



Assessing the Level of Individual Well-Being among Engineers: Career Goal Development as a Predictor

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ABSTRACT

Engineers are fast-track individuals who have special knowledge and expertise. They have great expectations and ambitions for their career (Malan, 2004). Engineers are also known to be energetic in climbing their career ladder and strive for their psychological success. However, the conflict between having their own goals and expectation with advancement opportunities, work autonomy and work demand structured by the organization have influenced the well-being of the engineers. As a result, Malaysian statistics of Human Resource Department indicated that the performance of engineers has shown a drop. This scenario would become worse if less attention is given to research on the engineer's individual well-being. Thus, it is a timely to conduct study in accessing the level of individual well-being among Malaysian engineers, with career goal development as the predictor. A total of 387 registered professional engineers participated in this study. The hypotheses were investigated through a correlation and path analysis using PLS. The results provide useful information on the positive influence of protean career orientation on psychological well-being. The results further had shown a positive influence of career goal development on individual well-being. The implications of these findings for understanding the process through of career attitude that affects individuals' individual well-being are discussed.

Keywords: Career goal development, career satisfaction, psychological well-being, engineer.

1. INTRODUCTION

The changes in the nature of work have influenced the notion of the individual's careers in the contemporary business world (Greenhaus, Callanan & Godshalk, 2000). Work has become more flexible as organizations become flatter. In addition, the boundaries of career landscapes are also becoming wider (Arthur, Inkson & Pringle, 1999).

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For this reason, changing the attitude of employees towards their career development and their own role is needed (Briscoe & Hall, 2006). Employees adapting to these labour markets and organizational structure modify their work values and behaviours (Hall, 2004).

Individuals also bear most of the responsibility for planning and managing their own careers. Hall (2002) concluded that the potential of the new career is that an individual must develop new competency related to the management of self and career (Eby, Butts & Lockwood, 2003; Hall & Moss, 1998). The potential competency that the individual need to have is identifying a career goal and this is called career goal development. This behavioural component is within the control of the individuals. It builds on the notion of pro-activity and it refers to the concrete actions undertaken by the employees to realize their career goals. This action can focus on improvement in one's current job or on moving within or outside the company (Kossek, Roberts, Fisher & Demarr, 1998).

Since the engineer's key performance areas are structured by the organization according to the business needs, the increasing in productivity and change in the workplace has become an integral part of the engineer's working life (Malan, 2004). Engineers need competence in coordinating technical teams, negotiating a complex, nonlinear system and solving problems. Other studies suggest further nuances of these skills; for example, Trevelyan (2007) described a key attribute of effective engineers as being the ability to work with and influence 'other people so they conscientiously perform necessary work to a mutually agreed schedule. Trevelyan's emphasis on technical coordination is echoed in other work finding effective communication as the skill engineers viewed as most essential. In a study comparing the design work of engineering professionals with that of students, researchers found that experts gather more information in more categories as they define and scope the problem; they more carefully consider the context and constraints, which is noted as another key skill. In Malaysia, engineers are believed to have contributed highly to Malaysia's economy development. This is because they are the key players in many industries such as construction industry, manufacturing industry, and agriculture based-industry. Engineers add values through the use of appropriate technology and process (Malan, 2004). For example, besides catching up with technology, shortening design cycles and computerising designs, engineers also have to cope with the demand that arises from the nature of their work (Ferrara, 1998). To cater for their work, engineers need to be equipped with ways to build and capitalise on their strength to maintain their excellent performance. Table 1 represents the Gross Domestic Product (GDP) by sectors from 2012 to 2014, which underlines the significant contribution of construction industry, manufacturing industry and agriculture based-industry to the GDP growth.

