

MODERATING EFFECT OF PERSONAL BACKGROUND VARIABLES ON THE RELATIONSHIP OF MULTI-DIMENSIONAL ORGANISATIONAL COMMITMENT AND PERCEIVED WORK ENVIRONMENT — SUB GROUP ANALYSIS

S. M. Khan*

Abstract Four hundred rail engine drivers using purposive sampling were selected from 34 divisions of Central, Eastern, Northern, North-Eastern, Southern, South Eastern, and Western zones of Indian Railways. Sub-group analysis was used to determine the referent effect of personal background variables (age, total dependent family members, income, length of service, and service in present grade) on the relationship of multi-dimensional organisational commitment and perceived work environment. Age, length of service and service in present grade have moderating effect on the relationship of multi-dimensional organisational commitment and perceived work environment. Utility of moderator variables in determining the relationship discussed. HRD Managers and Behaviourists were admonished to visualize the relationship in reference to emerged significant referent variables for good health of the organisations.

Keywords: Rail Engine Drivers, Indian Railways, Moderator, Work Environment

CONCEPTUAL FRAMEWORK

Moderating variable is a variable that changes (increases or decreases) the otherwise established effect of the independent variable upon the dependent variable. So, if we look at the linear relationship where variable X supposedly causes or affects the variable Y, a moderator variable M would somehow alter the strength of that relationship.

Saunders (1955) categorised in terms of whether they lead to differential validity (i.e., sub-groups formed by fractionation on the moderator scores demonstrate different validity coefficients), or involve moderated regression techniques. He used the term moderator variable to indicate continuous variables that influence the predictive effectiveness of the predictor variable. The latter categorisation centres on the moderator variable as a psychometric characteristic, whereas the former categorisations centre on the moderator variable as descriptions of relationships between variables (either in terms of predictability or in terms of possession of characteristic).

Differential validity examines the influence of a third variable, qualitative or quantitative, on a predictor-criterion relationship. The third variable is used as a basis for splitting the total group into subgroups. A subgrouping variable is the basis for splitting a sample into subgroups with the result

that the validity coefficient of the predictor variable for one subgroup is significantly different from the coefficient of the other subgroup.

Faulty sensitivity/ perception of job is reflected in bad performance. It also invites danger to public life and damage to public property, pollutes work place relations, invites strikes, absenteeism of workers, and loss of production (Pandey & Khan, 2000).

Mathieu & Zajac (1990) found that perceived competence to be positively related with commitment. Morris & Sherman (1981) interpreted that self-referent processes may serve as a means of linking of an individual to the organisation that is; individuals will become committed to an organisation to the extent that it provides opportunities for growth and achievement needs. Mathieu & Zajac (1990) revealed that jobs perceived to be more complex or perhaps enriched, yield higher commitment levels. Borrowing the logic of the job characteristic model, employee growth, need strength would be hypothesized to be a moderator of this relationship.

Commensurate to the social exchange theory, when employees receive resources from their organisation, in reciprocation they bring themselves more fully to work roles and devote greater amounts of cognitive, emotional, and physical resources (Kahn, 1990; Saks, 2006). Conversely, in situations of PCB, where employees perceive that an

* Scientific Officer/Psychology, Western Railway HQ, Churchgate, Mumbai, Maharashtra, India. E-mail: khandrsm@gmail.com

organisation is not living up to its commitments in terms of providing promised inducements, they are motivated to put in extra efforts and be engaged to their tasks (Aggarwal, Thakore & Bhargava, 2010).

In this article our attempt was to set eyes on the relationship between a dichotomous variable and a continuous variable using sub-group analysis. The moderator variables in our case were personal background variables (age, total dependent family members, income, length of service and service in present grade) and were dichotomized at the median anchored as 'low group' (less than or equal to median) and as 'high group' (greater than median). The predictor and criterion variables were perceived work environment and multi-dimensional organisational commitment respectively.

