



NON-RECURSIVE STRUCTURAL EQUATION MODELING IN ORGANISATIONAL BEHAVIOUR

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ABSTRACT Organizational behavior (OB) or organisational behaviour is "the study of human behavior in organizational settings, the interface between human behavior and the organization, and the organization itself." The Data is collected from 19 Arts & Science Colleges in Tirunelveli District. This study presents an analysis of various categories of factors affecting Job Satisfaction among Private Arts' and College Lecturers in Tirunelveli District. Employee retention is developed with dependence on Employee Involvement, Work Place Conflict, Working Condition and Employee Satisfaction. The Non-Recursive SEM is used to test the hypothesis and solve the model using ADF Estimators. The Non-Recursive CFA model is fitted. The SEM model is fitted. The fitted model is Non-Recursive SEM Model. In the research work, the relationship between Employee Retention and Employee satisfaction did not have the significant result and can't be supported.

KEYWORDS : Non-Recursive SEM, Non-Recursive CFA, ADF.

Introduction

Employee satisfaction is the terminology used to describe whether employees are happy and contented and fulfilling their desires and needs at work. Many measures purport that employee satisfaction is a factor in employee motivation, employee goal achievement, and positive employee morale in the workplace. Employee satisfaction, while generally a positive in your organization, can also become a downer if mediocre employees stay because they are satisfied and happy with your work environment. Factors contributing to employee satisfaction include treating employees with respect, providing regular employee recognition, empowering employees, offering above industry-average benefits and compensation, providing employee perks and company activities, and positive management within a success framework of goals, measurements, and expectations. The critical factor with employee satisfaction is that satisfied employees must do the job and make the contributions that the employer needs. If they don't, all that the employer does to provide an environment that satisfies employees is for naught.

Structural equation modeling (SEM) includes a diverse set of mathematical models, computer algorithms, and statistical methods that fit networks of constructs to data. SEM includes confirmatory factor analysis, path analysis, partial least squares path modeling, and latent growth modeling. The concept should not be confused with the related concept of structural models in econometrics, nor with structural models in economics. Structural equation models are often used to assess unobservable 'latent' constructs. They often invoke a measurement model that defines latent variables using one or more observed variables, and a structural model that imputes relationships between latent variables. The links between constructs of a structural equation model may be estimated with independent regression equations or through more involved approaches such as those employed in LISREL. This work presents Non-Recursive SEM study of the job satisfaction among Private Arts and Science College Lecturers in Tirunelveli District. In this research work, the direct comparison and reverse comparison of model fit are also studied. That is, the impact of satisfaction on retention and its reverse is the impact of retention on satisfaction is studied in this analysis.

Literature Review

W.Holmes Finch and Brian F.French (2015) discussed about "Modeling on Non-Recursive Structural Equation Models with Categorical Indicators" in the article. Prior research had focused on SEM parameter estimation with IVs when indicators were continuous and normally distributed. In that study, there was specific interest in comparing the 2-stage least squares (2SLS) estimator and its categorical variant to other recommended estimators. The study compared the performance of several estimation approaches for fitting structural equation models with categorical indicator variables when Ivs were necessary to obtain proper model estimates. Across conditions, 1extension of non-linear 2SLS(N2SLS) approach, the non-linear 3stage least squares(N3SLS),which accounted for correlated errors among regressors within each model (as does the N2SLS), as well as correlations of errors across models, which N2SLS does not, appears to work the best among methods compared.

Methodology

A. The Hypothesized model

Based on the theoretical frame work shows in figure B1, 6 major hypothesis are proposed.

H₁ : Employees “Involvement” has a positive effect on “Employee satisfaction”

H₂: “Workplace conflict” has a positive effect on “Employee satisfaction”.

H₃ : Employees “Involvement” has a positive effect on “Employee Retention”

H₄: “Working condition” has a positive effect on “Employee satisfaction”.

H₅: “Employee satisfaction” has a positive effect on “Employee Retention”

H₆: “Employee Retention” has a negative effect on “Employee satisfaction

B. Sample Size Determination:-

For Finite Population, N=1372

$$n = \frac{N}{1 + N(e^2)} = \frac{1372}{1 + 1372(0.05)^2} = 307.9 \approx 310.$$

For the accuracy of the result, researcher has distributed 475 Questionnaires among arts’ and science college lecturers. Among 475 arts’ and science college lecturers in Tirunelveli District, 400 are taken into consideration and 75 are non-responses. Eliminate the omission or incomplete answer, yielding a response rate of 84.2%

C. Sampling Design

The Data is collected from 19 Arts & Science Colleges from Tirunelveli District. It is collected from 5 Departments (25 Persons) in each college. The Departments namely B.com, English, Chemistry, Physics, Computer Science. Researcher applied Simple Random sampling (Lottery Method) from probability sampling Technique to collect primary data through structured Questionnaire.