Table 1: Gross Domestic Product (GDP) by Sector 2012-2014 (at constant 2005 prices)

Sectors	Change (%)			Share of GDP (%)			Contribution to GDP growth (percentage point)		
	2012	2013 ¹	2014 ²	2012	2013 ¹	2014 ²	2012	2013 ¹	2014 ²
Agriculture	1.0	2.7	3.0	7.3	7.2	7.0	0.1	0.2	0.2
Mining	1.4	2.2	3.1	8.4	8.2	8.1	0.1	0.2	0.3
Manufacturing	4.8	3.2	3.8	24.9	24.5	24.2	1.2	0.8	0.9
Construction	18.1	10.6	9.6	3.5	3.7	3.9	0.6	0.4	0.4
Services	6.4	5.5	5.7	54.6	55.0	55.4	3.5	3.0	3.1
Add. Import duties	15.6	9.6	1.0	1.3	1.4	1.4	0.2	0.1	0.1
GDP	5.6	4.5-5.5	5.0-5.0	100.0	100.0	100.0	5.6	4.5-5.0	5.0-5.5

Notes: Adapted from Department of Statistics and Ministry of Finance, Malaysia.

Note that total may not add due to rounding.

¹ Estimate

² Forecast

Unfortunately, Malaysian statistics of Human Resource Department's third quarter report (2008) indicated that the performance of engineers in the electronics sector has shown a drop of 20% to 25% (as compared with those of previous years) in their task and contextual performance. The task performances are product knowledge, product design knowledge and the ability to ensure that all designs have considered inputs from various counterparts. Meanwhile, the contextual performances are time management, prompt decision making, being assertive and human relations such as voluntary behaviours. Failure in meeting task performance has caused engineers' performance to drop significantly and eventually, resulted in deficiencies in the final product. Other consequences are delayed project completion and failure to meet customer deadlines and requirements (Desa, 2009). This scenario would become worse if less attention is given to research on the engineer's individual well-being. Thus, it is a timely to conduct study in accessing the level of individual well-being among Malaysian engineers, with career goal development as the predictor. Accordingly, the following research questions were posed to further examine the matter:

Does career exploration influence career satisfaction among Malaysian engineers?

Does career exploration influence psychological well-being among Malaysian engineers?

The remaining sections of this paper are organized as follows: the next section reviews the literature on the influence of career goal development on career satisfaction and psychological well-being among Malaysian engineers. The literature review leads to the development of hypotheses and the framework for this study. Section 3 describes an overview of the methods employed for this study. This is followed by Section 4 and 5, which respectively present the findings from statistical tests and a discussion of the results of this study. The final section concludes the study.

2. LITERATURE REVIEW

2.1 Career Goal Development

Career goal development refers to the goals people pursue at work, such as promotions, pay increases and skill development (Noe, 1996; Zikic & Klehe, 2006). Goals are the aim of an action or behaviour. Goals can be set for any verifiable or measurable outcome. Locke's basic assumption is that goals are immediate regulators of human action. An individual synthesizes direction, effort and persistence to accomplish goals. To maximize goal setting, specific and challenging goals are set that leads on focus action and effort over time to accomplish tasks. Individuals must commit to set goals to produce results; the more difficult (challenging yet reasonable) the goal, the better the individual will perform. Individuals need management support (feedback, reward mechanisms and required resources such as time, training and material goods in order to maximize performance when applying goal setting. Referring to goal focus, it is defined as how sure the person is about their career goal or preference for a specific occupation, job or type of organization in which to work (Stumpf et al., 1983). Goal focus may be an important determinant for developmental behaviour and willingness to participate in development activities. Goals influence behaviour is by facilitating the development of strategies for goal attainment (Locke et al., 1981). One strategy is for employees to engage in behaviours and activities designed to improve skill strengths and weaknesses. The more focused employees' career goals, the more likely they will be engage in behaviours which will help them reach their goals and the greater their motivation to participate in development activities.

Locke and Latham (2006) elaborated that goals are related to the primary standard that is set for self-satisfaction with performance measurement. It is more motivating to have a set of high or challenging goals, because they require one to attain more in order to achieve self-satisfaction. Therefore, feelings of success in the workplace occur to the extent that people view the ability to grow and meet job challenges by pursuing and attaining goals that are important and meaningful. Furthermore, Locke and Latham (2006) added, the key moderators of goal setting

are feedback which people need for the purpose of tracking their progress as well as commitment to the goal, which is enhanced by self-efficacy and viewing the goal as important; task complexity, to the extent that task knowledge is harder to acquire on complex tasks; and situational constraints. Stated by Brown, Jones and Leigh (2005), the excess work without the necessary resources to accomplish a task moderates goal effects; goals effect performance only when the overload of task is low.

