# STRUCTURAL EQUATION MODELLING (SEM): CAREER DEVELOPMENT, EMPLOYEE EMPOWERMENT AND ENGAGEMENT REDUCE TURNOVER OF INDIAN FABRICATION INDUSTRY

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**Abstract**

A large literature emerging during the last three decades has identified a range of antecedents of turnover, including individual characteristics, employee attitudes, organizational conditions and managerial practices. Very little is known, however, about the influence of employee empowerment and engagement on turnover. In this study, a causal model of how employee empowerment impacts turnover in the Indian Fabrication Industry is developed. The model is tested using structural equation modeling (SEM) techniques and different sources of data across multiple points in time. The empirical results support the hypothesized causal model. Employee empowerment impacts turnover intention indirectly through its influence on job satisfaction. Turnover intention, in turn, impacts turnover behaviour

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**Keywords: Employee Empowerment, Employee Engagement, Employee Turnover and Structural equation modelling (SEM)**

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**Introduction**

The concept of employee empowerment has deep roots stretching back to Follett's (1926) research on employee participation, Argyris (1957) analysis of managerial styles, McGregor's (1960) Theory Y, and the groundbreaking Ohio and Michigan leadership studies (Fleishman, 1953; Halpin and Winer, 1957; Hemphill and Coons, 1957). It was not until the 1990s, however, that empowerment programs became widely adopted. In a variety of industries, including food and hospitality, nursing, education and government, employee empowerment practices have been found to be effective at raising performance (Lee, Cayer and Lan, 2006; Fernandez and Moldogaziev, 2010; Spreitzer, 1995; Lawler, Mohrman, and Ledford, 1992, 1995; Neilsen and Pedersen, 2003; Kirkman and Rosen, 1999), encouraging innovation (Spreitzer, 1995; Fernandez and Moldogaziev, 2013a, 2013b), and improving employee job satisfaction (Lawler, Mohrman, and Ledford, Jr., 1992, 1995; Bowen and Lawler, 1992; Davies, Laschinger and Andrusyszyn, 2006; Sarmiento, Laschinger, and Iwasiw, 2004; Seibert, Silver and Randolph, 2004; Kuokkanen, Leino-Kilpi and Katajisto, 2003, Ugboro and Obeng, 2000; Wu and Short, 1996; Klecker, and Loadman, 1996; Fulford and Enz, 1995; Kim, 2002; Wright and Kim, 2004; Savery and Luks, 2001; Lee, Cayer and Lan, 2006), organizational commitment (Lawler, Mohrman, and Ledford, 1992, 1995; Guthrie, 2001; Kirkman and Rosen, 1999) and job involvement (Coye and Belohlav, 1995). We know very little, however, about employee empowerment's effects on employee turnover. Policymakers and public managers in Washington have expressed strong concern for turnover in the federal government at various points in the nation's history. In 2012, the turnover rate in the federal bureaucracy reached a level unseen since the end of the Second World War (Society for Human Resource Management, 2012; Losey, 2012). High turnover can have deleterious effects on organizations, including higher personnel administration costs, lower performance, and declining morale (Selden and Moynihan, 2000; Kim, 2006; Pitts, Marvel and Fernandez, 2011; Cho and Lewis, 2012; Boushey and Glynn, 2012). In this study, we develop a causal model of how employee empowerment impacts turnover. The model is tested using structural equation modelling (SEM) techniques and different sources of data from the U.S. federal government across multiple points in time. The empirical results support the hypothesized causal model. Employee empowerment impacts turnover intention indirectly through its influence on job satisfaction. Turnover intention, in turn, impacts turnover behaviour.

The study contributes to the literatures on employee empowerment and turnover in several ways. First, it borrows Bowen and Lawler's (1992; 1995) conceptualization of employee empowerment as a multifaceted managerial approach and develops and validates a multidimensional measure of this construct. Second, unlike many previous studies of turnover in the public sector, it examines how job satisfaction mediates the relationship between employee empowerment and turnover intention. Third, it goes beyond predicting turnover intention to estimate how turnover intention affects actual turnover behavior. Finally, it employs an innovative approach to structural equation modeling (SEM), along with data from multiple points in time, to create time lags that allow for more accurate estimates of causal effects (Gollob and Reichardt, 1987; Biddle and Marlin, 1987).

**Data**

The empirical analysis was carried out at two levels of analysis: at the level of the individual survey respondent, and at the level of the federal sub-agency. Whereas employee empowerment, job satisfaction and turnover intention data are available at the individual level, turnover behavior is only available at the sub-agency level. The variables in the analysis are employee empowerment, job satisfaction, turnover intention, and turnover behavior, all of which are treated as latent variables in our structural equation models.