Results And Discussion

AVE:

A good rule of thumb is an AVE of .5 or higher indicates adequate convergent validity. An AVE of less than .5 indicates that on average, there is more error remaining in the items than there is variance explained by the latent factor structure you have imposed on the measure.

CR:

The rule of thumb for a construct reliability estimate is that .7 or higher suggests good reliability. Reliability between .6 and .7 may be acceptable provided that other indicators of a model’s construct validity are good. A high construct reliability indicates that internal consistency exists. This means the measures all are consistently representing something.

All variance extracted (AVE) estimates in the above table are larger than the corresponding squared inter-construct correlation estimates (SIC). This means the indicators have more in common with the construct they are associated with than they do with other constructs. Therefore, the three construct CFA model demonstrates discriminant validity.

Confirmatory Factor Analysis

CFA helps to prove EFA. CFA is a measurement model. For Multivariate non-normal data, apply Asymptotically distribution-free (ADF) method.

The Non-Recursive Sem Model

The correlations between the latent variables X₁, X₂, X₃ and the casual variable X₁₁, X₁₂, X₁₃, X₁₄, X₂₁, X₂₂, X₂₃, X₂₄, X₃₁, X₃₂, X₃₃, X₃₄ are captured by the loading coefficients a₁₁, a₁₂, a₁₃, a₁₄, a₂₁, a₂₂, a₂₃, a₂₄, a₃₁, a₃₂, a₃₃, a₃₄ respectively. The Employee Satisfaction Y₁ is a latent variable correlated to the indicator vector Y₁₁, Y₁₂, Y₁₃, Y₁₄, Y₁₅. The Employee Retention Y₂ is a latent variable correlated to the indicator vector Y₂₁, Y₂₂, Y₂₃, Y₂₄, Y₂₅. SEM involves four stages namely model specification, model estimation, model evaluation and model modification.

The measurement equation is given by,

$$Z_i = \Lambda_1 \omega_i - \Lambda_2 (Y_2) + \varepsilon_i, i = 1, \dots, 21. \dots\dots\dots(1)$$

The matrix Λ contains the following loading coefficients, $\Lambda_1 = -5.38$ (the path- coefficient for Non-Recursive SEM Model), the latent variables ω includes X_1, X_2, X_3 and Y_1, Y_2 . The random variables ε_i represent the measurement errors which follow multivariate non-normal distribution. The latent variables are independent and uncorrelated with ε_i . The Employee Satisfaction Y_1 and the Employee Retention Y_2 are modeled as the endogenous latent variables and Employee Involvement (X_1), Work place conflict (X_2), Working condition (X_3) are modeled as the exogenous latent variables.

The model is given by the equation,

$$Y_1 = \Gamma_1 X_i + R_1 \dots\dots\dots(2)$$

$$Y_2 = \Gamma_1 X_i + \Gamma_2 Y_1 + R_1 + R_2 \dots\dots\dots(3)$$

Where Γ_1 and Γ_2 are (1×3) regression parameter matrix for relating the endogenous and exogenous variables. R_1 and R_2 are the disturbance variables assumed to be distributed as multivariate non-normal distribution. The model is solved using Amos 22 Software with hypotheses. The fit of the model is analysed using Asymptotic Distribution – free estimates of the regression of the regression variables.

Here Y_1 and Y_2 are the endogenous latent variables and X_i 's are the exogenous latent variables. Equations (2) and (3) can also be written as,

$$Y_1 = \tau_1 X_1 + \tau_2 X_2 + \tau_3 X_3 + R_1 \dots\dots\dots(4)$$

$$Y_2 = \tau_1 X_1 + \tau_2 X_2 + \tau_3 X_3 + \tau_4 Y_1 + R_1 + R_2 \dots\dots\dots(5)$$

The regression parameters τ_1, τ_2 and τ_3 are the measures of the impact of the three categories of the factors on Employee Satisfaction. The regression parameters τ_1, τ_2, τ_3 and τ_4 are the measures of the impact of the four categories of the factors on Employee Retention. The individual factors may be assessed using a_i . Note there may be dependence among the four categories of factors but in this study, the primary focus is on the impact of the factors on Employee Retention. The complete model of Employee Retention is shown in figure B2.