H1: Career goal development has a positive influence on career satisfaction.

H2: Career goal development has a positive influence on psychological well-being.

2.2 Career Satisfaction

Career satisfaction has been used as a subjective indicator of career success primarily since career satisfaction meaningfully reflects a person's attitudinal responses to his or her career based on his or her personal appraisals. This conceptualization is aligned with the boundary less career concept as of its considerable stress on individual agency in defining and assessing the career success. Consistent with the definition in the literatures; career satisfaction is assessed either with measurement of satisfaction with global career success (Valcourn & Tolbert, 2003) or with measurement of satisfaction with intrinsic and extrinsic aspects of one's career that include pay, promotions and developmental opportunities (Greenhaus et al., 1990; Judge et al., 1995; Turban & Dougherty, 1994). As indicated in the previous paragraphs, the boundary less career concept demand for a subjective career approach in which individuals personally could define and assess their career success.

In recent years, subjective measures of career success have become increasingly important (Arthur et al., 2005; Parker & Arthur, 2000), with career satisfaction being one of the most significant predictors of career success. This study thus focused on employees' career satisfaction. In this research, career satisfaction is mainly viewed in the context of job satisfaction and thus, it is used as an attitudinal variable that reflects an individual's perception that his or her career is fulfilling career-related values, needs and expectations (Callanan, 1989). However, although job satisfaction refers to a pleasurable or positive emotional state resulting from an appraisal of one's job or job experiences (Locke, 1976), on the other hand, career satisfaction reflects a person's positive emotional state resulting from a personal evaluation of his or her career or career experiences. In general, subjective career success as individuals' feelings of accomplishment and satisfaction with their careers (Judge et al., 1995). While assessing the subjective career success, individuals are also evaluating their own career success with reference to self-defined standards, needs, values, career stages, and aspirations (Betz & Fitzgerald, 1987; Gattiker & Larwood, 1986). With a few exceptions the

careers research has exclusively used the term of career satisfaction as a sole indicator of subjective career success (Judge et al., 1995).

2.3 Psychological Well-Being

Psychological well-being is a subjective concept that has a closer connection with quality of life. Campbell, Converse and Rogers (1970) have conceptualized that quality of life is a composite measure of physical, mental and social well-being, happiness and satisfaction involving many life situations, such as health, marriage, family work, finance, education opportunities, self-esteem, creativity and trust in others. The primary feature of subjective well-being includes subjectivity, positive measure and global assessment of all aspects of a person's life.

Psychological well-being is about lives going well. It is a combination of feeling good and functioning effectively. In this study, psychological well-being is defined in terms of the overall effectiveness of an individual's psychological functioning (Berkman, 1971a). Sustainable well-being does not require individuals to feel good all the time; the experience of painful emotions such as disappointment, failure and grief are normal part of life (Berkman, 1971b). Being able to manage these negative or painful emotions is essential for long-term well-being (Diener, 1994). Psychological well-being however cooperates with negative emotions and is extreme or very long-lasting and interfaces with a person's ability to function in his or her daily life. According to Warr (1990), the concept of feeling good incorporates not only the positive emotions of happiness and contentment, but also such emotions as interest, engagement, confidence and affection. The concept of functioning effectively in a psychological sense involves the development of one's potential, having some control over one's life, having a sense of purpose such as working towards value goals and experiencing positive relationship (Diener & Suh, 1999). This long tradition of theoretical and empirical research has emphasized the importance of psychological well-being. As stated by Pavot and Diener (1993), over the years, researchers have primarily focused on identifying and defining the key features of the psychological well-being construct. However, clarifying the structure of psychological well-being has neither been easy nor straightforward as evidenced by the multitude of both terms used to coin the construct (e.g.: emotional well-being, mental well-being and affective well-being) and conceptual approach that exist (Pavot & Diener, 1993).

