THE ROLE OF ENTREPRENEURIAL ORIENTATIONS IN TALENT RETENTION AMONGST MALAYSIAN ENGINEERS

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Abstract

This paper examines the linkage between entrepreneurial orientation (EO) and talent retention amongst Malaysian engineers from the perspective of entrepreneurial orientation theory.A cross-sectional survey of 104 engineers from private organisations in Malaysia was conducted to test the hypothesised relationships between constructs. The population comprised graduate and professional engineers who were registered under the Board of Engineers Malaysia (BEM). The purposive sampling method was employed for data analysis purposes. Data was analysed using partial least square-structural equation modelling technique. The results of this study indicated a significant relationship between innovativeness, proactiveness, risk-taking, and competitive aggressiveness and the intention to stay (ITS). Autonomy was found not significant in predicting engineers' ITS the same jobs. Engineers require EO to support their freedom of ideas and thoughts to exploit opportunities, produce creativity, and solve engineering task-related problems and uncertainty situations. EO dimensions can be used to predict engineers' ITS current employments. This study provides crucial information for the organisations and policy makers to develop mechanisms and policies to enhance the engineers' involvement of effective EO for increasing retention behaviours and career satisfaction. As the EO of engineers' increase, the ITS will also increase.

Keywords: *Engineers, Entrepreneurial orientation, Intention to stay, Talent, Malaysia*

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Introduction

Over thirty years ago, studies relating to behaviours, attitudes, and traits had become a central issue underlying engineers' complex behaviours and attitudes, career orientations, and employee shortages in the engineering sector (Abdull Rahman, 2012; Igbaria & Siegel, 1992; Igbaria, Kassicieh, & Silver, 1999; Kharbanda, & Stallworthy, 1990; and Williamson, Lounsbury, & Han, 2013). Attention was given to engineers' perceiving their engineering paths to be meaningful career experiences, and how core entrepreneurial orientation (EO) components influenced their career expectations, job performance, and job satisfaction. EO requires an engineer to optimise powerful technical knowledge and skills to develop capabilities and competencies to an extent that he or she can be an independent expert to solve engineering and non-engineering task-related problems. Engineering requirements are created and used to determine engineers' career orientations (e.g., technical, managerial role, entrepreneurial, project, and hybrid orientation), as all these components determine their greater work values for engineers (Alavi, Moteabbed, & Arasti, 2012). Evidence suggests that engineers' EO are a crucial component for the entrepreneurial process, successful entrepreneurial organisations and decisions to remain for the one's job tenure (Menzel, Aaltio, & Ulijn, 2007; Tremblay, Wils, & Proulx, 2002; and Yang, Ma, & Hu, 2011).

It is believed that the use of EO is likely to resolve the quitting behaviours of engineers to move to another job. If an organisation knows how to control the engineers' EO within an organisation, low job performance, and turnover behaviours can be avoided (Lee, 1994). In the literature, organisations employed EO for measuring performance, growth, and productivity (Antoncic & Antoncic, 2011; Entebang, Harrison, & Run, 2010; and Jia, Wang, Yu, 2014). However, Kollman, Christofor, and Kuckertz (2007) argued that a successful entrepreneurial organisation gains from an individual's participation in EO processes and activities. The impact of technology has influenced organisations to consider certain types of individual behaviours and attitudes for successful EO (Grip & Smits, 2012; Menzel, et al., 2007; and Oyedele, 2010). Relying on individual behaviours and attitudes, in some characteristics, supports the power of key individuals recognising the competitive business demands (e.g., technology, skills) and optimising organisational resources. In creating in-house EO, engineers apply freedom to innovate things and cultivate proactive solutions to solve uncertainties in task-related problems. In addition, engineers employ a high degree autonomy to control engineering task-related problems and participate in decision-making processes (Kharbanda et al., 1990; Igbaria, et al., 1992; Tremblay, et al., 2002; and Williamson et al., 2013).

Serious involvement of organisations in the engineers' EO would deal with a clear path of engineers turning towards positive behavioural intentions. Critical questions have vigorously challenged many scholars to overlook adapting EO within an organisational area to predict intention to stay (ITS) amongst engineers. Logical predictions of how employee shortages can be controlled by organisations is by connecting the engineers' behaviours with their employment expectations. As mentioned earlier, if an engineer applies for EO, it possibly has a significant implication on his or her ITS towards his or her current employment. Previous conceptual study, qualitative and empirical research has clearly acknowledged the research gaps between the influences of EO and individuals' (e.g., entrepreneurs, students, and teachers) entrepreneurial intentions and job performance (Bolton & Lane, 2012; Elenurm, 2012; Kollman et al., 2007; and Wu, 2009). From a theoretical gap, too, the EO theory has not clearly defined and expended the use of EO for predicting individual behavioural intentions. Despite the importance of managing engineers' behaviours and attitudes, no attention has been paid to the role of EO from an individual analysis in predicting engineers' ITS. Being limited only to EO from an individual level (e.g., engineer) and its influence to ITS, hence, this study has been aimed at investigating the influence of EO (e.g., innovativeness, proactiveness, risk-taking, autonomy, and competitive aggressiveness) on ITS amongst Malaysian engineers in private organisations.

