

Chapter 2

Individual Entrepreneurial Orientation and Talent Retention of Engineers: A Pilot Survey

Idris Osman, Fauziah Noordin and Normala Daud

Abstract Solving a crucial shortage of engineers in the internal labour market and a turnover cost are the major concerns to reassess a strong determination of engineers' behavioural expectations towards current employment. A recent retention problem occurred when organisations rarely highlighted engineers as intrapreneurs. Consequently, engineers' entrepreneurial behaviours are slowly undebated and limited action has been taken to assess individual entrepreneurial orientation (IEO) to predict years that remain among talented engineers. Therefore, the objective of this study is to assess the items used for IEO in predicting retention outcome (intention to stay) among Malaysian engineers in manufacturing companies. This study adopted IEO and talent retention (intention to stay) items and a survey that recruited 110 engineers based on convenience sampling technique. Participants were recruited from various manufacturing companies located in Malaysia. Strong evidence was found that innovativeness (0.766), proactiveness (0.793), risk-taking (0.830) and autonomy (0.884) items were reliable (>0.70) for predicting the engineers' intention to stay (0.879). Developing engineers with IEO behaviours and organisations can closely monitor the mobility of engineers to other jobs. The links between IEO and talent retention interpret a better solution to meet engineers' career orientations and positive behavioural intentions.

Keywords Individual entrepreneurial orientation • Talent retention • Engineers Intrapreneurs

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2.1 Introduction

Matching an entrepreneurial orientation (EO) to engineers' behaviours is a strategic process in transforming talents into organisational core assets. Still, talents remain crucial when organisations realise that talent substances become more valuable, unique and hardest to imitate (Govaerts et al. 2011; Tansley 2011). Engineering talents move flexibly, and a talented engineer brings his or her talents in a new organisation if there is no reciprocity recognition that exists between engineers and current employers. Getting engineers to stay depends on desirable attitudes and behaviours from the initial staffing process to assess engineers' capacity to perform tasks. Ideally, staffing system requires exceptional organisational strategy (e.g. develop talent) to explore the engineers' self-determination, an expansion of how engineers' determine his or her engineering career path orientations. Engineers' behavioural intentions will fully develop from his or her discretions to determine the destination to which talents must be capitalised. The appropriate ways of many talented engineers which are frequently discussed are how his or her entrepreneurial behaviours influence positive behavioural intentions towards current employments.

Unless attention is paid to EO, talented engineers who leave voluntarily and a turnover cost may become challenging issues. An engineer who is viewed as a talented individual of the organisation has possibly vetted his current employers to create a special engineering environment to support entrepreneurial behaviours. Theoretically, developing internal entrepreneurial environment is linked to the entrepreneurial orientation theory (EOT), which consents organisational business strategies to commit with the basis of entrepreneurial processes, practices and decision-making activities (Covin and Slevin 1986; Lumpkin and Dess 1996; Rauch et al. 2009). The business strategy entails innovativeness, proactiveness, risk-taking, autonomy and competitive aggressiveness behaviours to perform, as all these behaviours are associated with individual entrepreneurial traits, attitudes and behaviours (Bolton and Lane 2012; Covin and Slevin 1989; Lumpkin et al. 1996). Research suggests focusing on a matching EO as individual behaviours affect organisational readiness to produce innovativeness and competitiveness (Wu 2009). As expectations are a cause to change an individual's behavioural intention, individual entrepreneurial orientation (IEO) is evaluated and developed to improve engineers' attitudes and behaviours towards the successful internal entrepreneurial activities of an organisation.

IEO has been a secondary issue for many organisations in predicting years that remain among talented engineers. From the organisational level, EO has been positively connected to organisational performance. Consequently, dependency on IEO behaviours to predict engineers' retention has slowly condensed. Previous gaps earlier identified rare highlighted engineers as intrapreneurs, a person who is actively involved in entrepreneurial activities within an organisational area. Less exposure of IEO into actual implementation affects the engineers' core passions on engineering orientations, such as technical knowledge, solving technical problems and innovating activities. Once these elements are gone, engineers' will probably

turn his or her weak interests to support innovativeness, creativity and capability to become an intrapreneur. Organisations, however, have limited options to pursue competitive business strategies without a link between IEO and intrapreneurs' behaviours to respond to uncertainties in the business environment and challenges. Thus, the main objective of this pilot study is to measure the IEO major dimensions (e.g. innovativeness, proactiveness, risk-taking and autonomy) in predicting the engineers' intention to stay with the same employment.

