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A Validation Study of Person-Vocation Demands-Abilities Fit among Engineers in Malaysia Context

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Abstract: The topic on Person-Environment (PE) fit has attracted a lot of attention from academic scholars and practitioners, and it has been the topic which experiences pervasive growth in business literature, as it is reported to influence many positive human behaviors. As it is important to study about PE fit, however, most researches focused on only two dimensions of PE fit which were person-organization (PO) fit and person-job (PJ) fit, and very limited number of studies had focused on the other three dimensions of PE fit, namely person-vocation (PV) fit, person-group (PG) fit, and person-supervisor (PS) fit. This study attempts to discuss and validate the Person-Vocation (PV) Fit construct, which one of the PE fit dimensions using the conceptualization of Demand-Abilities (DA) fit. The data was analyzed using AMOS 20.0 software. The results of the study revealed that PV fit that was conceptualized as DA fit was highly relevant in measuring PV fit construct. Based on the results, it is suggested that the PV fit (DA measures) could be useful for measuring the level of match between individual's abilities and their occupational selection.

INTRODUCTION

Lewin's (1951) theory stated that human behavior is resulted from the interaction between the person and the environment. This explains that an individual's positive behavior is due to their working experience in an environment that suits them well and matches their personal characteristics (Kristof-Brown *et al.*, 2002). On the other hand, individuals who execute negative or bad behavior tend to be related to the environment which does not match the individuals' interests and characteristics. By applying the concept of Lewin's Field Theory (1951), an individual needs to work in a well-suited work environment that can lead to positive human behavior which could be referred to the term of PE fit. Specifically, PE fit which refers to a match between an individual and some specified work environment (Kristof-Brown *et al.*, 2005) is claimed to be the recent growing research

interest as it is reported to influence positive human behavior (Lauver & Kristof-Brown, 2001; Kristof-Brown *et al.*, 2005; Vogel & Feldman, 2009). In general, fit refers to a congruence (O. Reilly *et al.*, 1991) or compatibility (Cable & Parsons, 2001) between an individual's attributes (e.g. values, goals, skills, knowledge, beliefs, personality traits, preferences, or cognitive styles) (Jee & Kristof-Brown, 2012; Cools & Van den Broeck, 2007) and some environmental object (e.g. organization, work group, job) (Kristof, 1996). It involves the compatibility or congruence between an individual or employee and their work environment.

The conceptualization of PE fit was firstly defined by Munchinsky and Monahan (1987). They had conceptualized PE fit into two different forms of fit, namely supplementary fit and complementary fit. Supplementary fit occurs when a person supplements, embellishes, or possesses characteristics which are similar to the other individuals or components in an environment. On the other hand, a complementary fit occurs when a person's characteristics are required for fulfillment of job success. It occurs when a person provides what an organization wants in order to achieve success by applying individual's knowledge, skills, and abilities (KSAs) (Edwards, 1991). This definition of complementary fit discusses the complementariness of an individual's abilities with the organization's needs and demands which was term as Demand-Abilities (DA) fit.

Specifically, this study only focused on PV fit, as it becomes the broadest element in PE fit dimensions (Jansen & Kristof-Brown, 2006) and it covers the biggest and the first aspect before an individual is involved in professional of working setting. Other than that, most studies on PE fit, especially PV fit focused on supplementary conceptualization of fit (Vogel and Feldman, 2009; Tracey & Rounds, 1993), rather than using the conceptualization of demands-abilities (DA) fit. DA fit occurs when an individual's characteristics such as knowledge, skills, and abilities (KSAs) fit the needs of one object (Kristof, 1996), such as vocation or professional element. DA fit helps individual to achieve their career goals through applying their KSAs. On the other hand, an individual who does not possess specific KSAs may face difficulties in performing specific job in their profession. Thus, this may result in a failure of a job implementation and consequently affect their job performance. Therefore, it is important for an individual to possess specific KSAs that complement the work environment's demands for a successful job/profession implementation, thus confirmed the importance of PV DA fit towards one's profession or vocation.