RESEARCH OBJECTIVE

The personal background variables: age, total dependent family members, income, length of service and service in present grade have been considered as moderator. Research objective for the present piece of work can be stated as follows:

1. To determine the moderating effect of personal background variables on the relationship between multi-dimensional organisational commitment and perceived work environment

THE INSTRUMENT

Multi-Dimensional Organisational Commitment Scale

Indian adaptation of organisational commitment scale was used in the study (Khan & Mishra, 2002 c). Originally, the scale was 7-point Likert scale. The scaling was changed to 5-point scales with anchors labeled (5= Strongly agree and 1= Strongly disagree) considering the literacy level of population just being under or around matriculates. It was a multi-dimensional organisational commitment scale, measuring affective, continuance and normative commitment constructs. Each construct comprises six items. Thus, the possible scores for commitment constructs were 6 to 30 and overall organisational commitment scale from 18 to 90. High score indicates high level of agreement and low score indicates low agreement on the multi-dimensional organisational commitment in the organisation.

Median reliability coefficients for affective, continuance and normative commitment sub-scales were 0.91, 0.83 and 0.86 respectively and the same for organisational commitment scale was found to be 0.87. All these coefficients are higher than the same reported by Allen & Meyer (1996) and are significant at 0.001, level of significance.

The construct validity of the scale was tested by factor analysis and it has been examined in several studies using exploratory and confirmatory analyses. The percent of variances accounted by affective, continuance and normative commitment were 59.6%, 64.4% and 52.5 respectively. Significant link between affective commitment and performance was found. The confirmatory factor analysis has provided strong support for the scale, which exhibits discriminant and convergent validity (Hackett, Bycio & Hasudorf, 1994).

Perceived Work Environment Scale

Khan & Pandey (2002 b) tool to study the facets of work environment was used to study the drivers' perceived work environment. The scale consists 46 items, measuring different eleven facets (effectiveness of supervision/management, working conditions, confidence in management, monetary gain, sociability & cooperation within employees, opportunity for growth and development, sense of belongingness with the organisation, citizenship behaviour & recognition at work, work relations, and employee benefit programmes) of work environment. The 5-point Likert format was used to indicate the extent of their agreement with each item anchors labeled (5= Strongly Agree and 1= Strongly Disagree). Thus, the minimum possible score of the scale was 46 and the maximum 230. Higher the score indicates high level of agreement and lower the score indicates low-level of agreement on the work environment facet.

Cronbach's Alpha of the scale was 0.93, significant at 0.001 level. The internal consistency of the scale is quit high and this gives a support that the scale is reliable.

Using a more structured method, confirmatory factor analyses present support of the measures' convergent and discriminant validity. Eleven factors emerged in the factor analysis representing eleven different facets of perceived work environment. The percent of variance accounted by each factors varied from 25.7 to 2.3%. In summing up all the eleven factors explained 56.0% of the total variance.

ADMINISTRATION

The 'rail engine drivers' is a critical and most essential category of rail operation. It is not easy to get them in groups as and when desired. Hence, it was decided to administer the scales at Zonal Training centers/Loco sheds/Safety camps of the railways, where they used to visit for training/refresher courses. The scales were administered on a group of 40 to 50 drivers. The drivers were told in detail about the utility of the study. They were assured that the responses indicated by them should be used for research work only, which will help in having a thought-provoking look at various problems and human resource development programmes/interventions on

Indian Railways. They were not allowed to write their name or putting the signature on the answer sheet.

SAMPLE

A sample of 400 rail engine drivers was drawn from thirty-four divisions of Central, Eastern, Northern, North-Eastern, Southern, South Eastern, and Western zones of the Indian Railways, leaving only two zones (South Central and North-Frontier) unattended. 29 (10.2%) respondents were Shunter, 45 (15.8%) were Asst. Drivers, 108 (37.9%) were Driver (Goods), 57 (20.0%) were Driver (Passengers), and 46 (16.1%) were Driver (Mail/Express). The age of the respondents varied between 28 to 59 years, with mean age of 45 years. In education they varied between primary to

post graduation, however, most of them were matriculates. 391 (97.8%) respondents were married; five (1.3%) were unmarried and rest divorcee/widower. The working experience varied between 3 to 40 years, with a mean length of service of 23 years.

