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How well do you know your employees? A contribution towards understanding employee turnover.

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How well do you know your employees? A contribution towards understanding employee turnover.

Abstract

This large-scale, multi-country study aims to examine the relation between individual, organizational and managerial factors and voluntary turnover in a communications technology organization.

A comprehensive review of academic literature on employee turnover theories and meta-analysis studies is used to introduce turnover hypotheses along with a set of moderating factors.

Linear Probability and Probit models are used to analyze longitudinal employee data from the organization's human resource information system. The results indicate that traditional individual, organizational and managerial factors such as tenure, performance, manager support and employee rewards have an effect on employee turnover. Specific implications for managers on how to thwart employee turnover are introduced. This study contributes to the existing research on turnover by proposing a way in which human resources professionals can diagnose employees at fly risk using employee records and consequently developing the appropriate retention actions. Research limitations and future research are discussed.

Keywords: voluntary turnover; perceived supervisor support; pay; employee skills.

JEL classification: J63; J31; J24

1. Introduction

For more than one hundred years management scholars have theorized about and empirically investigated the causes of employees' voluntarily leaving jobs (Hom, Lee, Shaw, & Hausknecht, 2017), commonly defined in studies as voluntary turnover or turnover. The effects of turnover in organizations can be detrimental to their business performance and affect their market credibility. High turnover rates have negative effects on the productivity and financial performance of organizations (Hogan, 1992; Huselid, 1995; Call, Nyberg, Ployhart, & Weekley, 2015). In addition, researchers have found that organizations facing high turnover can underperform their competitors (Hatch & Dyer, 2004). Recent studies concluded that the overall cost of employee turnover is between 90% and 200% of the departing employee compensation (Cascio & Boudreau, 2015). But turnover also creates intangible effects, which affects organizational culture, employee morale, social capital and organizational memory (Morrell, Loan-Clarke, Arnold, & Wilkinson, 2008).

Employee turnover has been studied from psychological and labor economics viewpoints. Psychological antecedents such as job satisfaction, job performance, pay and organizational commitment offer attitudinal explanations of turnover at the employee level. At a macro level, demographic, economic factors and geographical conditions have been proposed as antecedents of turnover (Felps et al., 2009). While studies have consistently shown that the proportion of variance in voluntary turnover has been explained by the same group of attitudinal, organizational and managerial predictors (Felps et al., 2009), researchers have introduced different models and survey items in an attempt to shed more light about turnover patterns. However, Russell (2013) contends that survey constructs have historically being unable to predict more than 15 to 20% of the variance in turnover so attempting to find new survey measures of employee turnover will hardly address more than that. From a management relevance point of view, the plethora of survey items and models has not been noteworthy in managerial practice, despite turnover being critical to organizations (Holtom, Mitchell, Lee, & Eberly, 2008). It would be difficult to envision human resources departments constantly surveying employees in order to determine their turnover likelihood.

Fields (2002) proposed that organizations can gain competitive advantage by mining and using the data in their internal human resource information systems (HRIS). By analyzing employee information captured from organizations' systems he suggests ways in which managers can better

manage and develop top performers, or how statistical and econometric analysis can be used to assist an organization in its employee retention efforts (Fields, 2002a). Other researchers have also used information from human resource systems in their studies. Morrow, McElroy, Laczniak and Fenton (1999) used company data from employees who stayed and left the organization, applying logistic regression to determine the effects of prior absenteeism and performance on voluntary turnover. Schlechter, Syce and Bussin (2016) used data extracted from an insurance company HRIS and applied regression procedures to predict employee turnover using various demographic characteristics. Even in the case of turnover research that is based on constructs requiring the use of survey instruments, researchers have been able to leverage demographic information and other employee records to closely replicate survey-based studies. For example, Tanova and Holtom (2008) swapped the need to collect information through a survey instrument by using instead a large European dataset that contained information about a wide variety of variables related to turnover.

Employee information can yield important signals to predict employee likelihood of departure. Individual items studies and meta-analysis have identified numerous predictors of turnover. For example, Rubenstein, Eberly, Lee and Mitchell (2018) have summarized turnover predictors that include a) individual attributes such as tenure with the organization, age, gender; b) employee behavioral predictors such as job performance; c) aspects of the job such as job characteristic (e.g. being a supervisor vs. being an individual contributor), and pay; d) person-context predictors that include the supervisor relationships. Organizations collect overtime these and many other data that reflect the employee history with the company and could be used to better understand the likelihood of employees' turnover.

With these considerations in mind, this paper formulates the following research question: are specific individual, organizational and managerial factors conditionally related to turnover?

Specifically, this research aims to examine the relation between employee performance, age, tenure, gender, conflict management and interpersonal skills, work location, perceived supervisor support, pay, promotions, and voluntary turnover in a communications technology organization.

In addressing the research question, this paper has three distinct but related objectives. The first objective is theoretical. Borrowing turnover literature from the psychological school, a research model is introduced. This study is rare because it utilizes human resources data from a global technology organization spanning five years, 58 countries and includes several control variables for

organizational factors such as job family, job role and job level. Furthermore, the longitudinal nature of this study allows to control for unobserved characteristics (e.g. macroeconomic factors) for the variation between years and the variation between countries. Research on employee turnover based on longitudinal data is somewhat limited (Kang, Pan, & Ha, 2018). A review in Scopus of turnover studies using longitudinal data confirms the authors' findings. In the last 18 years, 28 academic articles using longitudinal data were identified, 17 of which covered only one country and the rest were studies on a single family of jobs and or single employee characteristics (e.g. males, nurses, engineers, etc.).

The second objective is to empirically test the relevance of different potential determinants of turnover utilizing data from the company human resources system. The data set contains five years of employee information about their demographics, performance, pay, promotions, management, and also about specific individual job conditions of those employees who stayed and left the organization. The data is analyzed in this study using statistical methods to understand the direct and indirect effects of these variables on individual turnover.

The third objective has practical implications and aims to address the objection raised by Russell (2013) that turnover models offer little practical tools for managers to address "real world turnover problems" (p. 116), and the suggestion by Holtom et al. (2008) that turnover research does not offer substantive practical application to managers. By using tangible data about employees, which is normally available in human resources systems in any organization, instead of turnover surveys with complex items that require proper contextual validation, the analysis can be reproduced by human resources professionals in other organizations. A practical approach to understanding turnover is offered in this study, using variables that are readily available for managers and have proved to have an effect on turnover. This approach could turn the prediction of turnover into actionable information for managers to make any required organizational changes.

2. Literature Review

Individual voluntary turnover has been defined as "voluntary cessation of membership in an organization by an individual who receives monetary compensation for participation in that organization" (Hom & Griffeth, 1995). Employee turnover has been studied from a psychological (i.e., micro) and labor economic (i.e., macro) angles. The psychological school emphasizes aspects related to members affect and relationships, commitment and organizational climate, and the labor economics school offers an account of the effects of external variables such as job opportunity on

turnover (Morrell, Loan-Clarke, & Wilkinson, 2001). Despite the massive body of research done on employee turnover, there is not yet a universally accepted framework for why employees choose to leave an organization (Lee & Mitchell, 1994) and turnover research has been dynamic and ever-changing (Hom et al., 2017). This literature review presents a summary of the most important theories developed since the mid twentieth century focusing on those that are representative of the major trends, along with the results of the recent meta-analysis on the main turnover precursors. The review is organized chronologically because earlier theories constitute the building blocks upon which more complex models were developed. Turnover research has evolved in terms of improvements in predictor measurement and research designs (Griffeth, Hom, & Gaertner, 2000).

Table 1: Voluntary Turnover Taxonomy (self-elaborated)

Psychological Theories	Attitudinal Models (why individuals leave)	Distal & Proximal Antecedents > Quit Intention > Turnover	March and Simon (1958) Mobley (1977) Price (1977) Price & Mueller (1981, 1986) Porter et al. (1974) Meyer & Allen (1997)
	Integrative Frameworks (why and how individuals leave)	Unfolding Model	Lee & Mitchell (1994)
		Turnover Decision Types	Maertz and Campion (2004)
	Attitudinal Models (why individuals stay)	Job Embeddedness Theory	Mitchell et al. (2001)
Labor Economics Theories	Search Theory	Job Vacancy Theory	Holt & David (1966)
		Multidisciplinary model	Muchinsky & Morrow (1980)
	Objective Job Opportunities	Labor market > Job Satisfaction > Turnover	Hulin et al. (1985)

2.1 The Psychological Theories.

The psychological school has studied turnover from a causal perspective to understand the reasons why employees depart from an organization and from a process standpoint to understand how the decision to leave unfolds over time. From a causal viewpoint, the majority of the turnover models assume the following constructs: distal antecedents (e.g., job characteristics, personality), attitudinal

or proximal antecedents (e.g., job satisfaction, performance), outcomes (quit intentions and voluntary quits) (Hom & Griffeth, 1995).

