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RECURSIVE STRUCTURAL EQUATION MODELING IN ORGANIZATIONAL BEHAVIOUR

Statistics

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ABSTRACT

The concept of job satisfaction is from Hulin and Judge (2003), who have noted that job satisfaction includes multidimensional psychological responses to an individual's job, and that these personal responses have cognitive (evaluative), affective (or emotional), and behavioral components. The Data is collected from 19 Arts & Science Colleges in Tirunelveli District. Several factors affecting Job Satisfaction are captured in a SEM of Employee Satisfaction. The four main categories of causes namely employee involvement, work place conflict, working condition, Employee Retention. Recursive SEM is used to test the hypothesis and solve the model using ADF Estimators. The Recursive CFA model is fitted. The SEM model is fitted. The fitted model is Recursive SEM Model. In the research work, the relationship between Work Place Conflict and Employee satisfaction did not have the significant result and can't be supported.

KEYWORDS:

Job Satisfaction, Employee Satisfaction, Recursive SEM, Recursive CFA.

Introduction

Job satisfaction scales vary in the extent to which they assess the affective feelings about the job or the cognitive assessment of the job. Affective job satisfaction is a subjective construct representing an emotional feeling individuals have about their job. Hence, affective job satisfaction for individuals reflects the degree of pleasure or happiness their job in general induces. Cognitive job satisfaction is a more objective and logical evaluation of various facets of a job. Cognitive job satisfaction can be one-dimensional if it comprises evaluation of just one facet of a job, such as pay or maternity leave, or multidimensional if two or more facets of a job are simultaneously evaluated. Cognitive job satisfaction does not assess the degree of pleasure or happiness that arises from specific job facets, but rather gauges the extent to which those job facets are judged by the job holder to be satisfactory in comparison with objectives they themselves set or with other jobs. While cognitive job satisfaction might help to bring about affective job satisfaction, the two constructs are distinct, not necessarily directly related, and have different antecedents and consequences.

Structural equation modeling is a very general, chiefly linear, chiefly cross-sectional statistical modeling technique. Factor analysis, path analysis and regression all represent special cases of SEM. SEM is a largely confirmatory, rather than exploratory, technique. In SEM, interest usually focuses on latent constructs--abstract psychological variables like "intelligence" or "attitude toward the coworkers"--rather than on the manifest variables used to measure these constructs. Measurement is recognized as difficult and error-prone. By explicitly modeling measurement error, SEM users seek to derive unbiased estimates for the relations between latent constructs. To this end, SEM allows multiple measures to be associated with a single latent construct. Compared to regression and factor analysis, SEM is a relatively young field, having its roots in papers that appeared only in the late 1960s. As such, the methodology is still developing, and even fundamental concepts are subject to challenge and revision. This rapid change is a source of excitement for some researchers and a source of frustration for others. This work presents Recursive SEM study of the job satisfaction among Private Arts and Science College Lecturers in Tirunelveli District.

Review of Literature

W.Holmes Finch and Brian F.French (2015) discussed about "Modeling on Non-Recursive Structural Equation Models with Categorical Indicators " in the article .

“A New Identification Condition for Recursive Models with Correlated Errors” By Carlos Brito and Judea Pearl established a new criterion for the identification of recursive linear models in which some errors are correlated.

Methodology

A. The Hypothesized model

Based on the theoretical frame work shows in figure 5.1, 8 major hypothesis are proposed.

H1 : Employees “Involvement” has a positive effect on “Working condition”

H2: Employees “Involvement” has a positive effect on “Employee Retention”

H3 : “Workplace conflict” has a positive effect on “Working condition”

H4: “Workplace conflict” has a positive effect on “Employee Retention

H5: “Working condition” has a positive effect on “Employee satisfaction”

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

H7: “Employee Retention” has a positive effect on “Working condition”

H8: : “Workplace conflict” 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%

B. 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 Recursive SEM Model :-
The correlations between the latent variables X_1 and X_2 and the causal variable X_{11} , X_{12}, X_{13}, X_{14}, X_{15}, X_{21}, X_{22}, X_{23}, X_{24} are captured by the loading coefficients a_{11}, a_{12}, a_{13}, a_{14} ,a_{15} a_{21} , a_{22} , a_{23} , a_{24} respectively. The Working Condition Y1 is a latent variable correlated to the indicator vector Y_{11} , Y_{12} , Y_{13} , Y_{14} .The Employee Retention Y_2 is a latent variable correlated to the indicator vector Y_{21} , Y_{22} , Y_{23} , Y_{24} . The Employee Satisfaction Z_1 is a latent variable correlated to the indicator vector Z_{11} , Z_{12} , Z_{13} , Z_{14}. SEM involves four stages namely model specification, model estimation, model evaluation and model modification.

