

ANALYSIS OF THE JOB DESCRIPTIVE INDEX (JDI) USING CONVERGENT AND DISCRIMINANT VALIDITY

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ABSTRAK

Isu kepuasan kerja telah menjadi fokus banyak kajian dalam psikologi industri dan organisasi kerana ia merupakan satu petunjuk kepada pencapaian tinggi. Banyak instrumen psikologi telah dibina untuk mengukur kepuasan kerja dan satu daripadanya ialah Job Descriptive Index (JDI). Kajian ini bertujuan menilai aspek psikometrik Job Descriptive Index (JDI) khususnya kesahan konvergen dan diskriminan. Sejumlah 366 responden dipilih dalam kalangan pegawai polis yang berkhidmat sebagai pegawai keselamatan di satu organisasi. Mereka diminta menjawab JDI. Analisis statistik yang digunakan ialah korelasi Pearson, alfa Cronbach dan analisis multitret-multimetod menggunakan pekali W. Keputusan menunjukkan bahawa JDI mempunyai kesahan konvergen yang memuaskan dengan lima subskala Minnesota Satisfaction Questionnaire (MSQ). Dapatan ini jelas menunjukkan bukti kesahan gagasan telah diperolehi dalam analisis matriks multitret-multimetod. Di samping itu, JDI juga menunjukkan kesahan kriteria dengan korelasi signifikan di antara kepuasan kerja dan komitmen organisasi. Bukti-bukti kesahan gagasan dan kriteria ini disokong oleh keputusan alfa Cronbach yang tinggi menunjukkan bahawa ia adalah satu instrumen yang mempunyai kesahan dan kebolehpercayaan untuk mengukur kepuasan kerja.

INTRODUCTION

Job satisfaction is a very important issue in industrial and organizational psychology as it is related with many factors such as job performance, commitment, stress and turnover. Among the most accepted definition of job satisfaction is by Locke (1969) who defines job satisfaction as a positive emotional feeling, a result of one's evaluation towards his job or his job experience by comparing between what he expects from his job and what he actually gets from it. Job satisfaction is the result of the interaction of the employees' values and his perception towards his job and environment (Locke, 1976). According to Everts (2001), job satisfaction is an important concept to an organization that contributes to the natural characteristics of the job in which dissatisfied employees negatively affect delivery of service. Experiences of dissatisfaction will generate disturbing behavior which will negatively affect the performance of a task and individuals around them. If

they cannot overcome those feelings, most probably they will choose to leave the organization or the career on the whole.

Job satisfaction is always considered based on intrinsic and extrinsic factors as suggested by Herzberg *et. al.* (1959). Intrinsic factors are components such as opportunity for development and promotion, recognition, responsibility and achievement and these will increase job satisfaction. On the other hand, extrinsic factors are factors like work environment, pay and company policies that eliminate job dissatisfaction. To decrease dissatisfaction and maintain employees in their jobs, employers must therefore move forward with values related with the job.

Another variable that has gained attention in relation to job satisfaction is organizational commitment and it has become an important measure for behavior effectiveness among employees in organizations. Steers (1977) views organizational commitment as an employee attitude and as a set of behavioural intentions; the willingness to exert considerable effort on behalf of the organization and a strong desire to maintain membership of the organization. Mowday *et. al.* (1979; 1982) further refine the concept of organization commitment by characterizing it into three factors: (a) a strong belief in, and acceptance of, the organization's goals and values, (b) a willingness to exert considerable effort on behalf of the organization; and (c) a strong desire to remain in the organization. Bateman and Strasser (1984) state that organizational commitment has been operationally defined as "multidimensional in nature, involving an employee's loyalty to the organization, willingness to exert effort on behalf of the organization, degree of goal and value congruency with the organization, and desire to maintain membership.

Meyer and Allen (1991) and Dunham *et. al.* (1977) have identified three types of commitment; affective commitment, continuance commitment, and normative commitment. Affective commitment is defined as the emotional attachment, identification, and involvement that an employee has with its organization and goals (Mowday *et. al.*, 1997; Meyer & Allen, 1991; O'Reily & Chatman, 1986). Affective commitment can also be referred to as the employee's emotional attachment to the organization. This means that employees with strong affective commitment remain with the organization because they want to do so. Continuance commitment refers to the extent to which the employee perceives that leaving the organization will be costly (Meyer & Allen, 1991). In other words, employees with strong continuance commitment remain because they have to do so. Finally, normative commitment refers to the employee's feelings of obligation to the organization and the belief that staying is the 'right thing' to do (Meyer & Allen, 1991). Therefore, employees with strong normative commitment remain because they feel that they ought to do so.

