MAQUILADORA TURNOVER: RELATIONSHIP FACTORS THAT MATTER

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ABSTRACT

The desperate need for the practical application of turnover research findings is not more evident anywhere than in the Maquiladora industry. While the promise of a 75% reduction in labor costs is quite enticing, the reality of a high average turnover rate of 12% per month would suggest that turnover offsets the great labor cost reduction advantage. Understanding the factors that drive turnover in the Maquiladora industry are of key importance as new markets such as China are emerging to lure manufacturers looking for low cost labor advantages. This paper will evaluate two traditional turnover models, while proposing a third that has elements of controllable and uncontrollable external factors and individual internalization factors. The analysis utilizing multivariate techniques such as Canonical Correlation Analysis (CCA) and Structural Equation Modeling (SEM) will hope to advance traditional turnover research to identify those relationships factors that truly matter to the Mexican maquiladora. The findings from CCA show that controllable external factors (CEF) are good predictors of the individual internalized factors (IIF), while the uncontrollable external factors (UCEF) are not included in the analysis univariate descriptive statistics of the reasons for turnover suggest that these factors play a key role. This is a significant find because it suggests that the practitioner focus should shift from measuring and improving factors such as job satisfaction and organizational commitment, and focus on elements that they can control such as the work environment and leadership and supervision. The univariate descriptive analysis of the reasons for turnover suggests the integration of “shock” factors and job hopping factors to be included in the maquiladora research for the future.

INTRODUCTION

Many years of research in the area of employee turnover, one would wonder what new contribution could possibly be added. The new contribution of this research is the comparison of
traditional models to maquiladora suggested models using various multivariate techniques such as canonical correlation and Structural Equation Modeling (SEM), which has been rarely used in the literature to this point. According to Maertz, Stevens, Campion, & Fernandez (1996) there is a major vacuum in the area of turnover studies from an international perspective. They note that all research has been in the United States (U.S.), Canada, England, and Australia. West (2000) in her research also notes that no model has yet been developed that represents key relationships between causes and turnover from a Mexican perspective.

The maquiladora industry primarily exists along the border between the U.S. and Mexico. A maquiladora is a business entity that imports raw materials into Mexico duty free, converts the raw materials into finished goods and exports the material back to the U.S. According to Mongelluzzo (2006), 96% of the products manufactured in the maquiladoras are exported back into the U.S. market. At the same time, 56% of Mexico’s exports are from products produced in the maquiladora industry. It is well known among those companies researching the move of their operations to Mexico and those companies that already have operations in Mexico that turnover is relatively high, at an average of 12% per month or 144% annually, or the equivalent in a 1000 person operation of losing and having to replace 120 employees per month. This turnover drives added costs, and has the potential to disrupt the operation from a delivery and quality perspective.

A current phenomena occurring is that of maquiladora organizations closing their operations and relocating to China. After over 25 years of maquiladoras in Mexico, the lack of growth in productivity and wages has led to the exodus of many maquiladoras to China. In Plama’s (2005) article he mentions that INEGI (Mexico’s governmental statistical organization) reported 545 maquiladoras leaving Mexico in a 12 month period between June 2001 and June 2002. This exodus was equivalent to two maquiladoras leaving Mexico per day and resulted in 160,000 employees losing their jobs. By the beginning of 2005 the 545 maquiladoras leaving Mexico reached 1000. The added costs of turnover affect this equation, because as Plama (2005) notes from an article in The Economist (July 24, 2003), that over time Mexico has done little to reduce energy costs which are 20% higher than competing companies, nor has Mexico taken the opportunity to develop a more skilled workforce. This lack of inaction has served to erode the competitive advantage of proximity that Mexico has with the U.S. Mexico is only making five cents more per dollar of product according to The Economist article (2003).