Even though DA fit is important in an organization, a limited number of studies has reported the impact of DA fit (Hoffman & Woehr, 2006). Most of the researches concentrated on the impact of similarity between a person and their work environment which represented the supplementary of fit (e.g. Kristof-Brown, 2000; Sekiguchi, 2007; Zoghbi-Manrique de Lara, 2008; Mohamed, 2009; Ji, 2006; Iplik *et al.*, 2011). The only well documented DA fit research was found in the field of person-job fit. Therefore, it is important to investigate the DA measures on the PV fit construct. Therefore, the present study intends to measure the construct validity of PV using DA fit measures.

LITERATURE REVIEW

Person-Vocation fit

Person-vocation (PV) fit is the broadest element in PE fit dimensions (Jansen & Kristof-Brown, 2006) and it covers the biggest and the first aspect before an individual is involved in the work setting. PV fit has a strong root in the field of vocational psychology. Based on the concept of vocational psychology, the researcher investigated how one individual was more selective towards certain occupation and how people's

personality and attributes influenced them to choose one occupation. The founder of vocational psychology, Parson (1909, cited in Edwards, 2008) became the first person that raised the issue of fitting an individual's characteristics with the different vocation characteristics (Ahmad, 2012). The concept of Parson's (1909) tripartite vocational choice model was used as the basic concept in explaining the relationship between a person and their work environment, which is currently known as PE fit. Parson's (1909) model has three fundamental disciplines that influence an individual to select certain occupation based on their personal characteristics. The three disciplines are (a) self-analysis of one's abilities, aptitudes, interests, ambitions, and resources; (b) occupational analysis of work requirement, tasks, and opportunities; and (c) the use of "true reason" to relate the self and occupational analyses" (Tracey & Rounds, 1993).

With reference to Parson's (1909) model, an individual will select certain occupation which meets three main elements that relate to their personal characteristics, the requirement of the occupation, and the combination of judgment between personal characteristics and occupation requirement. An individual will analyze the level of their personal characteristics (such as their abilities, and interests), and the occupation requirement (such as work requirement and tasks), and further they will compare their personal level and occupation level in making decision to choose one occupation. At this point, an individual will choose one occupation which matches their personal characteristics and occupation level, and they will remain in that occupation as long as their personal characteristics meet the requirement of the occupation.

Parson's (1909, cited in Edwards, 2008) basic model has dominated the field of fitting a person's characteristics and vocation characteristics and has attracted many other vocational researchers to investigate the relationship between an individual and a vocation (Edwards, 2008). The pioneering research on PV fit was conducted by Holland (1997) and he had conceptualized PV fit as the degree of matching between an individual's vocational interest and vocation type. Holland (1997) explains that an individual will choose occupation which matches their interest and they will remain in that type of occupation as long as their interest corresponds with their occupation.

In Holland's (1959, cited in Armstrong *et al.*, 2008) work, he developed the theory of vocational personalities and work environments and identified six occupational types that represented work-relevant personality traits, namely Realistic, Investigative, Artistic, Social, Enterprising and Conventional (Edwards, 2008). These six personality traits, which are famously known as RIASEC typology, represent an individual's interests that could be used in selecting vocation type (Edwards, 2008). Through these six types of traits, an individual can select their best occupation which meets their interest and further helps them to well engage in tasks and activities within that type of occupation. In addition, the RIASEC typology model is also viewed as the key driver towards gaining high stability of interests, satisfaction, and performance (Tracey & Rounds, 1993). This point explains that when one's interest is closely related to one's personality type, they will demonstrate high stability in interests and vocations that represent that particular personality type. In addition, matching a person's interest to their occupation (selecting vocation using RIASEC model) can lead to high vocational satisfaction and produce greater job performance that can result in greater vocational achievement (Tracey & Rounds, 1993) compared to lower degree of fit between interest and occupation. By using the RIASEC model by Holland (1959), matching a person's vocation depending on their interest could be used as a key element in profession selection. For example, an individual who fulfills the Artistic typology is more creative in nature. They best work in art and design profession. They are creative persons and perform their job using their own imagination without depending on others' ideas and

helps (Edwards, 2008). Therefore, they will produce best work and succeed in the field of art and design profession. On the other hand, an individual who falls under the "Social" typology is highly skilled in communicating with others. They have good communication skills and highly extravert persons who enjoy working and communicating with others (Tracey & Rounds, 1993). Therefore, they are excellent in communicating or marketing profession that requires employees to communicate well with customers.