The measurement equation is given by,

$$x_i = \Lambda_1 Y_1 + \Lambda_2 Y_2 + \Lambda_3 \omega_i + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots(1)$$

The matrix $\Lambda_1, \Lambda_2, \Lambda_3$ contain the following loading coefficients, the latent variables ω_i includes X1, X2 ,Y1,Y2 and Z1.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 Working condition Y_1, the Employee Retention Y_2 and The Employee Satisfaction Z_1 are modeled as the endogenous latent variables and Employee Involvement (X_1) , Work place conflict (X_2) are modeled as the exogenous latent variables.
The model is given by the equation,e

$$Y_1 = \Gamma_1 X_i + \Gamma_2 Y_2 + R_1 + R_2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$

$$Y_2 = \Gamma_2 X_i + R_2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

$$Z_1 = \Gamma_1 X_i + \Gamma_2 X_i + \Gamma_2 Y_2 + \Gamma_3 Y_1 + \Gamma_3 Y_2 + \Gamma_3 X_i + R \ldots\ldots\ldots\ldots\ldots\ldots(4)$$

Where Γ_1 , Γ_2, Γ_3 are (1×3) regression parameter matrix for relating the endogenous and exogenous variables. R includes R1, R2, R3 are the disturbance variables assumed to be distributed as multivariate non-normal distributuion. 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 Y1 ,Y2 and Z1 are the endogenous latent variables and Xi's are the exogenous latent variables. Equations (5.2) ,(5.3), (5.4) can also be written as,

$$Y_1 = \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 Y_2 + R_2 + R_1 \ldots\ldots\ldots\ldots\ldots\ldots(5)$$

$$Y_2 = \beta_1 X_1 + \beta_2 X_2 + R_2 \ldots\ldots\ldots\ldots\ldots\ldots\ldots(6)$$

$$Z_1 = \tau_1 Y_1 + \tau_2 Y_2 + \tau_3 X_i + R \ldots\ldots\ldots\ldots\ldots\ldots\ldots(7)$$

The regression parameters $\alpha_1, \alpha_2, \alpha_3$ are the measures of the impact of the three categories of the factors on working condition. The regression parameters β_1, β_2 are the measures of the impact of the two categories of the factors on Employee Retention. The regression parameters τ_1, τ_2, τ_3 are the measures of the impact of the three categories of the factors on Employee Satisfaction. The individual factors may be assessed using ai. 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 Satisfaction. The complete model of Employee Retention is shown in figure 2.

From Table A1, The Model Fit Summary for CFA is as follows:
i) If CMIN/DF Value is 2.449, then it is better fit.
ii) If RMSEA Value is equal to 0.06, then it is not better fit.
iii) Goodness-of-fit index GFI = .96 Not generally recommended
iv) Adjusted GFI AGFI = .95 Performance poor in simulation studies
v) Root mean square residual RMR is 0.352 Smaller, the better; 0 indicates perfect fit
vi) Standardized RMR is 0 ,SRMR ≤ .08
vii) R1=0.783,R2=0.312,R3=0.753.

The solved structural equation is given as,

$$Y_1 = 0.23X_1 + 0.07X_2 + 0.39Y_2 \ldots\ldots\ldots\ldots\ldots(8)$$

$$Y_2 = 0.38X_1 + 0.18X_2 \ldots\ldots\ldots\ldots\ldots(9)$$

$$Z_1 = 0.15Y_1 + 0.14Y_2 - 0.03X_2 \ldots\ldots\ldots\ldots\ldots(10)$$

From Table A2, The Model Fit Summary for SEM is as follows:
i) If CMIN/DF Value is 1.635, then it is better fit.
ii) If RMSEA Value is 0.04, then it is better fit.
iii) Goodness-of-fit index GFI = .999 Not generally recommended
iv) Adjusted GFI AGFI = .978 Performance poor in simulation studies
v) Root mean square residual RMR is 0.564 Smaller, the better 0 indicates perfect fit.
vvi) Standardized RMR is 0 ,SRMR ≤ .08
vii) The model is fitted.
viii) A model is recursive, if all arrows flow one way, with no feedback looping, and disturbance (residual error) terms for the endogenous variables are uncorrelated.
ix) The error terms are e1=18.551,e2=29.914,e3=8.166.
x) This model is known as "Recursive SEM Model".

Setting of Hypothesis

A) H1 : Employees "Involvement" has a positive effect on "Working condition"
Regarding our work, the hypothesis H1 is proposed : Employees "Involvement" has a positive effect on "Working condition". 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: Employees "Involvement has a positive effect on "Employee Retention".
Regarding our work, the hypotheses 2 is proposed: Employees "Involvement" has a positive effect on "Employee Retention" The result shows that there has significant positive relationship between the Employees "Involvement" and "Employee Retention". It is consistent with Mengue's (1996) work. Employees "Involvement" could have the better performance.

C) H3 : "Work Place Conflict" has a positive effect on "Working condition"
Regarding our work, the hypothesis H3 is proposed : "Work Place Conflict" has a positive effect on "Working condition". The analysis results lend support for H3 . It is consistent with Mengue's (1996) work. "Work Place Conflict" could have the better performance.