2.1.1 The attitudinal models.

The first formal theory of employee turnover was developed by March and Simon (1958)¹. Their study established the basis of the attitudinal path models that explain turnover. According to the authors, two factors cause employees' decision to leave: perceived desirability of movement (current perceived value of job conditions, or satisfaction with the job) and perceived ease of movement (perceived assessment of alternatives, or quality and availability of job alternatives). While the model did not include any other important variables that affect the turnover process like employee satisfaction or organizational commitment and it was not empirically validated, the basis of their theory was later expanded through the work of Mobley (1977); Mobley, Horner, and Hollingsworth (1978); Price and Mueller (1981); and Sheridan and Abelson (1983). Those studies turned the notion of job conditions and perceived job opportunities into attitudinal models that explain turnover following a direct path: employee dissatisfaction leads to thoughts of quitting which leads into search decisions and quit intentions, and finally materializes in actual turnover.

Mobley (1977) proposed a similar linear order of events that finishes in job quits, with the addition of the subjective expected utility (SEU), an evaluation made by the individual about the value of the job search and the estimation of the quitting cost as intermediate connections between satisfaction (or dissatisfaction) and quits. According to Mobley, job search and perceived alternatives are key tenets explaining turnover and intermediate steps or linkages in the quit decision course that follows the initial job dissatisfaction that triggers the withdrawal process. At every step, the individual evaluates the expected utility of a job search and the cost of quitting. If the expected utility of a job search outweighs the cost of quitting, then the individual moves to the next step in the withdrawal process, completing an actual job search where all the alternatives are evaluated against the existing job. If alternatives are feasible, the process continues until the individual finally quits. Mobley's constructs have been utilized and validated by different studies to date (see e.g. Miller, Katerberg, & Hulin, 1979; Michaels & Spector, 1983; Lee, Mitchell, Wise, & Fireman, 1996; Lee, Mitchell, Holtom, McDaniel, & Hill, 1999; Wittmer, Shepard, & Martin, 2014).

¹ For a recent review see Hom et al. (2017).

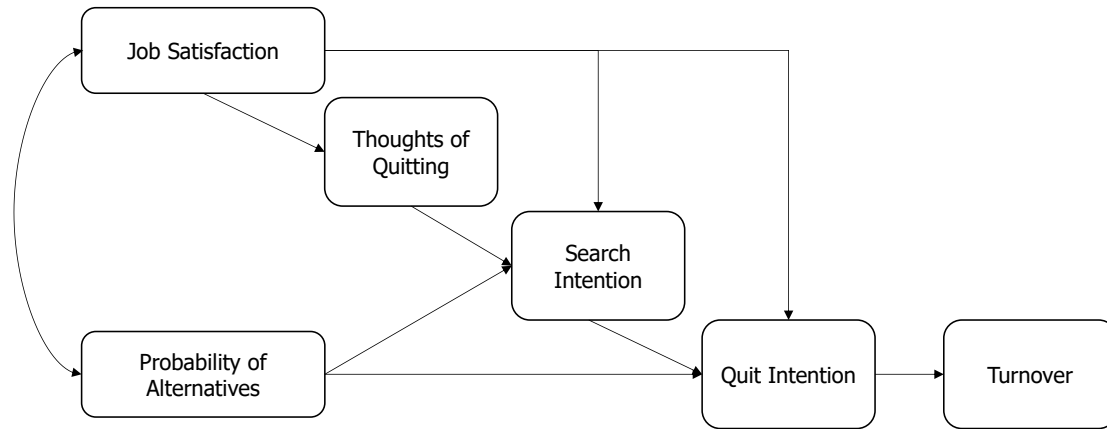


Figure 1: Turnover Linkages Model (Mobley et al., 1978).

Price and Mueller (1977, 1981, 1986) contributed to the established work on attitudinal models by adding a broad collection of turnover determinants that included a) job satisfaction, defined as degree to which employees have a positive affective orientation towards employment in the organization (Gurney, Mueller, & Price, 1997), and b) organizational commitment, a term initially used by Porter, Steers, Mowday and Boulian (1974) to explain variance of turnover that was not accounted by job satisfaction. Both job satisfaction and organizational commitment have been considered essential antecedents of turnover and their empirical relationships have been firmly established through numerous studies. In their research, Price and Mueller proposed that turnover determinants (excluding job opportunities) were connected to turnover indirectly by affecting job satisfaction, commitment or intention to leave, which in turn were proximal antecedents of turnover in that order.

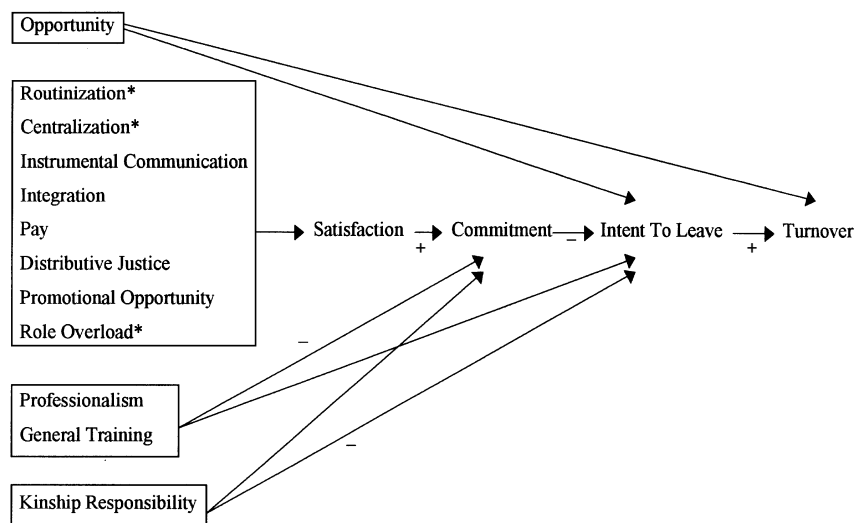


Figure 2: Causal Model of Turnover (Price & Mueller, 1981).

Empirical validation of their model affirmed that the majority of the explanatory constructs play some role in the quit process (see e.g. De Gieter, Hofmans, & Pepermans, 2011). Gaertner (1999) conducted a meta-analysis on nine empirical studies by Price and Mueller to examine the empirical relationship between structural determinants of turnover with job satisfaction and organizational commitment. He found that the majority of structural determinants in the model were directly related to job satisfaction and concluded that a negative effect of those determinants causes dissatisfaction and low commitment, leading to turnover intention and actual turnover. The exception was pay, which was directly related to turnover.

2.1.2 From content to process: Integrative Frameworks.

A different approach to turnover theories, integrating the quit process with turnover content theories was introduced in the mid-nineties with the publication of the Unfolding Model of Turnover (Lee & Mitchell, 1994). The model is a retrospective classificatory account of voluntary turnover that considers leaving a job as the culmination of a decision process affected not by dissatisfaction reasons but rather by some jolting incident that causes the person to evaluate the implication of such event in relation to his or her job. Hence, this model analyzes first why people leave (content) and second, how people leave (process) (Hom et al., 2017). The Unfolding Model is based on the Image Theory (Beach, 1992) which describes how individuals make rational choices using schematic knowledge structures to organize their thinking about decisions. Faced with a shock, “a very distinguishable event that jars employees toward deliberate judgments about their jobs” (Lee & Mitchell, 1994: 60), the employee considers leaving and different decision paths unfold. In a first path, the individual executes a previously conceived plan (script) to quit. In this situation, alternatives are not evaluated and the individual leaves rapidly. In a second path, a shock provokes a dissonance between the present job situation and contrasting images based on the employee's value image, or personal principles that makes them to reevaluate their commitment to the organization. A third path occurs when the individual receives an unsolicited job offer that prompts to compare his/her job with future prospects to decide if he/she can stay in the current job. In a fourth and final path leavers do not experience a shock. Rather, a violation of their image occurs over time, eventually becoming a quit scenario with or without job search alternatives.

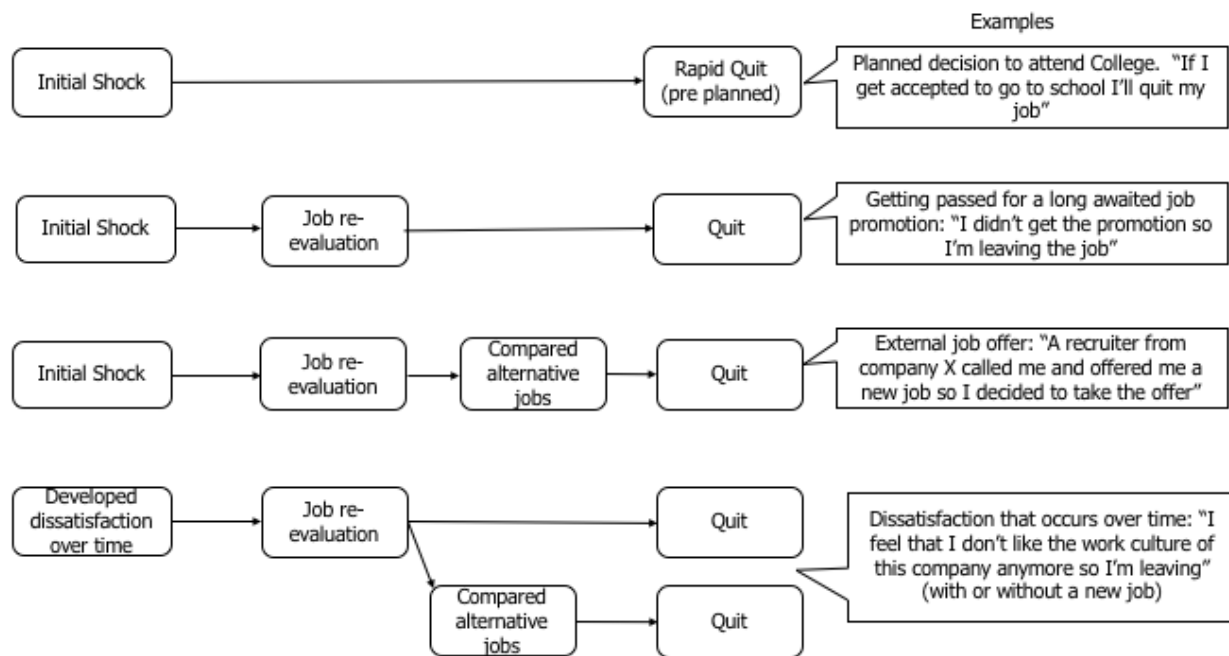


Figure 3: Unfolding Model of Turnover (Lee & Mitchell, 1994). Examples self-elaborated.