For instance, Bradburn (1969) proposed that psychological well-being is determined by two independent dimensions, which are positive and negative effect. According to Bradburn (1969) and Bradburn and Caplovitz (1965), an individual experiences a high level of psychological well-being to the extent that he or she has an excess of positive effect over negative effect. In other word, an

individual's happiness or well-being is determined by the degree to which pleasure dominated over pain in his or her life. More recently, Warr (1987, 1990) has developed a model of affective well-being and mental health to guide research in occupational psychology. In this broad conceptual framework, Warr (1990) argued that affective well-being is a component of one's overall mental health. Mental health is a broader concept accessed through three principal components; competence (a construct similar to self-efficacy), aspiration (a concept related to psychological growth or self-actualization) and negative job carry-over (the extent to which job worries carry over into non-working life). Warr (1990) argued that these elements collectively define a person's occupational mental health.

2.4 Research Framework

Figure 1 proposes the research framework which consist of independent variable (career goal development) and the dependent variable (career satisfaction and psychological well-being).

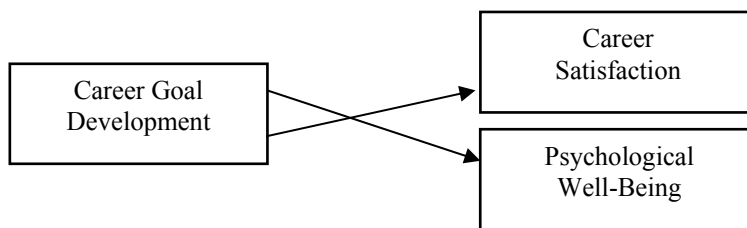


Figure 1: Research Framework

3. METHODOLOGY

3.1 Sampling and Data Collection

This study applied self-administered questionnaire in collecting the data. The unit of analysis in this study were 387 professional engineers who are registered with Board of Engineers Malaysia (BEM). Since they need to chalk up an average of 50 hours of Continuous Professional Development (CPD) activities per year to renew their practicing certificate, they have to participate in the CPD activities. The CPD activities are organized by Institution of Engineers Malaysia (IEM). Activities such as meetings, exhibitions and visits and other activities to promote the profession of engineering are also been organized by IEM. Due to this function, the researcher has approached IEM and seeks the permission to distribute the questionnaires to the professional engineers during the CPD activities.

3.2 Measures

The measures are mostly adopted from previous study with acceptable reliabilities. Scales developed by previous researchers (Noe, 1996; Zikic & Klehe, 2006) are used to measure the four items of career goal development. The Cronbach's alpha for career goal development is 0.83. Meanwhile, career satisfaction was assessed by five items developed by Greenhaus et al (1990). Respondents were asked to rate the items using a 5-point Likert-type scale ranging from 1 "Strongly disagree" to 5 "Strongly agree" The Cronbach's alpha was 0.91 in this study. Finally, the psychological well-being this study was used the eight-item Index of Psychological Well-Being developed by Berkman (1971a, 1971b). In this study, the coefficient alpha was 0.72. Ratings are made on a 5-point Likert-type scale ranging from 1 "Strongly disagree" to 5 "Strongly agree" for all the variables in this study.

3.3 Data Analysis

Data were analysed by SmartPLS software developed by Ringle, Wende and Will (2005) by means of Structural Equation Model (SEM) from Partial Least Square approach. PLS-SEM was preferable due to its numerous advantages compared to first generation techniques. Some of the major advantages are as follow:

- PLS makes fewer demands regarding sample size than other methods.
- PLS does not require normal-distributed input data.
- PLS can be applied to complex structural equation models with a large number of constructs.
- PLS can handle multiple dependent and independent variables in a single model.

Moreover, PLS as variance-based SEM is preferable because covariance-based SEM assumes that the observed measures have random error variance and measure specific variance components, which are not of theoretical interest and are excluded from the measurement model whereas, PLS SEM assumes that the explanation of all observed measure variance is useful.

4. FINDINGS

4.1 Descriptive Findings

This section presents the demographic profile of the respondents. In terms of gender, the number of male respondents is 319 (82 percent) as compared to the number of female respondents which is 68 (18 percent). They are predominantly a master degree holders 212 (55 percent), followed by degree holders 147 (38

percent) and 28 (7 percent) of the respondents are PhD holders. A selection of 387 respondents in this study was registered professional engineer (PE) with BEM (100 percent). The total CPD hours collected by the professional engineer (PE) for the year 2013 was more than 50 hours (100 percent). Table 2 summarizes the demographic characteristics of the respondents.