D) H4: "Work Place Conflict" has a positive effect on "Employee Retention"
Regarding our work, the H4 is proposed: H4: "Work Place Conflict" has a positive effect on "Employee Retention". The result shows that there has significant positive relationship between Work Place Conflict and Employee Retention. It is consistent with Mengue's (1996) work. It is indicated that Employee Retention would increases 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 : Work Place Conflict on the Employee Retention.

E) H5: "Working condition" has a positive effect on "Employee satisfaction"
Regarding our work, the H5 is proposed: H5: "Working condition" has a positive effect on "Employee satisfaction". 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 positive effect on "Employee satisfaction"
Regarding our work, the hypothesis H6 is proposed : "Employee Retention" has positive effect on "Employee satisfaction". The analysis results lend support for H3 . It is consistent with Mengue's (1996) work. "Employee Retention" could have the better performance.

G) H7: "Employee Retention" has positive effect on "Working condition "
Regarding our work, the hypotheses 7 is proposed: "Employee Retention" has positive effect on "Working condition" . The result shows that there has significant positive relationship between the "Employee Retention" and "Working condition". It is consistent with Mengue's (1996) work. "Employee Retention" could have the better performance.

H) H8: "Work Place Conflict" has a negative effect on "Employee satisfaction"
Regarding our work, the H8 is proposed: "Work Place Conflict" has a negative

effect on "Employee satisfaction". The result shows that there has no significant positive relationship between the Work Place Conflict 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 presents an analysis of various categories of factors affecting Job Satisfaction among Private Arts' and College Lecturers in Tirunelveli District. Employee Satisfaction is developed with dependence on Employee Involvement, Work Place Conflict, Working Condition and Employee Retention. 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 0.06. The CFA model is fitted. There is a good fit, if RMSEA Value is 0.04. The SEM model is fitted. The fitted model is Recursive SEM Model. In our research work, the relationship between Work Place Conflict 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	440.766	180	2.449	0.060	0.961	0.950	0.352	0

Table -A2 Model Fit Summary for SEM

Model	CMIN	DF	CMIN/DF	RMSEA	GFI	AGFI	RMR	SRMR
ADF	1.635	1	1.635	0.040	0.999	0.978	0.564	0

Table-A3 HYPOTHESIS – TESTING RESULTS

HYPOTHESIS		Theoretical Model
	Path coefficient	Conclusion
H1 : EI ← WC	0.23	Support
H2 : EI ← ERT	0.38	Support
H3 : WPC ← WC	0.07	Support
H4 : WPC← ERT	0.18	Support
H5 : WC ← ES	0.15	Support
H6 : ERT← ES	0.14	Support
H7 : ERT ← WC	0.39	Support
H8 : WPC← ES	-0.03	Not Support

Appendix

Figure B1. Theoretical Frame Work

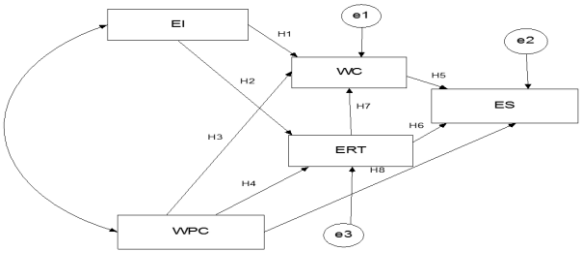


Figure B2. Standardised CFA model

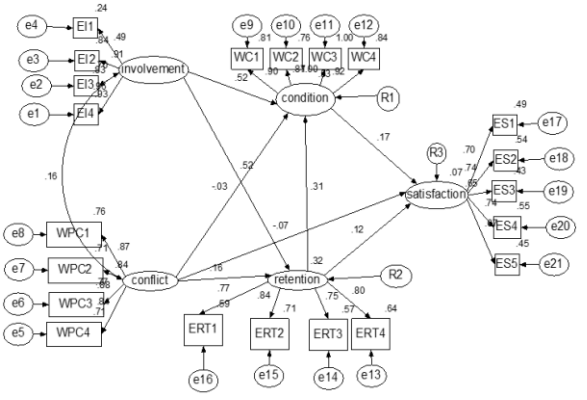
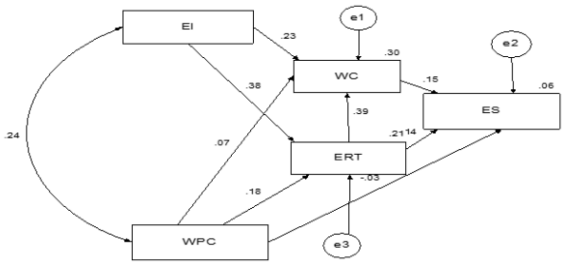


Figure B3. Recursive Structural Equation Modeling



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