Literature Review

Talent can be defined as a person who has high skills, knowledge, and expertise in producing and innovating ideas (Festing & Scha¨fer, 2014). He or she can be an excellent performer and a valuable asset to help organisations lead with core competencies (Dries, 2013; and Hiltrop, 1999). Talent exists in a rare, unique, and exceptional form and talent cannot be imitated (Collings & Mellahi, 2009; Govaerts, Kyndt, Dochy, & Baert, 2011; Guidice, Heames, & Wang, 2009; and Udo, Guimãrães, & Igbaria, 1997). From an organisational level, talent retention is one of the crucial talent management activities and it has received a critical attention to retain talents (Gelens, Dries, Hofmans, & Pepermans, 2013; Lewis & Heckman, 2006; and Zhang & Bright, 2012). Talent retention is defined as a process of encouraging talented individuals to remain with the same employment (Gangrade, Dubey, & Chouhan, 2014; and Sahi & Mahajan, 2014). The term talented individuals can be referred to as a key individual's characteristics and traits, namely, high expertise, specialised skills, innovative and creative (Abdull Rahman, 2012; Alavi et al., 2012; Igbaria et al., 1992; and Williamson et al., 2013). Talent characteristics assist many scholars to describe engineers as talented workers. A talented engineer is a key component in the workforce in the nation, and he or she has a wider knowledge, skill, and expertise in his or her field (Abdull Rahman, 2012; Igbaria et al., 1992; and Williamson et al., 2013).

It is essential to note that, an engineer obtains a high level of autonomy, creativity and innovation, and has a strong determination of his or her career paths. Often, in an emerging knowledge economy, engineers are called professional workers and knowledge workers (Abdull Rahman, 2012; and George, 2015). One of the greatest challenges is that, organisations continuously hide engineers' talent and creativity for producing innovative activities and product development (Menzel et al., 2007; and Tremblay et al., 2002). The adverse impact of separating talent and creativity affects engineers' determination for career satisfaction and turnover behaviours towards current employments in a short period (Williamson et al., 2013). Loosing talented engineers will lead an organisation to suffer from investing huge costs for replacing new entrants. Despite being costly, importing a new entrant has a number of several limitation potentials. First, organisations might spend a long time to expect the same level of performance from leavers and new entrants, and second, a huge gap of performance might exist between the expected and actual performance.

Intention to Stay

As Chang and Chang (2008) states, "*intention is a special thing or action with a special attitude or means, purpose, or plan in the individual heart*". Intention to stay (ITS) refers to an employee's consciousness and willingness to stay in the same job and organisation on a long-term basis (Tett & Meyer, 1993). It has been considered as the best predictor of the actual turnover behaviour of an employee. There is a strong possibility that using ITS for predicting actual behavioural intentions will estimate almost 99 percent of employees who will permanently continue with their intentions to stay with the same employment (Price & Mueller, 1981). Previous research comparing ITS and turnover intentions (e.g., intention to leave) has found that the antecedents used for turnover intentions are probably not significant for increasing ITS amongst employees. Research has consistently shown that ITS lacks usage in predicting positive behavioural intentions. Consequently, a huge sum of money should be spent to recruit new employees for replacement if one of the existing employees leaves his or her current job. Throughout this study, the term ITS will refer to an engineer's willingness to stay with his or her current employment.

Extending the EO theory on Individual Talent Retention

Theorising entrepreneurial behaviours within organisations can be explained and generated from the EO theory. EO relates to an organisation's strategic orientation which concerns entrepreneurial aspects, such as decision-making styles, processes, practices, and methods (Lumpkin & Dess, 1996). An early study of Covin and Slevin (1986) argued that entrepreneurship has become an essential feature of a high-performance organisation. Risk-taking, innovativeness, and proactiveness are the main features, and each feature is linked to an organisation's willingness to take high risk projects, be bold and aggressive in exploiting opportunities, and initiate actions to which competitors respond. To lead in the competitive marketplace, Lumpkin et al. (1996) argued that additional components of EO, such as autonomy and competitive aggressiveness, complete the EO for a new business entry to perform well in a dynamic business environment. The wise EO components, such as innovativeness, proactiveness, risk-taking, autonomy, and competitive aggressiveness, can be employed as a successful strategy if a new entry integrates these behaviours with environmental factors (e.g., dynamic, munificence, complexity, and industry characteristics) and organisational factors (e.g., size, structure, strategy, strategy-making process, firm resources, culture, and top management team characteristics).

In an analysis of EO, Davis, Bell, Payne, and Kreiser (2010); Entebang et al. (2010); Jia et al. (2014); Khalili, Nejadhussein, and Fazel (2013); and Kropp, Lindsay, and Shoham (2006) found that innovativeness, proactiveness, autonomy, risk-taking, and competitive aggressiveness have a positive and significant relationship with organisational performance, growth and productivity. With a flexible function of EO, other researchers measured EO components in predicting an individual's entrepreneurial intention and job performance, for example, Bolton et al. (2012); Elenurm (2012); Kollman et al. (2007); and Wu (2009). Preliminary work on EO from an individual analysis was undertaken by (Kollman et al., 2007). They showed that EO constructs can be transferred to measure individual performance. In their discussions of EO from an individual analysis, the efforts to develop an entrepreneur within an organisation must take into consideration cultural, political, and legal environments, and macro and micro economy factors. A few scholars now argue that theorising in-house EO through the EO theory will drive the intended consequences of individual entrepreneurial intentions, job performance, and career satisfaction (Bolton et al., 2012; Kollman et al., 2007; and Williamson et al., 2013). This present study postulates that transferring EO into engineers' entrepreneurial behaviours will increase ITS and career satisfaction towards their current employment. In the present report, the definitions of EO dimensions used for the study have been taken from Lumpkin et al. (1996); and Rauch, Wiklund, Lumpkin, and Frese (2009) shown in Table 1.