While some studies provide evidence in favor of the validity of the model (Lee et al., 1996; Holtom et al., 2008; Felps et al., 2009; Kammeyer-Mueller, Wanberg, Glomb & Ahlburg, 2005) there have not been a meta-analysis on primary studies of the Unfolding Model. Russel (2013) reported that the lack of meta-analyses of primary research studies testing Unfolding Model predictions is due to primary research studies not reporting estimates of how well forecasts from the Unfolding Model incrementally improved voluntary turnover prediction beyond the attitudinal path models.

Morrell et al. (2001) made four objections to the Unfolding Model. First, they found that single survey items were related to more than one construct leaving the instrument vulnerable to forcing the data into more than one construct, which undermined discriminant validity. Second, the original survey did not ask leavers why they left. They argued that asking a generic question about the reasons for leaving can provide contextual clarity that highlights the understanding of the reasons to quit. Third, the model used too many dichotomous measures, hence simplifying the complexity of the quit phenomenon because of the fewer data points along which respondents' scores may lie. Fourth, the shock construct was defined rather loosely, making the construct open to interpretation. Perhaps the most important element of their analysis is that the authors found that the model failed to classify a substantial number of leavers (23%) in a study that the authors conducted using the Unfolding Model. Niederman, Sumner, and Maertz Jr., (2007) completed a similar study to test the classification

accuracy of the Unfolding Model, classifying the quit decision paths of information technology employees. The research found that 88% of the respondents left their jobs using other decision paths that were not part of the original Unfolding Model.

Following a similar research track, Maertz and Campion (2004) proposed a model of turnover that combines how people leave a job (process) with their reasons to leave (why). Building on the Unfolding Model constructs the authors proposed a somewhat different classificatory model of leavers using four path types and eight content motives for leaving. From a process perspective, their four generic turnover decision types are 1) impulsive quitting: leaving because of low attachment; 2) comparison quitting: leaving for an alternative job; 3) preplanned quitting leaving with a preconceived plan; 4) conditional quitting leaving with a conditional plan. In addition, the authors proposed eight categories of motivational forces that drive individual turnover. 1) affective: commitment to the organization; 2) contractual: desire to fulfill perceived obligations; 3) constituent: commitment to people/groups; 4) alternative: perceived job alternatives; 5) calculative: perceived future satisfaction with continued organization membership; 6) normative: burden to stay or leave; 7) behavioral: behavioral commitment to the organization; 8) moral: ethical dilemma about quitting. Based on Maertz and Campion process types and motivational forces model, Maertz and Boyar (2012) proposed the Turnover-Attachment Motive Survey (TAMS). The instrument consists of 18 scales to aid in a more systematic diagnostic of turnover causes. Studies that have used this instrument have shown evidence of internal consistency, and predictive validity that warrants its use to assess turnover causes (Maertz 2012; Oliveira et al., 2016), demonstrating that like the Unfolding Model, content and process factors on turnover can be integrated in a unified framework (Hom et al., 2017).

2.1.3 Why employees stay.

The last significant shift in turnover research happened in 2001 when the Job Embeddedness Theory was introduced by Mitchell, Holtom, Lee, Sablinski and Erez (2001). The central argument of the theory is that the reasons that people have to leave their jobs could be different than the rationale for staying. Although departing is the opposite of staying, turnover drivers (e.g., unfair or low pay) may differ from what induces a person to stay (e.g., training opportunities) (Hom et al., 2017). The theory is anchored in a set of mechanisms linking socialization that happens on the job (organization) and off the job (community) with employee retention happening through: 1) the links between the individual and other people and groups; 2) the perceptions of their fit with the job, organization,

and community; 3) the belief about what they lose if they quit their jobs. Basically, when employees perceive their relationship with the organization as supportive, caring, and entailing positive social exchanges they become embedded within the organization. In this aspect, the embeddedness theory follows premises anchored in the Social Exchange Theory that affirms that organizations are environments for personal transactions where the degree of support for its members affects job satisfaction, commitment, turnover intentions (Randall, Cropanzano, Bormann, & Birjulin, 1999).

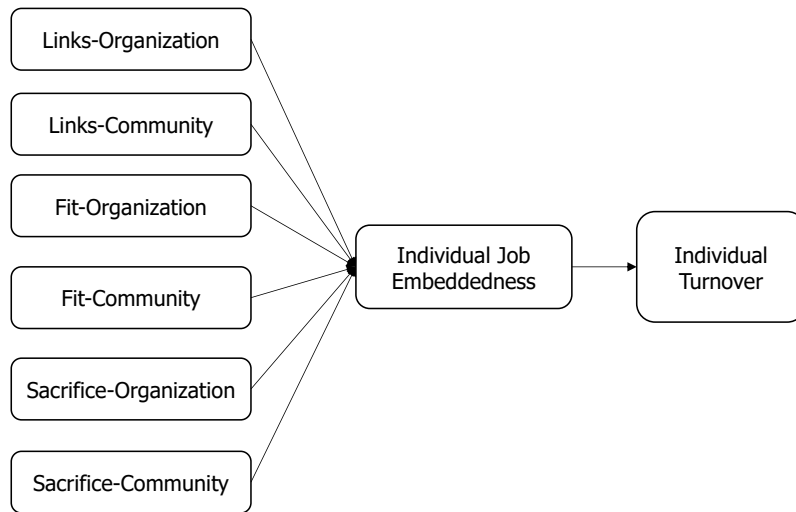


Figure 4: Job Embeddedness model (Mitchel, Holtom, Lee, Sablinski, Erez, 2001).

The Job Embeddedness Theory has been widely cited (Allen & Griffeth, 2001; Allen & Shanock, 2013; Karatepe, 2013; Robinson, Kralj, Solnet, Goh, & Callan, 2014; Porter, Woo, and Campion, 2016). However, there is no consensus among researchers about the impact of community links as additional predictors of quit behavior. Zhang, Fried, and Griffeth (2012) provide a good summary of recent studies that found disparate empirical results on the relationship between off the job factors (community) and turnover. In many instances all three dimensions of community embeddedness (community links, fit, and sacrifice) do not show a significant relationship with job turnover. The authors concluded that compared with organization embeddedness, community embeddedness is not a stable predictor of turnover.

Table 2: Relationship between Community Embeddedness and Turnover (Adapted from Zhang et al., 2012).

Study	Industry Sector or Demographic Group	Links (*) Community	Fit (*) Community	Sacrifice (*) Community
Mitchell et al. (2001)	Hospital	Significant	Significant	Significant
Mitchell et al. (2001)	Grocery stores	Significant	Not Signific.	Not Signific.
Lee et al. (2004)	Financial	Significant	Significant	Not Signific.
Crossley et al. (2007)	Public Org.	Not Signific.	Not Signific.	Not Signific.
Ramesh & Gelfand (2010)	Call Center	Not Signific.	Not Signific.	Not Signific.
Mallol et al. (2007)	Caucasian employees	Not Signific.	Not Signific.	Not Signific.
Mallol et al. (2007)	Hispanic employees	Not Signific.	Not Signific.	Not Signific.

* Community embeddedness and turnover relationship was negative in all cases.

2.2 The Labor Economics Theories

On the macro side, economic research often looks at particular industries or localities to explain how market forces such as unemployment rates or job supply and demand affect the frequency which people leave their jobs (Banerjee & Gaston, 2004). Those variables affect individual perception about ease of movement, job search and the expected benefits from leaving. Some empirical studies have supported this view, showing that labor market conditions can impact turnover rates (see e.g. Terborg & Lee, 1984; Mortensen & Pissarides, 1999; Heckman & Pages, 2000; Clement & Law, 2016; Schmidt, Willness, Jones, & Bourdage, 2016; Andersen, 2017). Morell (2001) affirms that while a labor economic view of turnover allows researchers to develop theories and models based on quantifiable variables, this can only be done after assuming that parties in the job market have perfect knowledge of opportunities, something that is not feasible in reality. In order to account for this imperfect knowledge of the job market, some theories have been proposed.

