PREDICTIVE MODELS OF EMPLOYEE VOLUNTARY TURNOVER IN A NORTH AMERICAN PROFESSIONAL SALES FORCE USING DATA-MINING ANALYSIS

A Dissertation

by

MARJORIE LAURA KANE-SELLERS

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2007

Major Subject: Educational Human Resource Development

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ABSTRACT

Predictive Models of Employee Voluntary Turnover in a North American Professional Sales Force Using Data-Mining Analysis. (August 2007)

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With the supply of talented employees for the predicted available jobs around the world declining, employee retention and voluntary turnover have jumped to the forefront of HRD practitioners', as well as senior managers', strategic initiative. By 2008, demographers predict that 76 million baby boomers will be eligible for retirement. The generations that followed these individuals, born between 1946 and 1962, are not numerically adequate to fill the vacancies that these retirements will create. A growing concern exists that the expected annual growth in the number of eligible employees will be outpaced by economic growth predictions. While employee retention and employee voluntary turnover have received considerable scholarly attention, few research studies have examined the phenomenon in a professional sales arena. No investigation to date has tracked employee voluntary turnover and retention over a 14-year longitudinal wave as was the focus of this study.

This population study examined employee retention of a Fortune 500 North American industrial automation manufacturer's professional sales force over a 14-year

period. It focused on personal characteristics, work characteristics, and human resource development (HRD) intervention factors influencing employee voluntary turnover. The results suggest that training and development participation contributes more significantly to employee retention than salary and job title promotions to the firm's ability to retain sales professionals.

The theoretical underpinnings associated with these findings reinforce the importance of human capital theory, social identity theory, expectancy theory, and distributive justice theory. They also suggest that employee retention should be included in calculations that measure the return on investment for training and development interventions. Further, these results that emerged from comprehensive data mining suggest that a structured training and development program embeds aspects of employee socialization that can influence a professional sales employee's tenure in the organization. Formal training can serve to socialize the employee into the organization, thus, deepening the effect of social capital theory to build normative organizational commitment, a mediator of employee retention. This effect appeared to be more significant for non-Caucasian sales professionals who remained in the organization when included in a structured sales training program.

DEDICATION

To Frank,

you have been the reason for every step

I've taken since the day you were born.

I love you with all my heart.

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Thanking those who helped me through this journey seems an arduous task since I had so many people who provided support and encouragement – professors, fellow classmates, friends, family, and coworkers. Sometimes the encouragement was in the form of great advice and others a well meaning question, “Are you ever going to finish that paper?” Regardless of the words wrapped around that support, all of them served to push me across the finish line, and for that I am eternally grateful.

Thank you to the organization that provided me with an opportunity to study employee retention by data mining 14 years of employee records. The investment in time, funding, and access to information provided me an opportunity to advance the research on one of the most critical topics facing the contemporary business world. I truly appreciate the confidence you placed in me and my research agenda.

My committee provided direction, guidance, and support throughout the project and my doctoral journey. Dr. John W. Slocum, thank you for challenging me to frame the research considering multiple perspectives. Dr. David A. Erlandson, thank you for teaching me to think differently and begin some of the most rewarding work of my life. Dr. Homer Tolson, your direction on the data mining has been invaluable. Dr. Stephen W. Thompson, I truly appreciate your support as a committee member, fellow faculty member, and friend. Dr. Toby Egan, you have provided outstanding support and sufficient pressure to push me when I was ready to throw in the towel. You have pushed me beyond my self-inflicted limits to stretch far above anything that I thought I could ever reach. I will be forever indebted to you.

I am fortunate to have so many friends who have invested in the attainment of my goals, even though they did not completely understand my motivations. Valerie Lewis, you are truly my biggest cheerleader and I love you for that. Ellen Goodloe, you have listened to my concerns and quieted my self-doubts when I was certain that I was incapable of seeing this goal to completion. To Larry Badgley who only joined the journey on the last leg, you pushed me more than you knew when you called me a Ph.D. Wannabe. Ron Russell, your chiding has always been interpreted in the spirit in which it was intended, and it has helped me in these past few months. To Robin Gray, Michelle Meyer, Debbie Conyers, and my other NEDA friends, you always showed support and interest and gave me the flexibility to work while I was pursuing the degree. To my many classmates, far too many to list, you challenged me to see and experience learning though multiple lenses.

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I am blessed to have all of the people mentioned herein, but also to have the God-given natural curiosity that spurs my love of learning. I pray that I may always use these

talents to give back in order to repay the many blessings that have been bestowed upon me.

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CHAPTER I

INTRODUCTION

Employee retention and employee voluntary turnover as a research agenda have received so much scholarly attention that, in academic circles, it could be considered trite. Voluntary turnover studies in the past two decades eclipse 2000 in number (Bluedorn, 1982; Cotton & Tuttle, 1986; Griffeth, Hom, & Gaertner, 2000), with studies found in business, management, industrial psychology, personnel psychology, human resource management, and human resource development journals. Few researchers have examined voluntary turnover or retention of professional sales force employees. Even fewer researchers have examined the effects of human resource development (HRD) interventions on a sales force over an extended period of time. A review of 20 longitudinal studies revealed only two studies that were focused on sales employees, and none of these studies examined the phenomenon over a period longer than five years. The majority studied a period no longer than 12 months.

This study addressed retention and voluntary turnover of professional sales force employees of an industrial sector manufacturer, headquartered in the U.S., over a 14-wave longitudinal period. The entire population of technical sales employees within a single organization was examined. The number of observations was extensive – over 20,000 observations associated with the 1,675 subjects analyzed for the study. The longitudinal period, size of the population, and the subject focus of this study distinguish this investigation from previously identified studies of employee voluntary

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The style for this dissertation follows that of the *Human Resource Development Quarterly*.

turnover. The unique aspect of this study, however, lies in the number of variables and the variety of statistical treatments of employee turnover through the data-mining process.

Nature of the Study

HRD is a field that combines theory and research from psychology, economics, and systems (Lynham, Chermack, & Noggle, 2004), as well as the natural sciences and business disciplines. The faculty of Texas A&M University (TAMU) (2001) define human resource development (HRD) as "the process of improving learning and performance in individual, group and organizational contexts through domains of expertise such as lifelong learning, career development, training and development and organizational development" (para. 1). The domains of expertise identified in the TAMU definition of HRD include lifelong learning, career development (CD), training and development (T&D), and organizational development (OD). Lifelong learning is the domain of expertise embedded in the TAMU definition that sparks the most debate (Sleezer, 2004). In the dynamic workplace of the 21st century, work is driving the need for employees to increase skill and knowledge levels in order to adapt (Packer & Sharrar, 2003).

This study was conducted with full support from the focal organization in order to examine employee retention and employee voluntary turnover of professional technical sales people in a Fortune 500 firm. Recognizing the human capital asset importance, the focal firm was interested in understanding the factors that influenced both retention and voluntary turnover in an industrial sales environment. While

identification and description of the factors can be enlightening, absence of solid prescriptive measures may result in nothing more than heightened levels of understanding. The extensive dataset over a 14-year longitudinal period will position this study as the longest wave longitudinal study on voluntary turnover and one of two that studied professional sales employees to date. A survey of literature revealed fewer than 25 longitudinal studies of voluntary turnover. The longest period of study identified through literature review was five years, and only 2 of the 20 studies reviewed used sales employee subjects.

Background

The aging of the baby boomers, individuals born between 1946 and 1964, and lower birth rates in the three decades that followed, suggest an impending talent shortage in the workplace (Frank & Taylor, 2004). On the cusp of the most dramatic period of downsizing and employment shifts, this threat may sound to some like Chicken Little's unfounded cries that the sky is falling. The Gallup Organization's Engaged Worker Index of September 2003 indicates that employees are registering the lowest level of job satisfaction in years – only 29% of workers claimed to be engaged in their work (Jamrog, 2004). Similar results were reported in the Towers Perrin Talent report. Sixty-four percent of the employees surveyed reported only moderate engagement, and 19% claimed total disengagement (Towers Perrin, 2003). Combine with the predicted smaller talent pool with waning employee engagement, and it becomes obvious why scholars in management and organizational behavior raise concerns (Frank, Finnegan, & Taylor, 2004; Frank & Taylor, 2004; Jamrog, 2004).

By 2008, demographers posit that 76 million baby boomers will be retirement eligible, having reached the age of 62. That equates to 43% of the civilian workforce who will be retirement eligible (Jamrog, 2004). Retirement ages are likely to increase as this demographic group struggles to build 401K and stock market balances while simultaneously facing healthcare costs, which are the highest in history (Frank, Finnegan, & Taylor, 2004). Nonetheless, there is a growing concern that workforce expected annual growth of 1% will be outpaced by economic growth predictions of 2-3% per annum (Fullerton & Toossi, 2001; Karoly & Panis, 2004). Impending labor shortages are creating a ground swell throughout U.S. firms as executives turn their attention to strategies and tactics aimed at engaging and retaining desirable performing employees (Konrad & Deckop, 2001).

Understanding the Phenomenon

Historically, firms have measured employee turnover rather than employee retention rates (Waldman & Arora, 2004). The shift in measurement is not as simple as 1 - T = R, where T = Turnover and R = Retention. Employee retention is more than a quantitative measure of how many workers stay, but also involves who stays with the focus being on the worker who is a valuable player in terms of individual and organizational goal attainment (Hillmer, Hillmer, & McRoberts, 2004). Firms with sufficient foresight to anticipate a threatening reduced level of employee retention are shifting their attention upstream to employee engagement, rather than its antecedent, employee retention (Bergmann, Lester, De Meuse, & Grahn, 2000).

The workplace of the 21st century promises to look different than that of any generation before. Employment challenges in the next decade suggest careful consideration due to a number of influencing factors. The aging of the workforce and the potential for a mass exodus of baby boomers are just two of the factors that will challenge the stability of the contemporary work environment. The employees entering the business world, and thus replacing retiring baby boomers, are very different than their generational elders. Individuals born in the Gen X (1965-1980) and Gen Y (1980-2000) tend to value work life balance differently than those belonging to the generations preceding them (Jamrog, 2004). They also tend to change jobs more frequently than their older coworkers (Catalyst, 2001). Globalization introduces a level of complexity that forces companies to examine critically the systematic and cultural underpinnings of the organizational fiber. Add to these dynamics the role that technology and the rate of innovation play, and it becomes evident that executives directing business activities face some interesting and complex issues in managing the human capital aspect of their businesses.

Employee retention is at the forefront of human capital considerations. Scholars in organization development, industrial psychology, HRD, and management have devoted more than half a century and almost 2,500 studies to the topic of employee turnover and its antithesis, employee retention. The factors influencing employee turnover have been the fodder of significant debate in the multidisciplinary field of organizational behavior, industrial psychology, and human resource management and development. Despite the vast body of research, scholars and practitioners continue to

grapple with factors and their causal relationships that lead to voluntary employee turnover. The consensus point is, however, the fact that the impending talent pool shortage escalates the importance of curbing turnover and workforce instability.

Jobs in "high tech" require specialized skills and knowledge borne from scientific acumen further developed by technical degree curriculum as well as company-provided training and development. The U.S. Bureau of Labor Statistics describes high-technology occupations as those that require a high degree of scientific and mathematical specialization that transcend the traditional technology industry boundaries that include designers, manufacturers, and distributors of computers, software, and test equipment firms (Catalyst, 2001).

Statement of the Problem

Demographic indicators strongly suggest that the race for talented workers will reach worldwide crisis levels by 2008 due to retirement of the baby boomer generation and decreased birth rates throughout the "developed" world in the three decades that followed the end of that era (Frank, Finnegan, & Taylor, 2004). The smaller pool of qualified professional workers combined with recent economic conditions in the U.S. led to downsizing, increased automation, and global outsourcing for improvements in operational efficiency and increased profits. The workplace phenomenon that resulted was employee disenfranchisement leading to lower levels of employee engagement and retention (Jamrog, 2004).

Understanding the factors that influence employee retention and voluntary turnover can be instrumental in predicting workforce stability and provisioning HRD

interventions aimed at improving employee selection, motivation, and retention in the professional technical sales environment. The aim of this research is to determine the factorial influence of personal, work, and HRD interventions in predicting employee voluntary turnover of the professional sales employees in this study.

Purpose of the Study

The purpose of this study was to examine voluntary employee turnover in the focal firm's sales organization, or more specifically, the salaried sales and marketing professionals within the organization. The researcher focused on 14 years of the company's internal employee records with the intent of identifying factors related to turnover, understanding similarities and differences among and between the various subgroups within the workforce, determining the cost of employee turnover, and prescribing systematic, procedural, and/or cultural remedies. The literature review is intended to identify factors that contribute to employee retention and voluntary turnover.

Research Questions

The study is intended to provide answers to the following questions:

1. What factors affect employee retention and voluntary employee turnover within the focal firm's North American technical sales force?
2. Based on the available data, how can future employee retention rates be predicted for the organization under study?
3. Can employee retention of professional sales people be improved by optimizing the human resource development interventions in the organization under study?

Methodology

The research employed an empirical positivistic approach in the analysis of the 14-year longitudinal employee records. The participating firm provided the employee record observations on August 1 of years 1992-2005 for the entire North American professional sales force. These observations were synchronized employee records captured on the same date (August 1) over a 14-year sequential period. These records were analyzed using descriptive statistical analysis methods as well as multivariate analysis techniques. Descriptive, multiple analysis of variance (MANOVA), independent t-test, factor analysis, multiple regression, and binomial logit regression analysis were used as data-mining techniques in order to identify factorial constructs and prediction models. Statistical analysis was performed using SPSS 14.0 and SAS 9.1.3 statistical software tools.

Participants

The population of this study was the North American-based exempt employees of a Fortune 500 industrial manufacturing firm. The total population of the firm's North American-based exempt sales employees used in the study was 1,675. Data were identified through 21,271 individual observations over the 14-year longitudinal period of study relating to 2,368 unique employees, of which 1,675 met the criteria of professional employee job title and at least one year of tenure in the organization. Professional technical sales employees were dispersed across North America in sales offices with the most populous concentration in headquarters and major metropolitan sales offices. Identity of the respondents was limited to the company's unique employee clock

number, but job hierarchical classification and assigned location were included in order to examine potential differences in engagement and retention intentions between and within groups.

Data Collection Methods

The data were provided by the participating firm in excel spreadsheets by the observation year. Datasets were merged, ensuring that fields were appropriately aligned to maintain data integrity. Since logistic regression techniques assume a single response variable, classification techniques were used to identify employee status, type of turnover, career stage, education level, job title hierarchy, training program participation, ethnicity, gender, marital status, educational reimbursement, and termination reason. Prior to data coding, classification techniques were discussed with the study sponsors to ensure accuracy and logic of data interpretation and coding techniques.

The dependent variable in the study was the dichotomous employee status (voluntary turnover and non-voluntary turnover, which included active and involuntary turnover), training and development (T&D) participation, and Caucasian versus non-Caucasian. There were three primary categories of independent variable groupings – demographic, work, and HRD interventions. Demographic variables included ethnicity, gender, organizational entry age, current age, termination age, marital status, career stage, and educational level; and these were treated as independent variables. Work characteristics were treated as an independent variable grouping and included work location, supervisor, service length, and service length during the study period. The third category of independent variables, HRD interventions, included educational

reimbursement, salary, salary progression, job title hierarchy, and job title progression. A fourth independent variable for inactive employees (voluntary and involuntary turnover) that was considered was termination reason.

Procedures

This was a population study that included all employee records that met the one year of service criteria for North-American exempt sales personnel in the focal firm. The employee records included current and archived employee records extracted from multiple human resources (HR) database systems.

Data Analysis

The results of the empirical portion of the study were reported consistent with appropriate reporting quantitative techniques according to Gall, Borg, and Gall (2003). The data collected from the focal firm's employee database were analyzed with SPSS 14.0. and SAS 9.1.3 statistical analysis software programs. Descriptive statistical procedures were used to describe each of the demographic subgroups, different employee status groups, different work characteristics, and different HRD intervention groups. Multivariate analysis and factor analysis techniques were used to explain the variance between gender and ethnic groups for active versus voluntarily turnover employees. Exploratory factor analysis techniques were used to identify component structures and to reduce the number of variables. Logistic regression statistical techniques were used to test models for employee retention modeling. Multiple displays, such as figures and tables, were used to present findings.

Significance of the Study

Few studies on voluntary turnover deal with professional sales personnel and none have approached the phenomenon using an extensive longitudinal approach and data-mining techniques. The impending talent shortage for professional technical sales personnel elevates the importance of predicting turnover as well as prescribing preventative measures in the form of HRD interventions. Future studies on employee retention cannot focus on the end point, but should consider the predecessor to the action that results in the loss of employees demonstrating desirable work performance (Frank & Taylor, 2004). Labor shortages are predicted to impact global markets due to higher retirement rates coupled with lower talent entering the workforce (Frank, Finnegan, & Taylor, 2004; Frank & Taylor, 2004; Jamrog, 2004; Konrad & Deckop, 2001). Consequently, broadening the understanding of employee voluntary turnover is critical for firms regardless of industry segment.

Limitations of the Study

The findings of this study were limited by the following:

1. Data analysis was limited to employee records and interviews with HR personnel at the focal firm.
2. The scope of this study was limited to the exempt employees and the context for the data provided by the focal firm.
3. The findings of this study were not generalized to any group other than the selected firm.

Assumptions

The findings of this study were preceded by the following assumptions:

1. The employee records were accurate and inclusive of the entire population of the North American Sales force for the period from August 1, 1992 through August 1, 2005.
2. Interpretation of the data collected accurately reflected the characteristics of the employees contained in the sales force employee records.

Operational Definitions

To delve into an in-depth discussion of employee retention would be imprudent without establishing a baseline understanding of the various operational definitions embedded in the construct. The key definitions follow:

Career Development: a shared responsibility between the employee and organization for career goal setting, T&D plan, development assignments, etc., aimed at facilitating horizontal and vertical movement within the employing organization (Cummings & Worley, 2005).

Career Stage: involves the level of employee education and experience. For the purpose of this study, subjects were characterized into one of four categories employing the Levinson career stage model (Levinson, Darrow, Klein, Levinson, & McKee, 1978). The first category, coded as 0 reflected 25 years of age and younger. The second classification code, 1, was 25 to 34.99 years of age. Employees 35 to 49.99 years of age were coded as 2, and those 50 years of age and older were coded as 3.

Caucasian: refers to white American-born employees. *Non-Caucasian* refers to employees belonging to the following ethnic groups – African American, Hispanic, Native American, Asian Pacific Islander, Other, and Unidentified or Unknown. Employees belonging to one of the groups excluded from the Caucasian category were classified as non-Caucasian.

Employee Engagement: occurs when an individual is cognitively and emotionally involved in performing the tasks that are expected and lead to attainment of job and corporate objectives (Luthans & Peterson, 2002). Employee engagement is manifested in behaviors related to employees' job performance, their willingness to remain employed by their firm, and positive comments they make about the firm (Gubman, 2004).

Employee Fit: the degree to which an individual is judged to possess congruent attitudes and values with the organization in the case of person-organization fit. Person-job fit is the match between a person's skills, knowledge, and attitude with the requirements of the specific job within the organization (Cable & Judge, 1996).

Employee Retention: the total number of employees minus employees who terminate employment with the firm within a specified time period (Hillmer, Hillmer, & McRoberts, 2004).

HRD Intervention: a purposeful activity that is intended to develop an employee's skills, knowledge, career, and/or performance as it pertains to the workplace (Cummings & Worley, 2005).

Human Resource Development (HRD): the process of improving learning and performance in individual, group, and organizational contexts through domains of expertise such as lifelong learning, career development, training, and development and organizational development (Texas A&M University, 2001)

Involuntary Turnover: the dismissal of employees with performance deficiencies, violations to corporate policies or guidelines, or participation in illegal activities (Frank, Finnegan, & Taylor, 2004).

Sales Training Program: the formal program offered by the focal firm intended to foster the formalized accumulation of knowledge and skills aimed at promoting job competence and performance of salespeople (Wilson, Strutton, & Farris, 2002).

Training & Development (T&D): "process of systematically developing expertise in individuals for the purpose of improving performance" (Swanson & Holton, 2001, p. 204).

Turnover: "the cessation of membership in an organization by an individual who receives monetary compensation from the organization" (Levin & Kleiner, 1992, p. 6). Turnover includes voluntary and involuntary separations from the employing firm. This study measured total turnover with an emphasis on voluntary turnover since the focal firm was interested in the employees who left the organization of their own free will and that the firm wished to maintain membership in the organization.

Turnover Intention: a conscious decision regarding willingness to stay or leave the organization (Tett & Meyer, 1993).

Turnover Rate: the total number of separations, both voluntary and involuntary, divided by the total number of employees in the organization or department of focus (Joinson, 2000).

Voluntary Turnover: an employee's decision to terminate the employment relationship. Involuntary turnover involves the employer's decision to terminate the employee (Dess & Shaw, 2001).

Organization of the Dissertation

With the foundation for the purpose of the study established, along with the definitions that serve as the basis of the research, the following chapters focus on a review of literature, description of the research procedure, results of the research, and culminate in a summary that includes implications and recommendations for further study. The literature review, Chapter II, includes a summary of recent research focused on employee voluntary turnover and retention as well as a review of the focal firm and the company's hiring, training, and promotion processes. The techniques and process used for data mining are described in Chapter III with the results discussed in Chapter IV. In addition to the detailed summary of the research contained in Chapter V, recommendations for further research and implications of the results are also included.

CHAPTER II

REVIEW OF LITERATURE

Employee turnover can be interpreted as a leak or departure of intellectual capital from the employing organization (Stoval & Bontis, 2002). The financial impact of employee turnover is estimated to range from 100-300% of the departing employee's annual salary (Moody, 2000). In the March, 2000, *Bulletin to Management*, the Bureau of National Affairs reported a national rate of employee turnover in 1999 of 1.2% per month (Joinson, 2000). Retaining top-performing employees has catapulted rapidly to the forefront of firms' business initiatives as the job market tightens in terms of employee supply versus demand (Sturman, Trevor, Boudreau, & Gerhart, 2003) as well as scholars' research agendas.

With studies devoted to voluntary turnover eclipsing 2,500 in number (Bluedorn, 1982; Cotton & Tuttle, 1986; Griffeth, Hom, & Gaertner, 2000) in just the past 25 years, scholars continued to analyze this phenomenon. There was general agreement on the factors that influence voluntary turnover, but a consensual chasm exists with regards to the path, direction, degree of influence, and the interactive effects found in these factors that comprised the generally accepted inductive-based models (Blau & Boal, 1989; Breaugh & Starke, 2000; Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Jaros, 1997; Kammeyer-Mueller & Wanberg, 2003; March & Simon, 1958; Williams & Hazer, 1986; Mobley, 1977; Price, 2001), is elusive.

Introduction

This chapter begins with a discussion of employee retention and employee turnover through a survey of literature and research studies. Next, a discussion of the factors that contribute to voluntary turnover categorizing these factors into three primary areas ensues. Each of these selected categories – demographic, work related, and human resource development (HRD) related factors, will be discussed thoroughly in relation to employee turnover. In the sales environment, little research has been devoted to employee turnover as the following literature survey demonstrates. Turnover models and HRD intervention models pertaining to turnover will be discussed next.

The studies included for analysis consisted of peer reviewed published articles, conference proceedings, and doctoral dissertations. The relevant published articles were identified primarily through computer-based searches of *Wilson, ABI/INFORM* (1976-2006), *ERIC EBSCOhost Business Source Premier* (2004-2006) databases using the keywords *turnover, turnover intention, employee retention, voluntary employment termination, Realistic Job Preview (RJP), Employee Socialization, Employee Fit, Person-Organization Fit, Career Development (CD), Training and Development (TD), Human Resource Development (HRD) Interventions, Job Satisfaction, Organizational Commitment, Employee Engagement, Sales Force, Industrial Sales,* and *quits.* A manual search using the same keywords was conducted for the years 1990-2006 in the *Journal of Applied Psychology, Personnel Psychology, Academy of Management Journal, Journal of Occupational Behavior, Advances in Developing Human Resources, Human Resource Development Quarterly, Human Resource Development International, Journal*

of Vocational Behavior, Annual Review of Psychology, Organizational Behavior and Human Performance, Journal of Management, HR Human Resource Planning, Interface, and *Monthly Labor Review*. Two other searches that were instrumental in identifying relevant literature involved separate searches with the combination of voluntary turnover and the search terms meta-analysis and longitudinal study. The final literature search source included references of the initial research study selections for the years 1990-2006. Across the searches described herein, more than 500 pertinent articles were identified. Literature selected for the study pertained to employee voluntary turnover and retention in the public business sector since it was more similar to the focus of this study.

Overview of the Firm

This study focuses on professional sales people working for an industrial automation firm headquartered in the Midwest, United States between the period from August 1, 1992 through August 1, 2005. The 100 year-old firm is publicly held with annual revenue of approximately $5 billion. The organization employs 21,000 individuals globally with between 1,000 and 1,200 deployed in the North American sales organization, the segment of the business that is the focus of this study.

The sales force is comprised of college-degreed individuals assigned to sales offices throughout North America. The company provides a seven-month training program to all college recruits and some employees who transfer into the sales organization from other internal departments. The decision whether to train inter-company transferred employees is based on prior experience of the transfer candidate.

The 30 year-old sales training program includes curriculum focused on etiquette, soft sales skills, intercultural diversity, time management, product and technical, solution selling, and business support within the organization. The program includes a field assignment of 10-12 week duration in a field sales office similar to a traditional internship. Organizational socialization is embedded in the sales training program.

The formal training component of the focal firm's sales training program involved classroom instruction on products, services, systems, and processes. These instructor-led activities were facilitated by a seasoned executive within the focal company. Primarily, this format fostered the acquisition of job skills, but the secondary outcome was the development of social networks within a peer group as well as the firm's functional managers. This training imposed social network increased the social identity of participants, thus diminishing individual differences as participants were "broken in" or assimilated into the company fold. This process was enhanced further by the rotational assignment aspect of the training program.

Trainees working in a functional job, even on a temporary basis as in a on-the-job rotation, were able to practice the application of skills and knowledge while expanding these social networks. Newcomers to the organization who participated in the training program learned more about the various organizational roles and behaviors – outcomes that have been linked with the socialization process traditionally (Anakwe & Greenhaus, 1999). Not surprisingly, empirical evidence supports the notion that employees who participated in a formal training program in service and technical jobs were more likely to remain in the organization when compared with those individuals

who were not socialized into the organization through a formal training program (Holtom, Mitchell, & Lee, 2006; Kammeyer-Mueller, 2002; Wilson, Strutton, & Farris, 2002).

Despite ongoing diversity issues in the U.S. business world, the sales organization is comprised of less than 10% non-Caucasian or female employees. Representatives from the company claimed that the firm has "diversity requirements to fulfill – but we try to do this by doing diverse recruiting – we are still very selective based on talented first and foremost – we can't afford to set someone up for failure in this program." (L. Cleve, personal communication, November, 18, 2005). Individuals hired into the sales program must be willing to relocate for the permanent assignment upon completion of the sales training program.