Table 1. EO Dimensions

Dimensions	**Definitions**
Innovativeness	Tendency to engage in and support new ideas, novelty, experimentation and creative processes that may result in new products, services or technological processes
Proactiveness	Tendency to lead rather than follow in the development of new procedures and technologies, and introduction of new products or services.
Risk-taking	Tendency to undertake risky projects and management preferences for acting boldly in order to achieve organizational objectives

Autonomy	Independent action of an individual or a team bringing forth of idea or a vision and carrying it through to competition
Competitive aggressiveness	Propensity to directly and intensively challenge its competitors to achieve entry or improve position to outperform industry rivals in the marketplace

The Relationships between EO and ITS amongst Engineers

Increasing EO activities from within is likely to control the internal mobility of key employees from leaving recent organisations (Yi, Sheu, & Zhi, 2009). There is the potential limitation of decreasing EO affecting an engineer's interest to continue his or her career with the same employment. To develop engineers as intrapreneurs, the organisation must encourage EO for engineers to secure their career potentials and ways to innovate and create new ideas and thoughts. It is believed that EO are an important element for engineers' career satisfaction and positive behavioural intentions (e.g., ITS) within an organisation. This section explains further the relationships between EO and ITS from an individual analysis. Figure 1 shows the research model of the current study.

Innovativeness and ITS

Innovativeness is defined as willingness to support creativity, experimentation, and creative activities in producing new products, services, and new technology (Lumpkin et al., 1996). From an individual's perspective, innovative behaviours pursue an individual's ability to explore new opportunities, creatively (Bolton et al., 2012). Kollman et al. (2007) claimed that an individual's attitude towards innovation is an important determinant for EO. Innovation lets individuals have the ability to pursue new opportunities and creativity. Bolton et al. (2012) revealed that innovativeness was a dominant element of EO. The results of collections showed that, 1,102 students' innovativeness behaviours were positively correlated with entrepreneurial propensity at 0.36**. Wu (2009) examined EO amongst 337 college students in Nanjing, China and there was a positive and significant relationship between innovativeness and EO ($r=0.55$). There is some evidence that innovativeness directly influences retention outcomes on individual employees. For example, Shih and Susanto (2011) studied the impact of innovative work behaviour (IWB) on turnover intentions amongst 135 Indonesian workers in manufacturing and pharmaceutical organisations. The findings revealed that IWB had a negative impact on turnover intentions ($ß=0:20; p<0.05$). Engineers' innovativeness will promote ideas and strategies and transform their ideas into tangible business results (e.g., profit). Moreover, engineers need the freedom to be creative and original, and permanently involved in any innovation and changes within organisations (Alavi et al., 2012; Igbaria et al., 1992; Kharbanda et al., 1990; Menzel et al., 2007; and Williamson et al., 2013). Thus, the following hypothesis is proposed:

H1: Innovativeness is positively related to engineers' ITS.

Proactiveness and ITS

As Lumpkin et al. (1996) states: "*proactiveness refers to an opportunity seeking, forward-looking perspective which involves the introduction of new products or services ahead of competition and acting in anticipation of future demand*". Strategies to enhance individual proactive behaviour related to taking a chance, proactively implementing and solving ideas, and innovation. Griffin, Neal, and Parker (2007) added that, the advantages of being a proactive individual is that, he or she identifies efficient work methods, suggests ways to improve the work team, and participates in many projects to improve an entrepreneurial organisation's practices and activities. Investigating the proactive behaviour and behavioural intentions of engineers has received a limited attention. In the literature, the influence of proactive behaviour connects with innovative work behaviour. Proactive behaviours capture the engineers' creativity in solving routine and non-routine engineering-related problems (Campbell, Gluesing, & Perelli, 2012; Menzel et al., 2007; and Williamson et al., 2013). Proactiveness enhances the engineers' ability to think conceptually. Difficulties arise when modern organisations are not engaged with proactive behaviours, as a result, the effective individual performance (e.g., turnover) cannot be guaranteed (Crant, 2000). Bolton et al. (2012); and Wu (2009) shared common thoughts of how proactiveness affects the individuals' entrepreneurial intentions. Association between proactiveness and individual behavioural intentions (entrepreneurship) will help individuals recognise more opportunities and avoid unwanted employment problems. The higher the proactive behaviours of individuals (e.g., engineers), the less likely it is that engineers will leave their current employment. Hence, we propose that:

H2: Proactiveness will positively relate to the engineers' ITS.

Risk-taking and ITS

Risk-taking refers to a tendency to take bold actions into unknown new markets, committing a large portion of resources to ventures with uncertain outcomes (Lumpkin et al., 1996). Risk-taking exists in different situations, namely, venturing into the unknown, heavy borrowing, and committing large amounts of corporate assets in uncertain environments. A number of researchers have characterised risk-taking into several forms. These include: operations that are generally seen as involving high risks; strong inclination towards high-risk projects; maintaining preference for acting to achieve organisational objectives; maintaining a bold, aggressive posture to maximise the probability of exploiting potential opportunities; taking financial risks that require that the organisation obtains large loans in order to grow; taking personal risks; and embracing risk-taking behaviour that involves major financial commitments to achieve high returns by grabbing opportunities. Risk-taking behaviour assumes individual risks and willingness to make commitments (Bolton et al., 2012). A consequence of implementing risk-taking behaviour is shaping the engineers' ability to predict uncertain situations and task-related problems that can lead to a higher satisfaction and ITS (Igbaria et al., 1992). Despite this, engineers tend to solve daily technical problems using their conscious and sub-conscious mental systems to create interesting and enjoyable environments (Campbell et al., 2012; and Kharbanda et al., 1990). Assigning interesting tasks have positively influenced the engineers' job involvement and career satisfaction ($r=0.32, p<0.01$), and has been negatively correlated to the intention to leave ($r=-0.30, p<0.01$) (Igbaria et al., 1992). Hence, based on the literature, it is hypothesised that:

H3: A higher level of risk-taking by engineers will lead to higher ITS.