2.2.1 Search theory.

Labor economists have used the concept of search theory to explain how workers optimize their job search strategies to find the optimal balance between the cost of a delayed decision and the value of searching again. Holt and David (1966), pioneered the concept of a reservation wage that allows individuals to decide at which salary level they will accept a job offer, faced with limited and imperfect information from the job market. In that way, turnover and job vacancy are related through a price dimension (wage) that is used by the individual to compare the expected benefits of taking a new job compared to his or her current job conditions.

The basics of job search theory has been refined and expanded through many studies over the years (see e.g. Hyde, 2005; Pries & Rogerson, 2005; Yashiv, 2007). In particular, search theory has been used by researchers to explain the probability of turnover, because the economic interpretation of job search inherently has the notion that search generates alternatives, which is a precursor of quitting. For example, Drenzo and Greenhaus (2011) introduced a model by which individuals engage in ongoing cycles of job search activities that can increase the likelihood of voluntary turnover. A central argument against the use of search theory to explain turnover is that job search and job opportunity are part of a larger multifaceted phenomenon that cannot be described using only impersonal variables and a rational-economic notion of decision making (Morell, 2001).

Partially counteracting the criticism of the pure rational-economic view of search and quits, Muchinsky and Morrow (1980) combined purely economic factors with psychological and sociological factors. Basically, they argued that three determinants have an effect on turnover: 1) individual factors that describe the personal characteristics of the employee (e.g., age, tenure, aptitude); 2) work-related factors that describe the interface between individual and the organization (e.g., supervisory characteristics, job satisfaction, pay); 3) economic opportunity factors that measure the state of the economy indexing national, regional, or occupational employment and the opportunity to obtain work (e.g., unemployment, inflation). The authors proposed that economic factors moderate the degree to which individual and work-related factors affect turnover. Individual and work-related items will be more predictive of turnover under flourishing economic conditions than when the economy is weak. For example, they proposed that during periods of high inflation labor retention is enhanced because fewer individuals can afford to move to other jobs. While the authors combined psychological and economic factors, the major premise in their model is that economic factors are the strongest determinant of turnover and serve to adjust the degree of predictability of the work-related and individual factors. Their research model goes into great level of detail to explain which economic variables affect turnover: the state of the labor market, the sector of activity, and the geographical location of the organization.

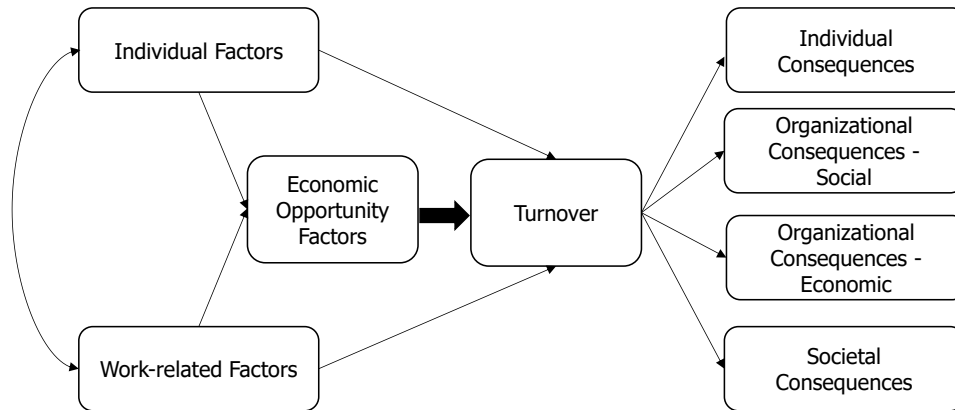


Figure 5: Multidisciplinary Model. Muchinsky and Morrow (1980).

Using the Multidisciplinary Model, Carsten and Spector (1987) conducted a meta-analysis to establish the relation between job satisfaction - turnover correlations across studies and unemployment rates at the time those studies were conducted. The authors found evidence that the underlying rate of unemployment could affect the relationship between job satisfaction and turnover with correlations between unemployment rates and satisfaction–turnover relations ranging between $-.18$ to $-.52$ across studies. Similarly, other studies have affirmed the argument made by Muchinsky and Morrow that market conditions moderate the relation between individual and work-related factors and turnover (see e.g. Gerhart, 1990; Steel, 1996; Trevor, 2001; Latzke, Kattenbach, Schneidhofer, Schramm, & Mayrhofer, 2016; Lee, Fernandez, and Chang, 2018)

2.2.2 Objective job opportunities.

This research branch seeks to explain why unemployment data are not useful when it comes to explaining or predicting individual decisions to quit. Hulin, Roznowski and Hachiya (1985) reviewed articles and empirical studies on job opportunities in relation to turnover and found a discrepancy between the labor market studies and research done at the employee decision level. At a macro level (labor market), unemployment rate correlated high with employee turnover rate in a geographical area or industry sector. At the employee level, the aggregated labor market data such as unemployment rate did not explain much of individual decision to leave. While at the macro level correlation between unemployment and turnover is high, the influence of labor markets and job opportunities to predict individual turnover is just negligible. The authors offered three explanations for the discrepancies between the theories and macro data on the one hand and individual decisions on the other hand:

- 1) Different economies produce different work forces. When the economy is expanding, a surplus of job vacancies and rising wages may attract workers into the labor market who are normally not part of the regular labor force. Those workers may manage to increase their saving because of the high wages and eventually, when the surplus of jobs drives wages down, they may drop out of the labor market, producing a high correlation between turnover and unemployment.
- 2) Job opportunities influence job satisfaction directly. A greater expected utility created by abundant opportunities in the labor market, decreases job satisfaction, and job satisfaction may affect turnover indirectly through behavioral intentions to quit. Hence, better economic conditions can create advantageous labor markets, more job alternatives, and lower job satisfaction. Therefore, the labor market effect on individual turnover is that satisfaction is influenced directly by economic activity.
- 3) Job opportunities, not quit intention, influence turnover directly. This explanation proposes that job opportunities affect the individual decision to leave directly, instead of through the relationship between “behavioral intention to quit” and “actual quit”. The authors argue that people quit on the basis of a real job opportunity instead of through an evaluation of probabilities that the individual makes based on alternatives available jobs, which happens as part of the “intention to quit” construct according to the attitudinal theories². Being dissatisfied without an alternative job offer would not necessarily end in quitting. It requires both job dissatisfaction and a job offer for a quit decision to materialize.

2.3 Meta-analytics studies.

In order to provide a more complete overview of the job turnover research, it is important to mention the meta analytic studies done on all major turnover theories and models, focusing on the most relevant and recent reviews. Hom and Griffeth (1995), and Griffeth et al. (2000) completed a wide-ranging quantitative review of the predictive strength of numerous turnover antecedents. Hom and Griffeths’ study included results from 42 studies and more than 500 correlations and incorporated an analysis of several moderators of antecedent-turnover relationships. Their analysis revealed that moderators such as regional unemployment or type of occupation influence the effect sizes and direction of several determinants can vary across situations and populations. Expanding Hom and

² For example, Mobley et al. (1978) research included the “intention to quit” construct. However, their findings showed no significant correlation between the probability of finding an acceptable alternative job and the individual reports of thinking of quitting.

Griffeth's meta-analysis, Rubenstein, Eberly, Lee, and Mitchell (2018) updated turnover predictors with new reports on their effect sizes and testing a set of substantive moderators, considering those factors that might intensify or mitigate turnover effects. Their analysis included 57 predictors and estimated 840 effects sizes. Results showed that predictors such as tenure, age, number of children, emotional stability, job characteristics, job security and job satisfaction have strong effects on turnover across studies. The study also analyzed the effects that the heterogeneity of demographic, attitudinal or behavioral factors among individuals have on turnover. For example, the positive relationship between being female and turnover is stronger when the organization is predominately composed of males. In general, they found support for the hypotheses establishing that the more dissimilar an individual is with a specific characteristic (e.g. age, tenure, gender) compared to the average value of the organization, the stronger the effects on turnover, accordingly. The combination of factors analyzed in Hom and Griffeth (1995, 2000) and Rubenstein et al. (2018) tallies more than 60 different variables. For the scope of this study variables were pared down to those precursors that are relevant for the hypotheses to be introduced in the next section.