An Overview of Employee Turnover

A study conducted in 2002 found that one-third of the respondents surveyed from companies in various industries expressed plans to voluntarily leave their current job within the next 24 months (Hay, 2002). Employee turnover is the termination of membership in an organization that provides monetary compensation in return for individual work (Levin & Kleiner, 1992). Turnover can be classified as voluntary or involuntary, referring to employee initiated or company initiated termination, respectively. Most turnover literature viewed turnover as either voluntary or involuntary, with the bulk of research devoted to voluntary turnover (Abelson, 1987). Researchers have refined further the concept of voluntary turnover into avoidable and unavoidable. Avoidable voluntary turnover refers to the employee-initiated leaving often related to job

dissatisfaction and lack of organizational commitment (Carsten & Spector, 1987; Chonko, 1986; Egan, Yang, & Bartlett, 2004; Firth, Mellor, Moore, & Loquet, 2004; Grayson, 1994; vanDam, 2005). This type of turnover is precipitated by cognitive withdrawal behaviors and changes in job performance (Abelson, 1987; Sturman & Trevor, 2001; van Bruekelen, van der Vlist, & Steensma, 2004). Unavoidable voluntary turnover, on the other hand, referred to employee-initiated terminations due to spousal relocation, personal health issues, family matters, retirement, death, or educational pursuit. Most companies focused on curbing avoidable voluntary turnover and factored out turnover related to layoffs, temporary assignment completion, illness, death, or spousal relocation (Joinson, 2000).

Some scholars viewed turnover in terms of either positive or negative consequences of employee departure (Dalton, Todor, & Krackhardt, 1982; Hom & Griffeth, 1995). Positive consequences of turnover result from the departure of poor-performing employees (Hollenbeck & Williams, 1986). When poor performers turned over, either voluntarily or involuntarily, the organization had an opportunity to upgrade the organization through the infusion of new employees bringing new skills and knowledge to the workplace (Levin & Kleiner, 1992). Additionally, the departure of poor performers provided increased opportunities for stayers and stimulated changes in policies and practices.

There was evidence that firms used pay policies to retain high performers and promoted separation of low performers (Trevor, Gerhart, & Boudreau, 1997). Pay for performance or contingent reward schemes were the basis for Boudreau and Berger's

(1985) employee movement utility model – one of the few models that linked performance to voluntary turnover (Sturman, Trevor, Boudreau, & Gerhart, 2003). Herman (2004) introduced the notion that 30-40% of today's workers experience "warm chair attrition," a condition used to describe an unengaged employee who was distracted by thoughts of the next job or pursuit of a new job. This might explain why research suggested that change in performance may be more instrumental in predicting voluntary turnover than an annual performance rating that is not referenced to past performance evaluations (Sturman & Trevor, 2001). Sturman, Trevor, Boudreau, and Gerhart (2003) studied the effects of three distinct pay-for-performance strategies as they pertain to employee turnover. They found confounding problems with this approach since employee age, gender, tenure, ethnicity, and education level had to be accounted for in order to meet Equal Employment Opportunity Commission guidelines. Fundamentally, however, linking contingent rewards to performance supports Vroom's expectancy theory that states that an employee's motivation toward specific behavior is dependent on that individual's belief regarding the effort-performance-outcome relationship (vanDam, 2005; Vroom, 1964).

To a large degree, people entered and maintained employment in an organization because of the perceived returns or rewards they expected to receive for their service investment (Cable & DeRue, 2002). This expectation epitomized the essence of Vroom's (1964) expectancy theory that suggested an employee's motivation to behave in a specific manner is dependent on the individual's beliefs regarding the effort-performance-outcome relationship (vanDam, 2005). Thus, employees who perceived

that their job role offered greater perceived career growth were less likely to terminate employment with the organization (Bedian, Kemery, & Pizzalatto, 1991). The employee perception of rewards included the tangible rewards, such as total targeted compensation (salary, commission, stock options, and bonuses), as well as the intangible returns that include investments commonly included under the heading of HRD interventions (T&D, CD, etc.). Fundamentally, individuals expected their employing organization to demonstrate a commitment in their personal and professional growth and well being and were willing to reciprocate an investment of their time and talents to such an organization (Bedian, Kemery, & Pizzalatto, 1991).

Interestingly, there is empirical evidence that voluntary turnover and employee retention may have been influenced by distinctly different factors (Sturman & Trevor, 2001). In Dalton's 1981 taxonomy, avoidable and unavoidable voluntary turnover were found to exhibit very different behaviors and motivations (Abelson, 1987). The fact that employees who left the organization for unavoidable reasons (e.g., illness, transfer of a spouse, family reasons, etc.), behaved similarly to those who remained in the organization, further supports the notion of different determinants of employees maintaining or terminating organizational membership.

In reports released by the U.S. Bureau of Labor Statistics in 2000, by the year 2010 the labor demand will exceed the labor supply by 5.2 million people – 22.2 million versus 17 million. Table 1 illustrates the skilled labor shortage trends for the last two decades of the 20th and first decade of the 21st centuries (Herman, 2004). Strictly examining workforce supply in terms of labor shortage, however, ignores the impact of

increasing job options that prompt dissatisfied employees from seeking "greener pastures." Reports issued by the U.S. Department of Commerce in 1997 and 1999 indicated that turnover, job satisfaction, and motivation to transfer are critically important elements in maintaining stability in high-technology industries. The specialized skills required in a technical sales position are those intangible human capital assets that drive a competitive edge in the marketplace (Egan, Yang, & Bartlett, 2004).

Table 1. Skilled Labor Shortage Trends

000 People	1980	1985	1990	1995	2000	2010
Jobs Available	99,330	109,680	124,324	134,959	145,594	167,754
Available Labor Force	106,940	115,461	125,840	133,304	140,863	157,721

Source. Hay (2002).

Service-related firms in high-technology industries were projected to be the hardest hit by employee turnover with projected decimation rates of 15-20% in the first decade of the 21st century. Within the high-technology arena, sales organizations were projected to experience the greatest employee turnover (Moody, 2000). Clearly, there is a plethora of research on employee turnover, both voluntary and involuntary. There is a void of research on employee retention and voluntary turnover of professional sales people. Another unique aspect of this study is the length of the period under study. In order to fill this void, this research examined the impact that the combinatorial influences of personal or demographic variables, human resource development (HRD)

variables, and work environmental variables longitudinally play in a high-technology sales environment. Each of these factorial categories were explored in more detail below.

In today's global economy, most firms recognize the role that human capital plays in driving competitive advantage. Becker (1964) stated that the investments that a firm makes in the employees in terms of benefits, training and development, and career development are human capital investments and can be compared to the capital investments made in property, plant, and equipment that provide the essence of driving a sustainable advantage in the marketplace (Becker, 1964). Seldom examined in this manner, human capital theory can be extended to measure the effects of turnover in terms of intellectual capital drain from the organization (Stoval & Bontis, 2002) similar to wasted materials.

According to a paraphrased passage from the focal firm's website, the firm understands the importance of the integral role that employing a diverse work force plays in achieving success in the marketplace. The firm values its 20,000 employees as the richest resource and is committed to cultivating an environment that is inclusive and respects diversity of views and ideas and, thus, rewards employees for bringing these talents to the workplace because it recognizes these attributes and attitudes are critical for the company's success.

Factors Influencing Voluntary Turnover

The relationships between voluntary turnover and determinant factors are still not fully understood (Barrick & Zimmerman, 2005). In a meta-analytic review of

voluntary turnover studies, Cotton and Tuttle (1986) found that the strongest predictors for voluntary turnover were age, tenure, pay, overall job satisfaction, and employee's perceptions of fairness. Conversely almost a decade later, Healy, Lehman, and McDaniel (1995) using meta-analysis techniques found that age is not a predictor of job-related outcomes or of voluntary turnover. Some scholars believed employees' reactions to their jobs, and thus their staying behavior, results from the interaction between personal or demographic characteristics and the nature of the job (Mowday, Stone, & Porter, 1979). Another school of thought acknowledged that female employees are more likely to feel that their needs are not being met. However, this form of dissatisfaction is not manifested in an intention to leave the organization (Rosin & Korabik, 1995).

Voluntary turnover studies can be categorized into three camps. The demographic camp focused on the influence that age, gender, ethnicity, education, marital status, etc., have on an employee's cognitive behaviors leading to turnover or voluntary turnover itself (Healy, Lehman, & McDaniel, 1995; Hom & Griffeth, 1995; Jones & Harter, 2005; Kirchmeyer, 1995; Kirschenbaum & Weisberg, 2001; Koch & Steers, 1978; Kristof-Brown, Zimmerman, & Johnson, 2005). The second camp, the work characteristics determinants of voluntary turnover camp, have focused on salary, working conditions, supervision, advancement, recognition, growth potential, etc. (Allen & Griffeth, 2001; Bedian, Kemery, & Pizzalatto, 1991; Karp & Nickson, 1973; Summers & Hendrix, 1991). Traditional HRD interventions related to training and development (T&D) and career development (CD) by definition fall into this category.

The third camp of voluntary turnover factors, was comprised of psychometric factors, namely, job satisfaction, perceived support, distributed justice, and the three components of organizational commitment (affective, normative, and continuance). This camp may well be the most studied of all determinants of voluntary employee turnover (Bentein, Vandenberg, Vanderberghe, & Stinglhamber, 2005; Mowday, Porter, & Stone, 1978; Powell & Meyer, 2004; Price, 2001; Reichers, 1987). The next three subsections of this chapter will discuss these three camps or categories.

Demographic Factors of Voluntary Turnover

Research findings suggested that personal or demographic variables, specifically age, gender, ethnicity, education, and marital status, were important factors in the prediction of voluntary employee turnover (Abelson, 1987; Arnold & Feldman, 1982; Hom & Griffeth, 1995; Peterson, 2004; Sacco & Schmitt, 2005). A five-year meta-analytic study of work attitudes and outcomes specifically focused on discrimination indicated that differences and the perception of workplace fairness indicates that ethnic and gender differences can influence job satisfaction, organizational commitment, and work tension (Lease, 1998). Demographic differences have been found to influence work outcomes such as job performance, hiring and career progression, and voluntary turnover (Tsui, Egan, & O'Reilly, 1992). Differences in supervisor subordinate dyads in terms of education, gender, and ethnicity have been associated with job stressors, such as role ambiguity, substandard job performance evaluations, and lower affective organizational commitment – all of which are positively associated with voluntary turnover intention and voluntary turnover (Tsui & O'Reilly, 1989). Gender was also

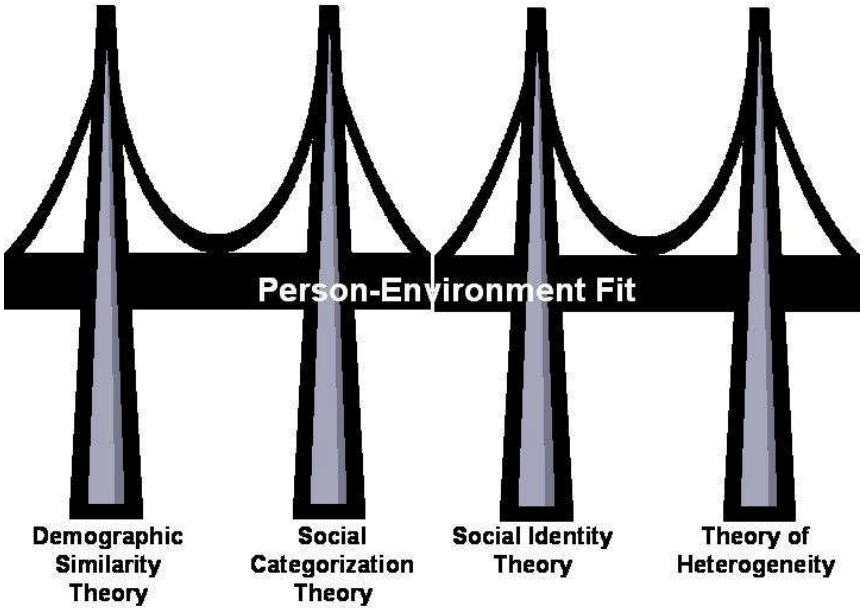
found to be the most significant barrier to women's career success (Betz, 1989). Together, demographic variables comprised those differences employers often sought in provisioning diversity initiatives. Each of these variables will be discussed in more detail in the following subsections. Prior to delving into each individual characteristic or demographic variable, a brief discussion of the theoretical underpinnings may be prudent.

Organizations seek diversity for social, legal, and competitive reasons (Sacco & Schmitt, 2005). However, unbalanced subgroup membership, a common outcome of diversity initiatives, can serve to highlight differences and place undue attention on the individuals of that subgroup (Kanter, 1977). Person-organization fit, also called person-environment (P-E) fit, was a critical consideration in the explanation of organizational stability, or specifically, employee retention and voluntary employee turnover. While person-organization fit was a determinant of employee retention, four theoretical tresses support person-organization fit, the bridge that is instrumental in understanding link between personal or demographic characteristics and voluntary employee turnover (Figure 1). The first tress to this bridge is demographic similarity theory that suggests that personal characteristic similarities and differences impact the social relationship between individuals, and thus, spill into the workplace as well (Tsui, Egan, & O'Reilly, 1992). Extending this notion and adding the second tress – social categorization theory helps us to understand how individuals enhance self-esteem by categorizing others according to salient characteristics including ethnicity, gender, and group membership

(Tajfel, 1982). This line of reasoning provided a logical explanation for the similarity attraction phenomenon that confounds many organizations' diversity initiatives.

Inherent to similarity attraction theory (Byrne, 1971), organizations have a natural tendency toward establishing homogeneity because those who do not fit are not attracted to, selected for, or retained on-the-job. Similarity, attraction is a fairly simplistic paradigm describing why similarity in attitudes and values increases interpersonal attraction and liking. Since individuals who are different from those in the group tended to withdraw physically (Perry, Kulik, & Zhou, 1999), it followed that members of the out-group were more likely to leave the organization voluntarily due to feelings of isolation.

Figure 1. Person-Organization Fit Theoretical Bridge.

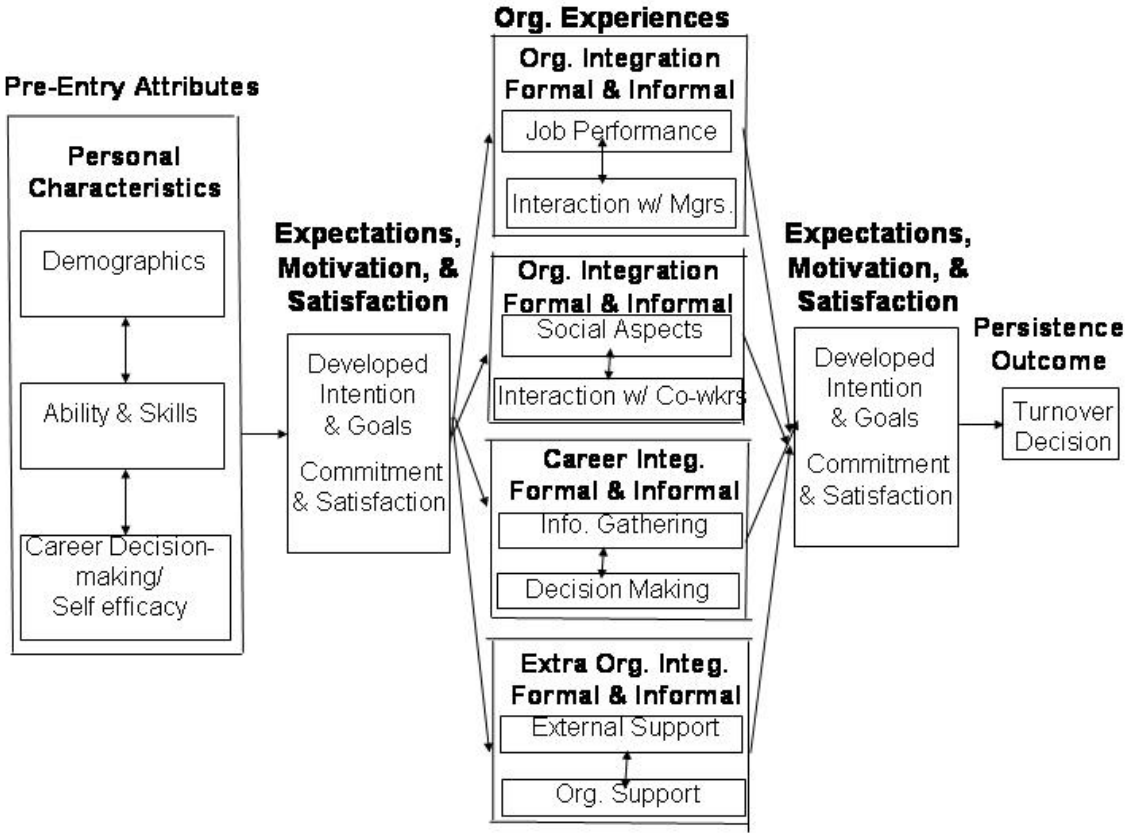


Closely related to social categorization theory, the third tress, is the more internalized notion of self-categorization theory in which individuals categorize themselves into psychological groups such as age or gender (Tsui, Egan, & O'Reilly, 1992). Empirical research supports the notion that intent to turnover and voluntary turnover are related to dissimilarity in age, race, or gender (Jackson et al., 1991; Kirchmeyer, 1995; O'Reilly, Caldwell, & Barnett, 1989; Tsui, Egan, & O'Reilly, 1992).

Peterson's (2004) turnover attrition model crystallized the interplay between personal characteristics, psychometric factors, organizational experiences, and eventually employee retention or turnover behavior (Figure 2). Social identity theory, the third tress, provided a solid foundation for the notion of person-organization fit since individuals identify with those most like themselves (Tajfel & Turner, 1979). Essentially, social identify theory could be considered a surface-level of diversity issues because it refers only to the individual's self-image and group identification (Cunningham & Sagas, 2004). The fourth and final tress to the person-organization fit bridge model is Blau's (as cited by Alexander, Nuchols, Bloom, & Lee, 1995) theory of heterogeneity whereby differences jointly and independently influence group cohesion and integration into social groups. Individuals identify with those who are members of the same categorical group. Therefore, if gender or ethnicity is one of the groups in an individual's self-categorization scheme, then that employee will select and maintain membership within groups that mirror the same characteristics (Tsui, Egan, & O'Reilly, 1992).

The person-organization fit theory bridge is well supported, and we can begin to explain the directional link between personal characteristic dissimilarities and voluntary employee turnover that is mediated through job satisfaction and organizational commitment constructs. Two concepts that are important to this discussion include the idea of psychological group congruence and relational demography. Psychological group congruence is a key construct in the self-categorization process (Tsui, Egan, & O'Reilly, 1992). Relational demography focuses on the distance between self and other members of the group (Chatman & Cha, 2003).

Figure 2. Organizational Model of Employee Persistence.



Source. Peterson (2004).

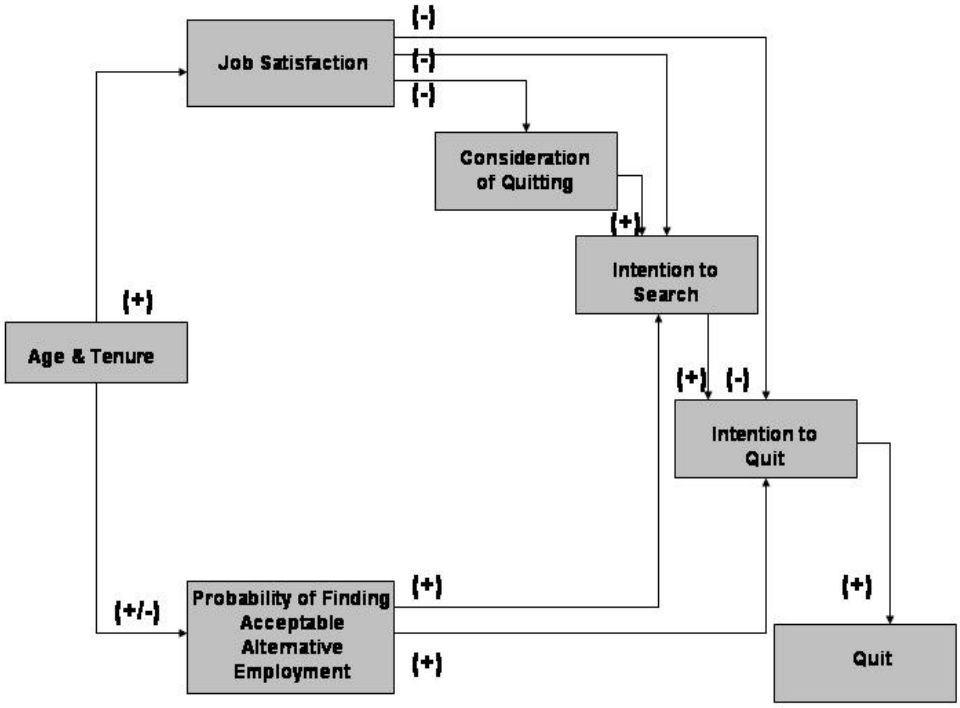
Person-organization fit involves more than physical personal attributes. The degree of congruence between an individual's values and the organizational culture was also integral to this theoretical framework (Cable & Judge, 1996). Examination of a number of studies in a meta-analysis indicated that when individuals identify that they do not perceive that they fit well in their employing organization, their intention to quit is higher (Verquer, Beehr, & Wagner, 2003). This metaphorically supports the "fish-out-of-water" concept. However, it should be noted that the preceding discussion has been what could be termed an "inside looking out" focus beginning with the individual employee. Several researchers have flipped the focus to a more "outside looking in" whereby demographic change in the workplace is the mediating variable and individual employee turnover is the variable of interest (Hom & Griffeth, 1995).

Influence of Age on Voluntary Turnover

The age of the employee significantly influences voluntary turnover (Arnold & Feldman, 1982; Barrick & Zimmerman, 2005; Cotton & Tuttle, 1986). Older, more tenured employees were less inclined to voluntary turnover than their younger, less tenured counterparts (Cotton & Tuttle, 1986; Mobley, Griffeth, Hand, & Meglino, 1979; Mowday, Porter, & Steers, 1982; Muchinsky & Tuttle, 1979). Lease (1998) reported that older workers exhibit higher levels of job satisfaction, job involvement, and organizational commitment. Arnold and Feldman (1982) reported a significant inverse relationship between age and voluntary employee turnover (β=-.14, $p<.001$). Figure 3 depicts a traditional relationship between employee age and tenure in the organization

and the relationship between quitting cognitions and the final step – voluntary turnover. This has been adapted from an earlier model (Mobley, Horner, & Hollingsworth, 1978).

Figure 3. Traditional Turnover Model.



Gender Influence on Voluntary Turnover

Unlike traditional thought that women's mobility in the workforce has been attributed to familial responsibilities, research indicated that more often voluntary turnover in women was related to career plateau issues (Stroh, Brett, & Reilly, 1996) than to family responsibilities. The U.S. Census Bureau reported in 2002 that women accounted for 51% of the population and 47% of the workforce, but only 13% of the

top-level executives in Fortune 500 firms (Kwesiga & Bell, 2004). Interestingly, there was some empirical evidence that women with children experience lower voluntary turnover (Federico, Federico, & Lundquist, 1976) than women who are childless. The rationale for this finding could be that women with family responsibilities experience higher continuance commitment due to financial obligations. However, it should be noted that the evidence for this argument is obtuse.

Work-centered individuals tended to connect to their job function role and value performance, organizational commitment, and career progression (Mannheim, Baruch, & Tal, 1997). These researchers found a relationship between gender and the work role construct. Mannheim et al. found women to be less work-centered and less concerned with career planning than male counterparts. This may explain the somewhat consistent empirical evidence that female managers were more likely to voluntarily leave their employing organization than male managers (Cotton & Tuttle, 1986; Rosin & Korabik, 1995; Stroh, Brett, & Reilly, 1996).

Voluntary turnover of women employees has been found to be attributed to career-enhancing opportunities in a new organization that were not accessible in their current organization (Moody, 2000; Stroh, Brett, & Reilly, 1996). A 1995 U.S. Bureau of Labor Standards survey found that 43% of the women respondents quit voluntarily for an increase in job responsibilities, with 38% leaving for promotion opportunities (Moody, 2000). In a study of male and female MBA graduates in management positions, researchers found that women were more likely than men to feel that their expectations were not being met on-the-job (Rosin & Korabik, 1995).

Research was mixed with regards to the influence of gender on voluntary turnover. Hom and Griffeth (1991) observed that female employees did not voluntarily leave organizations at a rate that differed from their male coworkers. Cotton and Tuttle (1986) in a meta-analytic study did find a difference, with women voluntarily quitting more frequently. Since ambitious females who are unencumbered by familial responsibilities are more mobile, it is not surprising that they were found to be less tolerant of career plateauing and thus, were more likely to leave of their own volition (Stroh, Brett, & Reilly, 1996). When women found career advancement barriers or pay inequity, pursuit of alternative employment that offered greater returns to human capital was the most logical solution (Sicherman, 1996).

There is some support for the postulate that women with higher education level attainments experienced higher turnover rates (Federico, Federico, & Lundquist, 1976). Conversely, Mathieu and Zajac (1990) reported that older, less educated, highly paid females experienced higher organizational commitment and, thus, exhibited fewer cognitive withdrawal behaviors such as tardiness, intention to quit, and voluntary turnover. This common research finding thread tends to reinforce beliefs that women employees experience barriers to advancement, but was mixed in terms of attributing gender as a significant influence to voluntary turnover (Valentine, 2001; Weisberg & Kirschenbaum, 1993).

In a 2004 study, researchers outlined five specific barriers to women's career progression (Kwesiga & Bell, 2004). First, women (compared to men) frequently found themselves excluded from mentoring relationships as well as informal career networks.

The second barrier encountered by women involved the absence or limited exposure to career succession planning interventions. Third, women were less likely to be selected to participate on committees or projects that facilitated workplace learning and development. The fourth barrier cited in the study was a general consensus regarding negative attitudes perceived by employees about women in executive management positions. The fifth and final barrier was the sheer lack of core opportunities for high potential female employees in the corporate environment.

Ethnic Influence on Voluntary Turnover

Supporting the notion of person-organization fit and its nested theoretical underpinnings, members of minority or non-dominant ethnic groups face many of the same problems as women in the workplace. Blau (1990) reported that of all the demographic characteristics considered, only ethnicity was related to voluntary turnover. Rates of voluntary turnover among employees belonging to the non-predominant ethnic group in an organization have been found to be higher (Peppas, 2002; Sorensen, 2004; Zatzick, Elvira, & Cohen, 2003). Another finding that threatened diversity initiatives in organizations was the finding that positive relationships existed between same race voluntary organizational departures (Sorensen, 2004; Zatzick, Elvira, & Cohen, 2003). This supported the notion of racial composition whereby fit in an organization is determined by the general mix of the employee population. Like females in the workplace, non-dominant ethnic group members experienced often impenetrable barriers progressing into managerial roles within the organization (Valentine, 2001). As the demographic composition of an organization was more balanced, employees tended

to experience similarity – attraction orientation as well as aspects of social identity theory (Zatzick, Elvira, & Cohen, 2003).

Voluntary turnover may not be determined by individual race, but in a greater sense by the ethnic composition of the organization. If so, this supports the importance of demographics within the organization. While many firms have increased the intensity of minority recruitment, minority turnover remains 40-50% higher than Caucasian voluntary turnover (Zatzick, Elvira, & Cohen, 2003). McKay and Avery (2005) suggested that the disparity in voluntary turnover rates could be due to a mismatch in pre-hire and post-hire diversity attitudes. For instance, the greater the proportion of minorities in an organization within management ranks, the higher the likelihood that non-predominant employees would participate in a workplace mentor-mentee relationship (Thomas, 2003). However, the smiles of minority employees in the recruitment ad tended to fade when they encountered pay inequity, inadequate career development opportunities, barriers to key job assignments, and isolation from developmental networks (Dreher & Cox, 2000; McKay & Avery, 2005).