Autonomy and ITS

Autonomy refers to the independent action of an individual or a team bringing forth the idea or vision and carrying it through to competition (Lumpkin et al., 1996). Autonomy empowers an individual with the freedom to make a decision and the power to control each decision he or she makes. As an entrepreneur, autonomy reflects an individual's self-managing, creativity, looking for more opportunities, and being an employee champion for effective EBs within an organisation. A mutual agreement of being an entrepreneur, he or she must be able to be autonomous. Khalili et al. (2013) believes that a significant amount of autonomy affects an individual's goal achievement and the challenging nature of the job; as all these motivational factors lead to a higher level of job satisfaction. For Bolton et al. (2012) autonomy, however, has failed to predict an individual's entrepreneurial intention due to lower consistency (0.208). This result, however, does not affect other researchers' attempts to explore this behaviour. Surveys conducted by Hashim and Wok (2015) have reported that higher job satisfaction amongst engineers will increase if engineers participate in organisational decision-making processes (85 percent). Opportunities to express his or her ideas in a certain organisational major decision will support engineers who work longer with the same employer. Job challenges, creativity, and autonomy are the main ingredients for engineers to create job satisfaction and higher intentions to remain (Udo et al., 1997). Participation by engineers in any decision-making process will make them recognise potential problems and solutions to the related engineering-tasks. Autonomy is the core of the engineers' career preferences (Tremblay et al., 2002). Autonomy exerts a powerful effect on ITS through improving the EO within an organisation. Based on these arguments, it is hypothesised that:

H4: Autonomy has a positive and significant relationship with engineers' ITS.

Competitive Aggressiveness and ITS

Competitive aggressiveness is a necessary element to lead in performance over competitors. In other words, competitive aggressiveness reflects the power of a firm's effort to outperform rivals in the marketplace (Lumpkin et al., 1996). Organisations with a lower competitive aggressiveness would be limited with the innovation process (e.g., searching, selecting, and learning processes). Additional competitive aggressiveness in EO activities provides an organisation's willingness to be conventional to rely heavily on traditional methods to compete with other rivals. The important implication of the competitive aggressiveness definition has leveraged more attempts from scholars to relate to organisational performance, growth, and productivity. From an individual's effectiveness (e.g., job performance and satisfaction), competitive aggressiveness is used for predicting individual (e.g., student) entrepreneurial intentions (Bolton et al., 2012; Elenurm, 2012; and Zhang et al., 2012). However, competitive aggressiveness behaviour failed to predict individual entrepreneurial intentions (Bolton et al., 2012). Much uncertainty, however, still exists about the effect of competitive aggressiveness and its influence on ITS amongst engineers. In view of this, the next proposed hypothesis is:

H5: Competitive aggressiveness is positively and significantly related to ITS amongst engineers.

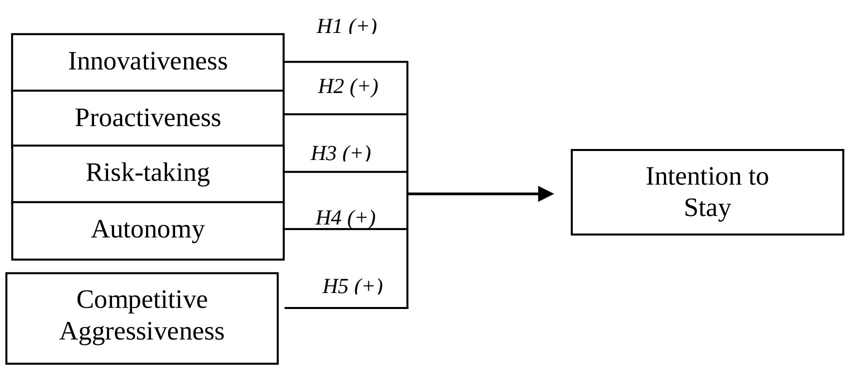

Figure 1. Research Model

Methodology

Samples and Research Procedures

An exploratory study was designed to answer the primary objective to examine the influence of entrepreneurship on talent retention amongst engineers. The population for this study was the engineers who had registered with the Board of Engineers Malaysia (BEM). Before distributing the questionnaires, researchers issued a consent letter to the human resource (HR) representatives of the targeted private organisations to seek an approval to distribute the questionnaires to their engineers. Confidentiality was ensured to the respondents and the organisations. The selection of the samples was on the basis of the purposive sampling method, and the responses obtained were subjected to a quantitative analysis. A total of 112 responses were obtained from 300 questionnaires. From the 112, 8 were discarded and only 104 were considered for analysis. This yielded a response rate of 34.67 percent.