Therefore, by using the RIASEC model by Holland (1959, cited in Armstrong *et al.*, 2008) an individual could identify occupation that matches their character. Holland's (1959) model applies similarity concept between an individual's interest and vocational type in profession selection. This similarity concept represents the conceptualization of supplementary fit (Kristof, 1996). However, in the present study, the PV fit was conceptualized using the complementary DA fit.

Person-Vocation Demand-Abilities Fit

Vogel and Feldman (2009) in their study defined PV fit in terms of DA fit and NS fit. They postulated that PV fit involved congruence among an individual's skills and profession needs. This congruence of skills and profession needs represented DA fit definition, as it explained the skills possessed by an individual that were required by an occupation. Besides, Kennedy (2005) and Kennedy and Huff (2005) conceptualized PV fit using the concept of DA. They defined PV fit as employees' abilities required by vocational demands. In Kennedy's (2005) study, he reported that PV in terms of DA fit was an important element in an organization, especially in enhancing the occupation commitment and job performance. Converse, Oswald, Gillespei, Field, and Bizot (2004) argue that the fit between an individual's abilities and their occupation ability requirement has important consequences on the individual and their organization. Converse *et al.* (2004) did a study on the ability-based matching application for career guidance and discussed the positive consequences of PV fit on an individual and their organization. They claimed that an individual's abilities predicted the employee's career choice and enhance their individual performance. As the employee selects occupation which based on their abilities, this will enhance their interest and motivation to implement their role effectively.

As explained above, Parson's (1909) model also supported the definition of PV DA fit as one individual need to analyze their self-abilities and occupational work requirement when to choose their profession or job. This means that those who possessed specific abilities that fit the occupation demands would be good in their career/ vocation implementation. In other words, employees who possessed abilities needed by their profession demands were more committed to their profession, as they had adequate KSAs for profession task implementation. Furthermore, high occupation implementation/ commitment could influence employees' to perform better in their job. This shows that PV in terms of DA fit is an important element in an organization and it is significant to study the PV fit by using the conceptualization of DA.

On the other hand, the abilities in the complementary DA fit are referred to employees' attributes, such as experience, education, knowledge, skills, and abilities (Cable & Edwards, 2004; Nikolaou, 2003). However, Edwards (1991) popularized the concept of DA fit in the field of PJ fit, and he described abilities in term of knowledge, skills, and abilities (KSAs) that assisted an individual to fulfill the requirement of their work environment. This conceptualization of abilities further attracted the other researches (Garcia, 2004; Mohamed, 2009; Scroggins, 2003) to investigate the benefits of KSAs in DA fit area.

In summary, studying PV DA fit which focuses on KSAs may provide a significant contribution to the body of knowledge as it could help individual to select most suited profession or career choice that

best fit their own abilities. Those who are fitted with the profession demands are always happy and have high interest with their career, thus influence them perform better in organization. The previous studies also reported the importance of PV fit (DA fit) in an organization, especially towards employees' commitment and performance. Therefore, this study used the concept of DA fit in defining the PV fit. In this study, PV fit refers to the compatibility between an individual's abilities and their vocation demands. As explained earlier, the employees' ability attributes consist of individual KSAs which are needed for vocation demands.

METHODOLOGY

Population and Data Collection Procedure

Population of this study were engineers in semiconductor companies in Malaysia. The selection of engineers due to the focused of the present study in validating the PV DA fit measures. Engineers are considered as professionals (MASCO, 2008) who aim for better career growth and have their own career aspirations (Sekiguchi, 2007; Bigliardi, Petroni & Dormio, 2005). They need to have adequate abilities to meet the demand of their profession and organization in order to succeed in their career. Possessing abilities which meet the demand for the work environment that represents the DA fit concept could assist in individual career growth and career aspirations that consequently could motivate them to stay in an organization. Thus, they need to equip themselves with specific KSAs for a successful job implementation. This situation represents the importance of possessing adequate KSAs for engineers in order to succeed in their career. Therefore, this study used KSAs as the abilities attribute in measuring the PV DA fit among engineers.