2.2 Literature Review

The underlying theory to emphasise entrepreneurial behaviours of an individual who is likely to remain in the job can be generated from the EO theory (EOT). Though none of the specific studies confirmed direct effect of EOT to an individual's outcome (e.g. retention), the process of successful EO must consider intrapreneurial behaviours of the organisational members who use creativity, innovativeness, capability and competency to perform tasks and to solve problems. EOT generates core elements, namely innovativeness, proactiveness, autonomy, risk-taking and competitive aggressiveness (Covin et al. 1989; Lumpkin et al. 1996). Several researchers who have examined the dominant elements of EOT found that innovativeness, proactiveness and risk-taking are important substances for organisational performance (Antoncic and Hisrich 2001; Covin et al. 1989; Entebang et al. 2010; Jia, Wang and Yu 2014; Kropp et al. 2006). Only a few available empirical studies on IEO have addressed the needs of an individual's (e.g. students, farmers) perception on EO towards entrepreneurial intentions and individual performance (Bolton et al. 2012; Dingilian 2015; Wu 2009).

Returning to what core elements affect engineers to perform entrepreneurially, this present study relates to the engineers' pure behaviours, traits and attitudes. As an intrapreneur, an engineer represents a person who has innovating ideas, has strategies for technology development and develops thoughts and freedom to be more creative and original (Alavi et al. 2012; Igbaria and Siegel 1992; Kharbanda et al. 1990; McDonnell and O'Neill 2009; Menzel et al. 2007; Williamson et al. 2013). Attention is also given to the engineers' creativity in solving technical and non-technical problems and the ability to think conceptually, and the ability to adapt changes and deal with circumstances (Chapbell et al. 2012; Kaewsri and Tongthong 2013; Kennedy and Daim 2010). Lastly, an engineer desires autonomy in his or her works to experience interesting and challenging tasks. Often, these entrepreneurial behaviours, namely innovativeness, proactiveness, risk-taking and autonomy, are all supported by research findings to optimise the engineers' behavioural positive impact on retention (e.g. intention to stay) outcomes.

2.2.1 IEO and Talent Retention of Engineers

One possibility of engineers' leaving their current employers is their unawareness of the evaluation of entrepreneurial behavioural intentions to be used in his or her daily task performance. The measurement used to assess IEO is necessary to expect the extent of individual behavioural patterns to react within an organisation. Prior research findings on IEO have argued that elements of EO are potentially applied for predicting positive individual performance and behavioural intentions. Retention, for example, is closely linked to how an individual's behaviour affects his or her behavioural intentions. This link is called talent retention, a process to encourage positive behavioural intentions of talented individuals to remain in the same employment (Gangrade et al. 2014; Sahi and Mahajan 2014). A classic thought of behavioural intentions (e.g. intention to stay or leave) involves the individual's psychological, cognitive and behavioural aspects (Takase 2010). These aspects are interrelated with one another, beginning from fulfilling the psychological needs to reflect to cognitive needs and producing an actual decision, either to stay or to leave.

How far can IEO items be predicted for an engineer's intention to stay? The development of IEO items was conceptually defined at an individual level as a pre-determinant to measure entrepreneurs from different directions. Kollmann et al. (2007) developed several propositions from a cross-cultural framework to assess an IEO from the areas of cultural environment, political and legal environment, macroeconomic environment and micro environment. They argued that EO constructs probably need to be emphasised and can be transferred to the individual level. Bolton et al. (2012) clearly determined three core elements of IEO, and ten items of the five-point Likert scales (*innovativeness—four items; proactiveness—three items; and risk-taking—three items*) were identified and developed. Based on 1,100 samples, only these three main items were considered consistent, innovative ($\alpha=0.80$); proactive ($\alpha=0.765$); and risk-taking ($\alpha=0.767$). Unfortunately, items for autonomy ($\alpha=0.208$) and competitive aggressiveness ($\alpha=0.585$) were not considered due to low consistency. The significant implication of this study revealed that IEO constructs are relevant for measuring an individual's entrepreneurial behaviour and frequently measuring autonomy and competitive aggressiveness items that will increase the factor loadings. Vast implication from this study has extended to the interest from other researchers to study IEO from different perspectives. Recently, Dingilian (2015) adopted ten items of Bolton et al. (2012) IEO to measure farmers' and faculty members' entrepreneurial behaviours, and the results of consistency of innovativeness, proactiveness and risk-taking items were similarly ranged between 0.70 and 0.75.