Measures and Instruments

The scale used to measure the items was rated on a 7-point Likert response scale ranging from 1 (strongly disagree) to 7 (strongly agree). Table 2 presents the variables and items used for the analysis. The scales for measuring the five dimensions of entrepreneurship were derived from the EO theory. This scale consisted of innovativeness (seven items), proactiveness (seven items), risk-taking (six items), autonomy (four items), and competitive aggressiveness (five items). All items used were on the seven-item scale developed from previous studies (Covin et al., 1986; and Lumpkin et al., 1996). Six items were used from the scale developed by Govaerts et al. (2011) to measure the ITS.

Examples of items used for the EO are as follows: a) innovativeness-"*My organisation has a strong intention to encourage and stimulate technological, product-market, or administrative innovation"; "My organisation engages in innovative behaviours and activities";* b) proactiveness -"*My organisation adopts creative methods of running business ahead of competitor*s"; "*My organisation is proactive";* c) risk-taking-"*My organisation commits a large portion of its resources in order to grow"; "My organisation encourages risk-taking behaviours";* d) autonomy-"*My organisation develops independent work units to enhance creative thinking"; "My organisation develops effective ways to allow employee and project team access to the needed resources to try out their new ideas";* e) competitive aggressiveness-*"My organisation adopts a price-cutting strategy to enhance a competitive position"; "My organisation routinely adopts a highly competitive, "undo-the-competitive" posture against threatening competition";* and f) ITS-*"If I wanted to do another job or function, I would look first at the* *possibilities within this company"; "If it were up to me, I would definitely be working for this company for the next five years".*

Table 2. Variables and Instruments

Variables	Sources	Item (n)
Innovativeness (INNO) INNO1, INNO2, INNO3, INNO4, INNO5, INNO6, INNO7	Covin et al. (1986); and Lumpkin et al. (1996)	1-7 (7 items)
Proactiveness (PROAC) PROAC1, PROAC2, PROAC3, PROAC4, PROAC5, PROAC6, PROAC7	Covin et al. (1986); and Lumpkin et al. (1996)	8-14 (7 items)
Risk-Taking (RISK) RISK1, RISK2, RISK3, RISK4, RISK5, RISK6	Covin et al. (1986); and Lumpkin et al. (1996)	15-20 (6 items)
Autonomy (AUTO) AUTO1, AUTO2, AUTO3, AUTO4	Covin et al. (1986); and Lumpkin et al. (1996)	21-24 (4 items)
Competitive Aggressiveness (COMP) COMP1, COMP2, COMP3, COMP4, COMP5	Covin et al. (1986); and Lumpkin et al. (1996)	25-29 (5 items)
Intention to Stay (ITS) ITS1, ITS2, ITS3, ITS4, ITS5, ITS6	Govaerts et al. (2011)	30-35 6 items)

Data Analysis Procedure

The data were analysed using SmartPLS 3.2.6, a variance–based structural equation modelling (SEM) to test the hypotheses of the study (Hair, Hult, Ringle, & Sarstedt, 2014). The reasons for adopting Smart-PLS were: a) capable to handle reflective and formative measures; b) able to accommodate the small sample size; and c) to predict the relationships between variables. It also can simultaneously testing the two models: a) measurement; and b) structural model.

Results

From a total of 104, 85 participants (81.7 percent) were graduate engineers (81.7 percent) whilst 19 (18.3 percent) represented professional engineers. The total sample was comprised of 85 males (81.7 percent) and 19 females (18.3 percent), 55.8 percent of the participants were aged between 26 and 35 years old, 57

(54.8) percent were married, and the majority of the participants were Malays (82 percent). The majority of the participants or 83 (79.8 percent) had a graduate degree, 60 participants (43.3 percent) were working in Melaka and 45 (43.3 percent) of the participants had between 1 to 5 years' experience. Manufacturing firms were the highest (38.5 percent) contribution for this study. Table 3 presents the demographic profile.

Table 3. Demographic Profile (N=104)

Category	Frequency	Percentage
Status of Designation		
Graduate Engineer	85	81.7
Professional Engineer	19	18.3
Gender		
Male	85	81.7
Female	19	18.3
Age		
<25 years old	9	8.7
26-35 years old	58	55.8
36-45 years old	26	25.0
46-55 years old	9	8.7
> 56 years old	2	1.9
Marital Status		
Single	46	44.2
Married	57	54.8
Divorced	1	1.0

Race		
Malay	82	78.8
Chinese	17	16.3
Indian	5	4.8
Education Level		
Diploma	16	15.4
Bachelor Degree	83	79.8
Master Degree	4	3.8
PhD	1	1.0
Length of Service		
1-5 years	45	43.3
6-10 years	25	24.0
11-15 years	21	20.0
> 16 years	13	12.5
Location		
Johor	19	18.3
Kuala Lumpur	4	3.8
Melaka	60	57.7
Selangor	21	20.2
Specification of Business		
Accounting/Finance/Banking	1	1.0
Arts/Media/Communication	1	1.0
Building/Construction	14	13.5
Computer/IT	2	1.9
Electrical & Electronics	13	12.5
Manufacturing	40	38.5
Oil & Gas	24	23.1
Sciences	1	1.0
Others	8	7.7

The Measurement Model

First, we assessed internal consistency (Composite Reliability), indicator reliability, convergent validity (AVE), discriminant validity (HTMT) and multicollinearity assessment. As reported in Table 4, factor loadings of each item exceeded 0.70, ranged between 0.712 and 0.935. It means the items used for measuring the constructs have satisfactory internal consistency reliability. For indicator reliability, items with loadings below 0.70 were removed and the items were *INNO1*, *INNO*6, *RISK3*, *AUTO*3, *COMP1* and *COMP5*. Composite reliability for each construct was ranged between 0.878 and 0.939, and these threshold values were above 0.70. For the AVE, the values exceeded 0.50, ranged between 0.629 and 0.755.