Job satisfaction as a significant determinant of organizational commitment has been well documented in numerous studies (Porter *et. al.*, 1974; Mottaz, 1987; Williams & Anderson, 1991; Vanderberg & Lance, 1992; Knoop, 1995; Young *et. al.*, 1998; Testa, 2001). Mowday *et. al.*

(1979) provided some evidence relevant to the discriminant validity of organizational commitment. Across five samples, Mowday *et. al.* (1979) found the median correlation between the organizational commitment and facet satisfactions of the Job Descriptive Index (JDI; Smith *et. al.*, 1969) to be 0.41.

Brooke *et. al.* (1988) provided some such evidence. In addition to organizational commitment and job satisfaction, they examined job involvement. Organizational commitment was measured by a 9-item version of the Organizational Commitment Questionnaire (OCQ), job satisfaction was measured by an adapted form of the Brayfield and Rothe (1951) scale, and job involvement was measured by the 10-item scale developed by Kanungo (1982). Based on confirmatory factor analyses and correlations with seven external variables (pay, routinization, centralization, distributive justice, role stress, work involvement, and kinship responsibility), they concluded that organizational commitment, job satisfaction, and job involvement were three empirically distinct constructs. The implication is that the organizational commitment, job involvement, and job satisfaction items combined quite well to form a homogeneous measurement scale.

Mathieu and Farr (1991) sought to replicate Brooke *et. al.*'s (1988) finding using two different samples. Like Brooke *et. al.* (1988), they derived three separate factors representing organizational commitment, job involvement, and job satisfaction. The correlations between job satisfaction and organizational commitment were 0.78 in sample 1 and 0.69 in sample 2. Also using differences in chi-square statistics to measure discriminant validity, Mathieu and Farr (1991) found correlations with job involvement in their two samples of 0.59 and 0.28 for job satisfaction and 0.73 and 0.45 for organizational commitment. Thus, organizational commitment was more highly correlated with job involvement than was job satisfaction.

Using chi-square statistics to confirm proper models is far from conclusive proof of discriminant validity. La Du and Tanaka (1989), and Marsh and Hocevar (1985) have noted that with even relatively large sample sizes, chi-square statistics, the fit index employed by Brooke *et. al.* (1988) and Mathieu and Farr (1991), will often be statistically significant with even trivial differences in fit. Therefore, the evidence used by the above authors, given the relatively large sample sizes they employed (average sample size for the three samples was 357), by itself is not convincing proof that measures of organizational commitment and job satisfaction are clearly distinct from one another.

Past studies have shown that employees' age has positive correlation with commitment. Mathieu and Zajac (1990) in a meta-analysis on 41 samples involving 10,335 research subjects reported that the correlation of mean was positive. Based on Mathieu and Zajac's (1990) meta-analysis, the mean correlation (corrected for unreliability) between job satisfaction and organizational commitment is 0.53. The corrected mean correlation between job satisfaction and attitudinal organizational commitment is 0.69 (Mathieu & Zajac, 1990). As another example, the

analysis of the Gillet and Schwab (1975) data found the corrected correlation between the JDI composite and the Minnesota Satisfaction Questionnaire (MSQ) composite to be 0.79. In other words, the correlation between job satisfaction and organizational commitment is of nearly the same magnitude as the convergent validity between alternative measures of job satisfaction.

Allen and Meyer (1996) also conducted a study examining the relationship between age and affective commitment and established the positive correlation involving two groups of subjects which were 123 university library employees and 168 hospital employees of various ranks. Earlier studies on organizational commitment (Meyer & Allen, 1984) suggested that older workers tend to be more committed to an organization since they are likely to experience greater satisfaction with their jobs.

Feinstein (2000) also conducted a study on 137 employees in two restaurants in Nevada using the MSQ and OCQ. Results showed that length of service has significant effects on several satisfaction component scores, the store location also has significant effect on level of satisfaction with policy, education level significantly influenced satisfaction in terms of recognition. In addition, satisfaction with policy, reward, work environment and promotion has significant relationship with organizational commitment.

A positive relationship between job satisfaction and organizational commitment has been reported by studies involving qualified professionals. Wu and Norman (2005) conducted a study in a nursing department of a medical university in China with a sample (75) of full time final year (clinical practice year) degree level nursing students. They found a positive correlation between job satisfaction and organizational commitment showing that student nurses who were more satisfied with the nursing as a job were also more committed to the health care service. A consistent finding was also obtained in the study by Redfern *et. al.* (2002) who reported a strong relationship between job satisfaction and organizational commitment among health care staff in the United Kingdom.