Instrument

The person-vocation fit items were taken from the study by Kennedy (2005) and Kennedy and Huff (2005) in measuring PV DA perceptions. This instrument had five items and the first four items were adopted from Lauver and Kristof-Brown's study (2001). Only the last item was developed by Kennedy (2005) in measuring PV fit (demands-abilities fit). The items revealed a high reliability value of 0.89. The details of the items are presented in Table 1.

Table 1
Operational Definition and Items for Person-Vocation Fit

Variable	*Operational Definition*	*Items*
Person-Vocation Fit	Employees' perceived their individual's knowledge, skills and abilities congruence with their vocation or professional demands.	i. My abilities fit the demands of my profession as engineer. ii. I have the right abilities for my profession as engineer. iii. There is a good match between the requirement of my profession as engineer and my skills. iv. I am the right type of person to be working in my profession as engineer. v. My training allow me to meet the challenges of my profession as engineer.

*Sources:*Lauver and Kristof-Brown (2001), Kennedy (2005), Kennedy & Huff (2005)

Demographic Profile

Total 268 respondents involved in the study, where 192 respondents (71.6%) were males, while 76 respondents (28.4%) were females. These respondents were in the age group between 25-34 years (72%) and more than half of them were Chinese (66%). Out of the total number of 268 respondents, 125 of them (46.6%) were single, 135 (50.4%) were married, only one respondent (0.4%) being a widow and the other seven respondents did not answer the question regarding their marital status. As the respondents of this study were engineers, majority of them (89.2%) graduated with a first degree in the engineering disciplines and 21 of them (7.8%) held a master and some other degree in the engineering disciplines. In terms of job tenure, 204 respondents (76.1%) had worked for their current organization between two to 10 years and they received salary between RM2501 to RM6000.

Table 2
Demographic Characteristics

Demographic Characteristic		*Frequency*	*Percentage*
Gender	Male	192	71.6
	Female	76	28.4
Age	Below 25 years	18	6.7
	25-29 years	100	37.3
	30-34 years	93	34.7
	35-40years	37	13.8
	40-44years	16	6.0
	45-50 years	4	1.5
Race	Malay	67	25.0
	Chinese	177	66.0
	Indian	10	3.7
	Others	6	2.2
	Not Stated	8	3.0
Marital Status	Single	125	46.6
	Married	135	50.4
	Widowed	1	0.4
	Not stated	7	2.6
Education Level	First Degree	239	89.2
	Masters	21	7.8
	Others	8	3.0
Job Tenure	<2years	45	16.8
	2-5years	115	42.9
	6-10years	89	33.2
	>11 years	19	7.1

contd. table 2

Salary Amount	RM1500-RM2000	2	0.7
	RM2001-RM2500	18	6.7
	RM2501-RM3000	52	19.4
	RM3001-RM3500	43	16.0
	RM3501-RM4000	34	12.7
	RM4001-RM4500	38	14.2
	RM4501-RM5000	18	6.7
	RM5001-RM5500	18	6.7
	RM5501-RM6000	21	7.8
	RM6001-RM6500	6	2.2
	RM6501-RM7000	7	2.6
	More than RM7000	6	2.2
	Not stated	5	1.9

FINDING

Initial Validity: Exploratory Factor Analysis (EFA)

The data were analyzed using Statistical Package for Social Science (SPSS) version 16.0 and Analysis of Moment Structures (AMOS) 20.0. A principle component factor analysis using varimax rotation was conducted on five initial items of PV fit. Table 3 shows the results of principle component factor analysis of PV fit variable. From the rotation of 5 items, only four items were finally extracted for PV fit. All the accepted items reported value of factor loading between 0.710 and 0.834. The eigenvalues for the factor was 1.616. The KMO result was 0.886 which showed the sample's adequacy. The Bartlett's Test of Sphericity was found to be significant at $p < 0.001$ with approx. In addition, Table 4 presented the reliability result of PV fit. The results showed high Cronbach's Alpha values for PV fit factor ($\alpha = 0.801$). All the results above supported the validity of measurement for PV fit.