From Table.A1, The Model Fit Summary for CFA is as follows:

- i) If CMIN/DF Value is 1.962, then it is better fit.
- ii) If RMSEA Value is 0.049, then it is better fit.
- iii) Goodness-of-fit index GFI = .970 Not generally recommended
- iv) Adjusted GFI AGFI = .960 Performance poor in simulation studies
- v) Root mean square residual RMR is 0.277 Smaller, the better; 0 indicates perfect fit
- vi) Standardized RMR is 0, SRMR = .08

Variable counts (Group number 1)

Number of variables in your model:	49
Number of observed variables:	21
Number of unobserved variables:	28
Number of exogenous variables:	26
Number of endogenous variables:	23

Rank of the matrix:-

$$A = \begin{matrix} & R_1 & R_2 \\ R_1 & 44.830 & 0 \\ R_2 & 0 & 2.994 \end{matrix}$$

Order of the matrix A : 2x2
 Rank of the matrix : 2

The solved structural equation is given as,

$$Y_1 = 1.34X_1 + 0.65X_2 + 2.07X_3 \quad \dots\dots\dots(6)$$

$$Y_2 = 1.34X_1 + 0.65X_2 + 2.07X_3 + 2.58Y_1 \dots\dots\dots(7)$$

From Table.A2, The Model Fit Summary for Non-Recursive SEM is as follows:

- i) If CMIN/DF Value is 2.594, then it is better fit.
- ii) If RMSEA Value is 0.06, then it is better fit.
- iii) Comparative fit index CFI= .979,for acceptance 0.95
- iv) Goodness-of-fit index GFI = .998, Not generally recommended
- v) Adjusted GFI AGFI =.966 Performance poor in simulation studies
- vi) Root mean square residual RMR is 0.541 Smaller, the better; 0 indicates perfect fit
- vii) Standardized RMR is 0 ,SRMR = .08
- viii) The model is fitted.
- ix) A model is non- recursive, if all arrows flow one way, with feedback looping, and disturbance (residual error) terms for the endogenous variables are correlated.
- x) This model is known as “Non- Recursive Model.

Setting Of Hypothesis

A) H₁: Employees “Involvement” has a positive effect on “Employee satisfaction”

Regarding our work, the hypothesis H₁ is proposed : Employees “Involvement” has a positive effect on “Employee satisfaction”. The analysis results lend support for H₁. It is consistent with the results of Mengue’s (1996) work. Employees’ Involvement could have the better performance.

B) H₂: “Workplace conflict” has a positive effect on “Employee satisfaction”.

Regarding our work, the hypotheses 2 is proposed: “Workplace conflict” has a positive effect on “Employee satisfaction”.. The result shows that there has significant positive relationship between the employee satisfaction and work place conflict. It is consistent with Mengue’s (1996) work. “Workplace conflict” could have the better performance.

C) H₃ : Employees “Involvement” has a positive effect on “Employee Retention”

Regarding our work, the hypothesis H₃ is proposed : Employees “Involvement” has a positive effect on “Employee Retention”. The analysis results lend support for H₃ . It is consistent with Mengue’s (1996) work. Employees “Involvement” could have the better performance.

D) H₄: “Working condition” has a positive effect on “Employee satisfaction”

Regarding our work, the H₄ is proposed: H₄: “Working condition” has a positive effect on “Employee satisfaction”. The result shows that there has significant positive relationship between the Working condition and employee satisfaction. It is consistent with Mengue’s (1996) work. It is indicated that Employee satisfaction would increase by finish the work in deadline, do the best to apply the abilities, and completeness of the responsibilities coverage. As the result, well-appointed schedule detailed the work standard, and the job description could assist the employees in getting more targets to measure the working condition. Because of the maturely supporting policies would enhance the effect : Working condition on the Employee satisfaction.

E) H₅: “Employee satisfaction” has a positive effect on “Employee Retention”

Regarding our work, the H₅ is proposed: H₅: “Employee satisfaction” has a positive effect on “Employee Retention”. The analysis results lend support for H₅ . . Our finding is consistent with the finding of wang Netemever (2002). A person who have better Employee satisfaction will look forward to being better than other collageness. As the result, they will set a moderate standard, mean while better performance than others.

F) H₆: “Employee Retention” has a negative effect on “Employee satisfaction”

Regarding our work, the H₅ is proposed: H₆: “Employee Retention” has a negative effect on “Employee satisfaction”. The result shows that there has no significant positive relationship between the Employee Retention and Employee Satisfaction. It is inconsistent with Boshoff and Allen’s (2000) work. There have a possible season is the adoption of karatepea’s (2005) measurement hat focus on self evaluation of employee in the external objective perspection. Employees may consider the high performance as an advantage that could help to find a

better job. In this research, Employees that have large percentage of samples, balanced the rewards against the high performance mentality. Since the failure of equilibrium caused the disconnect and rise the Employees Satisfaction.