Of the research specifically done on Mexican maquiladoras and turnover the approach has been varied. West (2000) evaluates an integrative model from the research of Hom & Griffith (1995) and the unfolding model from Lee & Mitchell (1994). The practical significance of understanding these relationships better would be a tremendous find. The Lee & Mitchell (1994) unfolding model introduces a new concept for consideration called “shocks.” A shock is a life changing event for the individual that requires them to terminate their relationship with their employer. A shock can be positive, negative, or neutral and leads to four specific paths as identified by Lee & Mitchell (see Table 1).
Lee & Mitchell (1994) introduced the unfolding model because “in over 17 years of research on the traditional turnover models suggest that many employees may leave organizations in ways not specified by the traditional models (p. 56)”. From 1994 to the present (2007) there still has not been significant progress made in identifying key relationships, or in the development of models with reference to turnover within the maquiladora industry. The focus of this research will be to utilize the multivariate techniques to propose a new model and explore possible new relationship factors or causes for turnover that have yet to be uncovered relative to Mexican maquiladora turnover. This research will begin with a review of the traditional turnover literature and maquiladora specific turnover literature. This will be followed by Canonical Correlation Analysis (CCA), which is used in the development of a proposed model. Thirdly, Structural Equation Modeling will be used to evaluate two traditional turnover models using Mexican maquiladora empirical data. The paper will conclude with research limitations, future research opportunities, and managerial implications.

LITERATURE REVIEW

Traditional Turnover Literature

The literature review will be chronological in nature, in order to understand the evolution of the turnover literature. Bernard (1938), Simon (1945), March & Simon (1958), were the earliest to study turnover by focusing on job satisfaction and perceived alternatives. Mobley (1977) developed the intermediate linkage model which suggests that all of the elements link in a consecutive fashion. The person thinks about quitting, evaluates the value of a job search, shows intention to search, searches, evaluates alternatives, has an intention to quit, which ultimately leads to turnover (quitting).

In 1994 Lee & Mitchell introduced the first departure from the traditional turnover construct and model called the unfolding model. Their research focused on the fact that “shocks” precipitate the process of an individual making a decision to turnover. In addition to the shocks, Lee & Mitchell (1994) present four specific decision paths, one of which interestingly goes from a shock directly to the individual quitting. Lee, Mitchell, Wise, & Fireman (1996) continue their research on the unfolding model with some empirical testing of the theories surrounding the model, with one key finding that a negative organizational shock led to a direct and quick turnover event.
Parker (1997) does research on the sources and consequences of principled turnover, which is one of four types of voluntary turnover. The other three types of voluntary turnover are responsibility-based turnover, opportunistic turnover, and idiosyncratic turnover. Parker (1997) also discusses the four key responses to principled turnover which are to exit, to speak out, to be patient, and to be neglectful (absenteeism, less work effort).

Mitchell, Holton, Lee, Sablynski, & Erez (2001) once again introduce a new construct to the turnover literature. The new construct “job embeddedness” refers to elements of attachment of the employee to other teams, groups within the organization, perceptions of fit (organization, community, and job), and cognitions about the sacrifice for leaving their jobs. This is followed in 2004, with research on job embeddedness categorized by on-the-job and off-the-job embeddedness. Holtom, Mitchell, Lee, & Inderrieden (2005) return to their research on “shocks” and discuss specific types of shock and provide a practical approach for addressing the effect of the shocks on the organization. The traditional turnover literature focused on causal relationships to turnover, mostly, internal to the individual, while the maquiladora turnover literature focuses more on elements of difference between culture, country, and compensation.

**Maquiladora Turnover Literature**

The chronological review of maquiladora turnover literature is quite limited. In 1990 Vidales does research on the difference between working conditions in a national (Mexican headquartered) maquiladora and a transnational (Other country headquartered) maquiladora, to understand if there is a subsequent effect on turnover. In an article by McDermott (1994) he looks at the cultural similarities between the Mexican and Japanese cultures in terms of power distance, strong uncertainty avoidance, collectivism, and high masculinity. McDermott suggests in this article that the collectivist nature of the Mexican culture impacts turnover because the workers are loyal to an organization up until there is a family matter that needs to be addressed.