Talent retention. The separation between core talents and positive behavioural intentions will probably affect the engineers' attitudinal aspect, since this behavioural pattern is complex to measure. Igbaria and Siegel (1992) found that several retention factors are related to the engineers' decision to stay; for example, task characteristics (e.g. task challenging) and intention to leave are negatively related

($r = -0.39$; -0.37 ; $p = <0.001$). Engineers' turnover can be controlled by assigning interesting task and providing feedback, and encouraging the engineers' creativity and originality. Such efforts can be found in the studies of Abdull Rahman (2012) and George (2015) which highlighted the engineers' and professionals' motivation to remain. Abdull Rahman (2012) measured 226 engineers' intention to stay with the seven items on the seven-point Likert scale ($\alpha = 0.72$; $SD = 0.60$). Seven statements are used to measure the engineers' intention to stay which included "*I will remain with this organisation indefinitely*" and "*I plan to stay here a long time*". On the other hand, George (2015) focused on retention factors (e.g. autonomy, creativity) of professional workers, and a strong association was found between these factors and the intention to remain ($\alpha = 0.82$; $M = 3.22$; $SD = 0.54$). These separate studies measured retention items as dependent variables to predict the actual individual engineer's intention to remain.

2.3 Methodology

The data were collected from the manufacturing companies in Malaysia. A total of 110 engineers were recruited based on convenience sampling method. A self-administered survey was distributed to engineers who are registered under the Board of Engineers Malaysia (BEM). The participants were anonymous and voluntary, and the participation was assured that all responses would be confidential. The human resource (HR) representatives from the manufacturing companies were contacted to seek an approval before distributing the survey instruments. The participants consisted of graduate engineers (87.9%), and a majority of the participants were Malays (84.8%), males (67.4%) and ages ranged between 25 and 29 years (44.7%). In regard to the highest academic qualification, 76.5% of the participants obtained a Bachelors Degree, 12.1% a Masters Degree and 9.1% a Diploma. The largest number of participants was employed for 2–5 years (37.1%), and 39.4% of the participants held the same position for a period of 2–5 years. Majority of the participants are working in Selangor (50%), whilst 34.1% of the participants are currently attached with petroleum/chemical industries and 28.0% for the electrical and electronics industries.

2.3.1 Measures

This pilot study contains two main constructs, namely IEO (innovativeness, proactiveness, risk-taking and autonomy) and talent retention (intention to stay). The scales for measuring the four dimensions of IEO were derived from the previous literatures on EO (Bolton et al. 2012; Covin et al. 1989; Lumpkin et al. 1996; Wu 2009). This study adopted the ten-item innovativeness, seven-item proactiveness, nine-item risk-taking and eight-item autonomy scales of the IEO. All items

used for measuring these dimensions were based on a seven-point Likert scale with 1 representing strongly disagree and 7 representing strongly agree. Cronbach's α of innovativeness scale was 0.766, proactiveness (0.793), risk-taking (0.830) and autonomy (0.884), indicating that the instruments were reliable (>0.70). To measure talent retention, this study formulated the six-item scales from Govaerts et al. (2011). The sample items included “*If I wanted to do another job or function, I would firstly, look at the possibilities within this company*” and “*If it were up to me, I will definitely be working for this company for the next five years*”. Cronbach's α of this scale was 0.879. The participants' responses were analysed on a seven-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

2.4 Results

This study was employed the SPSS 22.0 to assess the mean, standard deviation, factor loading and the reliability of the items. The scores from the 110 engineers are presented in Table 2.1. On a seven-item Likert scale, mean values for IEO dimensions and talent retention were ranged from 4.7 to 5.3 (*innovativeness—4.918, SD $\pm$ 0.5; proactiveness—5.195, SD $\pm$ 0.6; risk-taking—4.796, SD $\pm$ 0.7; autonomy—5.327, SD $\pm$ 0.6; intention to stay—5.227, SD $\pm$ 0.8*), respectively.