In a study of 235 intercollegiate athletics coaches, Cunningham and Sagas (2004) reported that value dissimilarity is a stronger predictor of job satisfaction and voluntary turnover than ethnic dissimilarity. One line of reasoning was that race and corporate culture are separate constructs that interacted to create combinatorial deep-rooted attitudes, expectations, values, and perspectives that may be incongruent with mainstream in-group employees in the workplace (Harisis & Kleiner, 1993). When managers do not have the skill, experience, or training to deal with conflicts that arise

from these differences, stress levels increase, job dissatisfaction rises, turnover rates escalate, and traditional business outcomes like productivity, customer satisfaction rates, and organizational efficiency suffer.

At least one study provided data indicating that the best opportunities for non-dominant group individuals were in the sales and service sectors, one of the fastest growing areas in American business (Falk & Lyson, 1988). Jobs in these sectors, however, tend to be burdened by high degrees of job stress and burnout, both of which lead to higher levels of job dissatisfaction and voluntary turnover (Johnson, Griffeth, & Griffin, 2000). That may partially explain why studies have found that minority employees are more inclined to develop negative attitudes about employers (Zerbinos & Clanton, 1993) and to pursue litigation over issues dealing with distributive justice (Reynolds, 1992) than other employees. Further discussion regarding fairness and career development in the organization will be discussed in the next section.

Education Influence on Voluntary Turnover

The education level attainment reflects the human capital of employees (Becker, 1964) and influences the likelihood that an employee will voluntarily leave the organization (Iverson & Pullman, 2000). Since higher education completion increased the employee's skill and knowledge levels, more highly educated employees were expected to have higher job mobility (Hom & Griffeth, 1995). Very few studies focused specifically on educational attainment level and employee voluntary turnover, however.

HRD Interventions' Influence on Employee Retention

The costs and energy that firms expend in employee training and development (T&D) are human capital investments. These have been found to track closely with the size of the organization and their capital investment strategies (Lynch & Black, 1998). Often, training programs are intended to satisfy dual initiatives – socializing newcomers into the organization and thus facilitating the entry process, and secondly, to improve skills and knowledge to promote job performance (Holton & Russell, 1999). Few prior studies have found evidence that link organization-sponsored training and development to employee retention (Gaffney, 2005; Holton & Russell, 1999). To the contrary, recent research suggests the emergence of the "free-agent" worker. These employees maintain an intense focus on self-development and lifelong learning to ensure acquisition of skills and knowledge that facilitate career mobility and may, in fact, be extended to suggest an inverse relationship between the organization's investments in training and development and employee retention (Deal & Kennedy, 1999; Gould, Weiner, & Levin, 1997; Opengart & Short, 2002).

Traditionally, practitioners have supported the importance of HRD interventions focused on T&D as well as career development (CD) in retaining solid-performing employees (Martineau & Cartwright, 2000; Packer, 2000; Short & Opengart, 2000). Recent workplace and economic conditions leading to organizational downsizing and reduction in force (RIF) have given rise to the shift from organizational loyalty (commonly referred to as organizational commitment) to the notion of commitment to profession or industry (Deal & Kennedy, 1999). While organizational commitment

research suggested that when organizations sponsor or support individuals' training and development activities that the employees' job satisfaction increased as did normative commitment levels (Bartlett, 2001; Summers & Hendrix, 1991) and both were precursors with an inverse relationship to turnover intention. There is, however, limited empirical evidence linking training and development directly to employee retention, or the absence of T&D investments to employee voluntary retention (Holton & Russell, 1999).

Work Characteristics Influencing Voluntary Turnover

The mere definition of employee turnover, "the cessation of membership in an organization by an individual who receives monetary compensation from the organization" (Levin & Kleiner, 1992, p. 6), implies the link between maintaining membership and rewards from the organization. Herzberg's (Hellriegel, Slocum, & Woodman, 2001; Herzberg, 1987) theory of motivation discusses two types of incentives – motivators and hygiene factors. The hygiene factors include factors, such as salary and monetary rewards, as well as the physical aspects of the workplace. The motivators refer to workplace influences such as recognition, interpersonal relationships with coworker and supervisor (Hellriegel, Slocum, & Woodman, 2001). Summers and Hendrix (1991) suggest that valance instrumentality expectations containing pay increases, promotion, and job security may be poorer predictors of turnover than more intrinsic affective factors like the job's effective use skills and knowledge or perceived organizational support. The minimal effect of valance instrumentality expectations on voluntary turnover supports the notion that hygiene factors, unless they are unfairly

distributed throughout the organization, are of lesser importance after the employee has joined and become socialized in the organization than motivator factors. Thus, motivators influence employee retention to a greater extent. Karp and Nickson (1973) provided a taxonomy of factors that can be classified into these two categories (Table 2).

Table 2. Employee Sources of Satisfaction

Hygiene Sources of Satisfaction	Motivation Sources of Satisfaction
Salary	Achievement
Working Conditions	Recognition
Work Itself	Advancement
Supervision	Responsibility
Healthcare Benefits	Potential for Growth
Vacation Days	Relationship With Boss & Coworkers
	Status

Source. Karp and Nickson (1973).

Influence of Salary Satisfaction

People enter and maintain employment in an organization because of the perceived returns or rewards they expect to receive for their service investment (Cable & DeRue, 2002). This expectation epitomizes the essence of Vroom's (1964) expectancy theory. An employee's motivation to behave in a specific manner is dependent on the belief regarding the effort-performance outcome relationship (vanDam, 2005). Thus, an employee who perceives that their job role offers greater perceived career growth is less likely to terminate employment with the organization (Bedian, Kemery, & Pizzalatto, 1991) than one who sees no relationship. The employee

perception of rewards included the tangible rewards such as total targeted compensation (salary, commission, stock options, and bonuses) as well as the intangible returns that included investments commonly included under the heading of HRD interventions (T&D, CD, etc.). Fundamentally, individuals expected their employing organization to demonstrate a commitment in their personal and professional growth and well being and were willing to reciprocate an investment of their time and talents to such an organization.

Satisfaction or dissatisfaction with pay seemingly was related to two distinct constructs: (a) pay level satisfaction and (b) pay raise satisfaction (Tekleab, Bartol, & Liu, 2005). In a study that linked pay satisfaction with organizational outcomes, a significant relationship ($\beta = -.42$, $p < .01$) was reported for teacher turnover intentions (Currall, Towler, Judge, & Kohn, 2005). Individual pay satisfaction included consideration of a person's salary itself as well as its relative relationship with wage and salary standards for the organization (Williams & Livingstone, 1994). The wider the discrepancy between self and others, the lower was the individual pay satisfaction (Rice, Phillips, & McFarlin, 1990).

Pay satisfaction was an integrally related justice theory that included procedural and distributive justice (Tekleab, Bartol, & Liu, 2005). Employees tended to become dissatisfied with work conditions, salary, or promotion when they did not feel that they had the same access to opportunities within the organization (Aquino, Griffeth, Allen, & Hom, 1997). Procedural justice with reference to salary was linked with the manner in which salary levels were established and maintained, while distributive justice was

related to the salary standards and a comparison of individual salary to others within the organization. Inadequate salary has been attributed to voluntary turnover (Campion, 1991; Tekleab, Bartol, & Liu, 2005; Weil & Kimball, 1995).

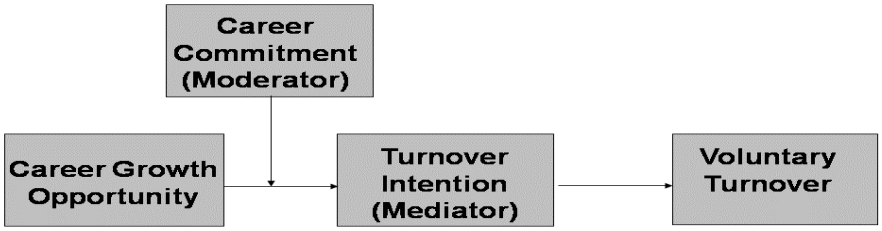
In a sales organization, contingent rewards add a level of complexity to the relationship between pay satisfaction and voluntary turnover. There was empirical evidence that when rewards are contingent on performance, there is an inverse relationship ($r=-.27$, $p<.05$) between performance and voluntary turnover (Williams & Livingstone, 1994). Recognizing the signal that contingent rewards strategies convey, there was evidence that through different pay structures based on performance that companies could encourage good performers to stay and poor performers to leave (Williams & Livingstone, 1994).

Influence of Tenure and Career Opportunities on Voluntary Turnover

Voluntary turnover or cessation of organizational membership involved weighing the rewards of staying against the rewards of leaving the organization. Consistent with Karp and Nickson's (1973) Source of Satisfaction matrix (See Table 2), potential for career growth was one of the factors that influenced an individual's job satisfaction. A study examined the expected utility of their present job in terms of attaining career growth (Bedian, Kemery, & Pizzalatto, 1991) and voluntary turnover. They introduced career commitment as a moderating factor (Figure 4). Individuals who perceived strong opportunities for career growth were less likely to leave the organization than those who did not perceive these opportunities. Career growth opportunity was a stronger predictor of turnover mediated by turnover intention than

career commitment. In other words, an individual with high career commitment but low perception of career growth opportunity was likely to exhibit turnover intention.

Figure 4. Expected Utility of Present Job vs. Turnover Model.



Source. Bedian, Kemery, and Pizzalatto (1991).

Relationship Between Job Performance and Turnover

Research has been mixed with regards to the relationship between job performance and voluntary turnover. Some researchers found an inverse relationship between an individual's job performance and voluntary turnover (McEvoy & Cascio, 1987; Wells & Muchinsky, 1985). Conversely, Allen and Griffeth (2001) found a lack of consensus between job performance and voluntary turnover citing several studies that supported that position (Jackofsky; March & Simon; both cited in Allen & Griffeth, 2001).

The argument in favor of a direct inverse relationship between performance and voluntary turnover was supported by voluntary turnover path models (Allen & Griffeth, 2001). McEvoy and Cascio (1987) rationalized the relationship stating that low performance leads to job alternative search prompted by high levels of job stress. Further, the positive path between performance and intent to leave moderated by job satisfaction provided another line of rationale reasoning (McEvoy & Cascio, 1987). One study indicated that individuals often leave after an unfavorable performance appraisal (Wells & Muchinsky, 1985) since feedback provided insight into longer term career advancement opportunity as well as salary progression potential.

In a study of 5,143 salaried employees in one organization, Trevor, Gerhart, and Boudreau (1997) reported a curvilinear relationship between the probability of organizational survival and job performance with low and high performers exhibiting similar patterns of leaving more often than average-performing workers. Earlier work suggested a non-linear relationship between performance and voluntary turnover (Jackofsky, as cited in Allen & Griffeth, 2001). As early as 1958, March and Simon introduced a contingent relationship between an individual's desire to stay in the organization and the organization's ability to provide sufficient rewards. They extended these notions suggesting that ease and desire of movement are closely tied with job satisfaction, a moderator of turnover intention ($r=-.58$, $p<.05$). Noteworthy, however, is the idea that the performance-turnover relationship is only applicable after the employee training period has concluded (Kanfer, Crosby, & Brandt, 1988).

Supervisor Influence on Voluntary Turnover

Studies on job stressors indicated that role ambiguity and lack of goal clarity were primary influences on voluntary turnover (Firth, Mellor, Moore, & Loquet, 2004). Lack of goal and process clarity impacted job satisfaction, and thus, voluntary turnover (Sawyer, 1992). Conflict or dysfunction in the organization resulting from perceived politics (Hochwater, Perrewe, Ferris, & Guercio, 1999) and absence of supervisor support led to declining organizational commitment, a precursor of turnover intent and ultimately voluntary turnover. Perceived organizational support was been found to correlate significantly with affective organizational commitment (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). Leader member exchange, commonly called LMX, was a stronger predictor of voluntary turnover than the supervisor's leadership style (Ferris, 1985).

Psychometric Factors Influencing Voluntary Turnover

Research has suggested that job satisfaction was an antecedent of organizational commitment. There is a large body of analytical evidence that job satisfaction and organizational commitment could explain 16-20% of voluntary turnover intention (Cotton & Tuttle, 1986). Waning or declining organizational commitment was directionally related to an individual's intent to voluntarily turnover and is frequently the precursor of alternative job-search activities.

Organizational Commitment

Organizational commitment, while beyond the scope of this study, is critical in predicting voluntary turnover and its antithesis, employee retention. Meyer and Allen

(1997) identified a three-component model of organizational commitment: (a) affective commitment, (b) continuance commitment, and (c) normative commitment. All three components of organizational commitment seemed to correlate with intent to turnover and voluntary turnover (Kondratuk, Hausdorf, Korabik, & Rosin, 2003).

Affective organizational commitment. Affective commitment referred to the emotional connection that the individual developed to the organization, coworkers, supervisor, and in the case of a sales organization, the customers in their assigned territory. Meta-analytic research of the three-component model of organizational commitment yielded some interesting findings. First, unlike previously thought, there were aspects of job satisfaction that did not correlate with affective commitment (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). Second, occupational commitment correlated with affective organizational commitment but also to organizational relevant outcome variables, such as employee retention and employee's organizational citizenship behaviors (OCBs). Empirical research appeared to affirm the critical predictive capabilities of affective commitment and normative commitment in the voluntary turnover phenomenon (Bentein, Vandenberg, Vanderberghe, & Stinglhamber, 2005).

Normative organizational commitment. Normative commitment referred to the obligation that an individual feels toward the organization or its members. There was support that the normative and affective organizational constructs overlap, especially in non-North American cultures. However, they maintain sufficient unique characteristics to consider them separately (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002).

The theoretical foundation for normative organizational commitment is the psychological contract whereby an individual measures the rewards and returns that the organization provided in reciprocation of the effort that he or she expends in activities aimed at attainment of organizational goals and objectives. If an individual perceives a disparity between personal investment and organizational rewards (salary) or returns (promotion or career development), the level of normative organizational commitment was likely to decline. Normative organizational commitment tends to increase immediately after an individual made a job change, whether it was an inter- or intra-organizational move (Kondratuk, Hausdorf, Korabik, & Rosin, 2003). Today's economic environment where companies emphasize shareholder value over human capital assets created a brittle condition in terms of nurturing normative commitment throughout the workforce (Bentein, Vandenberg, Vanderberghe, & Stinglhamber, 2005).

Continuance commitment. The costs an individual perceives to be associated with staying or leaving an organization are termed elements of continuance commitment. Market conditions, namely availability of job alternatives, play a significant role in the measure of continuance commitment (Stinglhamber, Bentein, & Vandenberghe, 2002; Whitener & Walz, 1993). Simply put, supply and demand of skilled workers played an integral role in moderating the continuance commitment levels. When the availability of suitable job alternatives was high, employees were likely to experience lower continuance commitment, which could lead to higher voluntary turnover rate (Iverson & Pullman, 2000). Continuance commitment involved the perceived sacrifice of leaving the current job. Consequently, it is not surprising that continuance commitment was

found to correlate with sacrifice and perceived alternatives (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). In an effort to theoretically ground the three-component model of organizational commitment, Powell and Meyer (2004) tested the model using Becker, Billings, Eveleth, and Gilbert's (1996) side bet theory. They found that there were both economic and social costs of voluntary turnover, and some of those costs came from side bets made outside the workplace. Practically interpreted, this research suggested that over the course of employment, an individual made side bets that made it difficult to leave the organization.

Job Satisfaction

Closely linked with organizational commitment is job satisfaction. These constructs share some common predictive variables (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Mobley, Horner, & Hollingsworth, 1978; Trevor, 2001). Meta-analytic research provided empirical evidence of the inverse relationship between job satisfaction and voluntary turnover in a range from -.18 (Hom, Caranikas-Walker, Prussia, & Griffeth, 1992) to -.28 (Steel & Ovalle, 1984), with a couple of studies demonstrating -.19 (Griffeth, Hom, & Gaertner, 2000; Hom & Griffeth, 1995). Job satisfaction has been characterized as a multifaceted construct comprised of seemingly unrelated factors – financial rewards, supervisor aspects, and participative decision-making opportunities (Trevor, 2001).

Research indicates that job satisfaction was strongly correlated with affective organizational commitment (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Steel, Shane, & Griffeth, 1990). A number of studies indicate that job satisfaction was a

mediator of organizational commitment in the turnover intention path of voluntary turnover (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Williams & Hazer, 1986). Conversely, Tett and Meyer (1993) viewed job satisfaction as an independent variable that more strongly influenced voluntary turnover intention and cognitive withdrawal behaviors than did organizational commitment. It should be noted that this research did indicate a covariance between job satisfaction and organizational commitment (r=.50). At least one study found job satisfaction to have no direct influence on voluntary turnover (Mobley, Horner, & Hollingsworth 1978). The chronology of these findings suggests that initial voluntary turnover research examined job satisfaction and organizational commitment as totally different constructs and seldom included both in the same study. As the overlap of the constructs was confirmed, researchers recognized the need to view both and study the mediating effects of job satisfaction on organizational commitment.

Research suggested that job satisfaction was an antecedent of organizational commitment and provided strong empirical evidence that the two variables were indeed different constructs with aspects that overlap (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002; Mobley, Horner, & Hollingsworth, 1978; Steel, Shane, & Griffeth, 1990). There is a large body of evidence that suggests that job satisfaction and organizational commitment can explain 16-20% of voluntary turnover intent (Cotton & Tuttle, 1986). Waning or declining organizational commitment was positively related to an individual's intent to voluntarily turnover and was frequently the precursor of alternative job search activities. If an individual perceived a disparity between personal

investment and organizational rewards (salary) or returns (promotion or career development), the level of normative organizational commitment was likely to decline. In a sales environment where total compensation tended to be a combination of salary and bonus (commission or pay-for-performance objectives), pay discrepancy was common.

Personal characteristics and work environment, two primary categories of variables in this study, influence job satisfaction directly and organizational commitment only indirectly through the mediation effects of job satisfaction than members of dominant groups (Williams & Hazer, 1986). Members of non-dominant groups in the work force tended to experience higher levels of job dissatisfaction (Mobley, Horner, & Hollingsworth, 1978). As job satisfaction declined, employers have observed higher levels of employee withdrawal behaviors, such as increasing absenteeism, tardiness, and declining performance (Hom & Griffeth, 1991). Ethnic composition imbalance, as well as gender imbalance, often resulted in out-group members perceiving lack of employee-organization fit, commonly referred to as person-environment (P-E) fit named for the theory by the same name (Parsons, 1909). P-E fit theory predicted that outcomes suffer when there is a lack of congruence between the demands of the job (organization) and the skills and/or knowledge of the individual (person) (Wright, 1991). Absence of employee-organization fit impacted employee recruitment, motivation, and retention.

Understanding inflection points or time period vulnerabilities for voluntary turnover as it relates to job satisfaction has been found to be important from a practical standpoint. Job satisfaction was found to be significantly related to voluntary termination

during the 1st year and 2nd year of employment (Waters & Roach, 1979). Personal and work characteristics interact with the intention to search, a precursor of intent to quit and voluntary turnover. The intention to search for alternative jobs is stronger when job satisfaction, employee age, and organizational tenure are low (Mobley, Horner, & Hollingsworth, 1978). Conversely, exogenous variables, such as job satisfaction, organizational commitment, intent to search, and intent to stay, have been found to be more predictive of voluntary turnover than employee age, gender, education, and tenure (Price, 2001). Few turnover studies have been focused on voluntary turnover in a professional sales environment (Cotton & Tuttle, 1986; Griffeth, Hom, & Gaertner, 2000; Tett & Meyer, 1993), and no studies examining the territory assignment or other strategies aimed at maximizing total compensation were located.

Employee Turnover in a Sales Environment

Employee retention and its antithesis, turnover, are a complex phenomena that create a serious problem in a sales environment. The complexity of human behavior makes the phenomena difficult to understand and even harder to solve. The bulk of voluntary turnover research has been conducted on professions other than sales and, therefore, may not be directly transferable since sales skills and behaviors may be specific to the profession or the particular industry sector (Sager & Menon, 1994).

The effects of employee turnover in a sales organization extend beyond the boundaries of the company by impacting customer relationships as well as revenue potential (Johnson, Griffeth, & Griffin, 2000). The Bureau of National Affairs, Inc. reported in their March 2000 *Bulletin to Management* that the national rate of voluntary

turnover (VTO) has reached 1.2% per month (Joinson, 2000). Shortly after the turn of the century, the Bureau of Economic Analysis reported turnover rates of 15-20% in the high-technology service industry, with the hardest hit job role being in the sales area (Moody, 2000). VTO rates at the focal firm fall well below the national average. Regardless, similar to the information technology industry sector, in a sales environment characterized by sophisticated technical product/service solutions, it took approximately three years after organizational entry for a salesperson to attain peak productivity (Joinson, 2000).

Inherent to the sales profession is a level of stress heightened by the public nature of the job role. The sales responsibility is a boundary role position in which individuals are required to interact with others beyond the formal boundaries of the organization. Adams' boundary role position theory provided a framework for understanding the interrelated activities and role characteristics of the boundary role position (Singh, 1998). The boundary role construct is complex since it involves the main and interactive effects of a number of variables – integration, innovativeness, influence over standards, external locus of control, closeness of supervision, communication frequency, level of sales experience, degree of role conflict, role ambiguity, individual need for achievement, and job performance (Behrman & Perrault, 1984).

Research indicated that sales role stress could be explained in terms of the relationships with antecedents that include role conflict (R^2=.328, p<.05), role ambiguity (R^2=.408, p<.05), job performance (R^2=.247, p<.05), and job satisfaction (R^2=.419, p<.05) (Behrman & Perrault, 1984). More recent research revealed that affective

organizational commitment mediates the relationship between perceived organizational support and voluntary turnover (Rhoades, Eisenberger, & Armeli, 2001). Simply stated, sales people who felt that the organization valued their contribution and was vested in their well-being were less likely to leave the organization of their own volition than others not sharing this belief. This supported earlier work by Futrell and Parasuraman (1984) that brought in another dimension, job performance.

Traditionally, sales people cherish a high degree of autonomy. This may explain in part why many sales people were resistant to sales force automation tools. Speier and Venkatesh (2002) reported that resistance to these automated sales tools often manifested itself with the same cognitive withdrawal behaviors often associated with precursors of voluntary turnover, namely increased tardiness and absenteeism, as well as reduced of organizational citizenship behaviors. They found that job satisfaction had a more significant influence on intention to leave for poor performers than for exemplary ones. The implication of these studies was that sales managers should devote more time to high sales performers to ensure that they felt valued, appreciated, and influential in order to increase job satisfaction and, thus, reduce voluntary employee turnover. The dilemma for the sales manager was balancing the sales professionals' need for support with their desire for autonomy.

Unlike a number of other professions, sales people often quit a job without alternative employment (Sager, Griffeth, & Hom, 1998). While there were inverse relationships between tenure and voluntary turnover (Sager & Menon, 1994) and performance and voluntary turnover (Futrell & Parasuraman, 1984; Hollenbeck &

Williams, 1986; McElroy, Morrow, & Rude, 2001; Morrow, McElroy, Laczniak, & Fenton, 1999), the behavioral path for voluntary turnover for salespeople appeared to be different than for other professions. Since sales professionals may quit prior to identifying alternative employment, it was somewhat surprising that the intention to search was a stronger predictor than the intention to quit for members of the sales profession (Sager & Menon, 1994). Low tenure sales professionals search for alternative employment before the intention to quit forms. This finding may have confounded the behavioral predecessors of voluntary turnover for sales people. No study was located that correlated the length of tenure and the voluntary turnover behaviors prior to the actual quit event. There was some evidence that indicates that recent performance reviews did not predict impending voluntary turnover as much as earlier reviews early in an employee's tenure (Morrow, McElroy, Laczniak, & Fenton, 1999).

By the nature of the sales environment, affective organizational commitment is the most predictive psychometric variable in the three-component model of organizational commitment (Rhoades, Eisenberger, & Armeli, 2001). It should also be noted that sales people have been more greatly influenced by the departure of coworkers leaving for another job than others (Sager, Griffeth, & Hom, 1998). McElroy, Morrow, and Rude (2001) reported that the performance of stayers after an organizationally reduction in force declined in all periods measured except for the one-year marker. As sales took on a more consultative nature (Williams & Attaway, 1996), customers expected more from supplier partners. Technology continued to impact the role of the professional sales person. As customers gained sophistication and access to information,

sales professionals were expected to develop a more customer-oriented approach (Williams & Attaway, 1996).

Seemingly, firms recognized the disruption in customer service, organizational stability, and financial performance that sales employee turnover can create. Reichheld (1994) found that when a stock brokerage firm reduced sales agent turnover by 50%, the long-term value of new hires doubled. Similar anecdotal examples are plentiful. Seldom, however, did organizations reward sales managers for maintaining sales force stability, but rather measured sales organization leaders on efficiency and effectiveness of their sales force against metrics such as cost of sales and revenue indicators (Williams & Attaway, 1996). There is research indicating that there were two critical inflection points with regards to voluntary turnover of professional sales people – at the 6-month tenure mark and between 18-24 months of sales role tenure (Sager & Menon, 1994) (it should be noted that this is post-sales training period). Based on these findings, organizations might be well served to time interventions intended to reduce voluntary employee turnover in the sales organization to these tenure milestone markers since employee turnover can be a dramatic cost driver.

Cost of Employee Turnover

Companies commonly focus on voluntary turnover, dismissing the fact that the cost of turnover approximates the same amount regardless of type. Therefore, the cost of turnover discussion that follows will commence with a discussion of methods to measure the cost of employee turnover. With the measurement methodology introduced, the

recommendations will follow a lifecycle approach beginning with recruitment, selection, socialization, training and development, career development, and employee retention.

Cost of Turnover

Essentially, the cost of turnover was similar regardless of whether the individual left voluntarily or involuntarily. Costs could be categorized into pre-turnover costs, separation costs, vacancy costs, recruiting costs, and new-hire costs (Joinson, 2000). Pre-turnover costs included the costs incurred due to the leaver's withdrawal cognition behaviors – reduced productivity due to lack of motivation, tardiness, absenteeism, morale impact on others in the work group, decline in customer relations, and supervision associated with performance improvement interventions. Vacancy costs included lost business during the vacancy period, overtime for employees picking up the slack, job stress leading to absenteeism and morale declines, and decline in customer service with risk of subsequent business level declines. Pre-turnover and vacancy costs can be difficult to measure and quantify.

Recruiting costs were easier to track than the previous turnover costs (pre-turnover and vacancy). These costs included the advertising the position, recruitment trip, site interview travel, assessment testing, interview time, background checks, and drug testing. The costs incurred after candidate selection included new hire processing, material and equipment issued, new employee orientation or socialization process, training, and lost productivity during the employee productivity ramp. Often overlooked is the valuable knowledge and expertise that was lost when employees packed their bags

or boxes and left the organization (Mitchell, Holtom, & Lee, 2001). Table 3 provides framework for measuring the cost of losing employees regardless of the type of turnover.