In 2000, West evaluates maquiladora turnover with a model that integrates model concepts from Hom & Griffith (1995) and Lee and Mitchell (2003) that focuses on elements of attachment (organization, leader, and co-worker) as predecessors to voluntary turnover.

Some of the labor trends commonly seen are driven by the Mexican labor laws or the unionization of the workforce. The Mexican labor law stipulates that if an organization keeps salaries at the minimum wage, they are exempt from federal taxes. This leads most maquiladoras to boost the salary with inducements such as sponsoring of sports teams, and other benefits such as free lunch, transportation coupons, and signing bonuses. This leads to the now frequently observed job hunting packs. These groups of 5-8 potential employees go from maquiladora to maquiladora in search of the organization that meets their base salary requirement, and provides added benefits, inducements, and/or signing bonuses. The Mexican labor laws also provide employees with a retirement payment once they have worked for a company for a certain period of time. This has led to the more frequent departure of the tenured employee who retires (or in some cases is let go), gets their payout and then starts over with another maquiladora. The unionization of the workforce also plays a major role in the ability of maquiladora employers to actively replace those individuals that turnover. In Matamoros, Mexico and Reynosa, Mexico unionization is nearly 100% (Bloom, 2001). The employees go to be placed at the maquiladora by the union. While this placement process still exists, there is still
the often sighted job hunting pack moving from maquiladora to maquiladora to find out what perks each maquiladora has to offer.

Whereas there are known maquiladoras that pay more than others, it is typically in the form of a signing bonus, or an other type of benefit. Miller, Hom, & Gomez-Mejia (2001) investigate whether elements of compensation actually have an effect on turnover. The results of their research show a positive relationship between productivity pay and turnover, however, a negative relationship was found between profit sharing and savings plan benefits and turnover. They also, through their research, refute the theory that the perks and incentives that are provided by the maquiladoras do not drive an employee to be more loyal to the organization. This would suggest that in the long run, that while the salary is important, the inducements and benefits are short lived. Maertz, Stevens, & Campion (2003) present a turnover model that focuses on the organization, leader, and coworker attachment relationship to voluntary turnover. A comparison of high and low technology maquiladoras and the relationship with job satisfaction is researched by Adams, Coyle, and Lovett in 2004. The limited research on Mexican maquiladora turnover does not begin to address the appropriate relationships or models that explain aspects of turnover that allow for practical interpretation and use.

**PROPOSED MODEL**

While the prevailing traditional turnover literature addresses factors such as absenteeism, job satisfaction, organizational commitment, work environment, staying intent and/or some combination of these factors, only absenteeism has been shown empirically to have a direct relationship to turnover. Absenteeism is the signal to the organization that there are external factors that the individual is internalizing, which could lead to turnover. Since the prevailing findings in turnover literature suggest many moderating interactions leading to turnover, the researcher wanted to first understand how traditional constructs of turnover relate to one another. An analysis was done using Canonical Correlation Analysis (CCA). While CCA is more than 70 years old, the more recent development of software packages such as SPSS, and AMOS allow for a more rapid analysis and interpretation of the results. The constructs of Job Satisfaction (JS), Organizational Commitment (OC), and Staying Intent (SI), were identified as the dependent variables while, Work Environment (WE), Leadership / Supervision (LS), and Link to Strategy (ST) were designated as the independent variables. These factors were categorized into these groupings such that the dependent variables are representative of elements that the individual must internalize and the independent variables are those elements that are external to the individual. See Figure 1 for the model used for the CCA.
Figure 1: Canonical Correlation Model & Results

The significance of these results from a practitioner perspective is that controllable external factors (WE, LS, ST) do drive the individual internalization of factors (JS, SI, OC) from a statistically significant and practically significant perspective. The relevance of these results suggests a shift in focus on measuring and improving JS and OC, to a focus on improving those items such as work environment and leadership and supervision, which are well within an organization’s control. Utilizing absenteeism as a signal that there is trouble, investigate why the individual is absent and whether there are CEFs that might be adjusted to ensure that turnover does not occur. The model representing these relationships can be found in Figure 2: Maquiladora Turnover Controllability Model.