Research Objectives

The objectives of this research are to:

- 1) Test the criterion validity of Job Descriptive Index through the correlation between job satisfaction and organizational commitment.
- 2) Test the convergent and discriminant validity of Job Descriptive Index with Minnesota Satisfaction Questionnaire.
- 3) Assess the reliability of Job Descriptive Index.

METHOD

Participants

The participants of this study involved 366 police officers in one formation of the Royal Malaysian Police in Klang Valley, Malaysia. Participants were chosen using purposive sampling with lower ranks from Constable to Sub Inspector as the determining factor. The breakdown of respondents according to gender and ethnicity of officers is shown in Table 1.

Table 1: Percentage of Participants according to Gender and Ethnicity

Ethnicity	Male		Female	
	N	Percentage	N	Percentage
Malay	276	75.4	51	13.9
Chinese	10	2.7	1	0.3
Indian	1	0.3	0	0.0
Others	27	7.4	0	0.0

Instruments

The instrument used consisted of a four-part questionnaire which were administered to participants. The researcher also included questions on participants' demographic profile such as gender, ethnicity and rank. The questionnaires were:

1. Part A: Demographic profile of respondents such as age, gender, ethnicity, marital status, length of service, salary, education level and rank.
2. Part B: The Job Descriptive Index (JDI) developed by Smith *et. al.* (1969). JDI consists of 72 items arranged in five dimensions which are Present Job, Present Pay, Supervision on Present Job, Opportunities for Promotion and People on your Present Job. Each dimension has 18 items except for Present Job and Opportunities for Promotion which consist of nine items each. Respondents are required to answer "Yes", "No" or "?". The scores are given according to the *scoring key* available in the manual. The interpretation of scores can be divided into three categories:
 - i. 18 to 30 – low job satisfaction
 - ii. 31 to 42 – moderate job satisfaction
 - iii. 43 to 54 - high job satisfaction

The JDI has shown satisfactory reliability and validity according to several studies (Campbell & Fiske, 1959; Schneider & Dachler, 1978). For instance, Schneider and Dachler (1978) demonstrated

that JDI has alpha reliability ranging from .56 to .58, while Smith *et al.* (1969) found alpha reliability ranging from .45 to .75.

3. Part C: The Minnesota Satisfaction Questionnaire (MSQ) consisting of 20 items that represent 20 work dimensions. The MSQ items are: (1) items 1, 2, 3, 4, 7, 8, 9, 10, 11, 15, 16 and 20 for intrinsic motivation; (2) items 5, 6, 12, 13, 14 and 19 for extrinsic motivation, and (3) items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20 for overall satisfaction (Weiss *et al.* 1967). The 20 items and dimensions can be further divided into three facets:
 - a. Intrinsic Satisfaction: Ability Utilization, Activity, Achievement, Authority, Independence, Moral Values, Responsibility, Security, Creativity, Social Service, Social Status and Variety.
 - b. Extrinsic Satisfaction: Advancement, Company Policies, Compensation, Recognition, Supervision-Human Relations and Supervision-Technical.
 - c. Overall Satisfaction: [Working Conditions, Co-workers] + Intrinsic Satisfaction + Extrinsic Satisfaction.

Weiss *et al.* (1967) reported that the MSQ has shown good reliability ranging from .77 to .92.

4. Part D: The TCM Employee Commitment Survey developed by Allen and Meyer (1996) that measures three forms of organizational commitment and they are: affective, continuance and normative. Meyer and Allen (1997) has developed six items for each type of commitment. Respondents are required to answer using a 7-point Likert scale: strongly disagree, moderately disagree, slightly disagree, neither disagree nor agree, slightly agree, moderately agree, and strongly agree. The TCM was reported to have good reliability ranging from .65 to .88 for all its dimensions (Allen & Meyer, 1996; Cohen, 1993; Cohen & Kirchmeyer, 1995; Somers, 1995; Somers & Birnbaum, 1998).