Table 3. Measuring the Cost of Turnover

Turnover Cost Drive	Description of Driver	Measurement Method
Pre-turnover Costs:		
Productivity lost	Lost sales due to performance declines of the individual	Sales decline based on dollars and share of TAM declines
Absenteeism	Number of days absent	Dailey salary schedule
Tardiness	Number of hours lost due to tardiness	Hourly salary schedule
Customer satisfaction	Declining customer satisfaction	Declining dollars based on share loss
Organizational morale	Declining organizational morale	Original performance declines, subsequent VTO of others
Intervention costs	Supervisor/HR personnel time	Time spent on intervention x hourly burdened salary of personnel involved (does not include opportunity costs)
Vacancy Costs:		
HR costs	Time required to process termination (exit interview, security checkouts, equipment/inventory returns, approvals, salary and benefit calculation, contact with future employer, record updating, unemployment commission reporting)	Hourly burdened salary of HR personnel x # hours spent
Unemployment tax	Unemployment tax payments if applicable	Amount paid for unemployment insurance and taxes
Separation costs	COBRA, separation pay, vacation or time bank payments, retirement conversions, contingency benefits, outplacement service cost.	Sum of all separation costs
Record updating	Provisioning of information about the employee	Time required for record updating x hourly burdened salary of provisioners
Contact with future employers	Time required to provide employment verification	Time required for employment verification x hourly burdened salary of HR contact
Correction payments	Payments + processing time	Payment amount + time required to process payment x hourly burdened salary of HR/Accounting personnel

Table 3 (continued)

Turnover Cost Drive	Description of Driver	Measurement Method
Vacancy inefficiency	Wasted time due to inefficiency during vacancy	Time lost x hourly burdened salary of personnel
Revenue impact	Revenue lost during vacancy	Average revenue – revenue during vacancy + share loss x territory TAM
Lost customers	Customers who switch suppliers during the vacancy period revenue	Sum of lost customer average
Replacement costs (Recruitment & new hire costs):		
Preparation and planning for new hire	Personnel time	Number of hours spent x burdened salary of employees involved
Advertising (newspaper, Internet, trade journals)	Sum of all costs associated with publicizing job opening	Sum of all costs associated with publicizing job opening
Recruiting trips	Travel costs for interviewers and/or employee candidate	Sum of travel transportation, hotel, materials, meals, and entertaining
Interviewing	Time spent in preparation, interviewing, and evaluations	Time spent on activity x hourly burdened salary
Pre-employment evaluation	Assessment costs, application review, drug testing, etc.	Costs of tests + time spent in evaluation x hourly burdened salary
Relocation costs	Moving employee to assignment and/or training location, house hunting trips, temporary living expenses, Realtor fees	Sum of travel, hotel, mileage, transportation, per diem, etc.
New-hire processing costs	Costs associated with new-hire – records updating, equipment, auto insurance & car allowance	Sum of all costs incurred
Hiring bonuses	Any financial provision offered to new hires at time of hire	Amount of hiring bonus – cash and/ or stock options
Additional benefits not pertaining to departed employee	Any benefits provided to new hire not provided to leaving employee	Amount of additional benefits – educational reimbursement, dependent coverage, additional vacation benefits, etc.
Training	Costs associated with company specific/job specific training	Sum of all training costs including personnel time and employee burdened salary during training
Lower initial productivity	Productivity loss until employee progresses down learning curve	Revenue delta to average territory revenue during ramp
Supervisor & coworker time lost	Time invested in new employee and filling in productivity gaps	Other employee's time (time x hourly burdened salary), opportunity costs lost

Voluntary Turnover Models and Interventions

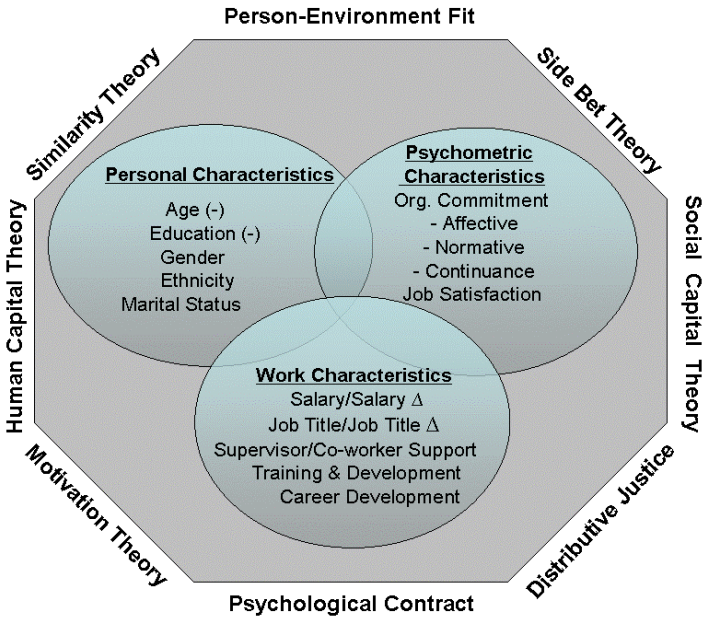
With the voluntary construct defined, the potential variables identified, the specific environment (technical sales) selected, introduction of a voluntary turnover model seems to be the logical next step. There are a myriad of voluntary turnover models that have been proposed and tested in the past several decades. These are found through meta-analytic and empirical research (Cotton & Tuttle, 1986; Griffeth, Hom, & Gaertner, 2000; Hom, Caranikas-Walker, Prussia, & Griffeth, 1992; Lance, 1988; Mathieu & Zajac, 1990; Muchinsky & Tuttle, 1979; Sager, Griffeth, & Hom, 1998).

This section includes an examination of several of those models with the intention of synthesizing existing studies to identify the key variables, directionality of relationships, and practical applications. First, the variables will be identified along with the theoretical framework (Figure 5). A review of voluntary turnover longitudinal research studies was helpful in rationalizing the selection of variables (Table 4). Next, a descriptive model that illustrates the organizational activities centered on human capital will be introduced. Finally, a conceptual model of voluntary turnover will be presented.

As discussed earlier in this chapter, the variables influencing employee voluntary turnover may be classified into three primary categories – personal or demographic characteristics, work characteristics, and psychometric variables. It should be noted that the HRD interventions, training and development (T&D), and career development (CD) fall into the work characteristics classification. Figure 5 provides a more granular description of the classifications as well as the theoretical framework for

these variables. As presented in a previous section, the person-organization or person-environment fit construct is comprised of demographic similarity theory, social categorization theory, social identity theory, and the theory of heterogeneity.

Figure 5. Variables and Theoretical Framework Influencing Voluntary Turnover.



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Existing longitudinal research on employee voluntary turnover focused on personal, work, and psychometric influences. The research reviewed was predominantly focused on psychometric variables such as job satisfaction and commitment as evidenced in the summary of longitudinal research found in Table 4. It is important to note that the longest longitudinal wave research spanned a five-year period. Only two of these studies concentrated on sales employees, and only one on sales professionals.

Table 4. Voluntary Turnover Longitudinal Research Summary

Study	Sample	Period	Variables of Study
Katz & Tushman, 1983	325 project members working in a large corporate Research and Development (R&D) department.	Subjects recorded oral communications on a randomly chosen day for 15 weeks. Employee retention rates were tracked for a 5-year period following the communication diary phase of the study	Dependent variable: boundary spanning supervisor; Independent variables: voluntary turnover, promotions
Rusbult & Farrell, 1983	Moderately professional technical workers; Sample size undisclosed	Survey was conducted to determine job satisfaction and job commitment; Turnover and job rewards were measured from company records. Job alternatives were measured through public reports referring to job market demand.	Dependent variable: voluntary turnover; Independent variables: job satisfaction, job commitment, job rewards, job alternatives
Griffeth, 1985	57 part-time desk receptionists working for a large Midwestern university	Participants were administered an abbreviated version of the Job Diagnostic Survey 1 month after the beginning of the semester and then ½ of the subjects were tested 2 months after the initial test. Interviews were conducted to obtain qualitative inputs pertaining to job improvement suggestions	Dependent variables: job enrichment, participatory decision-making; Independent variables: affective outcomes of participation, growth satisfaction, contextual job satisfaction, employee retention, employee turnover
Parsons, Herold, Leatherwood, 1985	51 daily room cleaning attendants in a large hotel in a Southeastern city	Turnover measured for 6 months after the study initiated	Dependent variables: voluntary turnover; dismissals (involuntary turnover); Independent variables: work satisfaction, self-report for job performance, supervisor report of job performance
Farkas & Tetrick, 1989	440 male Navy enlistees that had enlisted for 4-years	Survey was administered at 8 weeks, 8-10 months, and 21 months after enlistee began training; Survey assessed job satisfaction, org. commitment, and intention to reenlist.	Dependent variables: voluntary turnover, reenlistment; Independent variables: job satisfaction, organizational commitment, tenure
Johnston, Parasuraman, Futrell, & Black, 1990	122 Sales people selling and servicing retail accounts in the food industry	Survey was administered 2 times with a six month period between the first measurement and the second	Dependent variables: propensity to leave, VTO; Independent variables: role stress, job satisfaction, organizational commitment
Cordery, Mueller, & Smith, 1991	130 shift process and maintenance employees in an Australian mineral processing plant	Survey measuring intrinsic job satisfaction, work autonomy, and extrinsic job satisfaction administered at two intervals 1 year apart and matched with company records on absenteeism and voluntary turnover	Dependent variables: absenteeism, voluntary turnover; Independent variables: job satisfaction, work autonomy, trust in management, organizational commitment
Hom & Griffeth, 1991	Study 1: 206 nurses; Study 2: 129 nurses	Study 1: Measured retention 6 months after initial survey; Study 2: Conducted 3 surveys at 4 month intervals and measured retention via employee records 2 years after organizational entry	Dependent variables: turnover intention; retention, Independent variables: job satisfaction, search intentions; expected utility of withdrawal, job search, perceived utility of alternatives

Table 4 (continued)

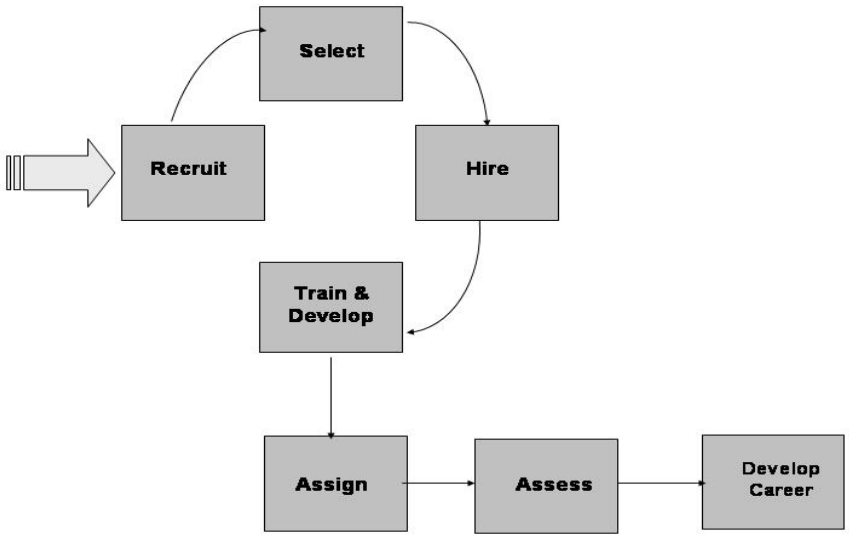
Study	Sample	Period	Variable of Study
Wright, 1993	113 criminal justice supervisory staff personnel	Work satisfaction and growth data collected at 2-year interval	Dependent variable: job and organizational turnover; Independent variable: work satisfaction, career growth
Wright & Bonnett, 1991	23 youth counselors employed as a juvenile detention center		
Johnson, Griffeth, Burton, & Carson, 1993	157 Sales people	Surveys administered at two times with a six month interval between; All sales people had 2-2.5 years experience with firm	Dependent variables: promotion and turnover; Independent Variables: organizational commitment, motivation, job anxiety, propensity to leave, satisfaction with pay, promotion, work, supervisor, and coworkers, salary
Hartman & Yrle, 1996	124 employees of a mid-sized luxury hotel in a Southern metropolitan city	Two job satisfaction instruments were used to measure attitudinal disposition and then 8 months later actual voluntary turnover was measured.	Dependent variables: job mobility and voluntary turnover; Independent variables: various aspects of job satisfaction (work, salary, supervisor, coworker, overall), Perception of promotion opportunities
Cohen, 1999	A net sample of 2967 respondents from which 703 were selected for follow-up survey and phone interviews	National Survey of Career Satisfaction/Dissatisfaction was administered to members of the American Bar Association in 1984 and 1990	Dependent variables: job satisfaction, turnover intention, voluntary turnover; Independent variables: age, gender, marital status, tenure, position in the firm, perceived performance
Robinson & Morrison, 2000	147 managers who were recent MBA graduates	Survey measuring psychological contract breach completed prior to beginning job and 18 months later	Dependent variables: feelings of violation, perceived psychological contract breach; Independent variables: organizational performance, employee performance, formal socialization, implicitness of promises, pre-hire interaction, org. change, perceived breach history, employment alternatives, causal attributions, perceived fairness
Sjoberg & Sverke, 2000	535 nurses in a Swedish emergency hospital	Survey measured job involvement, org commitment, and turnover intention and then actual turnover was measured approximately 1-year later	Dependent variables: job involvement and organizational commitment; Independent variables: turnover intent and actual voluntary turnover
Sutton, 2004	235 final year occupational therapy students prior to graduation	Survey administered prior to entering profession and 14 months later	Dependent variables: perceived psychological contract breach, met expectations; Independent variables: job satisfaction, turnover intention, voluntary turnover

Table 4 (continued)

Study	Sample	Period	Variable of Study
van Bruekelen van der Vlist, & Steensma, 2004	296 professionals in the Royal Netherlands Navy	Survey completed at beginning of study & 6 months later; Turnover was measured during 2-year period after completion of first questionnaire.	Dependent variable: voluntary turnover; Independent variables: job satisfaction, organizational commitment, age, and tenure

The organizational human capital process map facilitates an understanding of the activities in the employment cycle. In practical application, it is illuminating to consider the influence of the variables that fall into the personal, work, and psychometric variables to the various stages of the process identified in Figure 6.

Figure 6. Organizational Human Capital Process Map.



Based on previous research and theoretical underpinnings, several theories have been selected to support the variable categories – personal characteristics, work characteristics, and HRD interventions. Applying similarity theory, demographic homogeneity in the organization would be expected to create social identity issues for employees in the non-dominant group. If the organization socializes individuals into the organization effectively, social capital theory implies that the effects of dissimilarity may be neutralized somewhat. This leads to the selection of HRD interventions as a potential influence of voluntary turnover. Study of work characteristics, such as job title and salary progression over organizational tenure is intended to examine the theoretical tenets of distributive justice.

Simply put, the organization initiates the process with employee recruitment. Based on organizational needs balanced by employee candidate's qualifications (skills, knowledge, experience, etc.), the organization selects the ideal employee from the pool of candidates. Assuming person-environment fit, the individual is hired for employment. Research indicates that P-E fit, or more aptly person-job fit, is enhanced through realistic job preview (RJP), an intervention intended to depict a true picture of what the job is really like (Breaugh & Starke, 2000; Buckley, Fedor, Veres, Wiese, & Carraher, 1998; Hatcher, 1999; McEvoy & Cascio, 1985). In the initial organizational entry stage, an employee orientation, either formal or informal, enables the newly hired employee to learn about policies and procedures, meet coworkers and supervisors, and begin the acclimation or socialization process (George & Bettenhausen, 1990; Sheridan, Slocum, Buda, & Thompson, 1990).

Formal socialization processes have been found to promote early indoctrination into the organization as well as networking with potential mentors and workplace coaches (Foster, Shastri, & Withane, 2004; Kammeyer-Mueller & Wanberg, 2003; Kwesiga & Bell, 2004). During the socialization process, new employees gain access to experienced organizational members and supervisors. This accelerated indoctrination to the organization's culture, norms, and behaviors fosters a stronger sense of job and organizational embeddedness (Anakwe & Greenhaus, 1999; Holtom, Mitchell, & Lee, 2006; Mike & Slocum, 2005). Job embeddedness, including elements of affective organizational commitment as well as continuance commitment, were described as a web of connections that the individual formed to attach the individual to the organization and fostered employee retention (Holtom, Mitchell, & Lee, 2006). Linking the socialization effect of job embeddedness with social identity theory, one could make the logical assertion that this reinforcement of organizational attachment could level the field for the effective organizational entry of individuals who are dissimilar to or diverse from the dominant group in the workforce. As an adaptive organism, the new employee entrant indoctrinated into the organization through socialization, developed a stronger sense of shared work values, beliefs, and behaviors inherent in the organization's culture (Hopkins & Hopkins, 1991).

These HRD interventions, as well as the expectation-lowering procedure (ELP) are identified as factors that positively influence affective organizational commitment. The ELP is an HRD intervention aimed at reducing perceived breach of psychological contract by setting new employee expectations appropriately during the initial

organizational entry stage (Breaugh & Starke, 2000). These three HRD interventions, RJP, socialization, and ELP, are believed to lower turnover intentions and, thus, voluntary employee turnover.

The Firm's Training and Development Program

In the technical sales environment, new employees typically participated in a training program aimed at educating newly hired sales professionals on the products, services, and business processes. Upon completion of the sales training and development program, the employee receives his or her sales territory assignment. Training programs serve to prepare individuals to assume permanent positions within the sales organization, but may provide a higher degree of role clarity. In other words, throughout the training program, the training candidate gains a clearer understanding of the scope of his or her job, its responsibilities, and company's expectations about how that role interacted with others within the organization (Kammeyer-Mueller, 2002). In this manner, training could be considered an element of the socialization process since participants informally learned the expected behaviors and norms required to succeed in the organization (Van Maanen & Schein, 1979). Periodically, the sales person was evaluated and the performance in the assigned territory was assessed. In most organizations, this periodic assessment serves as the basis for salary increases as well as career development opportunities.

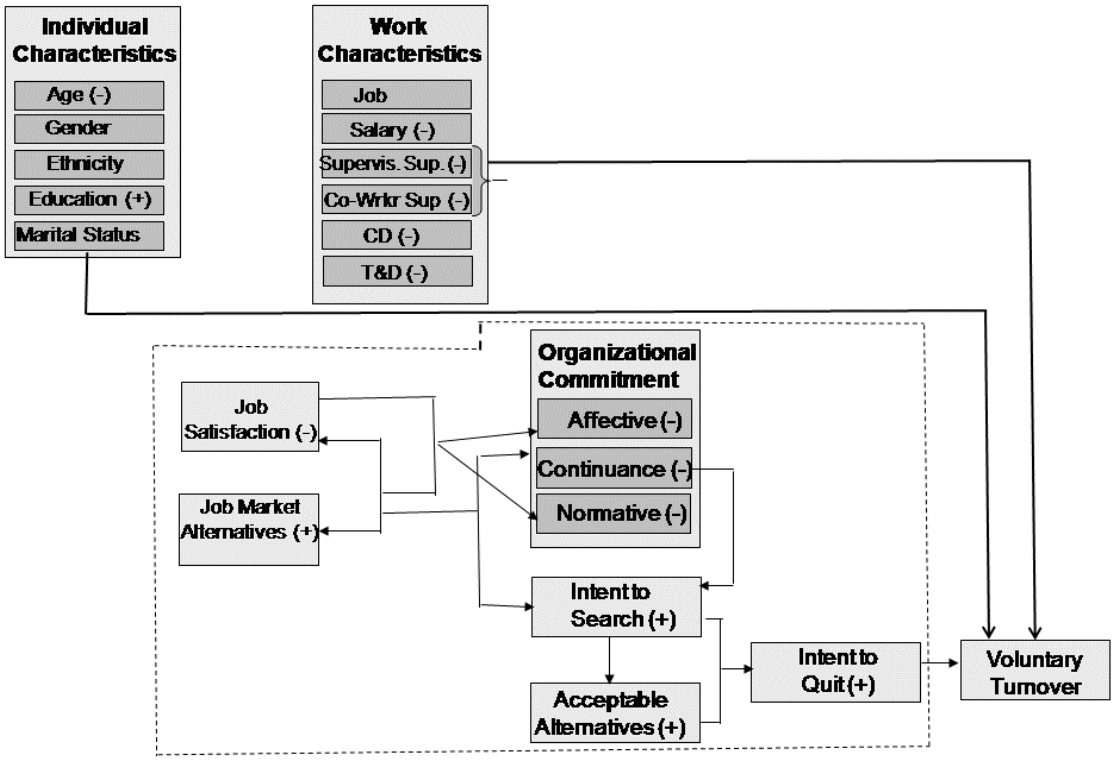
Literature indicated that the individual journeys through a path of behaviors led to voluntary turnover (Allen & Griffeth, 2001; Griffeth, Gaertner, & Sager, 1999; Mitchell & Lee, 2001). The Adaptive Response Model (Griffeth, Gaertner, & Sager,

1999) proposes that organizational change could be a shock event that leads to withdrawal behaviors, the most severe being organizational exits or voluntary turnover. Recent research supported the role of shock events as the trigger that stimulated or promoted the decision to quit (Morrell, Loan-Clarke, & Wilkinson, 2004). While the availability of job alternatives seemed to mediate the voluntary turnover decision (Hom, Caranikas-Walker, Prussia, & Griffeth, 1992; Johnson, Griffeth, & Griffin, 2000; Sager, 1991), there is limited empirical evidence that sales people formed quitting cognitions prior to identification of alternative employment (Sager, Griffeth, & Hom, 1998; Vandenberg & Nelson, 1999). Another behavior that appeared to be specific to sales people was the positive relationship strength between the number of viable job alternatives and the perception that the alternative opportunities were superior to the current job (Johnson, Griffeth, & Griffin, 2000). Thoughts of quitting usually preceded the actual resignation (Mitchell & Lee, 2001) and were the immediate step before formation of intent to turnover (Johnson, Griffeth, Burton, & Carson, 1993; Johnson, Griffeth, & Griffin, 2000; Sager & Menon, 1994).

Intention to quit was considered to be one of the strongest predictors of actual turnover behavior (Vandenberg & Nelson, 1999). There was consensus among researchers as to this robust relationship between turnover intent (propensity to leave) and voluntary turnover as seen through a meta-analytic research summarizing over 100 studies (Cotton & Tuttle, 1986; Griffeth, Hom, & Gaertner, 2000; Hom, Caranikas-Walker, Prussia, & Griffeth, 1992). The voluntary turnover model depicted in Figure 7 culminated from synthesis of a number of voluntary turnover models (Allen & Griffeth,

2001; de Luis Carnicer, Perez, & Sanchez, 2003; Mitchell & Lee, 2001; Peterson, 2004). This study focused on individual and work characteristics, as well as HRD interventions. Psychometric factors, such as organizational commitment and job satisfaction (factors divided by the dotted line in Figure 7), were outside the scope because these factors were not available in the existing data provided by the firm. The model (Figure 7) includes these influencing factors since there is considerable empirical evidence that they do play a role in predicting employee voluntary turnover (Allen & Griffeth, 2001; Mitchell & Lee, 2001).

Figure 7. Conceptual Voluntary Turnover Model.



With the groundwork laid through this review of the foundation literature, the considerations for the data-mining analysis became more salient. The three categories of influences on employee retention, individual characteristics, work characteristics, and HRD interventions, have been discussed. Chapter III explains the design, data, other considerations of the study, with results reported in Chapter IV.

CHAPTER III

METHODOLOGY

This chapter contains a description of the methodology used for the research study. The initial discussion is focused on the research design, followed by an extensive discussion of the data. Next, the data analysis will be discussed. Finally, the research questions and corresponding hypotheses to be tested, as well as the approach for the analysis for each are then presented.

Research Design

This study was based on a non-experimental field study utilizing an organizational database. Data were obtained from a Fortune 500 organization in the industrial manufacturing market sector. The organizational data included records for professional sales employees assigned to North American sales offices during the years 1992-2005.

It was believed that this design was a sound approach to examine the relationship between personal or demographic characteristics, work characteristics, and HRD interventions and voluntary employee turnover and employee retention. The dichotomous dependent variables in this study included: (a) voluntary employee turnover versus non-voluntary turnover; (b) trained versus non-trained; and (c) Caucasian versus non-Caucasian. The 17 independent variables were classified, coded, and categorized into one of three groupings: (a) personal or demographic characteristics, (b) work characteristics, or (c) HRD interventions. These independent variables were included either in the data provided from the focal firm or calculated from information

included in the employee database. The levels within each category are further defined in the next section of this chapter.

Design

The study design combined descriptive, correlation, factor analysis, multiple linear regression, and logistic regression analysis techniques to examine relationships, as well as provide some predictive characteristics among the variables. Initially, descriptive statistical techniques were used to develop baseline turnover rates, retention rates, and years of tenure. The mean tenure for the population as well as for each ethnic, gender, assignment location, supervisor, educational level, and sales training participation group was calculated. Hierarchical descriptive techniques also provided the mean salary by job title, ethnicity, gender, educational level, and sales training participation.

Unlike experimental research where there is a manipulation of variables, correlation research analyses facilitate examination of the relationships among two or more variables in the absence of manipulative influence treatment (Frankel & Wallen, 2000). Correlation research was an ideal means of addressing the first research question that dealt with the variables that influence voluntary employee turnover.

Next, the variables including gender, ethnic, educational, and sales training participation groups were examined using exploratory factor analysis. Using a stepwise approach controlled for the distortion of results stemming from the disparity of cell size due to the predominance of Caucasian males in the population under study.

To illuminate potential variation of career development and career progression results between the dominant and non-dominant groups, the between group analyses

were conducted for each stratification (ethnicity and gender) controlling for education level attainment and participation in sales training. Since no statistically significant difference was found in the employee status (VTO versus non-VTO) or training participation groups, further analyses were conducted for the Caucasian and non-Caucasian groups. Multivariate tests were conducted in a mixed model design examining the differences between and within groups as well as between people and within people using research techniques appropriate for longitudinal data.

Logistic regression techniques were utilized to address the second research question regarding predictive capabilities of the variables in identifying individuals who were most susceptible to voluntary employee turnover. The intention of this phase of the design was to determine if the conditions for the likelihood of voluntary turnover could be predicted. Logistic regression techniques were used to test a predictive model.

Data

The data reported in this research were collected from a Fortune 500 company's employee records consisting of all exempt (non-hourly) professionals in the North American sales organization. The company was a leading firm in the industrial market segment with annual revenues in excess of $4.5 million and approximately 21,000 employees worldwide. Company records included an observation of the database on August 1 of years 1992-2005. The firm provided 49 fields for each observation or individual employee record from which 21 variables for analysis were calculated or selected based on the research focus.

Human Resource (HR) personnel from the firm provided employee records for all exempt sales professionals who were active employees during the period beginning August 1, 1992 through August 1, 2005. Exempt sales professionals are salaried and college-degreed employees assigned responsibility for a sales territory, major customer account, or a sales office consisting of sales professional subordinates. Employee records were captured through observations of the entire professional sales force on August 1 of each of the 14 respective years within the scope of the research study. The firm provided bio-demographic variables on each employee including ethnicity, gender, marital status, educational background, and birth date. The company-related variables provided for each subject for each year included hire-in or service date, job title, salary, training participation, assignment location, supervisor, subsequent education after hire, and termination date if applicable. Some of the variables considered were used in the form provided by the employee record database:

- Unique employee clock number – an identifier that enabled the within subject analysis techniques;
- Ethnicity – coded to enable between subjects analysis using the following coding: 1 for Asian/American Indian/Other/Unknown, 2 for African American, 3 for Hispanic, or 4 for Caucasian;
- Gender – coded to enable between subjects analysis with a 1 denoting female or 2 for male;

- Training participation – participation in the firm's 12-month professional sales training program was coded as 1 for participation and 0 for no participation;
- Job title – the number between 1-8 that identified the individual's assignment within the sales organization hierarchy recorded for each year during the 14-year longitudinal study;
- Salary – nominal data reflecting the individual's total compensation on August 1st of each of the 14 years being studied. The total compensation for sales people in the focal firm is based on an 80/20 model, salary, and commission, respectively;
- Supervisor clock number – a factor that could not be used in the study due to insufficient cell size (> 30 subjects);
- Location – the assigned location was not usable in the study due to insufficient cell size as well office relocations to other cities during the period of study; and
- Employee status – coded to denote status: 0 for deceased/reduction in force (RIF), 1 for voluntary turnover, 2 for involuntary turnover, or 3 for active.