Next, we assessed the discriminant validity of the scales based on HTMT, as a new approach to assess the discriminant validity for variance-based SEM. This results indicated that the present study has adequate convergent validity since the value lower than 0.85. Table 5 presents the correlation estimates for the HTMT. The results show that the correlations between constructs were ranged between 0.611 and 0.802, and it was indicated that the discriminant validity was met the criteria for the HTMT assessment. For the multicollinearity assessment, the value of the Variance Inflation Factor (VIF) must be below than 0.50. Table 5 shows the VIF results that the mean values for each construct were ranged between 2.243 and 3.655. Therefore, the values of VIF posited that each of the independent variables (innovativeness, proactiveness, risk-taking, autonomy, and competitive aggressiveness) did not have a multicollinearity with its dependent variable (ITS). Table 4 presents the values of VIF.

Table 4. Assessment results of the measurement model

Constructs/Items	**Loadings**	**CR**	**AVE**	**VIF**
Innovativeness (INNO)		0.939	0.755	3.655
INNO2	0.815			
INNO3	0.876			
INNO4	0.935			
INNO5	0.864			
INNO7	0.852			
Proactiveness (PROAC)		0.935	0.673	3.321
PROAC1	0.843			
PROAC2	0.799			
PROAC3	0.831			
PROAC4	0.712			
PROAC5	0.825			
PROAC6	0.870			
PROAC7	0.852			
Risk-taking (RISK)		0.900	0.644	2.647

RISK1	0.749			
RISK2	0.773			
RISK4	0.768			
RISK5	0.859			
RISK6	0.857			
Autonomy (AUTO)		0.879	0.708	2.243
AUTO1	0.824			
AUTO2	0.864			
AUTO4	0.836			
Competitive Aggressiveness(COMP)		0.878	0.706	2.621
COMP2	0.784			
COMP3	0.846			
COMP4	0.888			
Intention to Stay (ITS)		0.894	0.629	-
ITS1	0.804			
ITS2	0.716			
ITS3	0.877			
ITS4	0.808			
ITS6	0.751			

Table 5. Discriminant Validity (HTMT)

Latent Constructs	**AUTO**	**COMP**	**INNO**	**ITS**	**PROAC**	**RISK**
AUTO						
COMP	***0.802***					
INNO	0.762	***0.698***				
ITS	0.610	0.461	***0.698***			
PROAC	0.746	0.692	0.893	***0.645***		
RISK	0.757	0.890	0.688	0.609	***0.611***	

Note: AUTO-Autonomy; COMP-Competitive Aggressiveness; INNO-Innovativeness; ITS-Intention to Stay; PROAC-Proactiveness; RISK-Risk-taking

The Structural Model

A structural model of PLS was examined each of the hypothesis to test the relationship between constructs that operationalised as latent variables (LVs). We performed the bootstrapping with a re-sampling 5000 for 104 cases to obtain the path estimates, standard errors and the *t-statistics* to report the significant relationships between variables. To evaluate the structural models' explanatory power, we calculated the R^2, the amount of variance explained by the exogenous variable (ITQ), whilst predictive power, we assessed path coefficient (β), predictive relevance (Q^2) and relative impact (q^2).

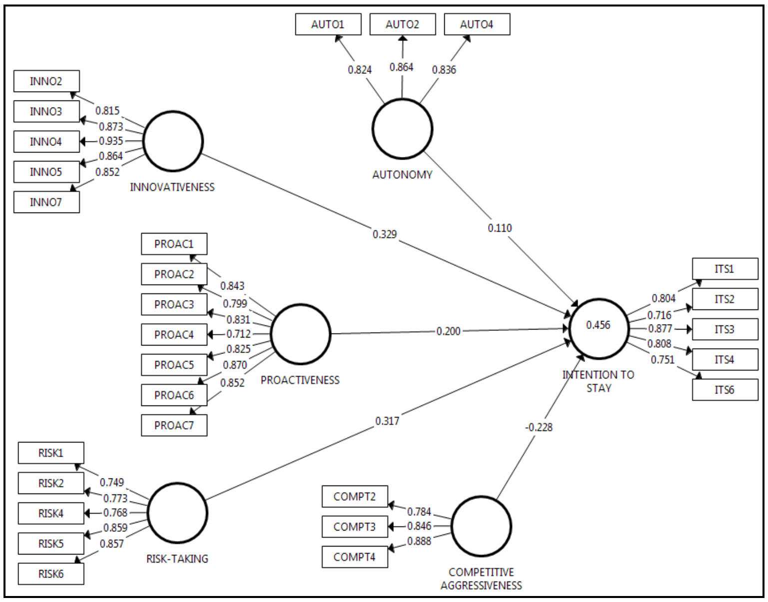

Figure 2: The PLS-Algorithm Results

For explanatory power, the LVs (e.g. innovativeness, proactiveness, risk-taking, autonomy, and competitive aggressiveness) were explained 45.6 percent of the variance, with R^2 (0.456). Next, we measured the effect size (f^2) to witness the impact of the exogenous latent variables for the endogenous latent variables. The formula used for calculating the effect size was ($f^2 = R^2$ *included*$-R^2$ *excluded* $/ 1-R^2$ *included*). The guidelines of the effect size are as follows: 0.35-large; 0.15-medium; and 0.02-small (Hair, Hult, Ringle, and Sarsted, 2014). From the path model, the effect size of risk-taking ($f^2=0.061$), innovativeness ($f^2=0.045$), competitive aggressiveness ($f^2=0.021$) and proactiveness ($f^2=0.020$) were found to have small effect size on ITS. However, autonomy ($f^2=0.007$) did not provide at least a small effect size on ITS.