RESULTS

Criterion Validity of Job Descriptive Index

Results showed that there was a low but significant correlation between present job and affective commitment, $r = 0.108$, $p < 0.05$. Present pay did not show significant correlation with affective commitment, $r = 0.012$, $p > 0.05$. Supervision on present job showed a low but significant correlation with affective commitment, $r = 0.192$, $p < 0.01$. Opportunities for promotion did not have significant correlation with affective commitment, $r = 0.002$, $p > 0.05$. People on the present job also did not show any significant correlation with affective commitment, $r = 0.090$, $p > 0.05$. Finally, overall

satisfaction had significant positive correlation with affective commitment, $r = 0.386$, $p < 0.01$). The results are shown in Table 2.

Table 2: Correlation Coefficients between Dimensions of Job Satisfaction and Organizational Commitment

Dimensions	Affective	Continuance	Normative
Present Job	0.108*	0.013	0.121*
Pay	0.012	-0.028	-0.029
Supervision	0.192**	0.229**	0.214**
Opportunities for Promotion	0.002	-0.018	-0.046
People on the Present Job	0.090	0.227**	0.195**
Overall Satisfaction	0.386**	0.503**	0.515**

* $p < 0.05$

** $p < 0.01$

Table 2 also shows the results of correlation between dimensions of job satisfaction with continuance commitment. Results showed no significant correlations between present job, $r = 0.013$, $p > .05$, pay, $r = -0.028$, $p > .05$ and opportunities for promotion, $r = -0.018$, $p > .05$ with continuance commitment. However, significant correlations were obtained between supervision, $r = 0.229$, $p < .01$, people on the present job, $r = 0.227$, $p < .01$, and overall satisfaction, $r = 0.503$, $p < .01$ with continuance commitment.

Based on the results, only two dimensions of job satisfaction did not have significant correlations with normative commitment, and they are; pay, $r = -0.029$, $p < .05$, and opportunities for promotion, $r = -0.046$, $p > .05$. The other four dimensions reported significant correlations with normative commitment, with present job, $r = 0.121$, $p < .05$, supervision, $r = 0.214$, $p < .01$, people on the present job, $r = 0.195$, and overall satisfaction, $r = 0.515$, $p < .01$.

The results obtained showed that Job Descriptive Index has criterion validity when correlated with the criterion of organizational commitment. Although not all dimensions of job satisfaction showed significant correlation, but more than half of the results showed significant correlations which provided evidence of criterion validity. Two dimensions, which are pay and opportunities for promotion were found to have no significant correlations with organizational commitment and thus can be

concluded that they cannot be used as criteria for validation of job satisfaction inventory.

Convergent and Discriminant Validity of JDI

According to Gillet and Schwab (1975), there are four scales found to measure the same facets in JDI and MSQ. These scales or dimensions are satisfaction with pay, opportunities for promotion, supervision and people on the present job. Therefore, these four dimensions in JDI and MSQ were taken as items in convergent and discriminant analysis in construct validation of JDI.

Two methods of analyses were used. First, the procedure as suggested by Campbell and Fiske (1959) was employed to assess convergent and discriminant effect through the examination of correlation coefficients among the similar and dissimilar scales across the two instruments. Second, to test the degree of agreement among the blocks, correlation coefficients were ranked according to size and Concordance coefficient, W (Siegel, 1956) was calculated.

To fulfill the requirements of assessing the convergent and discriminant validity of JDI, the scores of the identified facets in JDI and MSQ were correlated and the results are shown in Table 3. To determine the convergent and discriminant validity of the instrument, Campbell and Fiske (1959) has proposed four criteria. Criterion 1 is for convergent validity while Criteria 2 to 4 are for discriminant validity. The criteria are listed in the following:

- i. Criterion 1: Data in validity diagonal (circled) should be higher and significantly different from zero. In other words, the correlation between the two instruments should be high. Results showed that this requirement was fulfilled for pay and compensation (0.38), opportunities for promotion and development (0.48), supervision and supervision-human relations (0.67) and people on the present job (0.51).
- ii. Criterion 2: The value of validity diagonal should be higher than the values in the columns and rows in the heterotrait-heteromethod triangle (broken lines triangle). As an example, the correlation between pay and compensation measured by each instrument should be higher from the correlation between pay in one instrument and any other variable measured with another instrument. Results shown in Table 3 showed that this requirement was fulfilled for pay-compensation, $r = 0.38$, $p < .0001$, opportunities for promotion-development ($r = 0.48$, $p < .0001$), supervision-supervision human relations ($r = 0.67$, $p < .0001$), and people on the present job ($r = 0.51$, $p < .0001$).
- iii. Criterion 3: The value of validity diagonal should be higher than the correlation values in the heterotrait-monomethod triangle

(continuous line triangle). For example, the correlation between pay and compensation should be higher than the correlation between pay measured by one instrument and other variables measured by the same instrument. Results showed that this requirement was also fulfilled for pay and compensation ($r = 0.38$, $p < .0001$) whereby the heterotrait-monomethod correlation is higher than the validity diagonal for pay-opportunities for promotion ($r = 0.40$). This requirement was also fulfilled for opportunities for promotion-development ($r = 0.48$, $p < .0001$), supervision-supervision human relations ($r = 0.67$, $p < .0001$) and people on the present job ($r = 0.51$, $p < .000$).