Several variables were calculated using database fields provided by the firm. They were:

- Start age and quit age calculated from the service dates and birth date;
- Minimum and maximum salary from a comparison of salary during all active years;
- Lowest and highest job title determined through a comparison of all active years for each employee;
- Number of years with salary increase in excess of 2.5%, the average cost of living increase as determined by the U.S. Bureau of Labor statistics;
- Salary range calculated from the highest salary year minus the lowest salary;
- Average salary increase amount, average salary increase percentage, and annual average salary percentage increase;
- Number of years with a job title increase over individual employee's tenure within the 14-year longitudinal period of study;
- Job title range calculated by determining the difference between lowest job title and highest job title by subject;
- Career stage using a modified Levinson, Darrow, Klein, Levinson, and McKee (1978) approach to identify the subject's age at organizational entry denoting < 25 years of age with a 0; 25-34.99 years of age with 1, 35-49.99 years with 2, and 50+ years of age at beginning service date with a code of 3;

- Service category was a classification denoting number of years' service using the following coding methodology: 1 = < 5 years, 2 = 5-9.99 years, 3 = 10-19.99 years, and 4 = 20+ years of service in the organization;
- Gender/ethnicity combined gender and ethnicity in order to increase cell size. The coding was: 1=non-Caucasian female, 2=Caucasian female, 3=Native American/Asian/Other/Unknown male, 4=African American male, 5=Hispanic male, and 6=Caucasian male;
- Caucasian/non-Caucasian was a variable based on ethnicity with 1 denoting non-Caucasian and 2 used to denote Caucasian. This classification was used in order to increase cell size. Initial coding excluded Native American/ Asian/Other/Unknown since previous research indicated that this group tends to earn higher salaries and possess greater upward job mobility than Caucasians. However, analysis yielded no significant difference. Thus, the coding was modified to include this group in the non-Caucasian ethnic classification; and
- Voluntary turnover was a classification created to provide a dichotomous field for VTO versus other statuses (deceased/RIF, involuntary turnover, or active).

The complete dataset included 11,271 individual records or observations. Table 5 is a summary describing the groups included in the population data. These observations include multiple records for the same person since it was an annual snapshot of the employee database over a 14-year period of time.

Table 5. Descriptive Summary of the Subjects

Employee Status	Caucasian	African American	Hispanic	Other	All Groups
Employee Status:					
Active	8,630	112	226	238	9,206
Voluntary Turnover	203	11	9	17	240
Involuntary Turnover	1,635	57	97	36	1,825
Total Employee Observations	10,468	180	332	291	11,271
Employee Descriptive:					
Characteristics:					
Male Employees	9,719	131	269	231	10,350
Female Employees	749	49	63	60	921
Total Employees	10,568	190	332	291	11,271

Variables in the Present Study

Nominal variables were coded for each observation record. It should be noted that since the dataset involved an annual observation, unique employee clock records were used to identify employees with multiple records in different years enabling the within subjects analysis. Table 6 is a summary of the selected variables, the coding scheme, and an explanation of each variable. It is important to note that missing data accounted for 1-3% depending on the specific variable. Therefore, the researcher initially determined that missing data techniques were not required. When the data were sequenced by subject across the 14-year longitudinal wave, the magnitude of the missing data issue escalated requiring treatment for voids of data. The technique used to replace missing data fields is discussed in more detail in Chapter IV. Discussion with the firm's HR management team revealed that multiple HR databases during the period under examination explained the missing data phenomenon. It should be noted that the

missing data can be considered missing completely at random (MCAR), or simply stated, there was no pattern in the missing data elements (Newman, 2003).

Table 6. Explanation of Variable Listing

Variable	Data Type	Variable Explanation
ClockNo	Nominal	Unique employee number
Train	Nominal	0=Did not participate in training; 1=Participated in training
Ethnicity	Nominal	1=Asian/American Indian/Other; 2=African American; 3=Hispanic; 4=Caucasian
Gender	Nominal	1=Female; 2=Male
GenEth	Nominal	1=Non-Caucasian Female; 2=Caucasian Female; 3=Asian/American Indian/Other Male; 4=African American Male; 5=Hispanic Male; 6=Caucasian Male
StartAge	Scale	Age that employee hired into organization
CareerStage	Nominal	0=<25 years old when entered organization; 1=25-34 years old when entered organization; 2=35=49 years old when entered organization; 3=50+ years of age when entered organization
MaritalSt	Nominal	1=Single; 2=Married
EmpStatus	Nominal	0=Deceased/RIF'd;1=VTO; 2=ITO; 3=Active
RaiseYrs	Scale	Number of years that employee received raise over 2.5%/year
QuitAge	Scale	Age that employee left organization
MinSalary	Scale	Minimum salary during tenure
MaxSalary	Scale	Maximum salary during tenure
LJT	Scale	Lowest job title during tenure
HJT	Scale	Highest job title during tenure
JTRange	Scale	Job title range (Highest Job Title – Lowest Job Title)
SalaryIncRng	Scale	Salary increase during tenure
ServeLength	Scale	Service length (years)
StudyLength	Scale	Service length during 14-year study (years)
JTIncYrs	Scale	Number of years that employee received job title increase
AvgRaise	Scale	Average raise $
AvgRaisePct	Scale	Average raise %
AvgAnnRaisePct	Scale	Average annual raise %
VTO	Scale	0=Non-VTO; 1=VTO
ServeCat	Scale	1=0 to 4.99 years service; 2=5 to 9.99 years service; 3=10 to 19.99 years service; 4=20+ years service
CaucNonCauc	Nominal	1=Non-Caucasian; 2=Caucasian

Measures List

Twenty-one variables were examined. The dependent dichotomous variable, employee status, had two levels, voluntary turnover and non-voluntary turnover (including active employees and involuntary turnover employees). Additional analysis was performed using trained versus untrained employees and Caucasian versus non-Caucasian employees. Termination type and termination reason were examined also. Independent variables were categorized into personal or demographic factors, work characteristic factors, and HRD intervention variables. Personal or demographic variables included employee current age, organizational entry age, career stage, ethnicity, gender, marital status, and educational attainment level. The work characteristics under study initially included work location, supervisor, department, job title, gender mix, ethnic mix, and salary. Initial examination of coded data raised some question over the ability to fully analyze the relationship between voluntary turnover and retention to location, supervisor, and department due to insufficient cell sizes (< 30). Discussion with the focal firm revealed that department was not a relevant factor in employee status within the organization. The final variable category is HRD interventions, which included salary progression, job title progression, sales training program participation, educational reimbursement, and additional education completion. Only the first three of these interventions were used since the firm's transitions in employee databases cast a shadow of doubt on the accuracy of information provided regarding educational reimbursement and additional education completion.

Turnover

Employee records for North American sales professionals identified whether the individual was active or terminated on August 1 of each of the respective years measured (1992-2005). Turnover type involved interpretation of an employee record indicator that identified termination reason, from which the type of turnover resulted in three levels: (a) active, (b) voluntary turnover, or (c) involuntary turnover. Involuntary turnover, initially, had eight levels that were compressed to one during the analysis in order to meet minimum cell size of 30 subjects and included employees who terminated due to reduction in force (RIF), end of temporary assignment, poor performance, cause, leave of absence without return to work, transfer to another division, or death. Voluntary turnover was consisted of seven levels including employees departing for personal reasons, return to school, another job, personal illness, retirement, or relocation for personal reasons. Termination reason was used to determine turnover type since the number of reasons (27) did not allow analysis due to insufficient cell sizes (> 30). Initial data analysis highlighted the need to compress the groups into voluntary and non-voluntary turnover. More granular levels of analysis provided no statistically significant differences, and thus, the compression of the groups was selected for further analyses.

Demographic or Personal Characteristics

Demographic or personal characteristics included ethnicity, gender, marital status, organizational entry age or start age (Service date – Birth date), quit age if employee terminated (End of service date – Birth date) or current age of employee at

the time of the last observation (August 1, 2005 – Birth date), career stage (Organization age > 25 years of age or Service date – Graduation date > 1 year), and Caucasian or non-Caucasian. It is important to note that marital status in employee records was not updated in the case of divorce or death of spouse. As mentioned in the previous section, the accuracy of the firm's employee records with regards to education (tuition reimbursement and additional education received after employee service date) were insufficient and, thus, resulted in the decision to disregard education as a variable in the study. Thus, the education was reported in the descriptive data, but was not used in further analysis.

Work Characteristics

Work characteristics included service length, job title, salary, and service category. Service length as measured by termination date – service date in the case of departed employees or last observation date minus service date – was used as a variable in the study. Additionally, a category for service was coded to classify years of service for analysis purposes. The focal company's employee records provided supervisor as identified by unique clock number, department, location, and salary. The company's study commissioners indicated that department was not relevant in terms of assignment or career progression. Lack of clear relevance and insufficient cell sizes based on department designator precluded inclusion of that variable in the analysis. Cell sizes for the supervisor variable also did not meet minimum requirements (30/cell) for statistical purposes.

HRD Interventions

As operationally defined for this research study, HRD interventions included T&D and CD. T&D was defined by one dichotomous independent variable with two levels – participation or non-participation in the company's sales training program. Career development was interpreted as change in job title over the 14-year longitudinal period under study as well as change in salary in excess of the annual average salary increase. Four variables related to job title were included in the study – lowest job title, highest job title, number of years with a job title change, and job title range (highest job title minus the lowest job title).

Data Analysis

The following subsection focuses on the research questions leading to the two primary hypotheses and their derivatives.

Research Questions and Hypotheses

The following research questions (Q1 and Q2) and hypotheses (H1 through H2) served as the basis for data mining through statistical analysis of the factors that lead to voluntary employee turnover and employee retention in the focal firm; and understanding these variables facilitated the construction of the predictive models.

Q1a. What variables affected employee retention and voluntary employee turnover within the focal firm's North American technical sales force?

Q1b. What variables affected voluntary employee turnover within the focal firm's North American technical sales force?

H1a. The variables that affected employee status (VTO and non-VTO) are the same regardless of employees' personal characteristics.

H1b. The variables that affected employee status (VTO and non-VTO) are the same regardless of employees' work characteristics.

H1c. The factors that affected employee status (VTO and non-VTO) are the same regardless of HRD interventions that the employees have been attended.

H1d. The factors that affected employee status are the same regardless of VTO or non-VTO employee status.

Q2. Based on the available data, how might future employee retention rates be predicted for the organization under study?

H2a. There is a difference in the predictive model of voluntary employee turnover depending on employees' personal characteristics.

H2b. There is a difference in the predictive model of voluntary employee turnover depending on employees' work characteristics.

H2c. There is a difference in the predictive model of voluntary employee turnover depending on the HRD interventions that the individual has received.

Overview of Data-Mining Process

Unlike traditional quantitative research, data mining involves multiple phases of analysis similar to excavating or exhaustive exploring as the name of the process implies. Data mining is a method of uncovering patterns using analytical techniques. When applied to a business problem, a number of variables can be included and

investigation can be conducted without traditional data analysis boundaries of research methods bound by hypotheses.

In this study, data-mining analysis commenced with descriptive analysis techniques. This step facilitated an understanding of the scope of the problem as well as the characteristics of the dataset. The results of the descriptive analysis provided insight into missing data as well as cell size of the subgroups contained in the population. Exploratory factor analysis techniques were used in order to understand co-variance between variables and to develop valid constructs. With the groups determined (VTO versus non-VTO, Trained versus Untrained, Caucasian versus non-Caucasian), analyses of variance (ANOVA) were conducted to examine the difference between and within the various dichotomous groups. The final step involved binomial logit regression in order to test models used to predict an employee's likelihood to maintain organizational membership under different conditions.

Ethics and Human Subjects' Considerations

The sales employee data were submitted voluntarily by the firm. Identity of the individuals corresponding to each employee record was disguised using an internal employee clock number, and the researcher did not have any records that linked employee clock number to name, social security number, or any other information that enabled deciphering of the employee clock number. Employee clock numbers were issued sequentially based on hire date. The results of analyses were available in aggregated form only and could not be linked to any internal individual employee clock

number. Permission to use the results of the analysis was granted by the focal organization that commissioned a private study in addition to this research study.

Storage of Data

To address guidelines on the ethics of scientific publication and the privacy of human subjects, all research material including drafts, proposal, company report, and data analysis have been saved in at least two places for a minimum of five years. All electronic files will be kept on the researcher's laptop, desktop, and on CDs in the researcher's private domicile. All hard-copy files have been scanned and placed on multiple CD sets with one copy in the researcher's office and the other in the researcher's home.

CHAPTER IV

RESULTS

Initial analyses were conducted with the Statistical Package for the Social Sciences (SPSS), Release 14.0 for Windows operating system. Additional analysis of the exploratory factor analysis was conducted utilizing Statistical Analysis System (SAS) STAT 9. SPSS was selected for its ease of use and general acceptance in HRD research. The logistic regression analysis was run using SAS STAT 9 for the package's ability to deal with a large dataset. Further, binomial logit regression was conducted in SPSS in order to test the statistical models.

Introduction

In this chapter, the results will be presented based on the extensive data-mining procedures employed to explore the influence of the 24 variables to voluntary employee turnover and employee retention. The relationships of these variables were examined in order to develop an understanding of the similarities and dissimilarities between professional sales employees who voluntarily and involuntarily left the organization, as well as those who remained under employment of the firm. The results provide the basis for discussion of recommendations and conclusions concerning prescriptive measures and human resource development interventions for employee retention for the company under study.

The primary objective of this study was to identify the variables influencing voluntary employee turnover of professional sales people in a Fortune 500 industrial manufacturing company headquartered in the United States. Data mining of the 14-year

employee records database facilitated a thorough examination of these variables while enabling testing of a model using logistic regression analysis techniques. The models produced from this analysis were intended to advance the understanding of prescribed interventions to reduce voluntary employee turnover and, thus, improve employee retention rates. This study of longitudinal data is one of the most extensive research projects focused on employee retention and voluntary employee turnover that has been conducted in the field of human resource development.

Missing Data

In an extensive dataset as used in this study, missing data are not uncommon. Initially, since missing data accounted for less than 3% of the total dataset and missing values were intermittent, it did not appear necessary to perform missing data techniques (Diggle, Heagerty, Liang, & Zeger, 2002; George & Mallery, 2006). But when the employee observation data were arranged by subject across the 14-year longitudinal period, missing data fields in the salary and job title fields across the longitudinal period were determined to be sufficient to require missing data techniques to be applied.

In order to correct the time series gaps, a combination of techniques were employed depending on the nature of the data void. George and Mallery (2006) suggest methods for dealing with missing values that were employed. In the case of missing salary for the beginning period or year of organizational entry, an average of the salaries for the specific job title corresponding to the subject was used. In situations where salary information was missing in subsequent years, the mean increase percentage for the respective job title was classified and the individual salary was computed by multiplying

that mean increase plus 1 to the previous year's salary. The combination of missing salary techniques was used to impute data for 16.8% of the missing salary data fields.

Job title missing data for subjects at the onset of organizational entry were imputed by taking a comparison of the salary to the average salary for each job title and then replacing the missing field with the job title corresponding to the salary provided. In cases of overlap, the salary provided was compared with the mean salary for all job titles. When job title was missing in a year subsequent to the organizational entry year, the job title in the previous and next years were compared in order to extrapolate the job title for the missing year. If information was missing in either of those years (previous or next), the salary was used to impute the appropriate job title in the manner heretofore outlined. Missing job title techniques were applied to 12.3% of the job title fields across the original population (N = 2,368).

Profile of Subjects

The subjects in this study were professional sales employees employed by a Fortune 500 industrial manufacturing firm. During the 14-year period of study provided in the longitudinal data, the firm employed 2,368 sales professionals with tenure ranging from 1 day to 49 years. The minimum education level for subjects was an associate's degree with 99.6% holding at least a bachelor's degree. Approximately one-third (29.4%) of the subjects also had earned a master's degree primarily in either Business Administration or an Engineering discipline.

The original HR database consisted of 2,368 subjects who were culled down for analysis purposes to 1,675. Only those subjects who had completed at least one full year

of employment were included in the study. Those subjects with less than one full year of service (n = 693) were not used for data analysis purposes. Potential explanations for the high number of employees with less than one-year tenure are: (a) new employee entrants, (b) employees participating in a co-op program, and (c) summer college interns. Since the focus of the study was to identify factors that influence employee retention over an extended period of time, studying the retention behavior of newly hired employees did not provide substantive information contributing to the research.

Description of the Subjects

Despite diversity initiatives initiated by the focal organization, the study population was 92.2% Caucasian (n = 1544) with 83.7% male professional sales employees (n = 1402) versus a 10.2% female composition (n = 142). Marital status composition of the population yielded 72% married (n = 1210) and 38% unmarried (n = 465). Codes were assigned for ethnic group and gender to enable statistical analysis in SPSS 14.0 and SAS 9.1.3. The results of the coding process indicated that cell size was insufficient for parametric analysis of the distinct groups by gender and ethnicity. Thus, a code reflecting the combination of gender/ethnicity enabled attainment of sufficient cell size (n > 30), except in the case of African American males. Table 7 is a summary of the composition of the population in terms of gender/ethnicity demographic mix.

Since employee status was the primary focus of this study, examination of the differences in employee status by gender/ethnicity was explored (Table 8). Interestingly, involuntary turnover was absent among the first, third, and fourth gender/ethnicity groups – non-Caucasian females, Native Asian/Other/Unknown males, and African

American males. Voluntary turnover in the latter category (Native American/Asian/ Other/Unknown males) was higher than in other groups supporting the notion that job mobility among members of this group tends to be higher.

Table 7. Gender/Ethnicity Population Composition

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Non-Caucasian Female*	29	1.7	1.7	1.7
Caucasian Female	142	8.5	8.5	10.2
NA/AP/Other Male	37	2.2	2.2	12.4
African American Male	26	1.6	1.6	14.0
Hispanic Male	39	2.3	2.3	16.3
Caucasian Male	1402	83.7	83.7	100.0
Total	1675	100.0	100.0	

*Classification category includes Native American, Asian, African American, Hispanic, Unknown, and Other Female.

Table 8. Crosstab Analysis – Gender/Ethnicity by Employee Status

	Employee Status			
Gender/Ethnicity	VTO	ITO	Active	Total
Non-Caucasian Female	13	0	16	29
Caucasian Female	43	4	95	142
NA/AP/Other Male	9	0	28	37
African American Male	9	0	17	26
Hispanic Male	13	1	25	39
Caucasian Male	379	54	969	1402
Total	466	59	1150	1675

Exploring service category using SPSS 14.0 crosstab analysis facilitated an understanding of the inflection points in terms of service length vulnerability. In all gender/ethnicity groups, the service tenure period of interest is the 10-19.99 years of service since HR professionals in the focal firm advised that this is the period when they are most vulnerable to employee turnover (Table 9). Results of later analysis indicated that service category was not significant in predicting employee retention. One possible explanation for the lack of significance in service category as a predictor of employee retention could have been that diversity initiatives may have accelerated within the organization under study during the 14-year longitudinal research period. Interviews with HR management at the firm failed to uncover any confirmation for this assumption.

Previous researchers suggested that career stage influenced employee retention (Levinson et al., 1978), and thus, career stage by gender/ethnicity was examined using descriptive analysis technique (Table 10). Differences in frequencies were found, and these differences became instrumental in predicting VTO and employee retention (active status) in the logistic regression analyses found later in this chapter.

Table 9. Crosstab Analysis – Gender/Ethnicity by Service Category

Service Category	Gender/ Ethnicity	Employee Status			
		VTO	ITO	Active	Total
0-4.99 yrs	Non-Caucasian Female	1	0	1	2
	Caucasian Female	2	0	7	9
	NA/AP/Other Male	0	0	2	2
	African American Male	2	0	1	3
	Hispanic Male	2	0	1	3
	Caucasian Male	22	2	94	118
	Total	29	2	107	138
5-9.99 yrs	Non-Caucasian Female	2	0	5	7
	Caucasian Female	9	1	16	26
	NA/AP/Other Male	1	0	5	6
	African American Male	1	0	2	3
	Hispanic Male	1	0	4	5
	Caucasian Male	66	5	176	247
	Total	80	6	208	294
10-19.99 yrs	Non-Caucasian Female	7	0	7	14
	Caucasian Female	21	2	55	78
	NA/AP/Other Male	4	0	14	18
	African American Male	4	0	12	16
	Hispanic Male	9	1	16	26
	Caucasian Male	211	35	501	747
	Total	258	38	605	899
20+ yrs	Non-Caucasian Female	3	0	3	6
	Caucasian Female	11	1	17	29
	NA/AP/Other Male	4	0	7	11
	African American Male	2	0	2	4
	Hispanic Male	1	0	3	4
	Caucasian Male	80	12	198	290
	Total	101	13	230	344

Table 10. Crosstab Analysis – Gender/Ethnicity by Career Stage

Career	Gender/	Employee Status			
Stage	Ethnicity	VTO	ITO	Active	Total
<25	Non-Caucasian Female	9	0	10	19
	Caucasian Female	23	0	44	67
	NA/AP/Other Male	3	0	9	12
	African American Male	4	0	6	10
	Hispanic Male	1	0	5	6
	Caucasian Male	106	9	290	405
	Total	146	9	364	519
25-34	Non-Caucasian Female	3	0	6	9
	Caucasian Female	17	1	33	51
	NA/AP/Other Male	5	0	14	19
	African American Male	1	0	9	10
	Hispanic Male	9	0	14	23
	Caucasian Male	138	9	363	510
	Total	199	9	687	898
35-49	Non-Caucasian Female	1	0	0	1
	Caucasian Female	3	3	18	24
	NA/AP/Other Male	1	0	5	6
	African American Male	4	0	2	6
	Hispanic Male	3	1	6	10
	Caucasian Male	122	32	304	458
	Total	134	36	335	505
50+	Caucasian Male	13	4	11	28
	Total	13	4	11	28

Recognizing differences in career stage and employee status, further investigation of differences was conducted using independent samples t-test (SPSS 14.0). This analysis enabled identification of differences between groups for the key variables of interest. Table 11 is a summary of the mean, standard deviation, and standard mean error for each of these variables. Differences noted in start age support the previous finding that there is a difference in career stage between the gender/ethnicity groups (Levinson et al., 1978).

Table 11. Descriptives – Gender/Ethnicity Group

		N	Mean	Std. Deviation	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Start Age	Non-Caucasian Female	29	25.21	3.579	23.85	26.57	22	35
	Caucasian Female	142	28.63	8.114	27.29	29.98	18	53
	NA/AP/Other Male	37	29.35	6.567	27.16	31.54	22	51
	African American Male	26	29.69	8.661	26.19	33.19	22	52
	Hispanic Male	39	31.64	7.069	29.35	33.93	23	51
	Caucasian Male	1402	32.18	9.349	31.69	32.67	18	69
	Total	1674	31.64	9.165	31.20	32.08	18	67
# Yrs w/ Raise	Non-Caucasian Female	29	2.28	1.279	1.79	2.76	1	7
	Caucasian Female	142	2.09	1.368	1.86	2.32	0	6
	NA/AP/Other Male	37	2.03	1.641	1.48	2.57	0	9
	African American Male	26	2.38	1.499	1.78	2.99	1	6
	Hispanic Male	39	2.26	1.312	1.83	2.68	0	6
	Caucasian Male	1402	2.63	1.892	2.54	2.73	0	11
	Total	1674	2.56	1.829	2.39	2.53	0	11
Age @ Quit	Non-Caucasian Female	29	40.86	10.347	36.93	44.80	28	71
	Caucasian Female	142	45.88	13.823	43.59	48.17	25	74
	NA/AP/Other Male	37	45.76	14.322	40.98	50.53	26	74
	African American Male	26	43.85	13.410	38.43	49.26	26	78
	Hispanic Male	39	46.67	16.424	41.34	51.99	24	73
	Caucasian Male	1402	46.05	13.146	45.36	46.74	22	72
	Total	1674	45.92	12.771	43.41	44.44	22	77
Min. Salary	Non-Caucasian Female	29	46,383.07	22,746.72	37,330.68	55,035.46	11,940.00	95,446.00
	Caucasian Female	142	47,212.42	22,463.53	43,485.71	50,939.12	20,020.00	139,423.00
	NA/AP/Other Male	37	51,414.76	24,926.30	43,103.91	59,725.60	25,480.00	139,423.00
	African American Male	26	46138.78	19,146.27	35,029.08	50,495.77	22,743.00	119,186.00
	Hispanic Male	39	45,664.38	19,169.37	39,450.39	51,878.68	19,177.00	101,970.00
	Caucasian Male	1402	49,951.55	26,597.88	48,558.08	51,345.02	10,921.00	202,000.00
	Total	1674	49,478.46	25,929.17	42,160.51	54,465.99	10,921.00	202,000.00
Max. Salary	Non-Caucasian Female	29	71,442.45	28,635.75	60,549.99	82,334.91	30,420.00	161,000.00
	Caucasian Female	142	72,595.85	34,807.90	66,821.20	78,370.49	27,664.00	191,707.00
	NA/AP/Other Male	37	84,735.35	35,202.57	72,998.23	96,472.47	27,872.00	182,735.00
	African American Male	26	73,586.62	38,183.64	58,163.91	89,009.32	34,234.00	144,040.00

Table 11 (continued)

		N	Mean	Std. Deviation	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
	Hispanic Male	39	65,330.72	28,021.94	56,247.06	74,414.38	32,026.00	169,950.00
	Caucasian Male	1402	83,899.34	37,841.25	81,916.83	85,881.85	24,128.00	257,550.00
	Total	1674	82,151.45	37,424.83	73,455.99	76,389.74	24,128.00	257,550.00
Low JT	Non-Caucasian Female	29	1.66	1.37	1.13	2.18	1	5
	Caucasian Female	142	1.61	1.236	1.39	1.83	1	8
	NA/AP/Other Male	37	1.32	.818	1.05	1.60	1	4
	African American Male	26	1.23	.514	1.02	1.44	1	3
	Hispanic Male	39	1.64	1.135	1.27	2.01	1	5
	Caucasian Male	1402	1.75	.143	1.68	1.83	1	8
	Total	1674	1.72	1.396	1.93	2.07	1	8
High JT	Non-Caucasian Female	29	3.41	1.918	2.68	4.14	1	8
	Caucasian Female	142	3.03	1.688	2.75	3.31	1	8
	NA/AP/Other Male	37	3.70	1.714	3.13	4.27	1	8
	African American Male	26	2.69	1.517	2.08	3.31	1	6
	Hispanic Male	39	2.87	1.75	2.30	3.44	1	8
	Caucasian Male	1402	3.593.18	1.778	3.50	3.68	1	8
	Total	1674	3.51	1.778	3.04	3.19	1	8
Service Length	Non-Caucasian Female	29	14.83	8.880	11.45	18.21	2	47
	Caucasian Female	142	14.67	7.968	13.35	15.99	2	42
	NA/AP/Other Male	37	15.95	8.096	13.25	18.65	2	35
	African American Male	26	14.73	7.373	11.75	17.71	2	31
	Hispanic Male	39	13.18	6.992	10.91	15.45	2	32
	Caucasian Male	1402	14.64	7.943	14.22	15.06	2	49
	Total	1674	14.64	7.93	13.81	14.44	2	49
Avg. % Raise	Non-Caucasian Female	29	27.018	17.945	20.192	33.843	2.40	66.10
	Caucasian Female	142	2.905	17.886	19.938	25.872	.89	80.74
	NA/AP/Other Male	37	26.786	18.537	20.605	32.966	3.27	71.26
	African American Male	26	33.070	23.041	23.764	42.377	3.64	75.75
	Hispanic Male	39	19.985	16.996	14.489	25.481	.48	72.08
	Caucasian Male	1402	27.506	19.927	26.462	28.550	.09	82.55
	Total	1674	27.003	19.744	27.145	29.211	.09	82.55

An analysis of variance was conducted on Caucasian versus non-Caucasian subjects to determine if there was any difference between groups in terms of personal characteristics, work characteristics, or HRD interventions (Table 12 and Table 13). This analysis was a precursor to a similar investigation of the differences in the sales professionals who voluntarily left the organization to those who did not voluntarily terminate.