Table 2: Demographic Profiles of Respondents

Demographics	Categories	Frequency	Percentage (%)
Gender	Male	319	82
	Female	68	18
Level of Education	Bachelor Degree	147	38
	Master Degree	212	55
	Doctoral Degree	28	7
Registered as Professional Engineer (PE) with BEM	Yes	387	100
Total CPD hours collected for the year 2013	More than 50 hours	387	100

4.2 Model Testing

To test the conceptual model of the study, this study uses two-step approach suggested by Anderson and Gerbing (1988) and Chin (2010) to analyse measurement model firstly and structural model secondly. The purpose of this approach is to assess the fit and construct validity of the measurements prior to assessing the structural model for path coefficients or relationships between the constructs. Therefore, “Convergent validity” and “Discriminant validity” will be assessed next to confirm “Construct validity” by looking at the measurement model results. Figure 2 shows the measurement model in this study. Meanwhile, Figure 3 shows the structural model in this study.

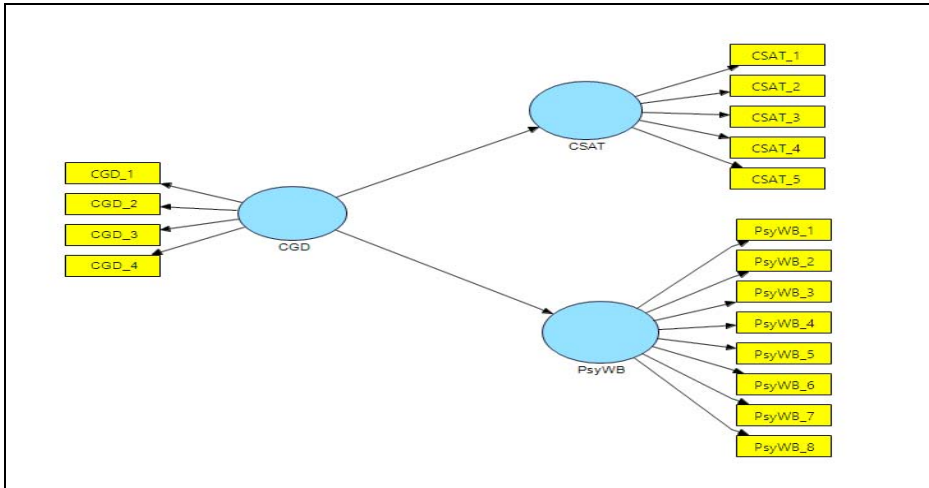


Figure 2: The Measurement Model

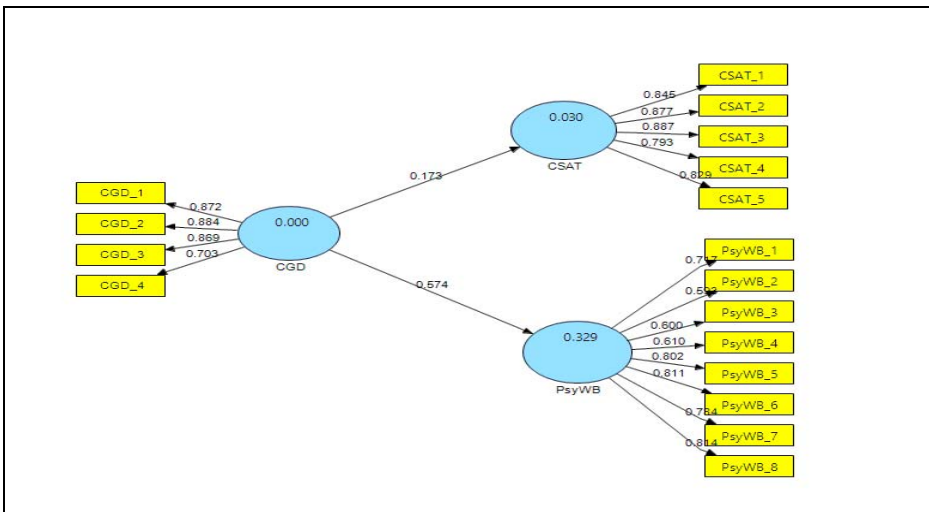


Figure 3: The Structural Model

4.3 Convergent Validity

As depicted in Table 3, cross-loadings, AVE (Average Variance Extracted) and composite reliability could be assessed to confirm the convergent validity. AVE is the mean variance extracted for the items loading on a construct and is a summary indicator of convergence (Fornell & Larcker, 1981). AVE value of at least 0.5 indicates sufficient convergent validity, meaning that a latent variable is able to explain more than half of the variance of its indicators on average (Goetz, Liehr-Gobbers & Krafft, 2009). Next, composite reliability is assessed for

reliability, which is a measure of convergent validity. The composite reliability value should be above 0.7 in order to assure an accurate scale (Nunnally & Bernstein, 1994). Based on this guideline, the CR values as per table 1 are satisfactory and it can be concluded that the measures used provide a satisfactory reliability. In view of the aforementioned results of factor loadings, AVE and composite reliability, adequate evidence of convergent validity is established. To confirm the construct validity, the results of discriminant validity will be discussed next. Table 3 illustrates the items loading, CR and AVE in this study.

Table 3: Results of Items Reliability, Internal Consistency and Convergent Validity

Constructs	Items	Loadings	Composite Reliability (CR)^a	Average Variance Extracted (AVE)^b