Table 3: Turnover antecedents considered for this study with effects size based on meta-analysis studies completed by Hom and Griffeth (1995); Griffeth et al. (2000); Rubenstein et al. (2018).³

	Hom & Griffeth (1995)			Griffeth et al (2000)			Rubenstein et al (2017)			Used in this Study
	k1	N	p	k2	N	p	k3	N	p	
Individual Predictors										
Abilities and Skills (*)	n/a	n/a	-0.09	7	6062	0.02	15	17651	-0.06	Yes
Gender	n/a	n/a	-0.07	22	17301	-0.03	88	198817	-0.01	Yes
Age	n/a	n/a	-0.12	45	21656	-0.11	121	209588	-0.21	Yes
Tenure	n/a	n/a	-0.17	53	29313	-0.23	117	194295	-0.27	Yes
Organizational Predictors										
Job Scope/Characteristics	n/a	n/a	-0.13	15	4285	-0.14	16	12869	-0.18	Yes
Job Involvement	n/a	n/a	-0.13	16	7666	-0.12	19	5158	-0.19	No
Job Satisfaction	n/a	n/a	-0.19	67	24566	-0.22	174	107625	-0.28	No
Supervisor/Leadership	n/a	n/a	-0.1	16	3333	-0.13	7	24331	-0.09	Yes
Pay	n/a	n/a	-0.06	19	14191	-0.11	55	177634	-0.17	Yes
Alternative Job Opportunities	n/a	n/a	0.11	23	18189	0.15	79	58512	0.23	No
Employee Performance	n/a	n/a	-0.19	72	25234	-0.17	86	473624	-0.08	Yes
Promotional Chances	n/a	n/a	-0.1	10	5752	-0.13	n/a	n/a	n/a	Yes
Engagement Factors										
Organizational Commitment	n/a	n/a	-0.18	67	27540	-0.27	129	71862	-0.29	No
Intention to Quit	n/a	n/a	0.35	71	63232	0.45	211	73405	0.56	No

³ K: number of samples; N: total number of observations; p: sample size weighted average correlation corrected for measurement error in the predictors. (*) Hom and Griffeth (1995) and Griffeth et al.(2000) only identified Cognitive Ability under the Abilities and Skills Category. Rubenstein et al. (2018) incorporated a broad range of individual abilities and skills in their analysis.

2.4 The research model.

The dataset collected for this study included a large number of variables (52). In order to select the final set of variables that would be used for the hypotheses in this study two conditions had to be met: 1) the respective variable had to be theoretically based in constructs from current research; 2) recent meta-analysis had to show a significant effect-size for the chosen variables. Hypotheses regarding the effect of attitudinal variables on turnover are tested in this study while controlling for: a) several job characteristics such job role, job family, job level; b) the numerous idiosyncratic and unobservable macroeconomic factors that may simultaneously affect the individual decision to leave by means of fixed effects that are year-country specific. By doing so, the effect of exogenous factors on changes in macroeconomic variables that may affect turnover are accounted for. Figure 8 outlines the theoretical model for turnover and the research hypothesis are elaborated below.

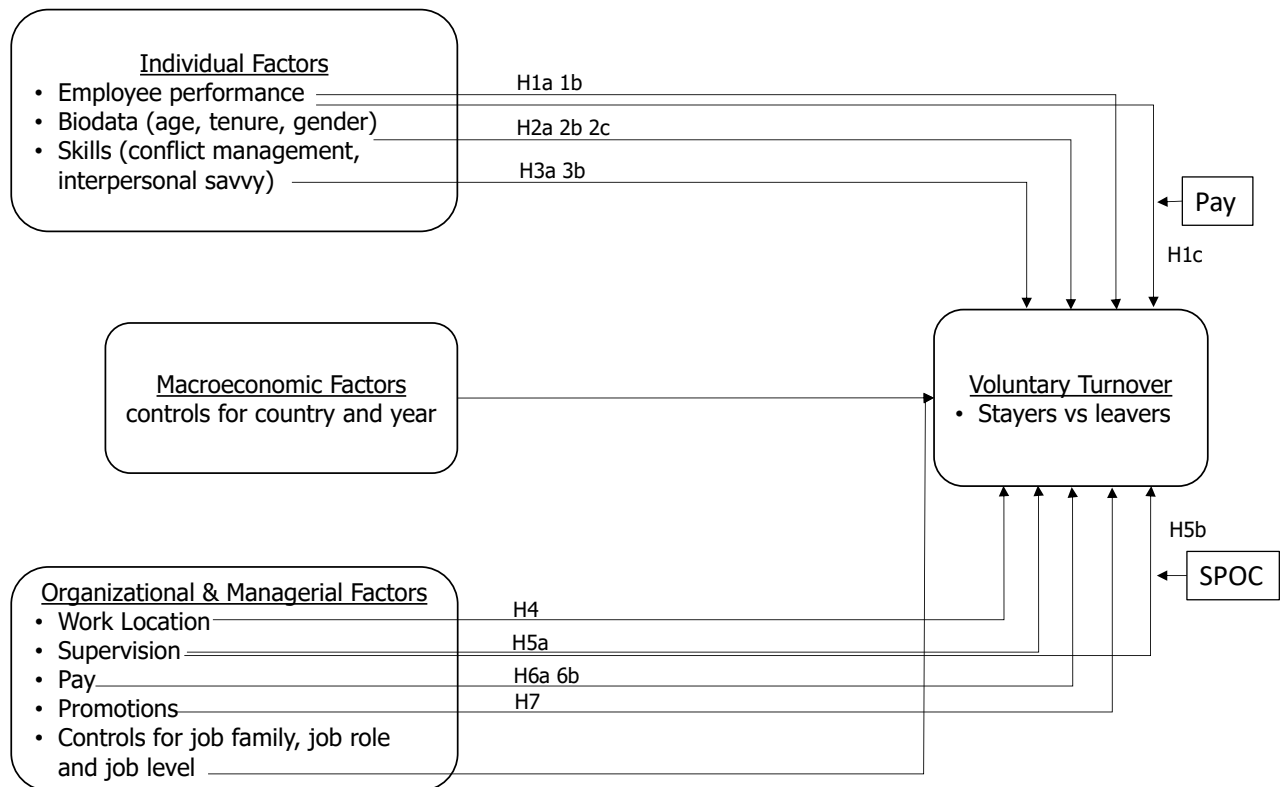


Figure 6: Research model

A. Individual factors.

Employee Performance.

Studies show diverse results regarding the effects of job performance on turnover. While some scholars found that top performers in an organization leave their jobs at a higher rate than lower performers (Martin, Price, & Mueller, 1981), others uncover the opposite relationship between performance and turnover (Morrow, McElroy, Laczniak, & Fenton, 1999; McEvoy & Cascio, 1987). Other studies found no evidence of a relationship between performance and voluntary turnover (Birnbaum & Somers, 1993). Further examination of the turnover literature also reveals the possibility that the relationship between job performance and turnover is non-linear (Jackofsky, Ferris, & Breckenridge, 1986; Sturman, Shao, & Katz, 2012). Finally, another alternative is that the relationship between turnover and job performance is non-linear and moderated by the influence of salary growth (Trevor, Gerhart, & Boudreau, 1997).

The company that provided the data for the analysis also furnished key aspects of their performance review process that can be summarized in: a) The company performance policy determined that managers measured individual performance for employees within the same job family and level in a business group (e.g. senior software engineer in services); b) Following each performance cycle, managers assign merit pay increases and or promotions, emphasizing that the biggest rewards go to top performers and almost none goes to low performers; c) Average merit increases were not significantly large (roughly 4.5 % for top performers).

Based on the cited studies and what is known about the company policy regarding employee performance, it can be hypothesized that the relationship between performance and turnover is non-linear and influenced by pay, more pronounced at lower and higher levels of performance than at middle levels. It can be argued that low performers had a motivation to leave given the perceived risk of being terminated for low performance (Jackofsky et al., 1986) and no incentive to receive pay increases or bonuses according to company policy. On the other end of the performance spectrum, high performers could have an incentive to look for alternatives in the job market, being conscious that their high performing skills could be valued (Trevor et al., 1997) therefore expecting high turnover. Since pay increases were emphasized for high levels of performance it is possible to assume that salary increases could have deterred the otherwise high desirability of departure of high performers.

Hypothesis 1a: Job performance is negatively related to turnover. Specifically, turnover will be lower at higher levels of performance than at lower levels of performance.

Hypothesis 1b: There is a non-linear relationship between job performance and turnover, with turnover being inferior for middle performers than for low and high performers.

Hypothesis 1c: The non-linear relationship between job performance and turnover is moderated by pay increases, with a less pronounced effect of turnover at high performance than at low performance.

Age, Tenure and Gender

Age. Research on age is long-standing and has established that age is negatively associated with turnover (Porter & Steers, 1973; Marsh & Mannari, 1977; Price, 1977; Mobley et al., 1978). Recent studies highlight that Millennials (individuals born after 1980) are retained on average less than three years (BLS, 2016; Campione, 2015). According to statistics from the US Bureau of Labor Statistics, employees aged 25-34 were retained on average less than three years, a third of the tenure of workers ages 55 to 64 (BLS, 2016). Specifically, in the technology sector, studies show that age has effects on the employment relationship and turnover (Finegold, Mohrman, & Spreitzer, 2002). The organization providing the data belongs to this sector.

Hypothesis 2a: Age is negatively related with turnover. Specifically, older employees are less likely to quit than younger employees.

Tenure. It is expected that tenure in the organization will follow a similar pattern than age. Labor economics theory has established that the accrual of firm-specific skills and learning explains a large part of decreasing turnover as the employment relationship ages (Topel & Ward, 1992; Munasinghe, 2006). Those employees who have invested time and effort in acquiring firm specific skills have lower incentives to leave their jobs. Somers (1996) found that employees with a short organizational tenure are more likely to quit than those with longer tenure.