CONCLUSION

This study presented an analysis of various categories of factors affecting Job Satisfaction among Private Arts' and College Lecturers in Tirunelveli District. Employee retention is developed with dependence on Employee Involvement , Work Place Conflict, Working Condition and Employee Satisfaction .The data on Job satisfaction was collected from the Private Arts' and College Lecturers in Tirunelveli District. There is a good fit, if RMSEA Value is less than or equal to 0.06. The Non-Recursive CFA model is fitted. There is a good fit, if RMSEA Value is less than 0.06. The SEM model is fitted. The fitted model is Non-Recursive SEM Model. In our research work, the relationship between Employee Retention and Employee satisfaction did not have the significant result and can't be supported. As the result, we hope conduct further research in this area.

Appendix

Table-A1

Model Fit Summary for CFA

Model	CMIN	DF	CMIN/DF	RMSEA	GFI	AGFI	RMR	SRMR
ADF	343.278	175	1.962	0.049	0.970	0.960	0.277	0

Table-A2

Model Fit Summary for Non-Recursive SEM

Model	CMIN	DF	CMIN/DF	RMSEA	GFI	AGFI	RMR	SRMR
ADF	2.594	1	2.594	0.06	0.979	0.998	0.541	0

Table -A3

Hypothesis – Testing Results

<u>HYPOTHESIS</u>	<u>Theoretical Model</u>	
	Path coefficient	Conclusion
H ₁ : ES ← EI	1.343	Support
H ₂ : ES ← WPC	0.646	Support
H ₃ : ERT ← EI	0.003	Support
H ₄ : ES← WC	2.071	Support
H ₅ : ERT ← ES	2.582	Support
H ₆ : ES← ERT	-5.075	Not Support