Table 2.2 presents the factor loadings for IEO and talent retention. An exploratory factor analysis (EFA) was conducted for each IEO and talent retention item. From the 40 items, only 39 were considered for the analysis. The item loading ranged from 0.40 to 0.70 (innovativeness), 0.5 to 0.70 (proactiveness), 0.40 to 0.70 (risk-taking), 0.50 to 0.80 (autonomy) and 0.70 to 0.80 (intention to stay). Factor loadings below 0.40 were not included for analysis; thus, the remaining items that were higher than 0.32 were considered as appropriate variables (Tabachnick and Fidell 1996). Only one item was removed from the analysis ($A12 = -0.224$), as this item was lower than 0.32. The values of Cronbach's alpha were greater than 0.70, indicating that all items used had high internal consistency. Table 2.2 shows the Cronbach's alpha values for IEO and talent retention variables. The Cronbach's

Table 2.1 Means and standard deviations for IEO and talent retention

Variables	N	Mean*	Std. Dev
<i>IEO</i>			
(a) Innovativeness	110	4.918	0.5870
(b) Proactiveness	110	5.195	0.6109
(c) Risk-taking	110	4.796	0.7023
(d) Autonomy	110	5.327	0.6961
<i>Talent retention</i>			
(a) Intention to stay	110	5.227	0.8145

*Responses to each are made on a seven-point scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*)

Table 2.2 Results of the factor loadings and Cronbach's alpha of the IEO and talent retention (*N*=110)

Constructs/Sources	No. of items	Items	Factor loading	Cronbach's alpha
IEO				
<i>(a) Innovativeness (INNO)</i>	Ten items	<i>INNO1</i>	0.468	<i>0.766</i>
		<i>INNO2</i>	−0.224	
		<i>INNO3</i>	0.680	
		<i>INNO4</i>	0.596	
		<i>INNO5</i>	0.817	
		<i>INNO6</i>	0.677	
		<i>INNO7</i>	0.769	
		<i>INNO8</i>	0.620	
		<i>INNO9</i>	0.693	
		<i>INNO10</i>	0.662	
<i>(b) Proactiveness (PROAC)</i>	Seven items	<i>PROAC1</i>	0.616	<i>0.793</i>
		<i>PROAC2</i>	0.846	
		<i>PROAC3</i>	0.712	
		<i>PROAC4</i>	0.602	
		<i>PROAC5</i>	0.550	
		<i>PROAC6</i>	0.640	
		<i>PROAC7</i>	0.723	
<i>(c)Risk-taking (RISK)</i>	Nine items	<i>RISK1</i>	0.405	<i>0.830</i>
		<i>RISK2</i>	0.703	
		<i>RISK3</i>	0.681	
		<i>RISK4</i>	0.678	
		<i>RISK5</i>	0.800	
		<i>RISK6</i>	0.797	
		<i>RISK7</i>	0.709	
		<i>RISK8</i>	0.686	
		<i>RISK9</i>	0.488	
<i>(d) Autonomy (AUTO)</i>	Eight items	<i>AUTO1</i>	0.667	<i>0.884</i>
		<i>AUTO2</i>	0.739	
		<i>AUTO3</i>	0.777	
		<i>AUTO4</i>	0.679	
		<i>AUTO5</i>	0.775	
		<i>AUTO6</i>	0.773	
		<i>AUTO7</i>	0.736	
		<i>AUTO8</i>	0.805	
Talent retention				
<i>(a) Intention to stay (ITS)</i>	Six items	<i>ITS1</i>	0.771	<i>0.879</i>
		<i>ITS2</i>	0.673	
		<i>ITS3</i>	0.870	
		<i>ITS4</i>	0.828	
		<i>ITS5</i>	0.779	
		<i>ITS6</i>	0.815	

alpha values of IEO dimensions were above 0.7 (innovativeness—0.766; proactiveness—0.793; risk-taking—0.830; and autonomy—0.884), whilst talent retention (intention to stay) was 0.879.