Hypothesis 2b: Tenure is negatively related with turnover. Specifically, more tenured employees are less likely to quit than less tenured employees.

Gender. The results from different meta-analysis show that quit rates between women and men are very similar and the effect size between meta-analysis conducted in the last 20 years show that the effect size has reduced from -0.07 (Hom & Griffeth, 1995), to a negligible figure of -0.01 (Rubenstein et al., 2018). However, recent academic publications have analyzed the effects of work life balance

practices on gender-based turnover (see e.g. Malone & Issa, 2014; Nie, Lamsa, & Pucetaite, 2018). Royalty, (1998) and Griffeth et al., (2000) have discussed the evidence that shows that, as they age, women are more likely to stay than are men. They argue that it is possible that domestic duties for women (who normally affront a bigger responsibility for household) diminishes as they age. Given the age maturity of the organization under analysis, with a median age of 47 years for women, it is conceivable the effect argued by Royalty (1998) and Griffeth (2000).

Hypothesis 2c: Males have a higher probability of turnover than females.

Skills.

Different studies have analyzed the effects of individual skills on turnover (Kraimer, Seibert, Wayne, Liden, & Bravo, 2011; Trevor, 2001). The scope of skills is so vast that is difficult to group all of them under one large category and generalizing conclusions about the impact of them on turnover could be misleading. The analysis should be done on a case by case basis. Contextual factors can show that a particular skill is an effective deterrent of turnover in one situation but not in another. For example, while customer orientation skills relate positively to sales performance and lower levels of turnover intentions (Pettijohn, Pettijohn, & Taylor, 2007), other types of skills such as communication and negotiations skills are required for engineers that transition into management to mitigate high levels of burnout and high turnover rates (Polito & Martinich, 2008). Even more, studies have shown conflicting result on skills and turnover. While Griffeth et al. (2000) report that their meta-analysis found virtually no correlation between cognitive ability skills and turnover, the analysis by Rubenstein et al. (2018) shows that the effect size for abilities/skills is significant. Based on the review of academic literature and the results from recent meta-analysis, two employee skills were selected from the records furnished by the company because of their possible relationship with turnover: conflict management and interpersonal savvy. Those two skills were selected among a broader set of skills that the organization utilized to hire, assess and develop employees. The full set of skills had been defined as "core competencies" and were considered by the company as general skills that all employees should possess to achieve higher levels of performance. From a validity viewpoint, in general, the use of skills sets in business context has been validated by psychologists (see e.g. Shippmann et al., 2000), and the particular set used by the company had been validated by consulting firm Korn Ferry (Leadership Architect Global competency framework, 2016). The two skills are described next.

Studies have proposed that interpersonal conflict at work could be linked to turnover (Frone, 2000). Faced with conflict, employees experience stress and related psychological and physical illness that

affect their productivity, generates absenteeism, and possibly end up in turnover (Brockman, 2014). For example, West (2007) found that conflict between subordinates and supervisors is directly related to turnover. Research on customer service agents showed that conflict overload is a stress factor and critical antecedents of turnover (Cho, Choi, & Lee, 2014) and research on general managers highlighted that a main reason for manager turnover is conflict management (Birdir, 2002). Conflict management skills, defined as the ability to analyze situations quickly; being able to listen actively and understand the parties' interests and create value to find a satisfactory agreement for the parties in conflict (Elgoibar, Euwema, & Munduate, 2016) can act as a deterrent of turnover. It is possible that those employees that learn to manage conflict and either acquire or poses coping strategies to tackle conflict productively, can reduce their work-related stress and hence their fly risk.

Hypothesis 3a: Conflict management skills are negatively related to turnover. Specifically, employees who possess better conflict management skills are less likely to leave than those employee that do not.

A second predictor, interpersonal relations, can have an effect on turnover. Mowday, Porter and Steers (1982) suggest that positive relations with co-workers increase the employees' organizational attachment, therefore reducing their likelihood of turnover. Likewise, the Job Embeddedness Theory (Mitchell et al., 2001) considers that the links between the individual and other people and groups in the organization is a factor that prevents turnover. Interpersonal savvy skills, defined as being able to relate well to all kinds of people and build constructive and effective relationships (Lombardo & Eichinger, 2010) is proposed to be negatively related to turnover.

Hypothesis 3b: Interpersonal savvy skills are negatively related to turnover. Specifically, employees who possess better interpersonal skills are less likely to leave than those employees that do not.

B. Organizational and Managerial Factors.

Work location.

Among the factors that could deter employee turnover, a flexible work arrangement that offers the opportunity to work remotely (i.e. telecommuting) has been signaled by researchers as a variable that impacts job satisfaction, allows employees to gain in flexibility, produces fewer trips, reduce time loss, and allows for a better organization of working hours (Tremblay, 2002; Tremblay & Thomsin, 2012; Hornung & Glaser, 2009). In a meta-analysis conducted over 46 studies involving

12,883 employees, Gajendran and Harrison (2007) found that telecommuting had positive effects on distal outcomes such as job satisfaction, performance, and turnover intent while it was not disadvantageous on the quality of workplace relationships. The option to telecommute could benefit employees with high work engagement, low turnover and low levels of psychological strain (Timms et al., 2015). According to company information some employees were allowed to work remotely, other worked in company buildings and a third group worked in customer or government sites. Those employees working remotely had access to technology that enhanced their remote work capacity, such as connecting with colleagues using high definition video conference for up to 50 participants, multiple audio connection to mobile and land lines, web enabled document exchange, enterprise-focused virtual environment platforms that allowed remote training, etc. The benefits of remote work combined with the increased communications capabilities that made such work practice seamless for those employees working remotely leads to consider that remote workers were less likely to leave compared to the other two groups.

Hypothesis 4: Remote work is negatively related with turnover.

Perceived Supervisor Support and Span of Control.

One of the facets in the relationship between supervisor and subordinates is the impact that supervisors have on employee commitment and turnover. Based on social exchange theory, several studies have shown the mechanisms through which supervision/leadership influences employee turnover. For example, positive leader-member exchange and supportive supervision result in employees with higher levels of organizational commitment (Joo, 2010; Harris, Wheeler, & Kacmar, 2009; Tse, Huang, & Lam, 2013). Studies that investigated how employees perceived the support that they receive from their supervisor and from the organization found that perceived supervisor support has an effect on turnover, whether directly or indirectly (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002). Arguably, effective supervisors can influence how human resources practices (e.g. employee development) are perceived by employees, which, in turn, affects their attitude and impacts employee turnover (Kuvaas & Dysvik, 2010).

Information furnished by the company shows that the organization had programs in place aimed at developing virtuous supervisors. For example, all new supervisors had to complete a 3-day class on the fundamentals of employee management, supervisors had additional employee management objectives included in their performance, and supervisors were ranked using a scorecard that tracked how their employees perceived them in terms of a items such as coaching, career development,

providing feedback, helping to overcome obstacles in their jobs, etc. The scorecard score was a composed result of those items that were rated by employees through an annual confidential survey. Hence, it can be hypothesized that those supervisors who were perceived to provide superior support experienced lower number of quits in their teams.

Hypothesis 5a: Employee perception of supervisors' support is negatively related to turnover. Specifically, supervisors who were perceived to be more supportive had lower turnover than those that do not.

One aspect that impacts supervision roles is the span of control (SPOC). The size of an organization and the way that the work is organized and influences the scope of the role that supervisors play (Meyer, 2008). While the ideal SPOC is determined by the type of business and work, in general a narrow SPOC could lead to too much supervisory involvement in detriment of employee empowerment and autonomy (Davison, 2003). Conversely, a large SPOC could lead to overloaded supervisors and little time to provide direction and support to employees. Green, Anderson and Shivers (1996) uncovered such inverse relationship between increased work-unit size and subordinates perceived supervisor support. Extending this argument, it can be proposed that there are diminishing returns to supervisor effectiveness as their span of control increases to the point that otherwise good supervisors may not be effective managing large groups of people. Hence, SPOC could moderate the relationships between supervisor perceived support and turnover so the right balance of SPOC and work needs can lead to a decrease in turnover (see e.g. Schriesheim, Castro, & Yammarino, 2000; Kim, Wehbi, Dellifrairie, & Brannon, 2014).

Hypothesis 5b: Span of control moderates the impact of perceived supervisor support on turnover.

Pay.

Almost every model on employee turnover includes pay factors to explain turnover behavior. The effects of pay on turnover has been analyzed in numerous studies (see e.g. Lum, Kervin, Clark, Reid, & Sirola, 1998; Tekleab, Bartol, & Liu, 2005; Jung & Yoon, 2015), and results show that, in general, satisfaction with pay raise is negatively related to turnover. Some studies have proposed a more complex relationship between pay satisfaction and turnover by incorporating elements borrowed from psychology of money theory (Furnham & Argyle, 1998) that describes the way money influences how individuals behave in different situations. For example, Li-Ping Tang, Kim, and Shin-Hsiung Tang (2000) analyzed how attitude toward money moderates the relationship between job satisfaction and turnover and found that employees with low attitude towards money had low voluntary turnover.