- iv. Criterion 4: The same pattern should be obtained towards the relationship between traits in all the heterotrait diagonal for both monomethod and heteromethod blocks. The Concordance coefficient, W was calculated and found that this requirement was also fulfilled, $W = 0.83$ ($p < .0001$).

Table 3: Intercorrelation Matrix of JDI and MSQ Dimensions

Scale	1	2	3	4	5	6	7	8
JDI								
1. Pay								
2. Opportunities for Promotion	40	-						
3. Supervision	29	40	-					
4. People on the Present Job	17	34	47	-				
MSQ								
5. Compensation	38	22	17	15				
6. Development	34	48	25	26	46	-		
7. Supervision-Human Relations	21	28	67	35	25	36	-	
8. Peers	08	14	31	51	33	35	41	-

The results obtained were very encouraging. The criteria suggested by Campbell and Fiske (1959) were very stringent. However, the results of JDI and MSQ fulfilled all the four criteria. This indicated that the JDI has convergent and discriminant validity.

DISCUSSION AND CONCLUSION

Results of the present study have shown that several dimensions of job satisfactions have significant correlations with components of organizational commitment. Only two dimensions which are pay and opportunities for promotion did not correlate significantly with organizational commitment. Therefore, all the other dimensions can be concluded to be good criteria for job satisfaction. Consequently, the evidence indicated that the instrument JDI that measures job satisfaction has concurrent validity.

These findings were supported by many previous studies documenting the significant relationship between job satisfaction and organizational commitment such as in the studies by Porter et al. (1974),

Mottaz (1987) Williams and Anderson (1991) Vanderberg and Lance (1992) Knoop (1995) Young *et. al.* (1998) and Testa (2001). This was also consistent with findings from Mathieu and Farr (1991), Brooke *et. al.* (1988) and Mathie and Zajac (1990). In the meta-analytic study that sought to examine the antecedents for organizational commitment, Mathieu dan Zajac (1990) has found the mean correlation between job satisfaction and organizational commitment was 0.59. The significant correlation showed that job satisfaction is a strong predictor for commitment for employees in various organizations and work environment.

The results also showed that JDI as a research instrument measuring job satisfaction has good convergent and discriminant validity. The procedure of convergent and discriminant validity (Campbell & Fiske, 1959; Kavanagh *et. al.*, 1971) is an important method used to assess construct validity and standardize job satisfaction instruments (Gillet & Schwab, 1975; Dunham *et. al.*, 1977). To determine both types of validity, the multitrait-multimethod suggested by Campbell dan Fiske (1959) was employed. Based on the results, it was found that the four similar dimensions of JDI and MSQ showed high validity when assessed using the criteria for Campbel and Fiske (1959) procedure. Convergent validity for the four dimensions was significant statistically. Results obtained also fulfilled the requirements of criteria for discriminant validity.

The findings clearly showed that construct validity was found in the MTMM matrix. The monotrait-heteromethod diagonal has shown high correlations followed by the heterotrait-monomethod diagonal and the heterotrait-heteromethod blocks. The high correlation values showed evidence that convergent validity emerged from the data. Moderate correlation for heterotrait-monomethod diagonal showed bias toward the use of similar method in measuring different traits. On the other hand, the low correlations for heterotrait-heteromethod block seemed to indicate evidence on discriminant or divergent validity.

These findings were consistent with studies by Evans (1969) on the convergent and discriminant validity obtained from the four similar dimensions of JDI and *Goal Attainment* using MTMM procedure (Campbell & Fiske, 1959) and the concordance coefficient, *W* (Siegel 1956). Apart from that, Gillet and Schwab (1975) also obtained convergent and discriminant validity on the same four dimensions of JDI and MSQ using the MTMM procedure (Campbell & Fiske 1959) and *analysis of variance* (Kavanagh *et. al.* 1971). McCabe *et. al.* (1980) also found convergent and discriminant validity for JDI and IOR for English and Spanish versions by using the same method.

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