Table 12. Test of Homogeneity of Variances – Gender/Ethnicity Group

Variable	Levene Statistic	df	df2	Sig.
Start Age	18.926	1	1672	.000
Career Stage	3.573	1	1671	.059
# Yrs w/Raise	13.252	1	1672	.000
Age @ Quit	.062	1	1672	.803
Minimum Salary	6.385	1	1672	.012
Maximum Salary	2.407	1	1672	.121
Lowest JT	13.457	1	1672	.000
Highest JT	.160	1	1672	.690
Job Title Range	.000	1	1672	.994
Salary Increase	6.936	1	1672	.009
Service Length	.035	1	1672	.852
# Yrs w/ JT Increase	4.656	1	1672	.031
Average Raise	1.504	1	1672	.220
Average % Raise	.628	1	1672	.428
Average Annual % Raise	1.131	1	1672	.288

Table 13. Analysis of Variance for Caucasian Versus Non-Caucasians

		Sum of Squares	df	Mean Square	F	Sig.
Start Age	Between Groups	738.262	1	738.262	9.800	0.002
	Within Groups	125,961.867	1,672	75.336		
	Total	126,700.129	1,673			
Career Stage	Between Groups	6.167	1	6.167	9.130	0.003
	Within Groups	1,128.778	1,671	0.676		
	Total	1,134.946	1,672			
# Yrs w/ Raise	Between Groups	17.593	1	17.593	5.278	0.022
	Within Groups	5,573.286	1,672	3.333		
	Total	5,590.879	1,673			
Age @ Quit	Between Groups	196.521	1	196.521	1.135	0.287
	Within Groups	289,621.771	1,672	173.219		
	Total	289,818.292	1,673			
Minimum Salary	Between Groups	942,356,008.328	1	942,356,008.328	1.411	0.235
	Within Groups	1,117,033,910,773.000	1,672	668,082,482.520		
	Total	1,117,976,266,781.330	1,673			
Maximum Salary	Between Groups	9,791,543,322.711	1	9,791,543,322.711	7.029	0.008
	Within Groups	2,329,291,050,985.470	1,672	1,393,116,657.288		
	Total	2,339,082,594,308.180	1,673			
Lowest JT	Between Groups	8.390	1	8.390	4.365	0.037
	Within Groups	3,213.828	1,672	1.922		
	Total	3,222.218	1,673			
Highest JT	Between Groups	14.437	1	14.437	4.594	0.032
	Within Groups	5,253.910	1,672	3.142		
	Total	5,268.347	1,673			
Job Title Range	Between Groups	0.600	1	0.600	0.187	0.665
	Within Groups	5,364.250	1,672	3.208		
	Total	5,364.851	1,673			

Table 13 (continued)

		Sum of Squares	df	Mean Square	F	Sig.
Salary Increase	Between Groups	4,665,643,259.612	1	4,665,643,259.612	4.691	0.030
	Within Groups	1,663,126,437,200.370	1,672	994,692,845.216		
	Total	1,667,792,080,459.980	1,673			
Service Length	Between Groups	1.775	1	1.775	0.028	0.867
	Within Groups	105,254.029	1,672	62.951		
	Total	105,255.804	1,673			
# Yrs w/ JT Increase	Between Groups	2.713	1	2.713	0.813	0.367
	Within Groups	5,580.523	1,672	3.338		
	Total	5,583.236	1,673			
Average Raise	Between Groups	28,465,650.670	1	28,465,650.670	1.787	0.181
	Within Groups	26,627,922,434.277	1,672	15,925,790.930		
	Total	26,656,388,084.946	1,673			
Average % Raise	Between Groups	112.691	1	112.691	0.289	0.591
	Within Groups	652,294.701	1,672	390.128		
	Total	652,407.393	1,673			
Average Annual % Raise	Between Groups	3.758	1	3.758	0.551	0.458
	Within Groups	11,397.185	1,672	6.816		
	Total	11,400.942	1,673			

In determining the factors that influenced employee retention and voluntary turnover, another ANOVA was conducted employing SPSS 14.0. As a reminder, personal characteristics included in the study were age, gender, and ethnicity. Significant differences between groups (VTO versus non-VTO) were found for personal characteristics – Caucasian and non-Caucasian as noted in Table 13 for start age (p=.002) and career stage (p=.003). This finding suggests that Caucasians entered the

organization as a first job more frequently than non-Caucasians. When segmented by major ethnic category (Caucasian and non-Caucasian), significant differences can be noted. Both variables are associated with age, and this was the only personal characteristic where differences were found, partially supporting H1a and H1d.

Exploring the work characteristics, those related to salary and job title, statistically significant differences were found between groups for maximum salary ($p<.001$), highest job title ($p=.014$), salary increase ($p<.001$), years with job title increase ($p=.034$), average raise ($p=.006$), and average annual percent raise ($p=.028$). Simply stated, there were significant differences between groups (Caucasian versus non-Caucasian) for maximum salary, lowest job title, highest job title, years with raise, and salary increase, but not in the other work-related characteristics, These findings suggest partial support for hypothesis H1b (Table 14 and Table 15).

The discussion regarding differences between groups exposed to the various HRD intervention factors career development (job title range and salary increase) and training and development were investigated using the models resulting from binomial logistic regression. These results may be found later in this chapter.

Table 14. Test of Homogeneity of Variances – Caucasians/Non-Caucasians

Variable	Levene Statistic	df1	df2	Sig.
Start Age	.140	1	1673	.708
Career Stage	.468	1	1672	.494
# Yrs w/ Raise	6.854	1	1673	.009
Age @ Quit	.024	1	1673	.878
Minimum Salary	.880	1	1673	.348
Maximum Salary	.136	1	1673	.712
Lowest JT	.579	1	1673	.447
Highest JT	2.172	1	1673	.141
Job Title Range	4.583	1	1673	.032
Salary Increase	19.715	1	1673	.000
Service Length	.018	1	1673	.894
# Yrs w/JT Increase	11.833	1	1673	.001
Average Raise	10.380	1	1673	.001
Average % Raise	.067	1	1673	.796
Average Annual % Raise	7.277	1	1673	.007

Table 15. Analysis of Variance for VTO Versus Non-VTO

		Sum of Squares	df	Mean Square	F	Sig.
Start Age	Between Groups	11.905	1	11.905	0.157	0.692
	Within Groups	126,708.124	1,673	75.737		
	Total	126,720.030	1,674			
Career Stage	Between Groups	0.033	1	0.033	0.049	0.825
	Within Groups	1,134.913	1,672	0.679		
	Total	1,134.946	1,673			
# Yrs w/ Raise	Between Groups	21.882	1	21.882	6.566	0.010
	Within Groups	5,575.537	1,673	3.333		
	Total	5,597.419	1,674			
Age @ Quit	Between Groups	311.189	1	311.189	1.796	0.180
	Within Groups	289,910.214	1,673	173.288		
	Total	290,221.403	1,674			

Table 15 (Continued)

		Sum of Squares	df	Mean Square	F	Sig.
Minimum Salary	Between Groups	771,120,651.470	1	771,120,651.470	1.147	0.284
	Within Groups	1,124,695,594,355.020	1,673	672,262,758.132		
	Total	1,125,466,715,006.490	1,674			
Maximum Salary	Between Groups	21,448,652,230.999	1	21,448,652,230.999	15.446	0.000
	Within Groups	2,323,185,651,791.390	1,673	1,388,634,579.672		
	Total	2,344,634,304,022.390	1,674			
Lowest JT	Between Groups	1.548	1	1.548	0.794	0.373
	Within Groups	3,260.132	1,673	1.949		
	Total	3,261.680	1,674			
Highest JT	Between Groups	19.144	1	19.144	6.078	0.014
	Within Groups	5,269.355	1,673	3.150		
	Total	5,288.499	1,674			
Job Title Range	Between Groups	8.808	1	8.808	2.750	0.097
	Within Groups	5,359.218	1,673	3.203		
	Total	5,368.026	1,674			
Salary Increase	Between Groups	14,111,828,985.834	1	14,111,828,985.834	14.275	0.000
	Within Groups	1,653,825,257,986.190	1,673	988,538,707.702		
	Total	1,667,937,086,972.030	1,674			
Service Length	Between Groups	148.796	1	148.796	2.368	0.124
	Within Groups	105,120.278	1,673	62.833		
	Total	105,269.075	1,674			
# Yrs w/ JT Increase	Between Groups	15.063	1	15.063	4.525	0.034
	Within Groups	5,568.451	1,673	3.328		
	Total	5,583.514	1,674			
Average Raise	Between Groups	119,321,544.861	1	119,321,544.861	7.522	0.006
	Within Groups	26,538,361,879.167	1,673	15,862,738.720		
	Total	26,657,683,424.028	1,674			
Average % Raise	Between Groups	100.736	1	100.736	0.258	0.611
	Within Groups	652,497.834	1,673	390.017		
	Total	652,598.571	1,674			

Table 15 (continued)

		Sum of Squares	df	Mean Suare	F	Sig.
Average Annual % Raise	Between Groups	33.010	1	33.010	4.857	0.028
	Within Groups	11,371.332	1,673	6.797		
	Total	11,404.342	1,674			

Exploratory Factor Analyses

The entire population of employees with at least one year of service was included in exploratory factor analyses (EFAs). This analysis technique was selected in order to summarize the relationships of the independent variables in order to eliminate those that did not relate to voluntary employee turnover. One common purpose of using exploratory factor analysis (EFA) is "to summarize relationships in the form of a more parsimonious set of factor scores that can be used in subsequent analysis" (Thompson, 2004, p. 5). An EFA technique was used to refine the measures and determine if the number of variables could be reduced. Since this study involved data mining rather than proof or disproof of an existing theory, EFA was used rather than confirmatory factor analysis that is traditionally used when the research is grounded by existing theory. It was assumed that less than 100% of the variance could be accounted for since no psychometric variables traditionally associated with employee voluntary turnover were included in the study. Nine interval scale variables were used in the data reduction analysis (Table 16). Exploratory factor analysis was conducted on the entire group (N = 1675), trained employees (N = 252), untrained employees (N = 1,422), voluntarily turned over employees (N = 465), active and involuntarily turned over employees (N = 1,209), non-Caucasian employees (N = 131), and Caucasian employees (N = 1,543).

Since the difference between factor analysis and principal component analysis tend to be less when the number of variables and the magnitudes of the factor loadings increase (Field, 2005), principal component analysis was selected. The Kaiser-Meyer-Olkin test (KMO-test) scores of .739, .738, .745, .714, .743, .712, and .739, respectively, were obtained for the groups outlined above. Bartlett's test of sphericity was significant ($p < .000$) for all seven EFAs indicating that the original correlation matrix was not an identity matrix (Field, 2005). Descriptive analysis was conducted first to examine central tendencies (mean) and variability (standard deviation and variance) for the population ($N = 1,675$). This analysis is shown in Table 16.

Principal component analysis (PCA) was selected as the extraction method in order to determine an empirical summary of the dataset. This factor analysis method facilitated selection of a subset of variables from the larger set of variables since several variables were practically and statistically related. PCA-enabled explanation of co-linearity problems or more aptly imprecise regression parameter estimates resulting from highly correlated independent variables.

Table 16. Descriptive Statistics for Variables Used in Exploratory Factor Analysis

	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Start Age	1675	40	18	58	31.46	8.701	75.699
# Yrs w/ Raise	1675	11	0	11	2.56	1.829	3.344
Age @ Quit	1675	95	22	75	45.93	13.167	73.370
Minimum Salary	1675	191,079	10,921	202,000	49,478	25,929	672321813.03
Maximum Salary	1675	233,422	24,128	257,550	82,151	37,425	1400617863.81
Lowest JT	1675	7	1	8	1.72	1.396	1.948
Highest JT	1675	7	1	8	3.51	1.777	3.159
Job Title Range	1675	8	-1	7	1.78	1.791	3.207
Salary Increase	1675	214,273	48	214,321	32,677	31,565	996378188.16
Service Length	1675	47	2	49	14.64	7.930	62.885
# Yrs w/ JT Increase	1675	9	0	9	1.53	1.826	3.335
Average Raise	1675	37,399	4	37,403	3014	3,991	15924542.07
Average % Raise	1675	82.46	.09	82.55	27.0026	19.74446	389.844
Valid N (list wise)	1675						

Thompson (2004) cautions that principal components analysis assumes that there is perfect reliability of the scores on measured variables. This is implausible if not impossible, but since this type of analysis attempts to reproduce variance in a sample in terms of predicting the population and this research deals with the population of professional sales employees at the focal firm, PCA is perfectly acceptable. Further, despite academic debate on the most appropriate extraction method, after performing the factor analysis using two techniques, principal component analysis and principal axis factoring, simple structure was best obtained utilizing the former method.

EFA for Entire Group

The first exploratory factor analysis involved analysis of the entire population (N = 1675). The analysis conducted with SPSS 14.0 used principal component analysis and Varimax as the orthogonal rotation method in order to maximize the separation of factors. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy derived a score of .705 for this dataset. Field (2005) claims that a KMO score of .7 to .8 is good, thus, it appears that the 11 variables selected for this analysis were factor analyzable.

The Bartlett's Test of Sphericity is a statistical test for the presence of correlations among the variables that provides the statistical probability that the correlation matrix has significant correlations among several of the variables (George & Mallery, 2006). The Bartlett's Test of sphericity demonstrated that this statistical probability of significant correlations existed with these data ($X^2 = 9088.509$, df = 55; $p < .001$).

Three components were extracted with Eigen values greater than 1, which accounted for 66.738% of the variance. Absolute values less than .40 were suppressed in naming the factors – service, salary, and promotion. The three-component structures emerged in four iterations (Blau, 1993). In Table 17, the results of the Varimax Rotation are illustrated.

Table 17. Rotated Component Matrix for Total Population

Variable	Components		
	Component 1 (Service)	Component 2 (Salary)	Component 3 (Promotion
Service Category	.934		
Service Length	.913		
Study Length	.840		
Age @ Quit	.633		
# Yrs w/ JT Increase	-.497		
Average % Raise		.850	
Average Annual % Raise		.800	
Average Raise		.793	
Salary Increase		.743	
Job Title Range			.826
Service Category	.934		
Percentage of Variance Explained	29.25	23.51	14.0

The first component factor, called service, accounted for 29.252% of the variance, and consisted of five variables – service category (.934 loading), service length (.913 loading), study length (.840 loading), age at quit (.633 loading), and number of years with job title increase (-.497 loading). Average percent raise, average annual raise percent, average raise, and salary increase loaded on the factor named, salary represented 23.508% of the variance with loadings of .850, .800, .793, and .743, respectively. The third component, labeled promotion, explained 13.978% of the variance with one variable, job title range, loading at .826.

EFA for Employees Not Participating in Training

To determine if the factors for subjects participating and those not participating in the sales training were the same, exploratory factor analysis was conducted filtering

for these two conditions. The first EFA in the training category dealt with subjects who did not participate in the training curriculum (N = 1423). A Kaiser-Meyer-Olkin Measure of Sampling Adequacy resulted in a score of .710 for this dataset. The Bartlett's Test of Sphericity demonstrated that the statistical probability of correlation matrix was significantly different and existed with these data ($X^2 = 7888.140$, df = 55, $p < .001$).

The PCA extracted three components with Eigen values greater than 1 in four iterations using Varimax rotation technique. This represented 67.555% of the variance (Table 18). Absolute values less than .40 were suppressed, which minimized multiple loadings. Five variables loaded on the first construct, which accounted for 29.021% of the explained variance. The five variables single-loading on the first component titled service were service category (.932), service length (.910), and study length (.833), age at quit (.602), and number of years with job title increase (-.533). The second component structure, salary accounted for 24.137% of the explained variance with four single-loaded variables, average percent raise, average annual raise percent, average raise, and salary increase with loadings of .860, .817, .797 and .756, respectively. Promotion, the third component structure, accounted for 14.397% of the variance with two single-loaded variables, job title range and lowest job title had loadings of .844 and -.751, respectively.

EFA for Employees Participating in Training

To determine if the factors for subjects participating in training differed from those not participating in the sales training, exploratory factor analysis was conducted filtering for subjects who participated in training (N = 252). A Kaiser-Meyer-Olkin

Measure of Sampling Adequacy derived a score of .689 for this dataset. The Bartlett's Test of Sphericity demonstrated that these data were factor analyzable ($X^2 = 1383.896$, $df = 55$, $p < .001$).

Table 18. Rotated Component Matrix for Non-Trained Subjects

	Components		
Variable	Component 1 (Service)	Component 2 (Salary)	Component 3 (Promotion)
Service Category	.932		
Service Length	.910		
Study Length	.833		
Age @ Quit	.602		
# Yrs w/ JT Increase	-.533		
Average % Raise		.860	
Average Annual % Raise		.817	
Average Raise		.797	
Salary Increase		.756	
Job Title Range			.844
Lowest JT			-.751
Percentage of Variance Explained	29.02	24.14	14.40

Three-component structures emerged in five iterations, accounting for 72.934% of the explained variance. Service accounted for 40.232% of the variance and consisted of four single-loaded variables – service category (.928), service length (.911), study length (.873), and age at quit (.780). The second component structure, salary, accounted for 17.001% of the explained variance with two single-loaded variables, average raise, and average percent raise with loadings of .805, and .796, respectively. Promotion, the third component structure, accounted for 15.701% of the explained variance. There were two single-loaded variables in the promotion component structure. Lowest job title loaded at -.855 and job title range loaded at .648. The component structures and loadings can be seen in Table 19. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy derived

a score of .736 for this dataset. The Bartlett's Test of Sphericity demonstrated that these data were factor analyzable ($X^2 = 914.399$, df = 28, $p < .001$).

Table 19. Rotated Component Matrix[a,b] for Trained Subjects

Variable	Components		
	Component 1 (Service)	Component 2 (Salary)	Component 3 (Promotion)
Service Category	.928		
Service Length	.911		
Study Length	.873		
Age @ Quit	.780		
Average Raise		.816	
Average % Raise		.794	
Lowest JT			-.855
Job Title Range			.648
Percent of Variance Explained	40.232	17.001	15.701

[a]Rotation converged in 4 iterations.
[b]Only cases for which Training Participation = Participated are used in the analysis phase.

The explained variance in employees participating and not participating in training was relatively close 66.402 and 72.934%, respectively. Differences in the factor loadings, however, were found. Average percent raise and average annual percent raise loaded on the service factor for non-trained sales professionals, but not on the trained employees. In the case of trained subjects, these two variables loaded on the salary component. The salary component structure for non-trained subjects included average annual percentage raise and salary increase, but these two variables did not show up in the same component structure for trained subjects. In the case of the third component structure, promotion, the variables lowest job title and job title range were included for trained and non-trained subjects.

EFA for Employees Who Did Not Voluntarily Turn Over

To examine the factors contributing to voluntary turnover, an EFA was conducted for employees who did not voluntarily leave the organization and another for those subjects who did voluntarily turnover. The first of these two factor analyses using principal component analysis dealt with subjects who did not voluntarily leave the organization (N = 1210). A Kaiser-Meyer-Olkin Measure of Sampling Adequacy resulted in a score of .706 for this dataset. The Bartlett's Test of Sphericity demonstrated that these data were factor analyzable ($X^2 = 5277.778$, df = 36, $p < .001$).

Three-component structures emerged using Varimax rotation in four iterations, accounting for 71.734% of the explained variance. Service accounted for 33.442% of the variance and consisted of four single-loaded variables – service category (.901), service length (.882), study length (.844), and age at quit (.676). The second component structure, salary, accounted for 23.363% of the explained variance with three single-loaded variables, average percent raise, average annual percent raise, and average raise with loadings of .873, .777, and .754, respectively. Promotion accounted for 16.177% of the explained variance. There were two single-loading variables in the promotion component structure. Job title range loading at - .719 and lowest job title at .703. The loadings for the three constructs can be seen in Table 20.

Table 20. Rotated Component Matrix for Non-Voluntary Turnover Subjects

Variable	Components		
	Component 1 (Service)	Component 2 (Salary)	Component 3 (Promotion)
Service Category	.901		
Service Length	.882		
Study Length	.844		
Age @ Quit	.676		
Average % Raise		.873	
Average Annual % Raise		.777	
Average Raise		.754	
Job Title Range			-.719
Lowest JT			.703
Percentage of Variance Explained	33.442	23.363	16.177

EFA for Subjects Who Voluntarily Turned Over

The next exploratory factor analysis involved analysis of the subjects who had voluntarily left the organization (N = 465). The analysis conducted with SPSS 14.0 used principal component analysis and Varimax as the orthogonal rotation method in order to maximize the separation of factors. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy derived a score of .689 for this dataset. The Bartlett's Test of Sphericity demonstrated that this statistical probability of significant correlations existed with these data ($X^2 = 2645.646$, df = 55,

$p < .001$).

Three-component structures emerged using Varimax rotation in four iterations, accounting for 66.969% of the explained variance (Table 21). Service accounted for 26.818% of the variance and consisted of four single-loaded variables – service category (.948), service length (.900), study length (.842), and age at quit (.547). The second

construct, salary accounted for 25.785% of the explained variance with four single-loading variables, average percent raise (.850), salary increase (.837), average raise (.830), and average annual percent raise (.775). The third component structure, promotion, was comprised of two single-loading variables accounting for 14.366% of the explained variance. Lowest job title (-.801) and job title range (.734) comprised the third component structure.

Considering the group that voluntarily turned over versus the group that remained in the organization, the explained variance was 66.969% versus 71.734% (Table 21). A slight difference in the variables that loaded on the service and promotion components was found. Number of years with job title increase loaded on the service component for subjects who did not voluntarily leave the organization, but not those subjects who maintained affiliation with the organization. Additionally, salary increase double-loaded on the salary and promotion components for "stayers" despite the fact that salary increase loaded stronger on the aforementioned component (salary with .708 loading versus promotion with .418 loading).

EFA for Non-Caucasian Subjects

In order to determine the factors explaining the variance for non-Caucasian subjects (N = 131), an exploratory analysis was performed using principal component analysis. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy derived a score of .673 for this dataset. The Bartlett's Test of Sphericity demonstrated that this statistical probability of significant correlations existed with these data ($X^2 = 611.984$, df = 45, $p < .001$).

Table 21. Rotated Component Matrix for Voluntary Turnover Subjects

Variable	Components		
	Component 1 (Service)	Component 2 (Salary)	Component 3 (Promotion)
Service Category	.948		
Service Length	.900		
Study Length	.842		
Age @ Quit	.547		
Average % Raise		.850	
Salary Increase		.837	
Average Raise		.830	
Average Annual % Raise		.775	
Lowest JT			-.801
Job Title Range			.734
Percentage of Variance Explained	26.82	25.79	14.37

The Varimax rotation converged on three-component structures in four iterations explaining 66.655% of the variance. Service, the first component structure accounting for 29.615% of the variance was comprised of four single-loaded variables – service length (.903), service category (.895), age at quit (.760), and study length (.748). The second component structure, salary explaining 20.537% of the variance included average annual percent raise, average percent raise, and average raise with single-loadings of .875, .800, and .761, respectively. Promotion, the third component structure had three single-loadings accounting for 16.503% of the explained variance – lowest job title (-.921), number of years with job title increase (-.509), and job title range (.504 loading). The four constructs emerged in four iterations using the Varimax rotation technique (Table 22).

Table 22. Rotated Component Matrix[a,b] for Non-Caucasian Subjects

Variable	Components		
	Component 1 (Service)	Component 2 (Salary)	Component 3 (Promotion)
Service Length	.903		
Service Category	.895		
Age @ Quit	.760		
Study Length	.748		
Average Annual % Raise		.875	
Average % Raise		.800	
Average Raise		.761	
Lowest JT			-.921
# Yrs w/ JT Increase			-.509
Job Title Range			.504
Percent of Variance Explained	29.615	20.357	16.503

[a]Rotation converged in 4 iterations.
[b]Only cases for which Caucasian/non-Caucasian = Non-Caucasian are used in the analysis phase.

EFA for Caucasian Employees

The final exploratory factor analysis involved analysis of the entire population of Caucasian sales professionals in the organization (N = 1543). Kaiser-Meyer-Olkin Measure of Sampling Adequacy derived a score of .720 for this dataset. The Bartlett's Test of Sphericity demonstrated that this statistical probability of significant correlations existed with these data ($X^2 = 7089.068$, df = 45, $p < .001$).

Three constructs emerged using Varimax rotation in four iterations, accounting for 68.161% of the explained variance (Table 23). Service accounted for 31.743% of the variance and consisted of five single-loaded variables – service category (.886), service length (.877), study length (.820), age at quit (.669); and number of years with job title increase (-.555). The second component structure, salary accounted for 21.281% of the

explained variance with three single-loaded variables, average percent raise (.871), average annual percent raise (.781), and average raise (.769).

Table 23. Rotated Matrix[a,b] for Caucasian Employees

Variable	Components		
	Component 1 (Service)	Component 2 (Salary)	Component 3 (Promotion)
Service Category	.938		
Service Length	.913		
Study Length	.849		
Age @ Quit	.611		
# Yrs w/ JT Increase	-.479		
Average Annual % Raise		.862	
Average % Raise		.862	
Average Raise		.786	
Lowest JT			-.808
Job Title Range			.800
Percent of Variance Explained	31.743	21.281	15.137

[a]Rotation converged in 4 iterations.
[b]Only cases for which Caucasian/non-Caucasian = Caucasian are used in the analysis phase.

Testing the Constructs

The constructs resulting from the EFA statistical phase demonstrated categorically similar patterns. In most cases, the variables loading on a construct were almost identical regardless of dependent variable. The weights did vary, however. In an ideal world, one variable would be sufficient to describe a construct, thus, simplifying further analytical study; but this was not the case. In order to determine if the analysis could be compressed, using one variable to denote the construct, multiple linear regression analysis was employed. As demonstrated in Table 24, this analysis yielded results that did not allow compression of the construct into the simplified variable

listing. Consequently, the next step of analysis, binomial logit regression, required utilization of the entire set of independent variables.

Table 24. Results of Multiple Linear Regression Analysis

Factored for	Variance Explained by Constructs	Construct Component Structures	Variable with Highest Standardized Beta Weight
Entire Population (N = 1,675)	66.738%	Service Compensation Promotion	Service Category = .390 Average Raise = .396 Job Title Range = .396
Not Trained (N = 1,422)	67.555%	Service Compensation Promotion	Service Length = .310 Average Raise = .392 Job Title Range = .441
Trained (N = 252)	72.934%	Service Compensation Promotion	Service Length = .332 Average Raise = .374 Lowest Job Title = .793
No-VTO (N = 1,210)	71.734%	Service Compensation Promotion	Service Category = .881 Average Raise = .532 Job Title Range = .568
VTO (N = 465)	66.969%	Service Compensation Promotion	Service Length = .324 Average Raise = .402 Lowest Job Title = .705
Non-Caucasian (N = 131)	66.655%	Service Compensation Promotion	Service Length = .324 Average Raise = .402 Lowest Job Title = .705
Caucasian (N = 1,543)	68.161%	Service Compensation Promotion	Service Category = .394 Average Raise = .396 Job Title Range = .417

Statistical Models

To understand the relationships of the variables identified in the exploratory factor analyses of those subjects in the various condition groups (voluntary vs. non-voluntary turnover, Caucasian vs. non-Caucasian, trained vs. non-trained), several multiple linear regression analyses were performed. A total of eight binomial logit regression analyses were conducted using all of the variables using SAS 9.1.3 in order to

gain an understanding of differences between the various condition groups. Maximum likelihood (ML) was used for estimating the logistic model for these analyses. ML is the only method in general use for individual level data with a dichotomous dependent variable (voluntary or non-voluntary turnover) as was the case in this study (Allison, 1999).