2.5 Discussion

The purpose of this study was to assess the IEO items for predicting retention (intention to stay) among engineers in manufacturing organisations. The main results described that the IEO items were reliable (>0.70) and beneficial for determining the engineers' positive behavioural intention towards their current employment. This study postulates that IEO and engineers' behaviours are interconnected, the more entrepreneurial activities demonstrate within engineering-related tasks, and the higher will the intention to stay be. An employer needs more intrapreneurs to build an innovative environment, a freedom to generate ideas and thoughts, and producing exceptional characteristics for being talented intrapreneurs. As an agent of change, an engineer exposes his or her self to deal with uncertain situations and risks, the major contributions of analysing technical-related problems and transforming those into challenging and interesting tasks. Two-way relationships between engineers and employers about flexibility and innovation are the core elements of reciprocity that must exist within the organisational area. The recognition of engineers as intrapreneurs and considering principles of EO (e.g. innovativeness, autonomy) will integrate inflow talents and lock internal talent mobility.

IEO and talent retention focus on recognising the engineers' entrepreneurial behaviours that will be considered if they remain in the same employment, along with a positive behavioural intention. The present results will help in determining positive behavioural intentions (e.g. intention to stay) for engineers to fully utilise entrepreneurial activities and act as intrapreneurs within the organisational area. It is further assumed that these entrepreneurial behaviours are known as catalysts for talented engineers to spend and transfer his or her talents throughout the entire employment. This study responds to core determinate behaviours of entrepreneurial orientation by determining how intrapreneurial behaviours can predict the engineers' intention to stay. The development of IEO on engineers' positive behavioural intention contributes to the body of knowledge of the link between innovativeness, proactiveness, risk-taking and autonomy and retention. When engineers leave their current employer, he or she has already developed the knowledge, skills, experience and expertise, and will transfer those elements in the new organisations. This is a crucial phase of the talents mobility, in which the engineering path orientations are created and new behavioural expectations will be developed.

Detailed discussions of the process to encourage engineering talents remain the same jobs that are confronted with several contemporary issues. First, the upward mobility of engineers is related to technology forces which deny labour as a main source. Second is the shortage of engineering talents in the internal labour market,

and third is tasks challenging for acquiring superior technical knowledge. In a sense, it is clearly possible that exploring retention strategies did mean organisations really focus on an individual engineer's behavioural expectations. The efforts to study the engineers' retention have contributed to encouraging the engineers' positive behavioural action. Also, unspecific retention factors have unlocked wider gaps for future researchers to match engineers with behavioural-related intentions. In some areas, IEO supports individual entrepreneurial intentions and actions towards implementing entrepreneurial behaviours that have been proposed by several authors. For example, Kollmann et al. (2007) conceptualised IEO and the cultural environment, political, micro- and macroeconomy that potentially affects entrepreneurial behaviours of employees within the organisation. Claims of IEO eventually require higher individual intentions to develop entrepreneurial intention and recognise opportunity recognition (Wu 2009). Enforcing IEO is an initial step to develop entrepreneurial intentions, and the unidimensionality constructs (e.g. innovativeness, proactiveness, risk-taking and autonomy) permit students, business practitioners and employees to act as entrepreneurs within an organisation (Bolton et al. 2012; Kollmann et al. 2007; Wu 2009).