RESULTS AND DISCUSSION

To ascertain the moderator effect of personal background variables, the simple product moment correlation between multi-dimensional organisational commitment and perceived work environment were calculated separately for each (low/high) group. To test the significance difference between two correlation coefficients, the coefficients for each group were transformed into Fisher's Z function. The function Z

Table 1: Sub-Group Analysis for Personal Background Moderators, as the Relationship Between Multi-Dimensional Organisational Commitment and Perceived Work Environment

Variables	Un-moderated correlation		Moderated Correlations				t-value
			High		Low		
	r	N	r1	n1	r2	n2	
Moderator: Age							
Y1 with X1	0.08	400	0.22	192	0.02	208	2.004
Y2 with X1	-0.07		0.05		-0.13		1.696
Y3 with X1	0.26		0.21		0.35		1.429
Y4 with X1	0.14		0.24		0.12		1.141
Moderator: Total dependent family members							
Y1 with X1	0.08	400	0.06	251	0.13	149	0.585
Y2 with X1	-0.07		-0.11		0.02		1.189
Y3 with X1	0.26		0.23		0.34		1.198
Y4 with X1	0.14		0.09		0.24		1.448
Moderator: Income							
Y1 with X1	0.08	400	0.03	199	0.07	201	0.367
Y2 with X1	-0.07		-0.14		0.03		1.687
Y3 with X1	0.26		0.21		0.34		1.409
Y4 with X1	0.14		0.04		0.22		1.786
Moderator: Length of Service							
Y1 with X1	0.08	400	0.12	197	0.10	203	0.248
Y2 with X1	-0.07		0.06		-0.18		2.421
Y3 with X1	0.26		0.22		0.25		0.476
Y4 with X1	0.14		0.20		0.09		1.171
Moderator: Service in present grade							
Y1 with X1	0.08	400	0.03	159	0.13	241	1.019
Y2 with X1	-0.07		0.04		-0.14		1.718
Y3 with X1	0.26		0.48		0.16		3.087
Y4 with X1	0.14		0.26		0.08		1.738

t=1.97 (p < 0.05), t=2.34 (p< 0.02), t=2.59 (p<0.01)

Y1=Affective commitment, Y2=Continuance commitment, Y3=Normative commitment, Y4 = Overall organisational commitment, X1=Overall perceived work environment.

has two advantages over 'r' (1) its sampling distribution is approximately normal and (2) its SE depends only upon the size of the sample 'N', and is independent of the size of 'r'. The formulae for SE and 't-value' are given below:

$$SE = \left(\sqrt{\frac{1}{(N1-3)} + \frac{1}{(N2-3)}} \right) \text{ and } t = \frac{(r_{z1} - r_{z2})}{SE}$$

where,

N1 and N2 are the sub-sample sizes for low and high groups respectively, r_{z1} and r_{z2} are the Fisher's Z values against each groups' correlation coefficients and SE is the standard error of the estimate. The Fisher's Z-value is equal to correlation coefficient, if coefficient is less than or equal to 0.25.

Table 1 shows, un-moderated correlation coefficient, no. of drivers, correlation coefficients in sub-groups and t-test between multi-dimensional organisational commitment and perceived work environment.

The un-moderated correlation coefficient of overall perceived work environment with normative and multi-dimensional organisational commitment was found to be positive and significant. This relationship brings out that with the increase in overall perceived work environment the normative (feeling of obligation to continue employment) commitment will also increase.

The coefficient of correlation between overall perceived work environment and multi-dimensional organisational commitment of rail engine drivers was positive and is found to be significant ($p < 0.001$). This relationship brings out that with the increase in overall perceived work environment the multi-dimensional organisational commitment will also increase.

In summing up, income and number of dependent family members do not have any moderating effect on the relationship of multi-dimensional organisational commitment and overall perceived work environment whereas, age, length of service and service in present grade have moderating effect on the relationship of two.