Table 6 presents mixed results the path coefficients, observed t-statistics and the significance level of the hypothesized relationships between variables. From the analysis, it was found that innovativeness ($\beta=0.329$; $t=2.222$, $p<0.05$) was positively related to ITS. Therefore, hypothesis *H1* was supported. Similarly, *H2* ($\beta=0.200$; $t=1.688$, $p<0.05$), *H3* ($\beta=0.317$; $t=2.479$, $p<0.05$) and *H5* ($\beta=-0.228$; $t=1.851$, $p<0.05$) reported that proactiveness, risk-taking and competitive aggressiveness had a positive and significant relationships on engineers' ITQ, therefore these three hypotheses were accepted. However, H4 has to be rejected as the data did not support the influence of autonomy on ITS amongst engineers ($\beta=0.110$; $t=0.959$). The predictive relevance of the Stone-Geisser's (Q^2) test of ITS was obtained by the blindfolding procedure, and the value was 0.421, and it indicated that the predictive relevance of the PLS path model. Figure 3 shows the bootstrapping results.

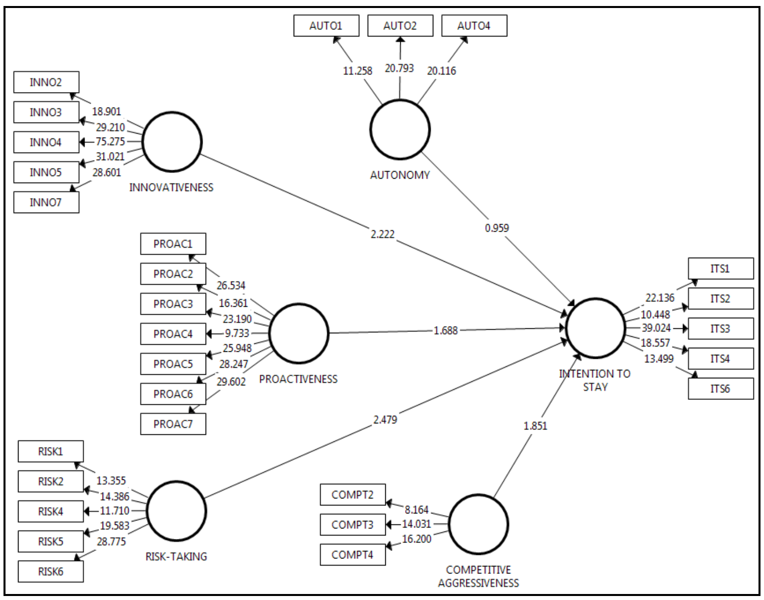

Figure 2. The PLS-Bootstrapping Results

Table 6. Results of path coefficients and observed t-statistics

Hypothesis	Relationships	Path Coefficient	t-value	Results
H1	Innovativeness→ Intention to Stay	0.329	2.222*	Supported
H2	Proactiveness→ Intention to Stay	0.200	1.688*	Supported
H3	Risk-taking→ Intention to Stay	0.317	2.479*	Supported
H4	Autonomy→ Intention to Stay	0.110	0.959	Not Supported
H5	Competitive Aggressiveness→ Intention to Stay	-0.228	1.851*	Supported

*Note: *p <0.05, **p <0.01, ***p <0.001*

Discussion and Conclusion

The present study was designed to fill the gaps of EO literature and its influence on talent retention amongst engineers in Malaysia. Malaysian engineers' positive behavioural intentions (e.g., ITS) depend on their EO. The positive relationships between EO (e.g., innovativeness, proactiveness, risk-taking, and competitive aggressiveness) and ITS have proved the arguments from previous studies (for example, Abdull Rahman, 2012; Bolton et al., 2012; Kollman et al., 2007; Igbaria et al., 1992; and Shih et al., 2011). This present study concludes that engineers' ITS could be enhanced by practising EO within an organisation. As the EO of an engineer increases, it is probable that his or her ITS will also increase. Engineers with higher innovative behaviours will support exceptional ideas and novelty, and transform them into profitable products. Innovative behaviours support engineers' creativity to design the jobs and tasks to match their specific engineering knowledge and skills, and general competencies. In addition, an engineer with proactive behaviour will act in his or her capacity to anticipate future problems and needs. As an agent of change, engineers see environmental issues as powerful demands for upgrading themselves with more skills and experience to work through those changes. An important source to make an engineer bold in his or her performance is his or her readiness to deal with uncertain situations and risks.

