneurial Intention

Independent and Mediating to Dependent Effects	Entrepreneurial Intention		
	Std. β	Std. β	Std. β
Need for Achievement	0.120*	0.137**	0.160**
Locus of Control	0.88	0.082	0.116
Attitudes (N=217)	0.565***		
Subjective Norms (N=216)		0.608***	
Perceived Behavioral Control(N=216)			0.497***
R ²	0.436	0.493	0.397
Adj. R ²	0.428	0.486	0.389
R ² Change	0.276	0.329	0.219
F Value	54.974***	68.639***	46.612***
F Change	104.134	137.400	77.092

*** $p < 0.01$ and ** $p < 0.05$ and * $p < 0.10$

To test for H8, when the mediating variable attitudes ($\beta = 0.57$, $p < 0.01$) was entered into the regression equation, the R² value increased to 0.44 suggesting that 28% (R² change = 0.28) of the variance in entrepreneurial intention is being explained by the mediating variable attitudes. The effect of locus of control became insignificant ($\beta = 0.88$, $p > 0.10$) in the presence of mediating variable attitudes while need for achievement ($\beta = 0.12$, $p < 0.10$) was found significant and positive effect on entrepreneurial intention. The β value is smaller than the β value from Table 1 ($0.12 < 0.24$), thereby, implying partial mediation. Hence, H8 is partially supported.

To test for H9, when the mediating variable subjective norms ($\beta = 0.61$, $p < 0.01$) was entered into the regression equation, the R² value increased to 0.49 suggesting that 33% (R² change = 0.33) of the variance in entrepreneurial intention is being explained by the mediating variable subjective norms. In the presence of mediating variable subjective norms, the effect of locus of control became insignificant ($\beta = 0.82$, $p > 0.10$) while need for achievement ($\beta = 0.14$, $p < 0.05$) was found significant and positive effect on entrepreneurial intention. The β value is smaller than the β value from Table 1 ($0.14 < 0.25$), thereby, implying partial mediation. Thus, H9 is partially supported.

To test for H10, when the mediating variable perceived behavioral control ($\beta = 0.50$, $p < 0.01$) was entered into the regression equation, the R² value increased to 0.40 suggesting that 22% (R² change = 0.22) of the variance in entrepreneurial intention is being explained by the mediating variable perceived behavioral control.

The effect of locus of control became insignificant ($\beta = 0.12$, $p > 0.10$) in the presence of mediating variable perceived behavioral control while need for achievement ($\beta = 0.16$, $p < 0.05$) was found significant and positive effect on entrepreneurial intention. The β value is smaller than the β value from Table 1 ($0.16 < 0.25$), thereby, implying partial mediation. Hence, H10 is partially supported.

DISCUSSION AND CONCLUSION

The two objectives of this study were to investigate the linkage between psychological characteristics and entrepreneurial intention, and to test whether attitudinal factors serves to mediate the relationship between psychological characteristics and entrepreneurial intention.

In terms of the linkage between psychological characteristics and entrepreneurial intention, the statistical results obtained in this study showed that the psychological characteristics of the students have significant and positive effects on their intention to become entrepreneur after they graduated. These findings are consistent with those of previous researchers (Davidson, 1995; McClelland, 1961; Rotter, 1966). There has been much discussion about 20 out of 23 major studies in the entrepreneurship literature found a fairly consistent relationship between need for achievement and entrepreneurship (Shaver and Scott, 1991). In a student sample, according to Bonnett and Furnham (1991), internal locus of control was found to be positively associated with the desire to become an entrepreneur.

Similarly, need for achievement and locus of control were found significant and positive effect on attitudinal factors. Subsequently, attitudinal factors (attitudes, subjective norms and perceived behavioural control) have significant and positive effects on entrepreneurial intention. These finding is in tandem with previous researchers (Ajzen, 1991; Kolvereid, 1996).

In this study, attitudes, subjective norms and perceived behavioral control were found to mediate partially the relationship between need for achievement and entrepreneurial intention. In other words, need for achievement might has a direct relationship on entrepreneurial intention via attitudinal factors of attitudes, subjective norms and perceived behavioral control. However, in this study, there were no mediating role of attitudinal factors (attitudes, subjective norms and perceived behavioral control) found in the relationship between locus of control and entrepreneurial intention.

The findings show that the attitudinal factors which approached to the components of Theory of Planned Behavior appeared to be significant variables to predict entrepreneurial intention. Thus, it is important to translate this into activities that can help improve that attitudes toward behavior related to entrepreneurial intention, elevate the environment to boost the social norms and exposed students to acquire skills that can support their perceived behavioral control.

The results of this study also have implications for educators looking to gain a better understanding of students' psychological characteristics, attitudes toward behavior, perception of subjective norms, perceived behavioral control, and intention to become entrepreneur. Findings from this study offer a better understanding of the factors that can lead students towards forming the entrepreneurial intention after graduation.

This study concentrated only for locus of control and need for achievement as variables of the psychological characteristic that influenced the entrepreneurial intention by the mediator of attitudinal factors approached by the components of Theory of Planned Behavior. Hence, future researchers might need to widen the scope of psychological characteristics like self-confidence, risk-taking, innovativeness and tolerance for ambiguity due to enhance our understanding of entrepreneurial intention. However, we assume that the effect of this variable is mediated by the components of Theory of Planned Behavior in influencing entrepreneurial intention.

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