

Principal Component Analysis of Influence of Organizational Justice on Employee Engagement

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Abstract

This paper presents the major organizational justice factors influence on employee engagement in a context of banking sector in Trincomalee District. Based on principal component analysis (PCA), correlation and descriptive statistical analysis of the factors believed to influence that organizational justice on employee engagement therefore clustered into principal component. The sampling test conducted using Bartlett's test of sphericity and KMO measure of sampling adequacy (MSA) to ascertain the level relationship and the pattern between variables was found to be very significant with MSA (0.940). The result of the analysis found to have four components displayed eigenvalues greater than 1. Therefore, the entire factor can be put into four principal components which accounted for 77.650% of the total variance. Statistically there was strong interrelationship among the variables in the (PCA) with p-value <0.05. The principal components are feedback, unbiased, Pay and Stresses and Strains and pay and effort.

Keywords: Organizational justice, principal component analysis and employee engagement

Introduction

There are many studies conducted in the field of factor analysis. Most of the articles are concerned with the concerns of western countries. A few abridged studies are found available in Bangladesh and other similar countries, but no detailed study is seen on it. Therefore, the authors took interest to somewhat cover this research gap. The study was undertaken to understand the factor analysis and its application in social and management science researches. Increasing attention has been paid in recent years to the issue of organizational justice and its impacts on organizational outcomes. Organizational justice, a term coined by Greenberg (1987) refers to employee perceptions of fairness in the workplace. The organizational justice of an organization provides job satisfaction to the employees its leads to employee engagement towards the organization. William Kahn in 1990 described the term employee engagement on the basis of Goffman's 1961 role behavior speculation. This theory proposes that employee attitudes are formed by the demands and regulations of other employees. Thus 'employees' attitudes can be calculated by investigation about their roles; the term "role" is taken from the theatrical world. William Kahn recommended that employees can perform the responsibilities that are no mentioned in their job descriptions. Employee Engagement is the level of commitment and involvement an employee has towards his organization and its values. An engaged employee is aware of business context, and works with colleagues to improve

performance within the job for the benefit of the organization. It is a positive attitude held by the employees towards the organization and its values. Engaged employees are fully involved in, and enthusiastic about their work. In addition, this research intended to examine the influence of organizational justice on employee engagement at the selected banks in Trincomalee District.

Objectives of The Study

The following three objectives were under taken for the study:

1. To determine a set of organizational justice factors influence on employee engagement
2. To rank the organizational justice factor influence on employee engagement with respect to their importance; and
3. To offer some policy implications to enhance the organizational justice on employee engagement at the banks in Trincomalee District.

Literature Review

Organizational justice

Organizational justice is the study of the concerns about fairness in the workplace. Concerns about distribution of resources have to do with distributive justice, concerns about fairness of decision-making procedures have to do with procedural justice, and concerns regarding interpersonal treatment have to do with interactional justice (Greenberg, J. 1990).

Distributive justice

The research on distributive justice in organizations today focuses primarily on people's perceptions of the fairness of the outcomes they receive, that is, their evaluations of the end state of the allocation process (Cropanzano & Greenberg, 1997).

Procedural justice

Procedural justice is defined as the fairness of the processes that lead to outcomes. When individuals feel that they have a voice in the process or that the process involves characteristics such as consistency, accuracy, ethicality, and lack of bias then procedural justice is enhanced (Leventhal, 1976).

Interactional justice

Interactional justice concerns fairness of how individuals treat one another not only when resources are distributed but in everyday interactions, as well. Interactional justice is defined by sociologist John, G. (2001) as the "...degree to which the people affected by decision are treated by dignity and respect. It is important that a high degree of interactional justice exists in a subordinate/supervisor relationship in order to reduce the likelihood of counter productive work behavior.

Employee engagement

Kahn (1990,p. 694) defines personal engagement as the harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances. Personal disengagement refers to the uncoupling of selves from work roles; in disengagement, people withdraw and defend themselves physically, cognitively, or emotionally during role performances (p. 694). Thus,

according to Kahn (1990, 1992), engagement means to be psychologically present when occupying and performing an organizational role.