CONCLUSIONS

The un-moderated correlation coefficient of age and length of service were found positive and significant with overall perceived work environment, but it was found negative and significant with continuance commitment only, leaving insignificant relationship with affective, normative and multi-dimensional organisational commitment. The referent effect of age on the relationship of overall perceived work environment and affective commitment was found to be significant ($t = 2.004$, $p < 0.05$) whereas, the moderator effect of length of service on the relationship of overall perceived

work environment and continuance commitment was found to be significant ($t = 2.421$, $p < 0.02$).

This is universally true that when a person develops coherent sets of perception about work environment his feeling of involvement, identification with and emotional attachment with organisation will certainly increase in all likelihood. In turn, his awareness about the cost of leaving the organisation will also amplify. However, researchers have not reported such a clear trend of relationship. For example; Porter *et al.* (1974) offered that satisfaction would be associated with respect of the work environment and thus, would develop more quickly than commitment.

The un-moderated correlation coefficient of service in present grade neither found significant with overall perceived work environment nor affective, continuance, normative and multi-dimensional organisational commitment. But, the referent effect of service in present grade on the relationship of overall perceived work environment and normative commitment was found significant ($t = 3.087$, $p < 0.01$). The service in present grade will moderate the relationship between overall perceived work environment and normative commitment as indicated in above paras.

IMPLICATION OF RESEARCH

In practice, the promotional avenues for rail engine drivers' are time bound. There is very low percentage of drivers, who might be stagnated because of operational inefficiencies. In addition to, railway management is in practice of spreading human touch of informality by extending the facilities of recreation clubs, employee/women welfare clubs etc., in work places running rooms as well as in residential colonies. It is possible to extend human relation beyond workplace with a touch of informality. Management has a moral responsibility to look after the welfare of employees including their families as far as practicable.

Though the number of studies concerned with moderating effects is great, the results and problems limit their utility. Though predictions are improved for one subgroup, there remains usually another subgroup for which predictive efficiency is diminished. The implications are to eliminate them or to find new predictors for them. Therefore, greater attention must be given to the search for valid moderators of the relationships for all groups in the population.

REFERENCES

- Aggarwal, U., Thakore, A., & Bhargava, S. (2010). Examining the effects of social exchange relationships on innovative work behavior: Moderating role of work engagement. *Proceedings of International Human Resource Management Conference, Aston, UK.*

- Allen, N. J., & Meyer, J. P. (1996). Affective, continuance and normative commitment to the organization. An examination of construct validity. *Journal of Vocational Behaviour*, 49, 252-276.
- Hackett, R. D., Bycio, P., & Hausdorf, P. (1994). Further assessments of Meyer and Allen's (1991) three-component model of organizational commitment. *Journal of Applied Psychology*, 79(1) 15-23.
- Hosmer, D. W., & Lemeshow, S. (1977). *Applied logistic regression*. New York: John Wiley and Sons.
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692-724.
- Khan, S. M., & Pandey, A. (2002 b). Tool to study sensitivity of Rail Engine Drivers' about Work Environment. *Journal of the Institute Rail Transport*, 11(1), 47-52.
- Khan, S. M., & Mishra, P. C. (2002 c). Construct validation of multi-dimensional Organizational Commitment Scale. *The Indian Journal of Social Work*, (Accepted for Peer Review)
- Mathieu, J. E., & Zajac, D. M. (1990). A review and meta-analysis of the antecedents, correlates and consequences of organizational commitment. *Psychological Bulletin*, 108, 171-194.
- Pandey, A., h & Khan, S. M. (2000). Enhancing Role-Efficacy of Front Line Supervisors: An O.D. Intervention. *Productivity*, 41(2), 297-304.
- Saks, A. M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, 21(7), 600-619.
- Saunders, D. R. (1955). The moderator variable as a useful tool in prediction. *Proceedings of the 1954 Invitational conference on testing problems*. Princeton, N.J.: Educational Testing Service.