Figure 2: Maquiladora Turnover Controllability Model

The Internalized Individual Factors (IIF) will determine the level of commitment to the organization, the individual’s level of job satisfaction, and ultimately their willingness to stay with the organization, which will in turn result in turnover or the individual deciding to stay with
the organization. The elements of “shock” and job hopping (JH) are uncontrollable external factors (UCEF) that will either directly drive the individual to leave the organization or will force them to internalize the affect of the shock and lead to a decision of whether or not they will stay or leave the organization. See Figure 3, which shows the impact of job hopping and elements of “shock” as captured in 2006 by the maquiladora in this research.

![Figure 3: Reasons for Turnover - Uncontrollable External Factors & Job Hopping](image)

### STATISTICAL TECHNIQUES & METHOD

#### Statistical Techniques

The statistical techniques that will be utilized in this research are Canonical Correlation (CC) and Structural Equation Modeling (SEM). Canonical Correlation will be used to analyze the relationship between a group of constructs categorized as external factors (CEFs) and internal factors (IIFs), and assist in the development of the proposed model as shown above in Figure 2. Finally, Structural Equation Modeling (SEM) will be used to evaluate two traditional turnover models to see if they are a good fit for the Mexican maquiladora data set.

#### Canonical Correlation

The canonical correlation analysis was done in both SPSS and AMOS. The results using AMOS SEM confirmed the results from SPSS. The analysis of the canonical correlation consisted of evaluation of statistical significance of each function, calculation of the Redundancy Index (R.I.), evaluation of the canonical weights, canonical loadings, and canonical cross loadings. The
statistical analysis resulted in only Function 1 being significant with $r = .752$. The size of the canonical correlation was large enough to be considered practically significant as well. The R.I. was calculated to evaluate both the dependent and independent variables. The dependent variables (JS, OC, SI) had a R.I. = .415. The independent variables (WE, LS, ST) had a R.I. = .397. While both indexes are low, combined with the statistical significance tests, Function 1 should be accepted. Function 1 provides a cumulative variance of .704, which translates into an $R^2$ value of .565. Function 1 explains 56.5% of the shared variance. The evaluation of the canonical weights provide the following rank 1st, 2nd, and 3rd for the dependent (JS, OC, SI) and independent (LS, WE, ST) variables respectively. The analysis of the loadings shows four (JS, OC, LS, WE) of the six variables to be greater than .84 shared variance. The cross loadings analysis shows all of the variables to have the same direction with JS explaining 49.1% of the variance, OC explaining 44.4% of the variance, and JS explaining 30.7% of the variance in the function. The sensitivity analysis was conducted by removing ST to see the effect on the results which was small (.738 without and .745 with). The decision was made to leave all variables in the analysis. The validation run confirmed the results of the original analysis with all of the values being slightly higher using the validation sample (Function 1 $r = .787$). The only change was to the rankings of the dependent variables. In the validation sample OC was ranked 1st and JS was ranked 2nd.

**Structural Equation Modeling**

SEM was utilized to analyze two traditional turnover models. The traditional model found in Figure 4 (a & b) were analyzed with JS as an independent variable to OC and vice versa.