**Modelling**

A series of structural equation models are developed and tested at the two levels of analysis: individual and sub-agency. All models are analyzed using Mplus 6. At the individual level of analysis, the indicators for the latent variables job satisfaction and turnover intention are categorical. This requires us to use a robust weighted least squares mean- and variance-adjusted (WLSMV) estimator. The WLSMV estimator uses a diagonal weight matrix with robust standard errors and a robust mean- and variance-adjusted chi-square test statistic, and is a default estimator in Mplus for models with at least one binary or ordered categorical dependent variable (Muthén and Muthén, 1998-2012). The WLSMV estimator provides superior model fit and more precise path coefficients than does the maximum likelihood (ML) estimator, especially when the number of categories is low (e.g., two or three categories) (Beauducel and Herzberg,

2006). For the sub-agency level models, the ML estimator is used since all observed variables are continuous.

Our structural equation models include two latent variables measured using a single indicator: turnover intention and turnover behavior. The identification is problematic when a single indicator is used to measure the underlying construct, and the measurement error variance of the indicator cannot be specified as a free parameter (Bollen, 1989). For the identification of the model, the measurement error of the indicator should be fixed using "a priori estimate of the proportion of variance of the single indicator that is due to measurement error based on the researcher's experience with the measure or on results reported in the research literature" (Kline, 2011). For the latent variable turnover intention, previous studies used a reliability of 0.85 for the single-item turnover intention measures in order to set the measurement error variance (e.g., Anderson, Coffey, & Byerly, 2002; Jaramillo, Mulki, & Solomon, 2006). Hence, at the sub-agency level of analysis, we fix the measurement error of the turnover intention indicator (turnover intention 1) as 15 percent of the observed variance of the indicator (i.e., the product of the observed variance and one minus the reliability) (Bollen, 1989). At the individual level of analysis, we fix the variance of the latent variable turnover intention as 1.0 for the model identification. This is because Mplus does not estimate residual parameters of categorical observed variables, and thus, the measurement error of the indicator cannot be fixed appropriately. For the latent variable turnover behavior, the single indicator of sub-agency turnover rates is measured using the data drawn from FedScope's official administrative database (EHRI-SDM). We assume that turnover rates are measured without error and the indicator (observable variable turnover rate) is the perfect measure of the latent variable turnover behavior. The variance of this measurement error term is fixed to equal 0.