2.6 Conclusion

The links between engineers and IEO provide a coordination to prepare engineers as intrapreneurs within organisational area. The purpose of matching engineers with IEO is desired behaviours; at the optimum, an intrapreneur's greater performance will enjoy performing challenging tasks and a freedom to be a creative employee (Igbaria et al. 1999). The dual engineers–intrapreneurs behaviour creates potential advantages for engineers to think conceptually as an agent of change and commonly determine career orientations (Kharbanda et al. 1990; Menzel et al. 2007). The best conclusion is that opportunity for clear entrepreneurial paths has caused less mobility of engineers looking to other jobs (Tremblay et al. 2002). Of course, to ensure that engineers remain in the same employment includes establishing engineers with technical and EO, including the management of career orientations that will possibly increase engineers' perception of his or her creativeness towards generating innovative ideas. This process, however, requires organisational structures to promote innovative ideas, define a strategic focus to foster innovative efforts, knowing where and how innovative ideas will be used, optimise organisational resources to support innovative ideas and provide a platform of competitive environment for increasing engineers' job satisfaction and retention (Kharbanda et al. 1990).

Retention (e.g. intention to stay) is an ultimate outcome that has been established in the way of core engineers' behaviours to act as an intrapreneur. Primary characteristics of engineers as intrapreneurs involve innovativeness, proactiveness, risk-taking and autonomy behaviour. Innovativeness will influence the engineers' willingness to develop innovate ideas and transform them into tasks and

development of products. Mature engineers are attracted by proactive behaviour, the initiative to improve current circumstances that will involve challenges to adapt the present changes. Expert engineers can be produced by allowing them to take risks, willingness of engineers' to tolerate uncertainties and mistakes subject to handling engineering-related problems. Lastly, engineers are very demanding in generating ideas; as a result, autonomy increases the engineers' power to make decisions towards jobs and he or she has freedom to control task-related matters (Dess and Lumpkin 2005; Lumpkin et al. 1996). Engineers with specialised engineering skills have clearly determined his or her career targets, and the same time, to improve the ability to balance acceptable risks, controlling situations, innovating ideas and proactively seeking opportunities.

A talent retention study becomes, in essence, a channel to guide researchers, policy makers and employers to assess talented individuals' behavioural expectations towards employment. The assessment on engineer's characteristics and behaviours is emphasised to ensure that the entrepreneurial spirit is continuously developed. One major implication of this study extends the use of IEO in predicting the engineers' retention decision. IEO must be exercised in controlling and decreasing the amount of voluntarily turnover among talented engineers. Yet, there is less research carried out in IEO and talent retention, so this study is necessary to understand the engineers' entrepreneurial behaviour expectations. In summary, solutions to the retention problems of engineers require a continuous organisational assessment towards the engineers' employment expectations. Behaviour, too, is the crucial developmental process to match the engineers with EO, and specific action must be taken to consider the new competitive retention strategies that will shape all engineers' positive behavioural intentions.

References

- Abdull Rahman, R. H. (2012). Malaysian firms' role in retaining engineers. *The Economic and Labour Relations Review*, 23(4), 57–78.
- Alavi, S. B., Moteabbed, S., & Arasti, M. R. (2012). A qualitative investigation of career orientations of a sample of Iranian software engineers. *Scientia Iranica*, 19(3), 662–673.
- Antonicic, B., & Hisrich, R. D. (2001). Intrapreneurship: construct refinement and cross-cultural validation. *Journal of Business Venturing*, 16, 495–527.
- Bolton, D. L., & Lane, M. D. (2012). Individual entrepreneurial orientation: Development of a measurement instrument. *Education and Training*, 54(2/3), 219–233.
- Campbell, R. I., Gluesing, J., & Perelli, S. (2012). Mindfulness and product failure management: An engineering epistemology. *International Journal Of Quality & Reliability Management*, 29(6), 642–665.
- Covin, J. G., & Slevin, D. P. (1986). The development and testing of an organizational-level entrepreneurship scale. In R. Ronstadt, et al. (Ed.), *Frontiers of entrepreneurship research*, Babson College, Wellesley, MA, 628–639.
- Covin, J. G., & Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10, 75–87.
- Dess, G. G., & Lumpkin, G. T. (2005). The role of entrepreneurial orientation in stimulating effective corporate entrepreneurship. *Academy of Management Executive*, 19(1), 147–56.