Table 3
EFA for Person–Vocation Fit

Items	*Factor 1*
Person-Vocation1	0.834
Person-Vocation2	0.824
Person-Vocation3	0.710
Person-Vocation4	0.711
Eigen Values	1.616
Variance Explained	6.215
KMO	0.886

Note: ***p< 0.001

Table 4
Reliability Result

Constructs	*Items*	*Mean*	*Standard Deviation*	*Cronbach's Alpha*
Person-Vocation Fit	4	5.020	0.658	0.801

Confirmatory Factor Analysis Results

The result of CFA for PV fit is shown in Figure 1 below. The result showed that the data fit the model perfectly ($\chi 2/df = 1.434$; p= 0.238; GFI= 0.995; TLI= 0.990; CFI= 0.997; RMSEA= 0.040, and SRMR= 0.006). In addition, the factor loading of items exceeded or greater than 0.5 (Hair *et al.*, 2010) which shows support for convergent validity. Table 5 exhibited the full results for PV fit measurement model.

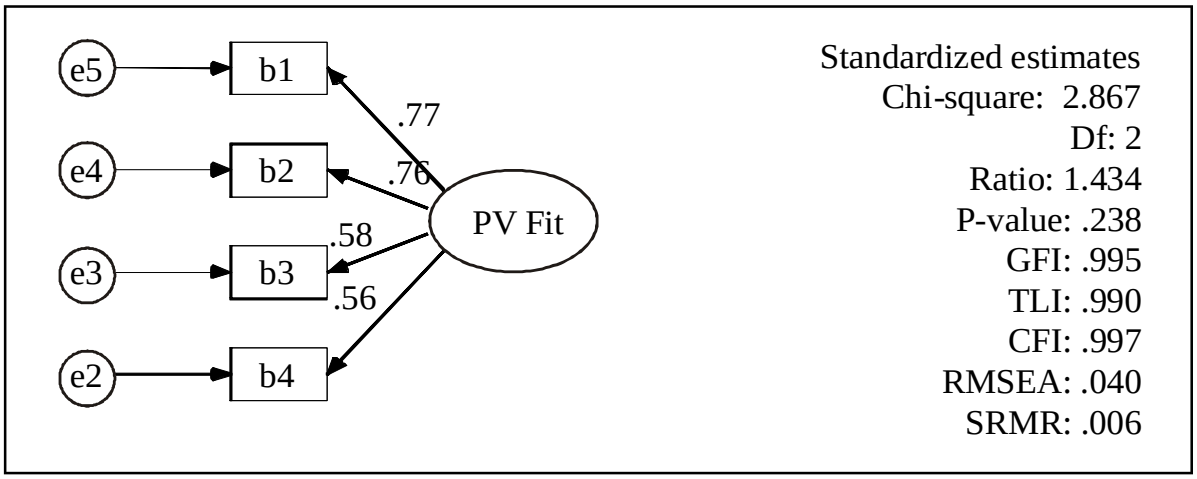

Figure 1: PV Fit Measurement Model

Table 5
The CFA Results of Person-Vocation Fit

Exogenous Variable	*Dimension*	*Construct= 4*	*Standardized Regression Weight*
PE Fit	PV Fit	b1	0.77
		b2	0.76
		b3	0.58
		b4	0.56
Model Fit Indicator			
Chi-square			2.867
Df			2
Ratio			1.434
P-value			0.238
GFI			0.995
TLI			0.990
CFI			0.997
RMSEA			0.040
SRMR			0.006

DISCUSSION AND CONCLUSIONS

The significant importance of PV DA fit had lead the present study to be done among engineer in Malaysia context. PV fit which was important for career selection becomes more important in the context of DA fit as it explains how's certain KSAs that best suited with one's profession would help them to perform better in their career. This study which was focused on validation instrument of PV DA fit had successfully presented through the application of AMOS 20.0. From the results conducted to 268 engineers, four items were extracted for PV DA fit measures. As the measures was successfully confirmed through EFA and CFA, future study could apply the measurement in studying the effect of PV DA fit to human behavior and organizational outcomes. Future study could also being conducted to analyze the convergent and discriminant validity, specifically in other country or different category of respondent for more validation evidence.

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