![Figure 4a: Traditional Model JS → OC](image-url)
The results of the analysis show an RMSEA value of .160 for 1a., and an RMSEA value of .195 for 1b. Neither is less than the recommended value of .08 for the sample size and number of variables in the model suggesting that the models are not a good fit for the Mexican maquiladora data set. The regression weights however are all significant leading one to conclude that the relationship between OC to JS (.72) and JS to OC (.63) are both strong statistical cause and effect relationships in both directions. The model developed for analysis based on the survey results suggests that as expected while pay was the lowest scoring survey element that the relationship of pay satisfaction (PS) to OC, JS, and SI is not strong, with the strongest relationship between PS and JS as expected. However there is an increase in the causal relationship between OC and SI (.72). This model as well is not a good fit with an RMSEA of .234. The final SEM analysis conducted was of the dependent variables and the specific survey questions and the independent variables and the specific survey questions. The results of this analysis were significant relationships with a good model fit (RMSEA = .063) for both the dependent and independent variables. The conclusions from the SEM analysis are that the data show support for the traditional models that suggest that Organizational Commitment leads to Job Satisfaction, which in turn leads to Staying Intent. The same is true for the reverse which modeled Job Satisfaction leading to Organizational Commitment, which in turn lead to Staying Intent. This suggests that the maquiladora turnover experience can be represented by the traditional models. The alternative model evaluated based on results from the survey although the model is considered a good fit, suggests as recommended below that “shock” while not analyzed in this research need to be considered in future research. While OC and JS show a causal relationship to SI, there is still the unresolved issue of what if there is not intent to stay with the organization from the beginning. If there is not intent then other factors need to be evaluated and better understood to explain turnover in the maquiladora industry.

**Method**

The analysis for this research was focused on the direct and indirect labor employees that are involved in converting the raw materials into finished goods. The maquiladora surveyed for this research operates in Reynosa, Mexico which is considered part of the Gulf Region. There are three identified regions of maquiladoras in Mexico (Huerta, 1993). The survey was administered...
to direct and indirect labor employees over the period from March 2006 through December 2006. There were 1,757 employees that completed surveys during this time period. The data used for the analysis was a random sample of 250 responses from the total data set of 1,757. This smaller sample size was used to ensure that the sensitivity of the results was not affected by the large sample size and to utilize additional data points in the validation of the results. A side aspect to this research was the analysis of the survey used for this research to ensure reliability and validity in the measure of the six constructs or factors as follows. These factors are: Job Satisfaction (JS), Staying Intent (SI), Organizational Commitment (OC), Work Environment (WE), Leadership / Supervision (LS), and Link to Corporate Strategy (ST). Confirmatory Factor Analysis (CFA) was done to verify that the questions in the survey load to the expected factors and the questions did load as expected.

LIMITATIONS, FUTURE OPPORTUNITIES, & MANAGERIAL IMPLICATIONS

Limitations

The data collected on the employee survey is anonymous, therefore there is no demographic data available on the participants to use to see if there are demographic elements that account for turnover in this region of maquiladoras. This research is only representative of data from the Gulf region in the state of Tamulipas. The Pacific region in Baja, California and Chihuahua regions represent 64% of the total number of maquiladoras in Mexico. In the research by Vidales (1990) the maquiladora employees in total represented 80% of all industrial employment through the entire country of Mexico.

Future Research Opportunities / Recommendations

Consider additional antecedents to job satisfaction more recently studied, such as employee inducements (Castillo, 2003) and impulsive quitting. The research by Castillo, 2006 concludes that because of the highest need being basic necessities, that the inducements were not key factors in enticing an employee to stay with an organization. Castillo found that inducements distinguished between a “stayer” or “leaver” but did not effect an employees intention to stay. Once again these conclusions lead us to consider, what is the primary “shock” that leads an employee to seek other employment (and/or no employment)? The factors of “shock” and job hopping need to be further studied in relation to Mexican maquiladora turnover.

Managerial Implications

The findings from this research would suggest that controllable external factors (CEF), which can be monitored and controlled by the organization, should be the focus of improvement efforts relative to turnover, and should in turn lead to improved levels of JS, SI, and OC. Understanding, analyzing, and developing strategies to counter each of the UCEFs is where the future in Mexican maquiladora research will be found.

References available upon request