- Dingilian, G. (2015). *Exploring group differences in individual entrepreneurial orientation between farmers with distinct agricultural conservation practices*. Unpublished Doctoral Dissertation, Northcentral University, ProQuest Dissertations Publishing.
- Entebang, H., Harrison, R. T., & Run, E. C. (2010). Entrepreneurial orientation of public enterprises in Malaysia. *Business Strategy Series*, 11(2), 75–77.
- Gangrade, D., Dubey, S., & Chouhan, O. (2014). Talent retention: Winning competitive edge (a study in academic sector). *Envision a Monthly Referred Journal of Management and IT*, 1(1).
- George, C. (2015). Retaining professional workers: What makes them stay? *Employee Relations*, 37(1), 102–121.
- Govaerts, N., Kyndt, E., Dochy, F., & Baert, H. (2011). Influence of learning and working climate on the retention of talented employees. *Journal of Workplace Learning*, 23(1), 35–55.
- Igbaria, M., & Siegel, S. R. (1992). An examination of the antecedents of turnover propensity of engineers: An integrated model. *Journal of Engineering and Technology Management*, 9, 101–126.
- Igbaria, M., Kassicieh, S. K., & Silver, M. (1999). Career orientations and career success among research, and development and engineering professionals. *Journal of Engineering Technology Management*, 16, 29–54.
- Jia, J., Wang, G., & Yu, X. Z. X. (2014). Exploring the relationship between entrepreneurial orientation and corporate performance. *Nankai Business Review International*, 5(3), 326–344.
- Kaewsri, N., & Tongthong, T. (2013). Professional development of female engineers in the Thai construction industry. *Procedia-Social and Behavioral Sciences*, 88, 291–298.
- Kennedy, E., & Daim, T. U. (2010). A strategy to assist management in workforce engagement and employee retention in the high tech engineering environment. *Evaluation and Program Planning*, 33, 468–476.
- Kharbanda, O. P., & Stallworthy, E. A. (1990). Management for Engineers. *International Journal of Operations and Production Management*, 10(6), 2–91.
- Kollman, T., Christofor, J., & Kuckertz, A. (2007). Explaining individual entrepreneurial orientation: conceptualisation of a cross-cultural research framework. *International Journal of Entrepreneurship and Small Business*, 4(3), 325–340.
- Kropp, F., Lindsay, N. J., & Shoham, A. (2006). Entrepreneurial, market, and learning orientations and international entrepreneurial business venture performance in South African firms. *International Marketing Review*, 23(5), 504–523.
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135–172.
- McDonnell, L., & O'Neill, D. (2009). Developing tomorrow's engineers: A case study in instrument engineering. *Education and Training*, 51(3), 210–214.
- Menzel, H. C., Aaltio, I., & Ulijn, J. M. (2007). On the way to creativity: Engineers as intrapreneurs in organizations. *Technovation*, 27, 732–743.
- Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurship orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory & Practice*, 33(3), 518–528.
- Sahi, G. K., & Mahajan, R. (2014). Employees' organisational commitment and its impact on their actual turnover behaviour through behavioural intentions. *Asia Pacific Journal of Marketing and Logistics*, 26(4), 621–646.
- Tabachnick, B., & Fidell, L. (1996). *Using Multivariate statistics* (3rd ed.). New York: HarpCollins College Publishers.
- Takase, M. (2010). A concept analysis of turnover intention: Implications for nursing management. *Collegian*, 17, 3–12.
- Tansley, C. (2011). What do we mean by the term “talent” in talent management? *Industrial and Commercial Training*, 43(5), 266–274.
- Tremblay, M., Wils, T., & Proulx, C. (2002). Determinants of career path preferences among Canadian engineers. *Journal of Engineering Technology Management*, 19, 1–23.

- Williamson, J. M., Lounsbury, J. W., & Han, L. D. (2013). Key personality traits of engineers for innovation and technology development. *Journal of Engineering Technology Management*, 30, 157–168.
- Wu, J. (2009). Entrepreneurial Orientation, Entrepreneurial intent and new venture vreation: Test of a framework in a Chinese context. Unpublished Doctoral Thesis. Virginia Polytechnic Institute and State University.

Proceedings of the 2nd Advances in Business Research
International Conference

ABRIC2016

Noordin, F.; Othman, A.K.; Kassim, E.S. (Eds.)

2018, XIX, 389 p. 22 illus., 8 illus. in color., Hardcover

ISBN: 978-981-10-6052-6