A similar argument could be made by means of the prospect theory (Tversky & Kahneman, 1992) that proposes that individuals receive greater disutility from losses than the utility that they receive from equivalent gains. Following this argument, it could be hypothesized that, for example, an employee who had a negative salary change of 10% (because of demotion in job role, or changes in variable pay) experienced greater dissatisfaction than an employee who received a 10% increase. The same level of pay change will affect turnover not just positively or negatively but with a different magnitude.

Hypothesis 6a: Positive salary changes negatively affect turnover.

Hypothesis 6b: The effects of salary change on turnover will be greater for negative salary changes than for positive salary changes, given the same rate of change.

Job Promotions.

Price and Mueller (1986) and Hom and Griffeth (2001) demonstrated in their research that lack of promotional chances are a distal factor that may enable turnover. Advancement opportunities (i.e. promotions) are a key reason for top performers to remain in the organization. Studies have shown that promotional opportunities are an effective deterrent of turnover (Quarles, 1994; Pillay, 2009; Hausknecht, Rodda, & Howard, 2009; Brown, Thomas, & Bosselman, 2015). It is possible to reason that the promotion/s of an employee over time creates a sense of commitment and satisfaction that results in the individual staying longer in the organization. Hence the number of promotions over a period of time is more important than single count of promotions (Trevor et al., 1997).

Hypothesis 7: The ratio of promotions over years of service (tenure) is negatively related with turnover.

Other organizational factors.

This study controls for job family, for job role and job level. As reviewed in the literature those variables are antecedents that affect turnover. Specifically, meta-analysis and single item studies have shown a positive relation between job level and turnover (Robie, Ryan, Schmieder, Parra, & Smith, 1998; Guan et al., 2014). Zimmerman and Darnold (2012) meta-analysis on job performance and turnover uncovered that job family (e.g. Sales, Finance, Engineering, etc.) acted as moderator on the relationship between performance and turnover intention.

C. Macroeconomic factors.

Holtom et al. (2008) review shows that at the macro level, labor market conditions significantly impact aggregate turnover rates (Armknrecht & Early, 1972; Schervish, 1983; Terborg & Lee, 1984). However, at the individual level, the situation is different, and actual unemployment rates are not a big determinant of the individual level turnover (Carsten & Spector, 1987).

That said, labor markets conditions affect the quality of alternative opportunities (Mano-Negrin & Tzafrir, 2004) and, while those may not directly affect individual turnover, it is possible that indirectly, the individual's behavior or job attitudes could be different in times of high versus low unemployment (Trevor, 2001). Several factors that could reasonably be expected to be related to turnover and the predictors of interest were controlled for in the study. Country-year specific fixed effects (i.e. dummy variables) were included to control for the nature of the labor market and unmeasured factors present in each year and country covered in the dataset (e.g. country inflation, unemployment rate, etc.).

3 Methodology

3.1 Sample

The original dataset was composed of all employees (N=18,517) from a global business communications technology organization, between 2011 and 2015, excepting those employees who were involuntary terminated. Legal reasons precluded the organization from including involuntary terminations. After the data was revised, by correcting errors and removing missing observations across variables, the final sample was composed of 9,555 employees who either (a) were working for the company as January 1, 2012 (n=8,462), (b) hired by the company between January 1, 2012 and December 31, 2015 (n=1,093), (c) had voluntarily resigned between January 1, 2012 and December 31 2015 (n =2,872), (d) were still employed as of December 31 2015 (n =6,683). The employees were distributed across 14 different divisions in 58 countries.

3.2 Variables

Voluntary turnover.

This variable was coded as 1 if the employee resigned at time t , given that he/she was working in the company in $t-1$, and 0 otherwise. Employees who left the organization because they received retirement benefits, service pension or disability pension were not included as voluntary departures, following literature that do not consider those cases as voluntary terminations (Adams & Beehr, 1998; (Crossley, Bennett, Jex, & Burnfield, 2007).

Performance rating.

This variable represented the performance ratings received by employees each year between 2011 and 2015. In order to receive a performance rating, the employee had to be employed in the organization for at least six months. Supervisors used a three-point rating scale to evaluate employee performance. The performance scale ranged from 1 = low to 3 = high, representing the level of achievement in the objectives in each year. In terms of the reliability of the performance ratings, information from the organization indicates that the performance process was conducted thoroughly. The company performance policy determined that supervisors, who were all trained in conducting performance evaluations, measured individual performance relative to the employee peers under the same line of report. After supervisors issued a preliminary performance rating, a meeting of all supervisors in the same division was conducted to calibrate the final employee performance ratings in a way that ensured consistency of the performance ratings across individuals and teams.

In this study, the employee performance rating in the previous year was the variable used to analyze the effects of performance on turnover. Lagged performance rating was used for two reasons. First, a methodological explanation comes from the literature. The employee withdrawal activities that begin with an event (e.g. performance rating) that makes employees re-assess their jobs and the possibility of voluntarily departure, require time to produce a turnover outcome. While in some cases that process may occur quickly, in the majority of situations the process is complex and likely to occur slowly (Mitchel et al., 1994). On a practical level, using lagged performance rating eliminates the risk of using same year performance to explain a small set of departures happening in the year. Performance ratings in the organization under analysis were communicated to employees by late November in the year that the performance evaluation was conducted. Thus, using the same year performance and turnover data could muddy the statistical outcomes from those very minor cases that left in the last two months of the year with results from those employees who left before the yearly performance rating was communicated.

Demographic information.

Employee age (in years and months at the time of departure or through the end of 2015), gender (0 for males and 1 for females) were demographic factors considered in the model.

Employee Skills.

Besides the performance evaluation conducted every cycle, supervisors had to rate employees on the level of attainment in specific behavioral skills required by the organization. In this study conflict management and interpersonal savvy were identified as two of the behavioral skills required by the organization. The rating scale ranged from 1 = low to 5 = high, representing the level of achievement in the skill proficiency over time. Because the company regarded such skills as a measure of the potential for promotion of an employee over time, unlike the performance ratings, the behavioral skills ratings represent the average of all supervisor ratings received in the 2011-2015 period. Similar requirements like the ones used in the performance evaluation process were emphasized for the evaluation of employee skills, hence providing evidence of the absence of leniency bias in the ratings.

Job characteristics, job location and tenure.

The organizational variables accounted for job family (15 different job families); job level (coded from 1 Occupational to 6 Vice President); job role (1 for individual contributor, 2 for supervisor); job location (1 for work performed in company offices, 2 for work performed in customer sites, 3 for work performed from remotely/home office; tenure in the company (years and months at the time of departure or through the end of 2015).

Perceived supervisor support.

This dimension represented the perception that employees had about the level of support provided by their supervisor, which was determined through an annual survey completed by supervisors' direct reports. The supervisor survey was completed annually, and the rating scale was from 1=Low to 5=High. A composite score that results from all the questions in the survey was calculated for each supervisor. That overall rating represented the perceived supervisor support score that was used in this study.

Span of control.

The dataset also contained information on 1,426 supervisors (15% of the total employee sample). The span of control (number of employees directly reporting to one supervisor) was collected for the data set, ranging from 1 to 47 employees

Salary change.

Average annual salary changes adjusted for country inflation based on work location were defined for each individual and year. Positive changes reflected salary growth arising from merit increase and from promotion (level change) increases. Negative changes reflected changes in level (demotion) or in the total composition of the employee compensation. Merit based increases were normally materialized in employee paychecks after the beginning of each year, following the performance process that happened in the last two months of the previous year. Promotion based salary changes were implemented in the course of the year when the employee changed levels. Hence, unlike performance scores, this variable was treated as a non-lagged variable to reflect the salary changes coupled with the preceding performance cycle or with the immediate promotion.

Promotions.

Employee promotions variable were reported for all employees who received a change in level between 2011 and 2015. The promotions variable used in the analysis was created by dividing the employee's total number of promotions by years of tenure. This was done to control for the effects of promotions over time since it is not the same to receive one promotion in five years versus one promotion in two years.

Control variables for macroeconomic conditions.

Several factors that could reasonably be expected to be related to turnover and the predictors of interest were controlled for in the study. Country-year specific fixed effects (i.e. dummy variables) were included to control for the nature of the labor market and unmeasured factors present in each year and country covered in the dataset (e.g. country inflation, unemployment rate, etc.).

3.3 Analysis.

The data set represents an unbalanced panel where some observations are missing for some cross-sectional units in the sample period 2011-2015. The missing observations are considered at random given that the absent data for an individual occurred when an individual was not present in the data

set for the full scope of the sample period. For example, a new hire in 2013 does not have performance records for 2011 and 2012. Likewise, an employee who departed the organization in 2012, does not have records for the years that followed his departure. The data for turnover was treated as binomial variable coded as stayers (0) and leavers (1) and a discrete choice model was implemented. The effects of the different variables on the probability of individual turnover were estimated using both a Linear Probability Model (LPM) and a Probit Model.

The discussion of the results mostly refers to the estimates obtained using the LPM, since the OLS coefficients can be directly interpreted as marginal effect on the predicted probability of leaving the firm. Moreover, the OLS is unbiased and consistent provided that the explanatory variables are not correlated with the error term (i.e. exogenous covariates, $E(X, u) = 0$).