Conceptual Framework

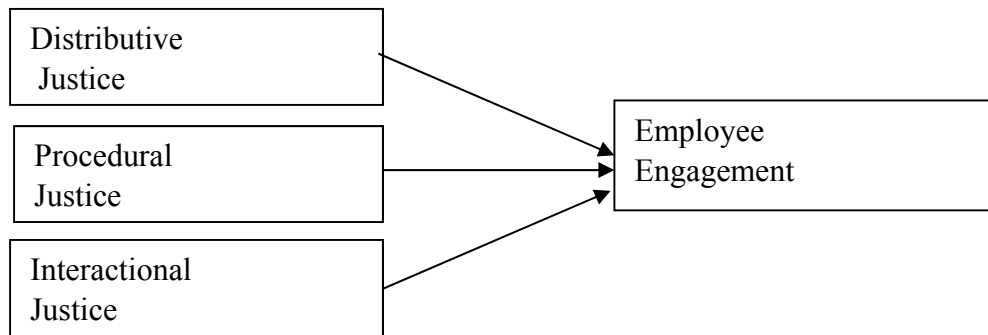


Figure 1
(Source: Abdul KhaliqAlvi and AbdusattarAbbasi, 2012)

Methodology

Sampling Design

Out of total population of selected banks in Trincomalee District, only 200 (68%) employees are selected as sample by using stratified sampling method. The paper begins with sampling test conducted using Bartlett's test of sphericity and KMO measure of sampling adequacy (MSA) to ascertain the level relationship and the pattern between variables.

Data Collection

The study totally depends on primary data. The primary data were collected through questionnaire following direct personal interviewing technique from 200 staff of selected banks in Trincomalee District. The questionnaire was developed with two parts namely part I Research Information and part II Personal Information.

Measures

The questionnaire was administrated to staff of selected banks in Trincomalee District. A five points Likert type summated rating scales of questionnaire from strongly disagree 1 to strongly agree 5 were adopted to identify the engagement.

Tool of Data Analysis

The present study has used a sophisticated method of statistics - FA using varimax rotation analyzing the data collected. In order to obtain interpretable characteristics and simple structure solutions, researchers have subjected the initial factor matrices to varimax rotation procedures (Kaiser, 1958). Varimax rotated factors matrix provides orthogonal common factors. Finally ranking of the indicators has been made on the basis of factor scores.

Reliability and Validity

The reliability value of our surveyed data was 0.940 for organizational justice. If we compare reliability value with the standard value alpha of 0.7 advocated by Cronbach (1951), a more accurate recommendation (Nunnally & Bernstein's, 1994) or with the standard value of 0.6 as recommended by Bagozzi & Yi's (1988) we find that the scales used by researcher are sufficiently reliable for data analysis. Regarding validity, Kaiser – Meyer –Olkin (KMO) measure of Sampling Adequacy is a measure of whether or not the distribution of value is adequate for conducting FA. As per KMO measure, a measure of >0.9 is marvellous, >0.8 is meritorious, >0.7 is middling, >0.6 is mediocre, >0.5 is miserable and <0.5 is unacceptable.

Table 1: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.829
Approx. Chi square	2308.864
Bartlett's Test of Sphericity df	105
Sig.	.000

Source: Survey data

Appropriateness of the Collected Data

Bartlett's test of sphericity (Barlett, 1950) is the third statistical test applied in the study for verifying its appropriateness. This test should be significant i.e., having a significance value less than 0.5. In the present study, test value of Chi ² Square 2308.964 is highly significant (as also given in table 2) indicating that the data is appropriate for the factor analysis.

Factor Analysis

After examining the reliability of the scale and testing appropriateness of data as above, we next carried out factor analysis to measure the engagement. For this, we employed Principal Component Analysis (PCA) followed by the varimax rotation, (Generally, researchers' recommend as varimax). It is worth mentioning out here that factor loading greater than 0.30 are considered significant. 0.40 are considered more important and 0.50 or greater are considered very significant (Hair, Anderson, Tatham, and Black, 2003).

According to Table 2 the data returned a value sampling adequacy of 0.829 indicating meritorious. Bartlett's test of Sphericity is a measure of the multivariate normality of the set of distributions. It also tests whether the correlation matrix conducted within the factor analysis is an identity matrix. factor analysis would be meaningless with an identity matrix. A significance value <0.05 indicates that the data DO NOT produce an identity matrix and are thus appropriately multivariate normal and acceptable for factor analysis (George and Mallery, 2003). The data within this study returned a significance value of 0.000, indicating that the data was acceptable for factor analysis.