**Figure 1 - Employee Empowerment and Engagement Model for Indian Fabrication Industry**

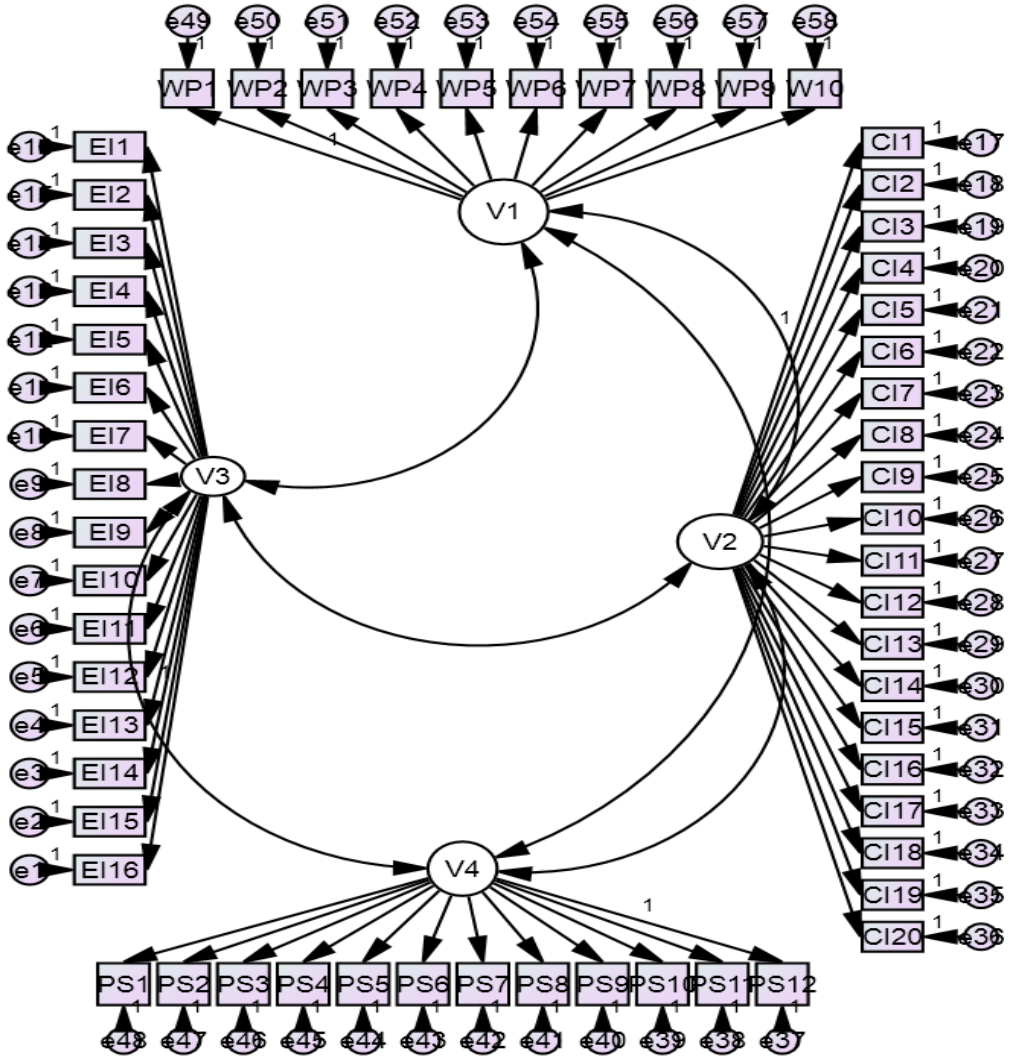


**Table 1 - Model fit Summary**

| Model | CMIN | AIC | BCC | BIC | ECVI |
|---|---|---|---|---|---|
| Model A | 1321.67 | 369.7 | 373.03 | 448.82 | 1.858 |
| Model B | 151.02 | 105.02 | 108.79 | 194.074 | 0.528 |
| Model C | 143.414 | 99.41 | 103.32 | 191.767 | 0.500 |
| Saturated Model | 0.000 | 156.00 | 166.90 | 413.7 | 0.784 |
| Independence Model | 1417.461 | 1441.46 | 1443.13 | 1481.04 | 7.244 |

**Table 2 - Absolute fit Indices**

| Model | Absolute fit Indices | | RMR | Incremental Fit Indices | |
|---|---|---|---|---|---|
| | GFI | AGFI | | NFI | RFI |
| 4 factors Model | 0.774 | 0.789 | 0.234 | 0.826 | 0.817 |
| 2 factors Model | 0.942 | 0.927 | 0.083 | 0.915 | 0.908 |

**Results and Discussions**

- The discussion now turns to the results of the analyses at the sub-agency level of analysis. The variable turnover behaviour can only be measured at the sub-agency level. To extend our analysis and estimate the relationship between turnover intention and turnover behaviour as stated in hypothesis H3.
- We develop and test a series of three structural equation models at the sub- agency level using lagged variables and data from five points in time: 2006 and 2008 FHCS data to measure employee empowerment, job satisfaction, and turnover intention.
- FedScope data to measure turnover behaviour. One of the limitations of the structural equation modelling (SEM) approach is that this kind of analysis is typically based on cross-sectional data that do not allow for time lags, and as a result, often produce biased estimates of causal effects (Gollob and Reichardt, 1987; Biddle and Marlin, 1987).
- The use of time lags can reduce this bias. The three models at the sub-agency level of analysis vary in terms of the time lag. In the first sub-agency level model (Model 2), employee empowerment is measured in 2006, job satisfaction and turnover intention.
- These structural equation models with multiple time lags allow us to examine the direction of causal relationships and the changes in effect size and statistical significance with less bias.
- When employee empowerment increases by one standard deviation, job satisfaction goes up by 0.62 standard deviation, with all else being equal ($\beta = -0.49$, $p < 0.001$).

**Conclusion**

Despite a burgeoning literature on the topic of employee empowerment, very little research has

been done in its impact on employee turnover. If employee empowerment, as a managerial approach, is proven to be effective at reducing turnover, it would provide policymakers and public managers with another option in their arsenal of weapons used to combat turnover and mitigate its negative consequences. In this study, we draw upon different literatures and sources of data across time to develop a causal model of how employee empowerment impacts turnover in the Indian Fabrication industry, where turnover has been a persistent concern since the late 1990s. The results of the empirical analysis offer significant support for the proposed causal model and its three hypothesized relationships. Specifically, we find that employee empowerment, defined as a relational construct, has a positive and substantively meaningful effect on job satisfaction, which in turn has a negative and substantively meaningful effect on turnover intention. Thus, the relationship between employee empowerment and turnover intention is negative and mediated by job satisfaction, as previous research suggests. We also find that turnover intention has a positive and substantively meaningful effect on turnover behaviour.

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