Career Goal Development	CGD_1	0.872	0.902	0.698
	CGD_2	0.884		
	CGD_3	0.869		
	CGD_4	0.703		
Career Satisfaction	CSAT_1	0.845	0.927	0.717
	CSAT_2	0.877		
	CSAT_3	0.887		
	CSAT_4	0.793		
	CSAT_5	0.829		
Psychological Well-Being	PsyWB_1	0.717	0.896	0.522
	PsyWB_2	0.593		
	PsyWB_3	0.600		
	PsyWB_4	0.610		
	PsyWB_5	0.802		
	PsyWB_6	0.811		
	PsyWB_7	0.784		
	PsyWB_8	0.814		

a Average variance extracted (AVE) = (summation of the square of the factor loadings)/{(summation of the square of the factor loadings) / (summation of the error variances)}

b Composite reliability (CR) = (square of the summation of the factor loadings)/{(square of the summation of the factor loadings) / (square of the summation of the error variances)}

4.4 Discriminant Validity

Hair et al., (2010) suggest that discriminant validity is the extent to which a construct is fully distinct from other constructs. It is investigated in order to indicate to what extent measures in the model are different from other measures in the same model. Discriminant validity is investigated by comparing the square root of the AVE with the correlations between the variables. Chin (2010) suggests that discriminant validity is established, if the square root of the AVE exceeds the correlations. As depicted in Table 4, the square root of the AVE is placed in the diagonal. It could be noted that the correlations for each construct is less than the square root of the AVE by the indicators measuring that construct, indicating adequate discriminant validity. Based on the reported results, the measurement model confirms the construct validity, which allows proceeding for testing hypotheses and proving the research model.

Table 4: Discriminant Validity

	Career Exploration	Career Satisfaction	Psychological Well-Being
Career Exploration	0.835		
Career Satisfaction	0.173	0.847	
Psychological Well-Being	0.574	0.016	0.722

Note: Diagonals (in bold) represent the square root of the AVE, while off-diagonals represent the correlations

4.5 Hypothesis Testing

The relationships of the direct paths among the exogenous variables and endogenous variables were examined in this section. Two hypotheses were postulated for the relationship between career goal development and individual well-being (career satisfaction and psychological well-being). Findings indicated that the both hypotheses were supported. Career goal development has a positive influence on career satisfaction ($\beta = 0.106, p < .1$) and career goal development has a positive influence on psychological well-being ($\beta = 0.352, p < .01$). The results are presented in Table 5.