Autonomy and ITS, unfortunately, had no significant relationship. This present study believes that a considerable amount of autonomy will boost engineers' independent behaviours to resolve engineering task-related problems. From an individual's perspective, EO should strive for a high degree of autonomy, emphasising the individual's attitude towards innovation and involving the amount of risk to produce challenges and interesting tasks. Other than that, the individual needs to exploit the business opportunities and the need for achievement in his or her career orientations. Bigliardi, Petroni, and Dormio (2005); Igbaria et al. (1992) and Kharbanda et al. (1990) have seen engineers' behaviours as unique, unpredictable, and full of challenge. Whole phases of the engineer's life cycle within an organisation will be determined by several aspects, such as personality, socialisation, technical investment, learning and development, and career orientations (Abdull Rahman, 2012; Korte & Li, 2015; and Williamson et al., 2013). Even though engineers' behavioural studies remain scarce, these aspects must be considered to improve the engineers' actual expectations, satisfaction, and positive retention outcomes. Unquestionably, by exposing talents (e.g., skills, knowledge, experience), engineers are able to identify flaws, develop solutions, and entertain ways to control task-related problems. Several thoughts from early studies (for example, Igbaria et al., 1992; and Kharbanda et al., 1990) argued that matching entrepreneurial characteristics and traits will enhance the entrepreneurial spirit amongst engineers.

The results supply crucial information to organisations as a fundamental means to understand engineers' behaviours and attitudes towards employment. The empirical results have revealed that EO support engineers' intention to remain in their current jobs and organisations. Unexpected findings were found in engineers' crucial behaviours. For example, the engineers' expectations towards innovativeness, proactiveness, risk-taking, and competitive aggressiveness should be involved in their tasks and responsibilities. Although previous studies have confirmed that EO influence organisational performance (e.g., profit) and growth, none of the available literature provides a link between EBs and talent retention amongst engineers. The pure behaviours of engineers generally relate to a freedom to innovate things, facing uncertain situations, and exposing their creativity to technical knowledge. EO will emphasise the engineers' ability to overcome task-related challenges and act parallel to industrial demands. Moreover, with the emergence of technological, product, and administrative innovation, it has been claimed that many organisations must support the engineers' readiness to adopt ideas, and recognise and balance risks. These behaviours expose engineers to new huge career opportunities where talent competitiveness requires engineers to upgrade themselves new skills and knowledge to compete. Technology, for example, has been a crucial player in the competitive marketplace, and has influenced engineers' awareness about filling in the gaps of having core engineering skills and competencies to support their employment and behavioural expectations.

Implications and Recommendations

To date, organisations suffer from investing internal cost for recruiting and selecting new talented engineers to replace those who have left, and most probably the new staff may not have acquired the same talents. Cases of engineer migration to other firms have exposed firms to a higher turnover, and employers depend highly on their current experts. The dramatic increase in the need of engineers is linked to technological demands, superior technical knowledge, and the major roles in innovation processes (Campbell et al., 2012; and Kharbanda et al., 1990). The current study strongly suggests that the management and human resource (HR) managers should focus more on EO in predicting positive behavioural intentions amongst current and future engineers. Regardless of the size of the company, the management must understand EO and their implications in shaping engineers' behavioural expectations. The awareness to attach EO in engineering tasks and jobs must be developed at the first place where engineers can use EO as a job performance reference. Therefore, it is advisable to make it a policy for the management and HR managers to link the engineers' level of performance with their EO for their career orientations. This, will probably encourage engineering practitioners to design their jobs according to the engineers' abilities to develop and innovate ideas and thoughts, and transform them into tangible results.

A robust theoretical implication from previous studies (for example, Bolton et al., 2012; and Kollman et al., 2007) mentioned that the EO theory is a valid construct for measuring an individual's entrepreneurial behaviour within an organisation. This argument is significant on why many individual employees (e.g., engineers) rely on their EO for extending their commitment and retention decisions toward the same employment. The researchers in this present study believe that the dominant components of EO (e.g., innovativeness, proactiveness, risk-taking, autonomy, and competitive aggressiveness) are the primary behaviours for engineers' leading performance and job satisfaction. The effort to match engineers with EO is said to develop engineers as potential intrapreneurs with several characteristics. Amongst them are autonomy, flexibility, adaptability and the capacity to cope with and manage change, self-motivation and drive, analytical ability and decision making, communication and interpersonal skills, team working abilities and skills, organisation, planning and prioritisation abilities, ability to innovate, mental and physical resilience, leadership ability, managing long term projects, time management, risk-taking, creativity, and being an agent of change. Engineer-intrapreneur dual roles impose a power of being a talented individual within an organisation, and are an important source for engineers to be actively involved with many innovation activities for organisational long-term successful entrepreneurial performance.

This present study has examined the influence of EO on ITS amongst Malaysian engineers. The findings of this study could be used to help organisations to encourage EO amongst engineers and control their movement to other employers. The talent retention model makes these findings less generalisable to other professional employees. However, this study realises a few potential limitations. Firstly, the sample size for data analysis and interpretation was small. Secondly, the response rate for the study was mainly recruited from limited states in Malaysia. Therefore, it is suggested to increase the number of participants from various nations and industrial businesses. Thirdly, this present study has used established items for measuring the EO of engineers within an organisation. There are still other specific but limited items for EO that can be used to measure individual EO. Hence, future research can identify the specific items for measuring the EO amongst key employees. It is unfortunate that the study did not include other employees and was limited to only the EO, ITS, and EO theories. It is recommended that further research should explore, usefully, EO and talent retention amongst other professions, such as accountants, medical doctors, lawyers, lecturers, or architects. Further research is suggested to explore and combine the EO theory and other theories (e.g., social cognitive theory and social exchange theory) in predicting employee's behavioural intentions, job and career satisfaction. A greater focus on talent retention could produce interesting findings that account for more variables, such as teamwork, organisational citizenship behaviour, leader-member exchange, trust, and organisational support.

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