When the original ten characteristics were analysed by the Principal Component Analysis (PCA) with varimax rotation, four characteristics extracted from the analysis with an Eigen value of >1, which explained 77.650 percent of the total variance. The result of the factor analysis is presented in Table 2. The factor loadings have ranged from 0.870 to .586. The higher a factor loading, the more would its test reflect or measure as characteristics. The

characteristic getting highest loading becomes the title of each group of characteristics e.g. feedback– title of characteristics group I and the like. Further, the present study has interpreted the characteristics loaded by variables having significant loadings of the magnitudes of 0.50 and above (Pal, 1986; Pal and Bagi,1987).

Table 2: Principal Component Analysis – Varimax Rotation of Characteristics. Rotated Component Matrix^a

Name of the characteristics	Component				Communalities
	1	2	3	4	
Feedback	.870				.794
Unbiased	.751				.747
Consistency	.715				.817
Employee concern	.639				.694
Correctable	.586				.655
Unbiased		.775			.747
Trust		.771			.884
Timely feedback		.771			.865
Ethical procedures		.670			.831
Individual point of view		.618			.694
Pay Stresses and Strains			.820		.723
Employee treatment			.683		.814
Pay and Performance			.596		.638
Pay Effort				.855	.871
Pay and responsibilities				.774	.760
Eigen Value	7.990	1.465	1.185	1.034	
Proportion of Variance	53.265	9.767	7.722	6.896	
Cumulative variance explained	53.265	63.032	70.754	77.650	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Source: Survey data

Component I: Feedback –This Component was represented by five Components with factor loadings ranging from .870 to .586. They were Feedback, unbiased, consistency, employee concern and correctable. This Component accounted for 53.265% of the rated variance.

Component II: Unbiased – five Components with factor loadings ranging from .775 to .618. A variance of 9.767% was explained by this Component

Component III: Pay Stresses and Strains- This Component was represented by three Components with factor loadings ranging from .820 to .596. They were Pay Stresses and Strains, employee treatment and pay for performance. This Component accounted for 7.722% of the rated variance.

Component IV: Pay Effort Only two components are with 0.855 and 0.774. A variance of 6.896% was explained by this characteristic.

Scree Plots

Scree plots are formed by plotting the number of factors against their respective eigen value (Hackett and Foxall, 1999). It is a graph of the eigen values against all the factors. The graph is useful for determining how many factors to retain.

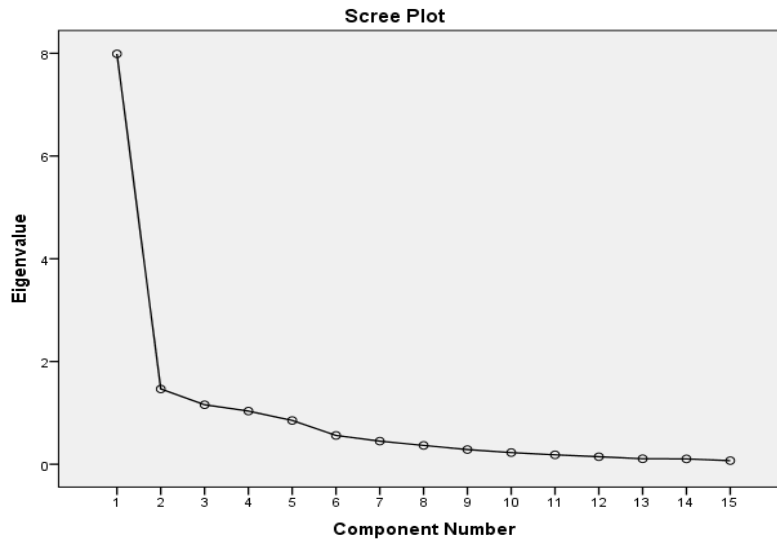


Figure 2- Scree plot
 Source: Survey data

Ranking of the above components in order of their importance, along with factor score, is shown in Table 4. The importance of these components, as perceived by the respondents, has been ranked on the basis of factor score.