Appendix B

Figure B1. Theoretical Frame Work

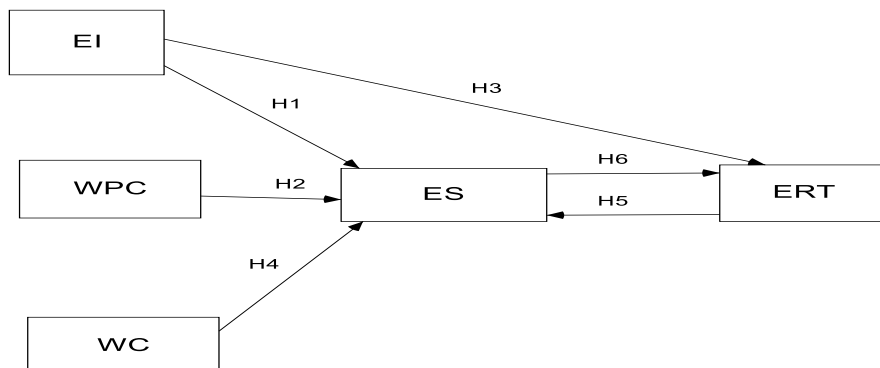


Figure B2.Non-Recursive Model

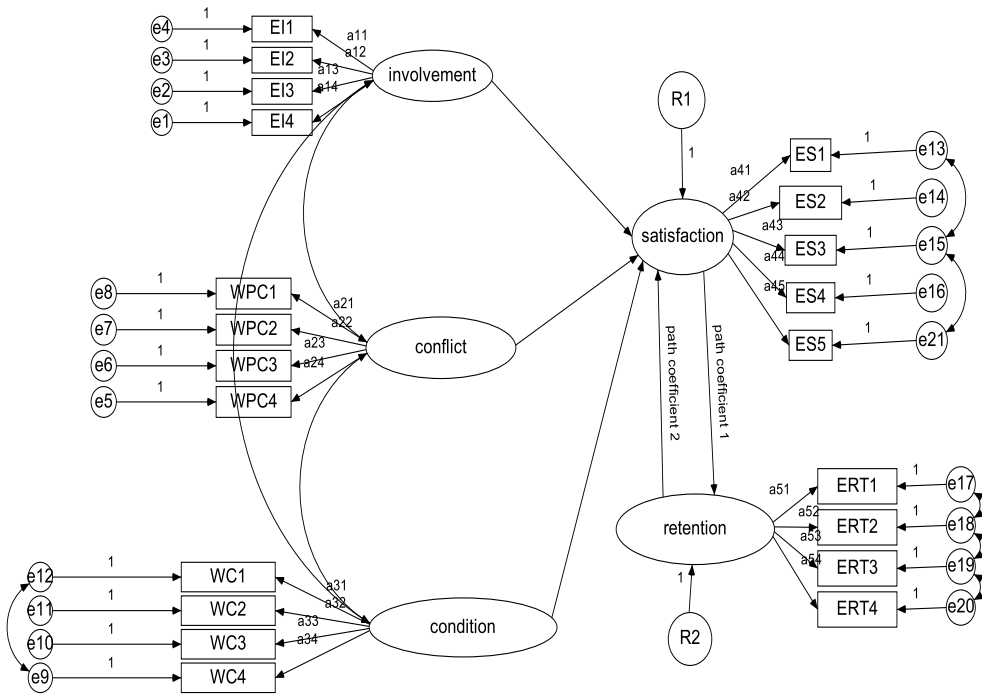


Figure B3: Standardised – Non- Recursive Cfa

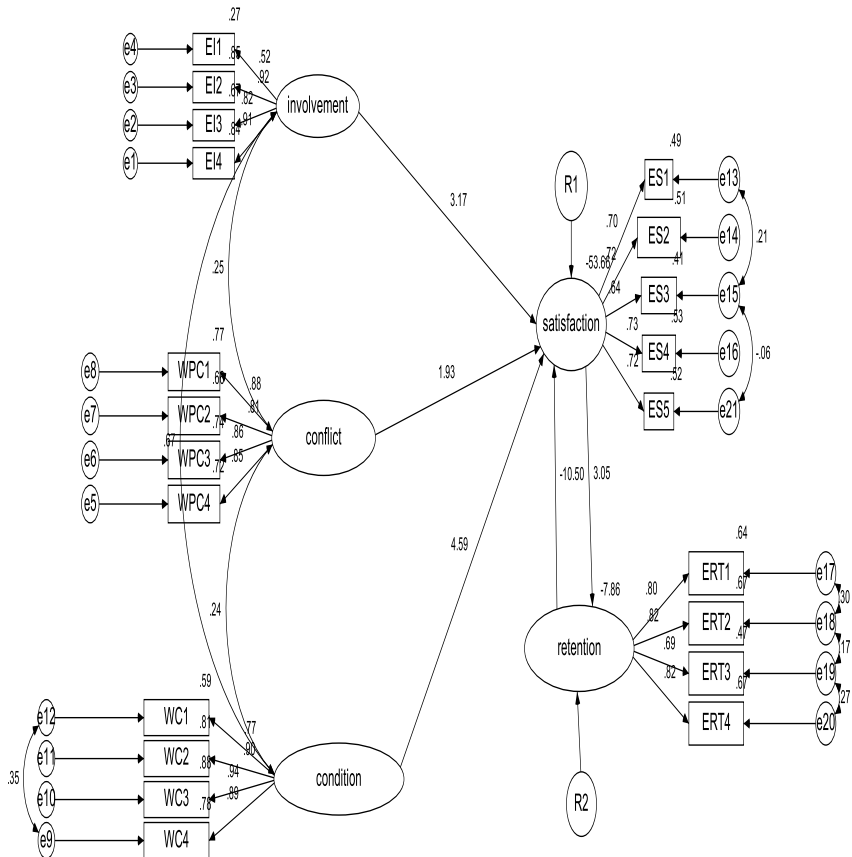
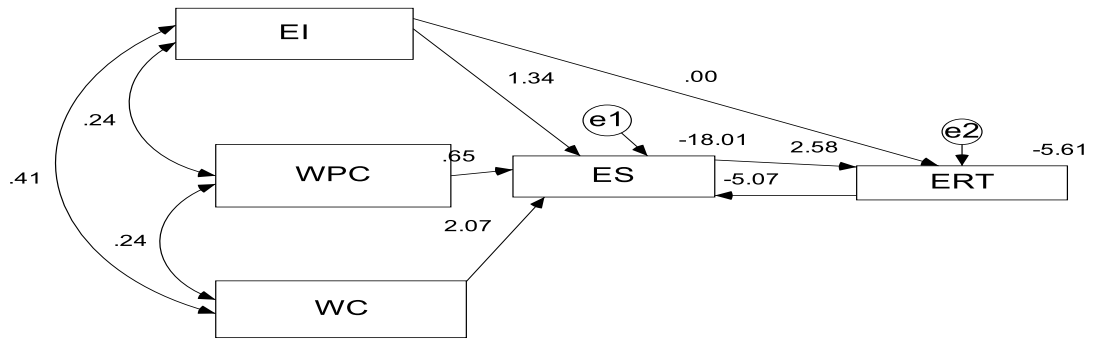


Figure B4:- Non-Recursive Structural Equation Modeling



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