Table 5: Path Coefficients for Proactive Career Management Behaviours and Individual Well-Being

No	Relationship	Path Coefficient (β)	Std. Error	t-value	Decision
H1	CGD ---> CSAT	0.106	0.069	1.533*	Supported
H2	CGD --->PsyWB	0.352	0.076	4.646***	Supported

Note: *** $p < .01$ (2.33), ** $p < .05$ (1.645), * $p < .1$ (1.28)

5. DISCUSSION

This paper set off with the main objectives to see firstly, whether career goal development influences on career satisfaction. Secondly, the paper studies whether goal development career influences on psychological well-being. And finally, goal development career strategy implementation influences on psychological well-being.

Based on the empirical finding, this study found that career goal development has a positive influence on career satisfaction ($\beta = 0.106$, $p < .1$). This finding implies that career goal development gives an impact on career satisfaction. This result is in line with the earlier findings of past scholars (Crant, 2000; Lent, 2005; Kuijpers et al., 2006; Seibert et al., 2001; Barnett & Bradley, 2007) who opined that the individuals taking proactive actions to achieve their career goals (engaging in career management behaviours) are more likely to experience career satisfaction. As mentioned earlier, the respondents in this study were the professional engineers who are registered with BEM. Initially, they were registered graduate engineer with BEM. In order to upgrade themselves to be a registered professional engineer, they need to (a) satisfy the training requirements of BEM (b) passed BEM's Professional Assessment Examination and (c) accumulate an average of 50 hours of CPD activities conducted by IEM per year. By upgrading themselves as a registered professional engineers, it is reasonable to assume that the professional engineers are engaged to career goal development, which is individuals identify their career goal. By following the above requirements set by BEM, the professional engineers had actually programming their behaviour accordingly. For example, they have established a detailed career development plans, they been very clear about how their present position is related to their career objectives and finally, they been very clear about what efforts are needed to realize their career goals. Therefore, by involving in career goal development, they would have more chances to get promoted and at the same time to get satisfied with their career. As a result, this study found that career goal development has a positive influence on career satisfaction.

If also found that career goal development has a positive influence on psychological well-being ($\beta = 0.352$, $p < .01$). This finding implies that individuals who established detailed career development plan is often feel particularly excited or interested in something. According to De Vos and Soens (2008), the more focused employees' career goals, the more likely they will be engage in behaviours which will help them reach their goals and greater their motivation to participate in development activities. In the career literature, goal focus has been shown to be an important determinant of career goal attainment and satisfaction with career progress (Sugalski & Greenhaus, 1986). In this sense, career goal is expected to influence their level of individual psychological well-being. Stated in the literatures, several factors such as skill utilization, professional development and social support have consistently been shown to be related to functional well-being related outcomes such as engagement, job satisfaction and health (Halbesleben, 2010). With the result of this new hypothesis testing, it contributes to the literature that career goal development has a positive influence on psychological well-being.

6. CONCLUSION

While the majority of previous literature in well-being originates from western backgrounds with industrial context, this paper has been one of the few studies which have investigated the interaction among proactive career behaviours on psychological well-being in Malaysian context. This paper intends to contribute to the literature regarding the relationship between career goal development and individual well-being (career satisfaction and psychological well-being) among professional engineers in Malaysia. Theoretically, the findings support by providing empirical evidence on the influence of career goal development on career satisfaction and psychological well-being. It implies that professional engineers are more likely to engage career goal development is responsible for managing their career. This indicates that engineers who are committed to the organization do not frequently complain about their health.

Practically, the findings of the present study encourage professional engineers to have high career goal development, so that they will be motivated to fully use their acquired skills or to develop full potential abilities. The implication of this is that individual would experience their job as meaningful and they enjoy working. In view of the findings, organization to do some revision on the engineer's key performance areas, so that they would feel that their own goals and expectation are aligned with their working companies they work for. Also, it is crucial for the organization to provide an opportunity and let the engineers to fully use their acquired skills or to develop full potential abilities In conclusion; engineers act as a key player and have highly contribution to Malaysia economy development. They also act as the key to wealth creation and helping the country

to become an active player in the global economy. Since that the study on well-being is relatively new in Malaysia, and as the government already has put into the spirit, organizations are really needed to have heavy emphasis on the employee's well-being. By highlighting the career goal development as important contributors towards individual well-being, this study calls for organization and the government to look into enhancing the well-being of professional engineers so as to enhance their image, reputation and sustainability.

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