Table 3: Ranking of Components according to their importance

Organizational Justice	Factor Score	Ranking
Component-1: Feedback	0.185	4
Component-II: Unbiased	0.217	3
Component- III: Pay Stresses and Strains	0.274	2
Component- IV: Pay Effort	0.451	1

Source: Survey data

Conclusion

Many factors actually describing the factors that contribute to employee engagement. This paper deals with the problem of putting the factors that contribute to employee engagement in Trincomalee District into principal component thereby reducing the factor into major factors. The paper finally presented four principal components which are stipulated in the proposed model. Factor Analysis attempts to simplify complex and diverse relationships that exist among a set of observed variables by uncovering common dimensions or factors that link together the seemingly unrelated variables and consequently provides insight into the

significance of underlying structure of the data. The present study identified four factors of employee commitment which accounted for 77.650% of the total variance and displayed eigenvalues greater than 1. Therefore, the entire factor can be put into four principal components statistically there was strong interrelationship among the variables in the (PCA) with p-value <0.05. The principal components are pay and effort, Pay and Stresses and Strains, unbiased and feedback. These are ranked as first, second, third, and fourth respectively with respect to their importance. Outcomes of the study would benefit the academicians, researchers, policy makers and practitioners.

Suggestions

Managers should enhance two-way communication, ensure that employees have all the resources they need to do their job, give appropriate training to increase their knowledge and skill, establish reward mechanisms in which good job is rewarded through various financial and non-financial incentives, build a distinctive corporate culture that encourages hard work and keeps success stories alive, develop a strong performance management system which holds managers and employees accountable for the behavior they bring to the workplace, place focus on top performing employees to reduce their turnover and maintain or increase business performance. Finally, employees always expecting something from the organization if their expectations are satisfied only employees ready to put their effort to the organization, so making pleasant working environment create employees engagement towards the organization.

Contribution of The Study

It is hoped that the study will contribute greatly to the literature of employee engagement. Besides, suggestive recommendations will have much effect on improving employee engagement. The suitable policy formulation based on the findings of the study, to the best interest of the academic professionals as well as of the country will go a long way to open a new era in the field of the country's human resource development.

Implications for Future Research

This present study examines an influence of organizational justice on employee engagement at selected banks in Trincomalee District. First implication is that in this study only dealt with identifying influence of organizational justice on employee engagement but further research can be done other work related outcomes such as employee satisfaction and employee turnover intentions. Second implication is this study only covered seven banks employees in Trincomalee District so in future scope will be expand beyond the research area it will be effective and useful.

Reference

- Bagozzi, R. P., and Yi, Y. (1988), "On the Evaluation of Structural Equation Models." *Journal of the Academy of Marketing Science*, Vol.16, No.1, pp. 74-95.
- Cronbach, L.J. (1951), Coefficient Alpha and the Internal Structure of tests, *Psychometrika*, 16 (3):297-334.
- George, D. and Mallery. P. (2003). *SPSS for Windows Step by Step: A Simple Guide and Reference*, 11.0 update (4th edition).
- Goffman, E., (1961), *Encounters: Two studies in the sociology of interaction*. Indianapolis, IN: Bobbs- Merrill.
- Gorsuch, R.L. (1983). *Factor Analysis* (2nd ed). Hillsdale, NJ: Erlbaum.

- Greenberg J (1987), "Reactions to procedural injustice in payment distributions: Do the means justify the ends?" *J. Appl. Psychol.*, 72: 55-71.
- Hackett Paul, M.W. and Foxall Gordon, R. (1999). A Factor Analytic Study of Consumers' Location Specific Values: A Traditional High Street and a Modern Shopping Mall: In Hooley.
- Kahn, A.W. (1990), Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33: 692-724.
- Kasier, H.F. (1974), "Index of Factorial Simplicity." *Psychometrika*, Vol.39, pp.31-36
- Nimalathasan, B and Mohammed, N. A. (2010), Quality of work life practices of academic professionals in Bangladesh: a factor analytical approach, *International Journal of Research in Commerce & Management*, Vol.1
- Nimalathasan, B. (2009), Factor Analysis: Nature, Mechanism and Uses in Social and Management Science Research: *Journal of Cost and Management Accountant*, Bangladesh. XXXVII (2):15-25(Published).
- Nunnally, J. C., and Bernstein. (1994), "Ira Psychometrics Theory." McGraw-Hill, New York
- Pal, Y. (1986): A Theoretical Study of Some Factor Analysis Problems and Pal, Y. and Bagai, O.P. 1987): A Common Factor Better Reliability Approach to Determine the Number of Interpretable Factor. Paper presented at the IX Annual Conference of the Indian Society for Probability and Statistics held at Delhi, University of Delhi, India.
- Yarhands Dissou Arthur, Emmanuel Harris, Jonathan Annan (2012) Principal Component Analysis of Customer Churns in Ghanaian Telecommunication Industry *American International Journal of Contemporary Research* Vol. 2 No. 12; December 2012.