Additional rationale for use of ML was because these estimators are known to have good properties in large samples or in other words, ML estimators are consistent or unbiased in large samples (Allison, 1999). Stepwise automated variable selection with 0.2 to include or remove variables at each step was used. Each of the models revealed three or four major influences from the top ten variables identified in the Principal Component Analysis dimensions. The results of these analyses will be discussed in this section. The analyses were conducted with SAS 9.1.3. The logit model used was maximum likelihood which requires an iterative algorithm to produce a predictive model (Allison, 1999).

Overall, there were no significant interaction effects, meaning that none of the interactions were significant at 0.2 level. Absolute values less than .20 were suppressed in order to extract clear models (Allison, 1999). Lack of significant interactions could be interpreted as evidence that the data were clean and consistent. The sample did not seem to contain any remaining major outliers.

Voluntary Turnover Model

The first logit model was performed using subjects where VTO =1 indicating that the subjects had voluntary exited the organization. Logistic regression analysis was

employed to predict the probability that a participant would voluntarily leave the organization. The model used all variables, but the model that emerged from analysis indicated that five variables were significant in predicting voluntary turnover of the subjects (Table 25) – training participation, study length, number of years that employee received a job title increase, average raise in compensation, and job title range (lowest to highest job title during organizational tenure).

Nine variables entered into the analysis failed to meet the 0.2 significance level eligibility for entry into the model. The variables that were removed included: Caucasian/non-Caucasian, service category, service length, age at quit, average annual raise percent, average raise percent, lowest job title, and the interaction between job title range and number of years with job title increase. The results indicate that employees who voluntarily turnover are 50.2% more likely to participate in training, or more succinctly put, a unit change in training increases the likelihood that the employee will voluntarily turnover by 1.5 more times.

Table 25. Analysis of Maximum Likelihood Estimates (MLE) – VTO Employees

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Odds Ratio
Intercept	1	-1.0331	0.2073	24.8291	< .0001	
Train	1	0.4065	0.1470	7.6420	0.0057	1.502
Study Length	1	0.0246	0.0152	2.6190	0.1056	1.025
Job Title Increase Years	1	-0.0463	0.0333	1.9341	0.1643	0.955
Salary Increase	1	-0.00003	0.000017	3.2636	0.0708	1.000
Job Title Range	1	-0.0543	0.0333	2.6610	0.1028	0.947

Note. No additional effects met the 0.2 significance level for entry into the model.

Trained Subject Model

In order to examine if the model for trained employees who did not voluntarily leave the organization was consistent with the model produced from the previous binomial logistic regression analysis, another binomial logit model was produced using all of the variables. In this analysis, logistic regression analysis enabled prediction of the employee's likelihood of remaining in the organization based on the treatments/ conditions identified through the variables loaded into the analysis. The model that emerged was based on four predictor variables – quit age, number of years with job title increase, job title range, and lowest job title. The results are outlined in Table 26. Six variables were not included in the model since the effects did not meet the 0.2 significance level. These variables were in the EFA Service and Promotion Constructs – service category, service length, study length, average raise, average annual raise percent, and average raise percent. Simple interpretation of this analysis indicates that trained employees are less likely to quit especially if they have several JT increases and wide JT range already, but age and seniority in the organization diverge greatly. Additionally, trained employees are more likely to quit than untrained employees despite age at organizational entry but will less likely be victims of voluntary attrition if they are hired at a higher job level later than early career stage. However, the prediction value of this model was negligible with odds ratios on all variables of values less than 1.

Table 26. Analysis of Maximum Likelihood Estimates (MLE) – Trained Employees

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Odds Ratio
Intercept	1	2.8887	0.3762	58.9607	< .0001	
Quit Age	1	-0.0690	0.00760	82.5843	< .0001	0.933
Job Title Increase Years	1	-0.2282	0.0517	19.4925	< .0001	0.796
Job Title Range	1	-0.2039	0.0485	17.7034	< .0001	0.816
Lowest Job Title	1	-0.6917	0.1029	45.1900	< .0001	0.501

Note. No additional effects met the 0.2 significance level for entry into the model.

Non-Voluntary Subjects' Model

To determine if the model for employees who had not voluntarily turned over, a binomial logit regression was performed using the maximum likelihood estimate technique (Table 27). All of the variables that loaded into one of the constructs (> .40) from the principal component analysis (PCA) were loaded resulting in a model based on four variables – study length (1.9086), number of years with job title increase (2.7529), average raise (3.3658), and job title range (3.2747). Employees who did not voluntarily leave the organization received minimal raises and not surprisingly few job title increases. There is a direct relationship between job title and salary, and while this finding may be practically significant, no statistical significance was found. The variables that failed to meet the 0.2 significance level for entry into the model were service category, service length, age at quit, average annual raise percent, average raise percent, and lowest job title. It is important to note that non-VTO employees includes active and involuntarily turned over employees.

Table 27. Analysis of Maximum Likelihood Estimates (MLE) – Non-VTO Employees

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Odds Ratio
Intercept	1	0.9035	0.2010	20.2036	<.0001	
Study Length	1	-0.0208	0.1051	1.9086	0.1671	0.979
Job Title Increase Years	1	0.0547	0.0329	2.7529	0.0971	1.056
Average Raise	1	0.00032	0.000017	3.3658	0.0666	1.000
Job Title Range	1	0.0599	0.0331	3.2747	0.0704	1.062

Non-Caucasian Model

Further examination of the sales force ethnicity was conducted. All nine variables were loaded into the logit regression with only two variables remaining in the model – training participation (1.3343) and average raise (-0.00004) (See Table 28). The results seem to suggest that when non-Caucasian sales professionals participated in training, they are less likely to voluntarily leave the organization. This supports an equity theory premise where employees match the level of commitment invested by the organization. This seems to hold true even when non-Caucasians received low average salary increases. Another way to interpret this could be that non-Caucasian employees who participate in training are less likely to be terminated (ITO) or self-select out (VTO) of the organization. The remaining variables that were not included in the model because they failed to meet the 0.2% significance level were voluntary or involuntary turnover, service category, service length, study length, age at quit, number of years with job title increase, average annual raise percent, average raise percent, job title range, and lowest job title. The model depicted in Table 28 leads to the failure to accept null hypothesis

H1c since there was a difference in the effect of training on Caucasian versus non-Caucasian sales professionals.

Table 28. Analysis of Maximum Likelihood Estimates (MLE) – Non-Caucasian Employees

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	Odds Ratio
Intercept	1	-2.6785	0.1350	393.9180	<0 .0001	
Train	1	1.3343	0.1965	46.1129	<0 .0001	3.797
Average Raise	1	-0.00004	0.000028	1.7018	0.1920	1.000

Note. No additional effects met the 0.2 significance level for entry into the model.

Training and Ethnicity Model

Examining the interaction between training participation and ethnicity, results suggest that training participation is a more significant predictor of voluntary turnover than ethnicity; but both training and ethnicity seem to influence an employee's decision to voluntarily leave the organization (Table 29).

Table 29. Analysis of Parameter Estimates

Parameter	DF	Estimate	Standard Error	Wald 95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept	1	0.1920	0.4646	-0.7187	1.1027	.017	-0.6795
Train	1	0.8215	0.7906	-0.7280	2.3709	1.08	0.2988
Ethnicity	1	0.4297	0.2385	-0.0378	0.8972	3.25	0.0716
Train * Ethnicity	1	-0.6547	0.4184	-1.4748	0.1654	2.45	0.1176
Scale	0	1.0000	0.0000	1.0000	1.0000		

Note. The scale parameter was held fixed.

Expanded Models

To explore the models further, binomial logit regression analyses were performed using SPSS 14.0. These analyses enabled a better understanding of the differences between trained and non-trained and Caucasian and non-Caucasian employees who voluntarily left the organization or remained in the organization. The first analysis dealt with the largest group, Caucasian employees who did not voluntarily leave the organization (N = 1543). Goodness of fit indices from this analysis are shown in Table 30. A good fit was not demonstrated from the analysis. The proportion of the variability in the dependent variable (voluntary turnover) that could be accounted for by all predictors in the equation was low as indicated by the Cox Snell R^2 and the Nagelkerke R^2 (Table 30 and Table 31).

Table 30. Goodness of Fit Indices for Non-VTO Caucasian Employees

			Model			Correct	
Step	Chi Square	Df	Chi Square	df	Sig	Class %	Variable
1	25.894	11	25.894	11	.007	66.7	
2	-.008	1	25.886	10	.004	66.7	
3	-.048	1	25.839	9	.002	66.7	
4	-.266	1	25.573	8	.001	66.7	
5	-.306	1	25.267	7	.001	66.7	
6	-.355	1	24.912	6	.000	66.7	
7	-.431	1	24.481	5	.000	66.7	
8	-1.211	2	23.270	4	.000	66.7	
9	-2.359	1	20.911	3	.000		IN: Min Salary IN: Max Salary IN: Train

Note. No more variables can be deleted or added. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

-2 Log Likelihood	1787.696
Cox Snell R^2	.013
Nagelkerke R^2	.019

Table 31. Classification Table for Non-VTO Caucasian Employees

	Chi-Square	df	Significance
Model	20.911	3	.000
Block	20.911	3	.000
Step	-2.359	1	.125

The classification table for non-VTO Caucasians below (Table 32) indicates that 66.7% of the Caucasian employees were in the non-VTO category. Eleven variables were loaded into the binomial logistic regression as summarized in Table 33.

Table 32. Classification Table for Non-VTO Caucasians

			Predicted Unselected Cases Voluntary Quit		
	Observed		No VTO	VTO	Percentage Correct
Step 0	Voluntary Quit	No VTO	1122	0	100.0
		VTO	421	0	0
	Overall Percentage				72.7

Table 33. Variables Not in the Equation[a] at Block 0

			Score	df	Sig.
Step 0	Variables	StartAge	.290	1	.591
		QuitAge	.472	1	.492
		MinSalary	.433	1	.511
		MaxSalary	10.320	1	.001
		LJT	.206	1	.650
		HJT	3.249	1	.071
		JTRange	1.781	1	.182
		JTIncYrs	3.038	1	.081
		AvgRaise	6.267	1	.012
		ServiceLength	1.472	1	.225
		Train(1)	9.576	1	.002

[a]Residual chi-squares are not computed because of redundancies.

The table of coefficients for variables in the model (Table 34) for non-VTO Caucasians indicates that independent variables max salary (.001) and training participation (.003) were significant predictors, but min salary (.080) was not.

Table 34. Coefficients for Variables in Non-VTO Caucasian Model

Variable	B	SE	Wald	df	Sig.	Exp(B)
Min Salary	.000	.000	3.058	1	.080	1.000
Max Salary	.000	.000	11.104	1	.001	1.000
Part. In Training	-.473	.161	8.584	1	.003	.623
Constant	.284	.187	2.294	1	.130	.753

The second analysis (Table 36) dealt with non-Caucasian employees who did not voluntarily leave the organization (N = 131). Goodness of fit indices from this analysis are shown in Table 35. The proportion of the variability in the dependent variable (voluntary turnover) that could be accounted for by all predictors in the equation was low as indicated by the Cox Snell R^2 and the Nagelkerke R^2 (Table 35 and Table 36).

Table 35. Goodness of Fit Indices for Non-VTO Non-Caucasian Employees

Step	Chi Square	Df	Model Chi Square	df	Sig	Correct Class %	Variable
1	19.042	10	19.042	10	.040	69.5	
2	-.117	1	18.925	9	.026	68.7	
3	-.243	1	18.681	8	.017	68.7	
4	-.198	1	18.484	7	.010	67.2	
5	-.287	1	18.197	6	.006	67.9	
6	-.316	1	17.881	5	.003	66.4	
7	-.383	1	17.498	4	.002	67.2	
8	-.704	1	16.793	3	.001	64.9	
9	-.837	1	15.957	2	.000	67.9	IN: Quit Age IN: Max Salary

Note. No more variables can be deleted or added. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

-2 Log Likelihood	151.268
Cox Snell R^2	.115
Nagelkerke R^2	.159

Table 36. Classification Table for Non-VTO Caucasian Employees

	Chi-Square	df	Significance
Model	15.957	2	.000
Block	15.957	2	.000
Step	-.837	1	.360

The classification table for non-VTO non-Caucasians (Table 37) indicates that 66.7% of the Caucasian employees were in the non-VTO category. Eleven variables were entered into the binomial logit regression (Table 38) with two variables that were significant. The table of coefficients for variables in the model (Table 39) for non-VTO Caucasians indicates that independent variables quit age (.008) and max salary (.004) were significant predictors of non-voluntary turnover.

Table 37. Classification Table for Non-VTO Non-Caucasians

			Predicted Unselected Cases Voluntary Quit		
	Observed		No VTO	VTO	Percentage Correct
Step 0	Voluntary Quit	No VTO	87	0	100.0
		VTO	44	0	0
	Overall Percentage				66.4

Table 38. Variables Not in the Equation[a] at Block 0 – Non-VTO Non-Caucasian Model

			Score	df	Sig.
Step 0	Variables	StartAge	.003	1	.956
		QuitAge	5.729	1	.017
		MinSalary	1.933	1	.164
		MaxSalary	7.264	1	.007
		LJT	2.008	1	.156
		HJT	4.614	1	.032
		JTRange	1.669	1	.196
		JTIncYrs	2.373	1	.123
		AvgRaise	1.092	1	.296
		ServiceLength	1.481	1	.224
		Train(1)	.186	1	.667

[a]Residual chi-squares are not computed because of redundancies.

Table 39. Coefficients for Variables in Non-VTO Non-Caucasian Model

Variable	B	SE	Wald	df	Sig.	Exp(B)
Quit Age	.041	.015	7.051	1	.008	1.042
Max Salary	.000	.000	8.510	1	.004	1.000
Constant	-1.041	.770	1.826	1	.177	.353

The third expanded model crossed the stratification of Caucasian and non-Caucasian with trained versus non-trained employees with VTO and non-VTO as the dichotomous dependent variable. The total population was involved in the analysis (N = 1674), and one observation was excluded as a missing case from the original population (N = 1675). Goodness of fit indices from this analysis are shown in Table 40. This model (Table 41) was not a good fit nor could proportion of the variability in the dependent variable (voluntary turnover) that could be accounted for by all predictors in the equation as indicated by the Cox Snell R^2 and the Nagelkerke R^2.

Table 40. Goodness of Fit Indices for Crossed Model (Caucasian/Non-Caucasian by Training Participation)

Step	Chi Square	Df	Model Chi Square	df	Sig	Correct Class %	Variable
1	31.652	12	31.652	12	.002	72.3	
2	-.070	1	31.582	11	.001	72.3	
3	-.023	1	31.558	10	.000	72.3	
4	-.208	1	31.351	9	.000	72.3	
5	-.269	1	31.081	8	.000	72.3	
6	-.236	1	30.845	7	.000	72.3	
7	-.475	1	30.370	6	.000	72.2	
8	-.631	1	29.738	5	.000	72.2	
9	-1.207	1	28.531	4	.000	72.2	
10	-1.944	1	26.588	3	.000	72.2	IN: Quit Age IN: Max Salary IN: Did Train

Note. No more variables can be deleted or added. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

-2 Log Likelihood	1951.552
Cox Snell R^2	.016
Nagelkerke R^2	.023

Table 41. Coefficients for Variables in Crossed Model (Caucasian/Non-Caucasian by Training Participation)

	Chi-Square	df	Sig.
Model	256.588	3	.000
Block	26.688	3	.000
Step	-1.944	1	.163

The classification table for non-VTO non-Caucasians below (Table 42) indicates that 66.7% of the Caucasian employees were in the non-VTO category.

Table 42. Classification Table for Crossed Model (Caucasian/Non-Caucasian by Training Participation)

Observed			Predicted Unselected Cases Voluntary Quit		Percentage Correct
			No VTO	VTO	
Step 0	Voluntary Quit	No VTO	1209	0	100.0
		VTO	465	0	0
	Overall Percentage				72.2

Thirteen variables were entered into the binomial logit regression at Block 0 (Table 43) with three variables entering into the crossed model (Table 44). The table of coefficients for variables in the model (Table 44) for non-VTO Caucasians indicates that independent variables quit age (.024), max salary (.000), and training participation (.004) were significant predictors of non-voluntary turnover.

Table 43. Variables Not in the Equation[a] at Block 0 – Training Participation of Caucasians/Non-Caucasians

			Score	df	Sig.
Step 0	Variables	StartAge	.151	1	.697
		QuitAge	1.860	1	.173
		MinSalary	1.048	1	.306
		MaxSalary	15.118	1	.000
		LJT	.686	1	.408
		HJT	5.897	1	.015
		JTRange	2.799	1	.094
		JTIncYrs	4.536	1	.033
		AvgRaise	7.519	1	.006
		ServiceLength	2.346	1	.126
		CaucasianNonCaucasian(1)	2.391	1	.122
		Train(1)	8.406	1	.004

[a]Residual chi-squares are not computed because of redundancies.

Table 44. Coefficients for Crossed Model (Caucasian/Non-Caucasian by Training Participation)

Variable	B	SE	Wald	df	Sig.	Exp(B)
Quit Age	.010	.004	5.059	1	.024	1.010
Max Salary	.000	.000	13.816	1	.000	1.000
Training (Did Participate)	-.217	.075	8.364	1	.004	.805
Constant	-.784	.225	12.095	1	.001	.457

Summarily, non-Caucasian employees who participate in training are four times more likely not to voluntarily defect from the organization, even when the average raise is lower and job title increases are less frequent than the average employee's organizational progression. Along those same lines, the likelihood of retaining any employee who participates in training regardless of ethnicity is twice that of the employee who did not participate in training. The difference in retention between Caucasians and all other ethnicities, however, is dependent on the average raise and job title increases. When the trained Caucasian employee receives higher average raises and more years of job title increases, they are more likely to remain in the organization. The results of the analysis also indicate that earlier career stage Caucasian employees entering the organization at lower job titles are more likely to voluntarily turnover than older Caucasian peers.

The models resulting from binomial logit regression address question 2 posed in Chapter III regarding how models might be developed to predict employee retention rates for the focal organization. It is possible to construct a predictive model of voluntary turnover, but goodness of fit results cast suspicion on the strength of the model. Since the personal characteristics except for ethnicity dropped out of the predictive model of

voluntary turnover, hypothesis 2a was only partially supported. Training and work characteristics related to salary and job title were found to be predictive factors in the model of voluntary employee turnover. Thus, hypotheses 2b and 2c were supported by the logistic regression analyses results.

CHAPTER V

SUMMARY, DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

The shortage of talented individuals has never so acutely impacted the public and private sector as in the first decade of this millennium. Consequently, retaining talented and productive workers is at the top of mind with business executives around the globe. When unemployment rates are at the sub-5% level as they are today, job alternatives are more plentiful, providing dissatisfied employees with a plethora of employment options. The professional sales person is critical to most firms' success; and this may be the most vulnerable employee group since the nature of the job implies the development of a network of contacts that can serve a dual purpose – customers and potential employers.

Many of the skill competencies required for a successful sales person could be classified as soft skills making the task of finding the sales professional especially difficult. Most firms will admit that the sales professional is the single most important human capital asset on the company's balance sheet (Adidam, 2006). The sales professional represents the firm, its products and services, as well as its brand image to the customer base. Any disruption in service created from unwanted voluntary turnover of the sales person can negatively impact the firm in terms of customer satisfaction that can lead to lost revenue and profit. This impact to financial performance does not take into account the investment that the firm may have made in the training and development, recruitment, coaching, and mentoring of the individual who chooses to leave the organization voluntarily.

The composition of most sales people's incentive programs provides a built in feedback mechanism enabling the individual to measure the company's assessment of their value to the organization. When a firm is unable or unwilling to compensate an individual in a manner competitive to the marketplace, the sales professional is likely to survey the employment landscape for alternative firms that provide greater rewards. Retaining high-performing sales people is hard since they work in an environment that showcases achievement. Companies recognize the time and money spent in training a professional sales person. So when a firm is expanding into a new market or increasing sales coverage, the productivity curve can be accelerated by hiring an experienced sales person rather than growing their own.

The cost of employee turnover has been estimated from 30-200% of the annual salary of the individual (Pinkovitz, 1997). Therefore, it is incumbent on firms that depend on a highly trained and motivated team of sales professionals to be alert to organizational problems and difficulties that may encourage these sales professionals to take flight. As an HR professional, I recently conducted an analysis of the cost of voluntary turnover among the sales ranks in the firm for which I am employed. The analysis enabled the management team to determine that voluntary turnover of professional sales people impacted the firm's bottom line by more than 1%, a figure that exceeded single-digit millions of profit dollars. The three most common costs associated with employee turnover, separation costs, replacement costs, and training costs, pale in comparison to the loss in terms of revenue and profits missed while the sales territory is left vacant.

At this point, it may illuminate the magnitude of the problem to discuss contemporary issues that are expected to increase voluntary turnover in the sales profession. First, as mentioned earlier with the unemployment rate under 5%, firms are scrambling to hire qualified individuals, thus, driving financial compensation packages to new higher levels. Second, employee attrition is predicted to increase dramatically as 78 million baby boomers, individuals born between 1946 and 1964 reach retirement eligibility age. The next two generations immediately following this retirement eligible group, Gen Xers (born 1965-1980) and Echo Boomers (born 1981 and beyond) grew up in families that suffered the disappointment associated with parents' losing jobs due to firms downsizing. This leads to the third issue, younger employees entering the workplace do not demonstrate the same level of commitment to their employer as previous generational employees. Lower levels of employee commitment lead to intent to search, a mediator of voluntary turnover (Peterson, 2004). The fourth significant issue involves the impact of globalization. As the business landscape expands to the global marketplace, national boundaries are eliminated as companies search for talented workers across the globe. All of these contemporary factors can be attributed to the increasing difficulty companies experience when recruiting qualified employees, thus elevating the importance of retaining the employees who are already working for them.

This chapter is organized into three sections, commencing with a summary discussion of the study and continuing with conclusions of the findings. It concludes with limitations and recommendations for future research.

Summary of the Study

The purpose of this study was to explore the variables impacting employee voluntary turnover in the North American professional sales force of a Fortune 500 industrial manufacturing firm. By studying VTO, the intention was to gain a better understanding of HRD interventions that could improve employee retention. The focal firm provided observations of the employee database for all members of the professional technical sales force over a 14-wave longitudinal period. The original database conveyed 21,271 discrete observations identified by unique employee clock number.

At the onset of the study, meetings were conducted at the focal firm headquarter offices. During that time, senior management provided a comprehensive business overview. HR executives discussed the hiring, employee socialization, sales training, territory assignment, and performance evaluation processes. The discussion included disclosure of the multiple personnel systems employed during the 14-year longitudinal wave under study. Explanation of the multiple systems illuminated the reason for inconsistency of data and served as the basis for interpretation and coding used in the research study.

Initially, the database was synchronized in order to match records for all unique employee numbers in order to examine each subject over the period of tenure in the organization. This resulted in a dataset consisting of 2,368 unique employee clock numbers or subjects with tenure from one day to 49 years. Subjects with organizational tenure less than one year were eliminated from the study, resulting in a population of 1,675. Prior to any analysis, the dataset was coded, using classification techniques for

dichotomous and categorical variables. The coding techniques employed were described in detail in Chapter III.

Data-mining techniques were used to investigate the variables that influenced employee turnover and, thus, retention in this North American sales force. The first step was to perform descriptive analysis techniques in order to gain a better understanding of the total population under study. The descriptive analysis was conducted using SPSS 14.0 using all 17 independent variables and two dependent variables.

A series of exploratory factor analyses (EFA) were conducted in order to identify constructs and eliminate independent variables that did not influence the model. The variables clustered into three constructs depending on the dichotomous dependent variable analyzed. The EFAs were conducted for the entire population yielding three constructs – service, salary, and promotion. Similar construct clusters were found when analyzing VTO versus non-VTO, Caucasian versus non-Caucasian, and trained versus untrained non-employees.

Binomial logistic regression analyses were performed then using the same groupings as described above for the EFAs – VTO versus non-VTO, Caucasian versus non-Caucasian, and trained versus untrained non-employees. Maximum likelihood estimates were employed since this is the most appropriate analysis method for large datasets with dichotomous variables (Allison, 2001). These analyses yielded results enabling comparison across the various dichotomous dependent variables that could be used to predict retention rates. But more importantly, perhaps these models could be employed in order to determine the appropriate interventions to apply in order to reduce

employee voluntary turnover and, thus, improve employee retention of professional sales persons in this organization.

Discussion and Conclusions

This study employed data-mining techniques to answer questions related to the variables that influenced employee retention and voluntary turnover in this North American headquartered industrial manufacturing firm. Seven hypotheses were derived from two fundamental questions. The results were mixed with a failure to accept four of the seven (H1a, H1b, H1c, and H1d). The three hypotheses dealing with development of a predictive model for employee voluntary turnover were supported. The balance of this section will be devoted to a discussion of the study and the theoretical underpinnings that serve to explain the results.

Data were ranged by unique clock number so that subjects could be tracked over the 14-year period. It should be noted that during that period of time, subjects entered and exited the workplace due to hire date as well as voluntary and involuntary turnover. While 2,368 unique employee clock numbers resulted in the time-phased dataset, only 1,675 resulted after elimination of employees with less than one year of full service in the organization. The employees with less than one year of full service included new hires, employee attrition within the first year of service, college interns, college co-ops, and employees who were not retained for one full year after the acquisition of Allen Bradley. Over 92% of the subjects were Caucasian and 83.7% were male. The ethnic makeup of the population determined that cell sizes were insufficient to meet parametric

statistical guidelines (30 subjects per cell). Consequently, ethnicity was compressed to Caucasian versus non-Caucasian.

Employee status was a primary consideration with 466 subjects or 27.5% of the population (N = 1,675) who voluntarily left the organization at some point during the 14-year longitudinal period. Sixty-nine percent of the population were active at the last observation – August 1, 2005. Fifty-nine of the subjects had been involuntarily terminated due to performance issues, violation of company policy, or company mandated downsizing.

Fifty-six percent of the subjects had attained tenure of at least ten years in the organization. Only 21.7% of the subjects (n = 364) had joined the sales force in the first career stage, denoting first professional job. These employees were entrants that were recruited from college and placed in the sales training program. The management team also indicated that existing employees who transfer from other departments in the firm into the professional sales organization did not participate in the training program. According to company policy, employees entering the firm as a first job, participate in the 18-month sales training program. Subjects joining the firm with prior industry experience were not required to participate in the program. Some employees entered the organization without previous industry experience and were required to complete the sales training curriculum, although hiring professional sales people outside the industry for professional sales was not common practice in this organization.

Investigation of differences between groups with regard to variables revealed some interesting differences between ethnic and gender groups with regards to

organizational entry and exit ages. Non-Caucasian females (n = 29) entered the organization at a mean age of 25.21 versus Caucasian females (n = 142) at 28.63 years of age and Caucasian males at 32.18. The mean age at quit was 45.92, with differences in all groups, but the range being non-Caucasian females (n = 29) on the low end at 40.86 and Hispanic males (n = 39) at the high range, remaining in the organization until a mean age of 46.67. The absence of a normal distribution in terms of gender and ethnicity can be explained by similarity theory. The firm's management team is comprised of a largely Caucasian male population; and these managers recruit and hire others who resemble them. Further, the relatively low proportion of non-Caucasians and females in management ranks could be an issue of pipelining. Exploring that phenomenon with HR management uncovered recent initiatives aimed at shifting the demographic mix. However, empirical results indicate that these initiatives have not resulted in significant changes through August 1, 2005.

During their tenure in the organization, Caucasian males (n = 1,402) experienced the highest number of years with a salary increase with 2.63 and the group consisting of Native Americans, Asian Pacific Islanders, and Other ethnicity males (n = 37) at the low end of the range at 2.03 years with salary raises. Female non-Caucasian (n = 29) and Caucasian (n = 142) groups on average received raises in 2.28 and 2.09 years, respectively, during their employment tenure.

Exploratory factor analyses enabled the identification of variable clusters referred to as constructs or component structures. Variables that did not meet the .40 significance loading criteria were eliminated to minimize double loading due to covariance between

factors (Blau, 1993). Three constructs emerged from the EFA using Principal Component Analysis and Varimax rotations involving total population (N = 1,675), subjects who did not voluntarily leave the organization (N = 1,210) and subjects who voluntarily left the organization (N = 467), subjects not participating in training (N = 1,423) and subjects participating in training (N = 252). Those three constructs were service, salary, and promotion. While there were slight differences in the loadings on the service construct depending on the dependent variable, the factors consisted of independent variables dealing with time in the organization and personal characteristic, age at quit. The salary construct was comprised of variables such as average annual raise and salary increase. The third construct, promotion, involved variables associated with job title.

Differences in the constructs were discovered when the dependent variable dealt with the dichotomous variables Caucasian and non-Caucasian. This variable was considered a personal characteristic. For the non-Caucasian (N = 131) group, four constructs emerged. The service and salary constructs were similar to the EFA results found with the total population and the dichotomous variables not related to ethnicity. The anomaly in this Varimax rotation as compared to all other groups, was that promotion split into two distinctly different component structures – one with salary increase, job title range, and lowest job title; the other with years with job title increases and lowest job title. The former promotion construct implied that non-Caucasians who entered the organization at a lower job title and received promotions also received salary increases. Logically, this is expected since salary is linked with job title. The latter

promotion construct suggested that non-Caucasians entering the organization at higher job titles tended to receive raises more frequently during their tenure in the organization. Social capital theory may be used to explain the fourth construct. Non-Caucasian employees entering the organization at a higher level would be expected to have a more supportive coworker and supervisor support network, facilitating upward mobility in the sales organization. The rationale for the split of the promotion construct could be related to social identity theory – non-Caucasians are more sensitive to the differences and, consequently, more attune to differences in rate of mobility as well as merely directionality. One would expect that any employee, regardless of ethnicity, who entered the organization at a mid-level job range was recruited for specific experience and, thus, would be more successful in their pursuit of job title promotions.

Analyses of Caucasian employees demonstrated different constructs than any of the other groups, with only two component clusters. The first structure, service, included expected independent variables of service category, service length, study length. Also included in the service construct for Caucasians was age at quit and years with job title increase (inverse relationship). Essentially, the results indicated that when a Caucasian joined the organization early in their career, the greater the age at quit, indicating longer service tenure period. The second construct, salary, was comprised of independent variables associated with salary and job title increases. This was not surprising since logically there is a direct relationship between salary and the job title level. It does not, however, explain why the construct for Caucasians differed from any other group. From a theoretical standpoint, the results provided support for the notion that Caucasians link

salary and job title, suggesting support for distributive justice theory, but other groups did not seem to demonstrate the same linkage. The significance of these two constructs for Caucasians speaks to normative organizational commitment whereby individuals' tenure in the organization increases so long as the employee feels that the organization recognizes contribution through salary and job title increases.

Logistic regression analyses techniques were employed in an effort to construct models to predict whether an employee would voluntarily leave the organization based on predictor variables associated with the three constructs, service, salary, and promotion. Binomial logistic regression was chosen over other methods in order to evaluate the effects of two dichotomous predictors.

Only two models emerged that could be considered helpful in predicting employee turnover probability. One binomial logit regression analysis predicted a 50% higher probability that trained employees would voluntarily leave the organization if they had similar service, salary, and promotion experiences as their untrained peers. Data-mining techniques employed to understand this difference, primarily segmenting the groups further into dichotomous ethnicity groups (Caucasian and non-Caucasian), uncovered an interesting difference. Trained Caucasian employees were more likely to leave the organization ($\beta = -.473$, $p = .003$). The predictor variables were training participation, study length, years with job title increase, average salary range, and job title range. The training predictor variable was the only one of five that was statistically significant.

The second model with predictive potential was for non-Caucasian sales professionals. When the non-Caucasian employee participated in training, they were 3.97 times more likely to remain in the organization even when there was no significant difference in the amount of salary increase. This model may be explained through the application of several theories.

Training participation is an intervention that can assimilate the individual into the organization and, thus, provide a deeper type of socialization, and thus, the individual feels more attached. This attachment supports the notion of social capital theory. This theory implies that individuals gain more success in a position due to the connections that they develop in the organization. During training participation, the individual meets others at all levels in other functional departments. This network can be leveraged enabling the non-Caucasian sales professional to do his or her job more effectively since the nature of the job requires interface at multiple levels within the organization.

Another theoretical explanation for lower levels of predicted turnover for trained non-Caucasians is that as the organization invests in the individual, normative commitment on the part of the training participants develops, and thus, the motivation to leave the organization diminishes. This may be further explained by social identity theory whereby the individuals begin to identify with fellow trainees more than the non-Caucasian ethnic group to which they belong. Training and development interventions, like the focal firm's training program, are a primary example of human capital theory. The firm's investment in the workforce can be viewed as a contribution to the balance sheet, namely human capital assets.

Training participation for Caucasians and non-Caucasians accounted for different factorial influence effects. The reasons for these differences are critical to understanding the predictive influence of the HRD intervention. One potential explanation for the factorial influence of training on retention of non-Caucasians is that training served a socialization role in mitigating the effects on members of the non-dominant group in terms of similarity theory, thus leveling the playing field and promoting assimilation into the organization. For Caucasians, training that consisted of organization-specific as well as transferable skills, may have improved self-efficacy, thus enabling trained Caucasians to improve their marketability as "free agents." Expectancy theory could be applied to explain that as Caucasians perceived that they had improved their knowledge and skill base, that the firm was obligated to promote through higher job titles and increased salary. Further, support for the expectancy theory rationale through the findings for Caucasians is the connection found between job title and salary increase and their predictive influence on voluntary turnover.

With regards to the purposes of the study, the following hypotheses were only partially supported:

H1a. The variables that affected employee status (VTO and non-VTO) are the same regardless of employees' personal characteristics.

H1b. The variables that affected employee status (VTO and non-VTO) are the same regardless of employees' work characteristics.

H1c. The factors that affected employee status (VTO and non-VTO) are the same regardless of HRD interventions that the employees have been attended.

H1d. The factors that affected employee status are the same regardless of VTO or non-VTO employee status.

The study results supported the following hypotheses dealing with the ability to develop predictive models of voluntary employee turnover. It is important to note, however, that in general the goodness of fit for these models was lower than originally expected.

H2a. There is a difference in the predictive model of voluntary employee turnover depending on employees' personal characteristics.

H2b. There is a difference in the predictive model of voluntary employee turnover depending on employees' work characteristics.

H2c. There is a difference in the predictive model of voluntary employee turnover depending on the HRD interventions that the individual has received.

Recommendations

From a practical standpoint, the study supports the recommendation that companies should broaden their scope when investigating remedies for employee turnover rates beyond salary and financial compensation. While it is incumbent on companies to maintain a competitive compensation structure, that in and of itself is not sufficient to curb unwanted employee turnover. Focused training and development programs serve a dual purpose. Firms provide training to enable employees to perform the functions of their jobs effectively so that they can produce the desired results congruent with company objectives and goals. But the less overt purpose of T&D

programs is to promote employee socialization leading to deeper levels of organizational commitment and, thus, lower employee voluntary turnover.

The results of this study support earlier work that posits that employers may not have to maintain a linear relationship between tenure and salary increases when they are investing in the employees' continuous professional development. These results present an opportunity for employers to add retention rates to the return on investment (ROI) calculation when considering the payback of human capital investments, namely training and development.

Companies should offer training and development curriculum and activities that are targeted with the firms' objectives clearly embedded rather than generic courses that impart skills that can be transferred easily to alternative employment opportunities. The nature of organizational commitment in contemporary business is compromised due to the downsizing trends of the past decade. Consequently, equipping employees with greater skills that could be exported to competitors could diminish the ROI of such activities.

Implications for Future Research

Further research is suggested to the scope to include a greater number of firms in similar industries. Conducting research by industry sector may be more telling than a broad brush approach that spans multiple market segments. It is expected that certain professions may exhibit more commitment to the profession than to the employing organization. For instance, employees in the healthcare industry may exhibit more commitment to the profession than the employer. Thus, a population of subjects who

mixes professions or industry segments may dilute the predictive potential of the research. Additionally, predictive models should be tested rigorously to ensure the robustness of the model.

Further analysis using survival analysis techniques, or duration analysis, could enable the focal firm to identify the vulnerable inflection point for employee voluntary turnover. Generally, survival analysis would enable tenure to voluntary turnover to determine when HRD interventions would be most effective in improving employee retention. Survival analysis only allows two variables to be loaded into the model, so to analyze the predictive strength of the three-component structures identified in the exploratory factor analyses, service, salary, and promotion, combinatorial analyses would be required. Similar work has been done in the area of employee retention (Sheridan, Slocum, Buda, & Thompson, 1990).

In light of the impending talent shortage due to the aging of baby boomers and lower birth rates in the two generations immediately following, there may be application for merging predictive models of employee retention and queuing models in order to determine ideal talent supply. This approach would view workforce staffing through a supply chain management (SCM) lens. Further, discussion of this concept is presented in Appendix A. This implies overlaying a systems approach to the phenomenon of employee voluntary turnover. Adopting this systems approach to the organization promotes a common ground that is fertile for viewing voluntary turnover in a binocular manner through an HRD and SCM lens simultaneously.

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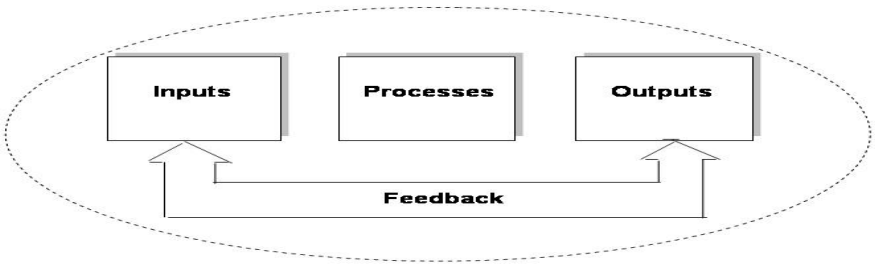
APPENDIX A

VOLUNTARY TURNOVER THROUGH A SCM LENS

VOLUNTARY TURNOVER THROUGH A SCM LENS

Supply Chain Management (SCM) is the methodology intended to effectively integrate suppliers, manufacturers, warehouses, and selling organizations, so that the right product is in the right place at the right time in a manner that addresses demand while optimizing efficiency (Simchi-Levi, Kaminsky, & Simchi-Levi, 2003). This notion of holism embedded in the operational definition of SCM is grounded to a large extent in Lewin's systems theory (New, 1997). Considering the Lewinian model of the organization that is commonly accepted in HRD circles as a system with inputs, outputs, and processes connected through a feedback mechanism, it provides a common vernacular for the analysis that will follow. Adopting this systems approach to the organization promotes a common ground that is fertile for viewing voluntary turnover in a binocular manner through an HRD and SCM lens simultaneously (Figure A1).

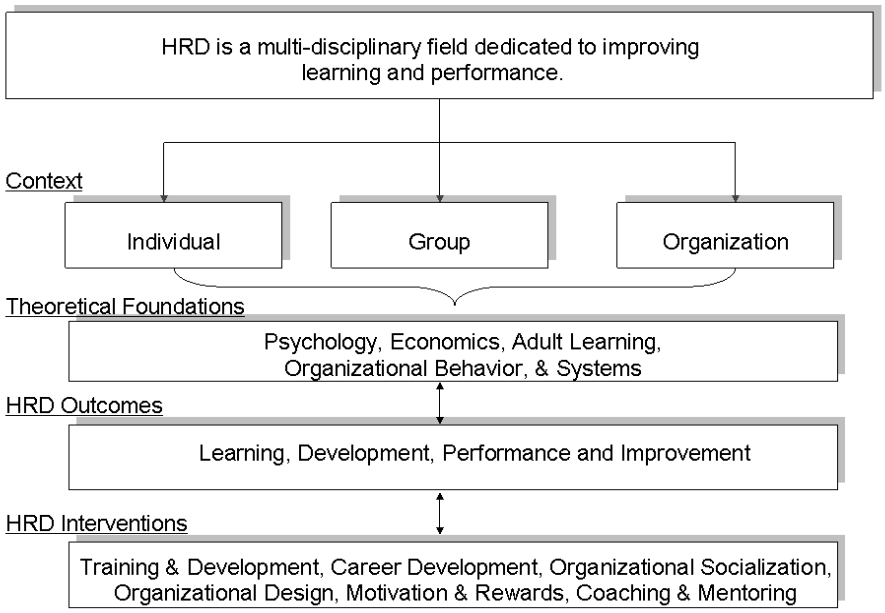
Figure A1. The Organization as a System.



Source. Dubin (1978).

In order to integrate HRD and SCM into a framework for future analysis through dual lenses, a brief discussion of HRD including the operational definition, context, theoretical foundation, foci, and interventions is probably in order. Figure A2 is intended to provide a framework that facilitates mapping the concepts from an HRD to an SCM perspective.

Figure A2. HRD Framework.



The supply chain can be explained in terms of a system comprised of interdependent units working together to achieve a mutually agreed upon set of goals and objectives. It should be noted that the terms supply chain, value chain, and demand chain are also used to explain the same or similar constructs (McCarthy, 2003). As a multi-disciplinary field, supply chain management (SCM), like HRD,

borrows theory and research from a number of disciplines – operations science, physics, business and management, finance, accounting, communications, the natural sciences, and information technology (Li, Kumar, & Lim, 2001; New, 1997). While the fields that they borrow origins from are different, the multi-disciplinary methodology is very similar. Another similarity between the two fields that suggests synergy for future study is the debate surrounding return on investment (ROI). HRD purists argue that return on investment is a concept aimed at the organization at the expense of the individual. In SCM, scholars often debate effective methods of measuring ROI for technology and systems (Bolstorff, 2002).

Drawing parallels between the two fields could be done at the micro or macro-levels. An interesting overall comparative theme between the applied fields is encapsulated in Uncles, Dowling, and Hammond (2003) introspective question, "why are there so few grounded principles?" (p. 101). The answer to this question for both fields may lie in the practitioners' dependence on know-how with little regard for theory and the scholars' dependence on theory with limited practical experience – another interesting parallel. Nonetheless, at the micro level, one could compare employee attraction to customer attraction, job satisfaction to customer satisfaction, or employee retention to customer retention (Table A1). Certainly, these comparisons could be supported through logic as well as inductive and deductive means. They tend, however, to oversimplify the concept of the organization reducing it similar to a Descartesian approach. Rather, it seems to make more sense to

compare the two fields in terms at the macro-level through an approach that is almost second nature to the SCM field, business modeling.

Table A1. Reductionist Comparison of HRD and SCM

Human Resource Development	Supply Chain Management
Employee Attraction	Customer Attraction
Human Resource Management	Asset Management Production Management
Job Satisfaction	Customer Satisfaction
Organizational Commitment	Customer Loyalty
Just-in-Time Learning	Just-in-Time Delivery
Quality Improvement	Total Quality Management
Personnel File	Supply Chain Operations Reference (SCOR) model

A fundamental element of supply chain management is the modeling approach that used to illustrate and simulate business processes in order to ensure seamless linkage. The supply chain can be thought of as a relay race of sorts with the players configured around a track and assigned to the position where they may provide the most value to the team. Like a river system with materials or supplies at one end of the waterway a well-configured supply chain begins with raw materials that flow through the manufacturing cycle to produce a product that floats downstream as the product is delivered to the customer at the other end. A cautionary

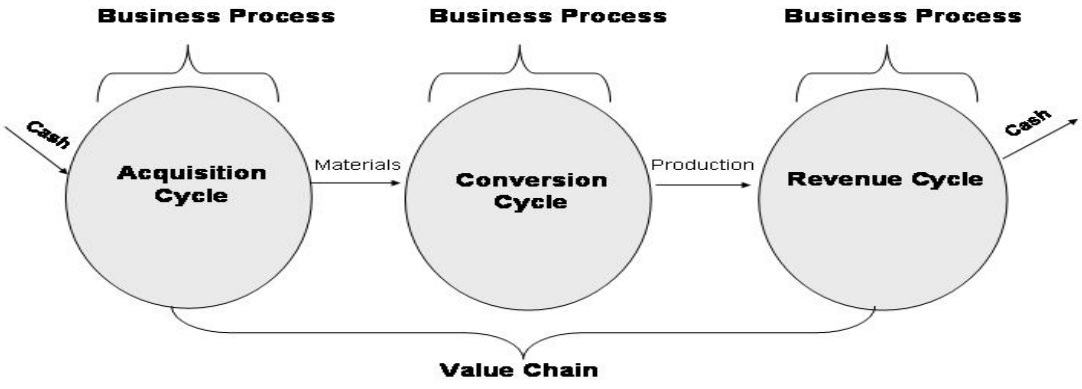
note about this metaphoric description – most scholars define the supply chain in terms of iterative processes rather than a series of single events.

Unlike the closed loop supply chain, the forward supply chain is depicted with the customer at the end of the process (Guide, Harrison, & Van Wassenhove, 2003). Voluntary employee turnover ends with the employee departing the organization, similar to product being delivered to the customer - thus, the adoption of a forward supply chain rather than the closed loop supply chain model that includes reverse logistics capabilities used in the material return process.

The Resource-Event-Agent (REA) business model, developed by accounting scholar McCarthy (2003), provides the model from which Figure A3 has been adapted to explain the value or supply chain inputs, processes, and outputs. This model is not to be confused with the basic REA model developed by McCarthy in 1982, but was a precursor to the model used to understand the value chain.

In this model, a business process is a suite of activities that originates with one or a series of inputs. Each business process is intended to produce something of greater value than the input from which it was derived. The value chain is the thoughtful and well-orchestrated configuration of these individual business processes (Figure A3). The end result is intended to be greater than the sum of the individual inputs, and thus provides an output that the customer values (McCarthy, 2003).

Figure A3. Adapted Business Process and Value Chain Model.



Adapted from McCarthy (2003)

The REA model has been accepted as a theoretical accounting information system (O'Leary, 2004). Simplified, it is a series of linked business processes that include inputs (resources), processes (events), and outputs (products that are consumed by agents) and bears an uncanny resemblance to Dubin's (1978) organization model as a system model. Scholars classify the REA model in the domain ontology when they state,

> The REA model already resembles an ontology where that term is taken to mean "a specification of a conceptualization: the objects, concepts, and other entities that are assumed to exist in some area of interest and the relationships that hold among them." (Geerts & McCarthy, 2001, p. 4)

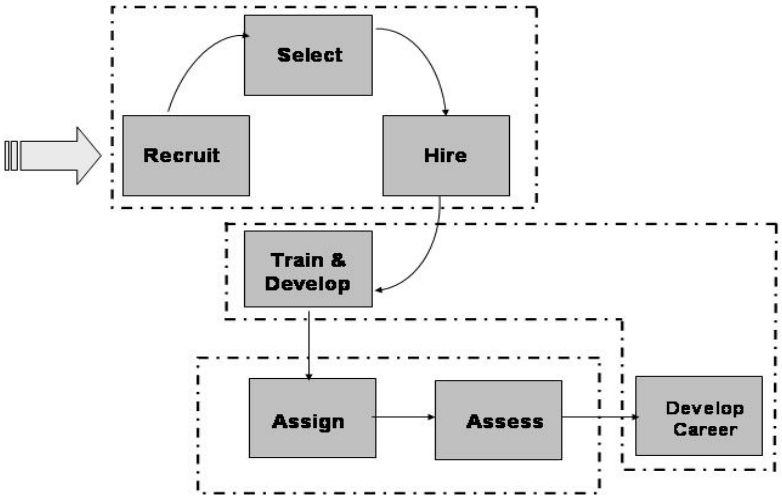
The full-REA representation includes a policy infrastructure that governs the accountability infrastructure, with the policy aspect dealing with type images of what could or should be and accountability infrastructure focusing on the actual business events or namely what has happened or been committed to (Geerts & McCarthy, 2001).

Interestingly, like Dubin's systems definition of the organization, the communication or feedback is critical to the long-term success of the supply chain. In the REA model, an internal agent gives something of value to an outside party for an economic exchange (Geerts & McCarthy, 2001). Like simple accounting practices, every transaction in the REA model can be traced to a mirror image offsetting transaction. This reciprocity implies a descriptive paradigmatic orientation with an action-reaction modeling approach and also implies a forward supply chain.

With this theoretical framework for the forward supply chain clearly delineated, it should follow that future research on employee retention using a SCM model approach could inform both disciplines. In the forward supply chain, the goal is to deliver the product to the customer using effective methods and efficient processes that facilitate value to all of the stakeholders. Similarly, HRD is tasked with facilitating the human resource aspects of organizational learning and performance. By looking at the role of HRD in terms of the REA model, it may make sense to review the model originally presented in Figure 6. This time the model includes dotted line shapes that connect the business processes in SCM language or interventions in HRD terminology (Figure A4).

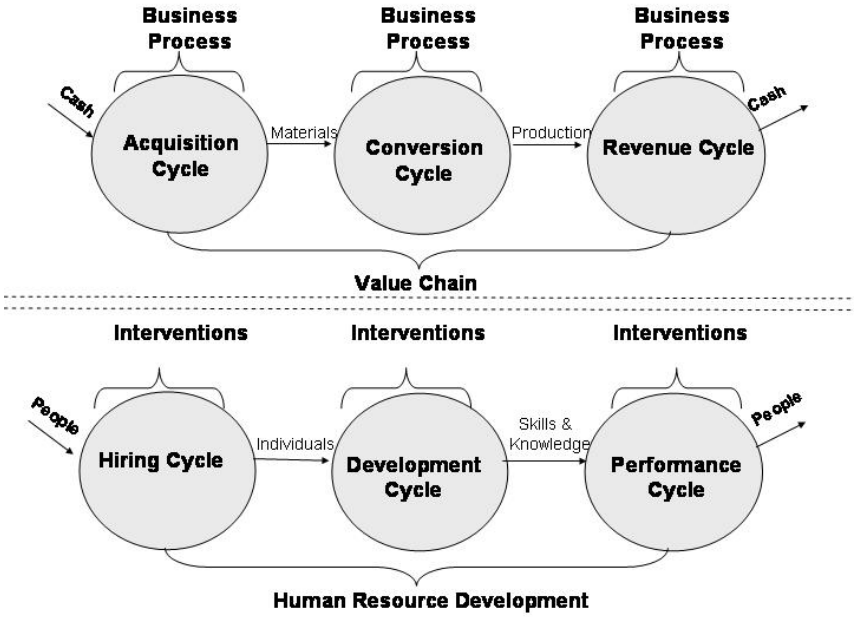
The combination of these activities is the HRD model that may be compared to McCarthy's value chain model. This activity is intended to highlight the similarities between business processes in the SCM value chain and interventions in human resource development (HRD) model (Figure A4).

Figure A4. HRD Interventions as Business Processes.



The model is intended to depict the similarities between HRD and the value chain, but without understanding the HRD interventions making that jump to voluntary employee turnover is not as obvious. Consequently, it is important to consider the HRD interventions that are involved in each of the circles identified in Figure A5. It should be noted that these models are organizing frameworks rather than research models that were tested through empirical means.

Figure A5. Value Chain and HRD Similarities.

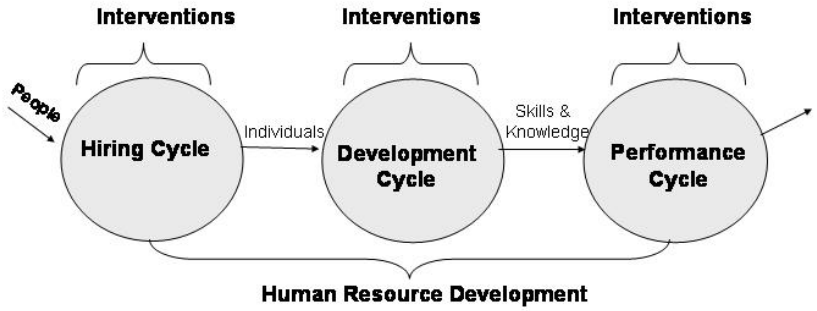


Arguably some of these activities could be considered a human resource management (HRM) activity, especially in the hiring cycle. During the first circle, the hiring cycle, the human resource activities include identification of recruits, the recruitment activities, and some of the more HRD activities such as realistic job preview, expectation lowering procedures, and the formal and/or informal socialization process as depicted in Figure A6.

The development cycle, the second circle, is clearly positioned in the HRD realm with T&D, CD, evaluation and assessment, organization development, and coaching and mentoring interventions involved. The third circle of the model, performance cycle, deals with some of the more strategic HRD activities. This cycle

involves rewards and motivation, supervisor support, coworker support, and work design – factors that influence job satisfaction and organizational commitment.

Figure A6. Employee Retention and HRD Interventions.



Interventions

Hiring Cycle	Development Cycle	Performance Cycle
Recruitment & Identification	Training & Development (T&D)	Rewards
Realistic Job Preview	Employee Evaluation & Assessment	Motivation
Expectation Lowering Procedure	Coaching & Mentoring	Supervisor Support
Formal/Informal Socialization	Career Development (CD)	Co-worker Support
	Organization Development (OD)	Work design

Mentioned earlier as a comparison to HRD evaluation and assessment, the SCOR model is a tool used by supply chain partners for planning, aligning, evaluating, and assessing SCM performance. The SCOR model is a process reference tool that was introduced in 1996 by the Supply-Chain Council (Bolstorff, 2002). Simply explained, the SCOR model comprised of four process elements – plan, source, make, and deliver – has proven instrumental in aligning definitions, operational strategies, material, work, and information flows between supply chain partners (Supply-Chain Council, 2002).

The model culminated from collaborative efforts of 69 firms and involved four distinct steps:

1. Business process re-engineering – Identify and describe current state and desired end state;
2. Benchmarking – Quantify results of firms in the focal industry and identify best in class;
3. Identification of best practices – Characterize the management practices and tools used by the best in class company;
4. Development of SCOR model – Establish target goals and align with supply chain partners (Supply-Chain Council, 2002).

While the SCOR model in its current form cannot be used in the HRD field, adaptation of the tool to the model proposed in Figure A3 may be a worthy endeavor. The four integrated processes of plan, source, make and deliver in a SCM arena might translate to plan, hire, develop, and perform in HRD. Since trust, support, and justice are factors that influence job satisfaction and organizational commitment – both antecedents of turnover intention and ultimately voluntary avoidable turnover – then a tool that aimed at improving alignment between employees and the organization is expected to improve these factors and lead to improved employee retention.

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