However, it is also important to highlight that econometrics models for individual behavior should recognize the existence of unobserved heterogeneity. Explanatory variables can be correlated with the error term causing the regression coefficients to be biased. Hence the regression results cannot strictly be given a causal interpretation. Rather, results can be used to describe the phenomena of turnover in terms of conditional correlations.

Turnover is estimated with the following framework. The turnover variable y_{it} is interpreted as the individual probability of turnover. What is observed, however, is an indicator variable on whether the employee (i) has left or not between period t-1 and t, given a set of explanatory variables.

Therefore:

$$y_{it} = \beta_0 + \beta_1 Perf_{i,t-1} + \beta_2 Tenure_{it} + \beta_3 Tenure_{it}^2 + \beta_4 Age_{it} + \beta_5 Age_{it}^2 + \beta_6 Gender_i + \beta_7 JobFam_i \\ + \beta_8 JobRol_i + \beta_9 JobLev_i + \beta_{10} WorkLoc_i + \beta_{11} ConfMgm_i + \beta_{12} InterpSav_i \\ + \beta_{13} SPOC_i + \beta_{14} PSS_{i,t-1} + \beta_{15} SPOC_i \# PSS_{i,t-1} + \beta_{16} zSalncPR2_{it} + \beta_{17} zSalncNR2_{it} \\ + \beta_{18} Prom_i + \theta_{ct} + \varepsilon_{it}$$

Perf is the performance rating of the employee in the year before he/she left the organization; Tenure is the employee time of service in the company and Tenure2 is its quadratic form; Age is the employee age and Age2 is its quadratic form; Gender is the employee sex; JobFam is the employee job family; JobRol is employee supervisor or non-supervisor; JobLev is the employee position in hierarchy; WorkLoc is the place of work; ConfMgm and InterpSav are the employee skills; SPOC is supervisor's span of control; PSS is the supervisor support score and SPOC#PSS is the corresponding interaction; Prom is the ratio of employee promotion/year; zSalaryIncPR2 is the employee

standardized score for positive salary changes; zSalaryIncNR2 is the employee standardized score for negative salary changes.

Explanatory variables were progressively added to the model in six stages, (1) individual performance, (2) employee demographics, (3) organizational level variables, (4) employee skills, (5) supervisor level variables, (6) employee pay and promotion variables. At each step, the adjusted R-squared and the individual significance of the additional covariates were considered to determine whether each additional block of variables was relevant to explain the outcome. An indicator variable to control for the specific effects of country and year was included in all models. Moreover, standard errors are clustered at the employee level, to take into account the correlation of repeated observations from the same individuals in different years. Notice that this also controls for heteroscedasticity, which is always present in LPM.

4 Results

Table 4: Descriptive statistics.

Variable	Mean	Stayers Std. Dev.	Percent	Mean	Leavers Std. Dev.	Percent
Performance	2.29***	0.56		1.6***	0.68	
Tenure	19.35***	10.9		9.92***	6.53	
Age	49.2***	10.15		39.68***	9.54	
Conflict Mgmt.	3.7***	0.52		3.51***	0.65	
Interpers. Savvy	3.92***	0.54		3.72***	0.71	
SalaryIncN	2.4***			3.6***		
SalaryIncR	-0.8***	10.18		-1.77***	9.6	
Promotions	0.6***	0.8		0.4***	0.68	
PSS	4.01***	0.44		3.91***	0.51	
SPOC	10.11***	6.38		7.93***	4.67	
Female			88.22			11.78
Male			88.78			11.22
<i>Job role</i>						
Individual			88.2			11.8
Contributor						
Supervisor			91.19			8.81
<i>Work location</i>						
Company Office			88.53			11.47
Non Company Office			70.28			29.72
Virtual Office			91.17			8.83
="* p<0.05 ** p<0.01 *** p<0.001"						

Table 4: Descriptive statistics (cont.).

Variable	Mean	Stayers Std. Dev.	Percent	Mean	Leavers Std. Dev.	Percent
<i>Job level</i>						
Occupational			66.04			33.96
Manager Associate			85.46			14.54
Manager			91.26			8.74
Sr Manager			90.41			9.59
Director and above			88.44			11.56
<i>Job type</i>						
Business Leadership			90.32			9.68
Business Support			90.37			9.63
Finance			82			18
SMB			99.76			0.24
Human Resources			86.56			13.44
IT			89.61			10.39
Legal			90.2			9.8
Manufacturing			90.79			9.21
Marketing			85.42			14.58
Product						
Management			90.18			9.82
Professional						
Consulting			90.67			9.33
R&D			89.36			10.64
Sales			85.33			14.67
Sales Support			91.23			8.77
Services			86.71			13.29
="* p<0.05 ** p<0.01 *** p<0.001"						

4.1 Descriptive statistics

The mean performance for stayers was higher than for the leavers and the difference between them was statistically significant at the 1 percent level. Furthermore, a breakdown of performance by level (Table 5) shows a stark contrast between stayers and leavers. Almost half of the quitters received a performance rating of Low (1) while only 5% of the stayers were rated Low. On the other end of the performance scale, over a third of the employees who stayed were rated High (3), compared to about 11% of those who left.

The average age for those employees departing the organization was significantly lower than for those who remained. A deeper analysis by age group (Table 5) reveals that about 38% of the employees who were in the age groups less than 25 years and 25-35 years, had left the organization, compared to just 27% who were in the 45 years and above groups.

Tenure in the organization presents a similar pattern, with a difference of 10 years of service between stayers and leavers (Table 4). A breakdown of tenure by years of service in the company shows that for leavers, about 17% left the company in the first five years of tenure, and if the next group (5-10 years of service) is added, 67% of the employees left the company before reaching ten years with the organization.

Table 5: Performance, Age and Tenure distribution of stayers and leavers.

	Stayers Percent	Leavers Percent
<i>Performance</i>		
Low	4.97	49.32
Med	60.68	39.73
High	34.35	10.96
<i>Age</i>		
<25	0.12	0.94
25 to 35	7.3	36.8
35-45	27.87	35.2
45-55	60.48	26.08
>65	4.23	0.97
<i>Tenure</i>		
<5	0.77	16.92
5-10	23.44	50.49
10-15	20.72	15.32
15-25	29.05	13.58
>25	26.03	3.69

Employees who regularly performed their job in non-company building (i.e. customer sites, government buildings) experienced a higher turnover, close to 30%, than those employees who worked in company premises (12%) or those who worked from home/remotely (9%).

The mean score for conflict management and interpersonal savvy skills was higher for stayers than for leavers. The differences in mean scores between stayers and leavers was significant at the 1 percent level for both skills tested, according to the multivariate tests of means differences.

Nominal salary increases were higher for leavers (3.6%) compared to stayers (2.4%). However, salary changes expressed in real wages (adjusted for inflation) showed that leavers suffered a larger impact in their salary (-1,8%), compared to those who stayed (-0.8%).

The mean number of promotions for stayers was higher (0.6) than for leavers (0.4). When analyzing the average number of promotions received by an individual over their tenure in the company, the mean scores were similar for both groups (0.04 promotion/year).

Examining the supervisor variables, the mean score on a five-point scale for the supervisor perceived support was higher for the stayers (4.0) than for leavers (3.9). This score does not imply that all the supervisors for leavers had lower supervisor scores than the supervisor score of those employees who stayed, as supervisors had heterogeneous groups of stayers and leavers. Finally, the mean span of control (SPOC) of supervisors of leavers was lower (8 direct reports) versus the span of control of supervisors of stayers (10 direct reports).

4.2 Linear Probability Model results.

Table 6 presents the results of the OLS regression. Columns one to six display the OLS coefficients along standard errors for each variable added in each step.

With the exception of the variable interpersonal savvy, all other variables remained significant through the final model (6), after controlling for the effects of the variables previously added in the sequence and controlling for job family, job level, individual contributor or supervisor role, country and year.

Table 6: Linear Probability Model Results.

	(1)		(2)		(3)		(4)		(5)		(6)	
Dependent Variable: Stayers / Leavers	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
1.Lag_Perf Low	Reference Category											
2.Lag_Perf Medium	-0.120***	0.011	-0.093***	0.010	-0.093***	(0.010)	-0.083***	(0.010)	-0.082***	(0.010)	-0.071***	(0.010)
3.Lag_Perf High	-0.147***	0.011	-0.114***	0.010	-0.116***	(0.010)	-0.099***	(0.010)	-0.099***	(0.010)	-0.080***	(0.010)
Age			-0.038***	0.002	-0.039***	0.002	-0.039***	0.002	-0.038***	0.002	-0.043***	0.002
Age squared			0.000***	0.000	0.000***	0.000	0.000***	0.000	0.000***	0.000	0.0003***	0.000
Gender Female	Reference Category											
Gender Male			0.017***	0.005	0.016**	0.005	0.015**	0.005	0.018***	0.005	0.016***	0.005
Tenure					-0.022***	0.001	-0.021***	0.001	-0.021***	0.001	-0.019***	0.001
Tenure squared					0.000***	0.000	0.000***	0.000	0.000***	0.000	0.0003***	0.000
1.Work location: company office	Reference Category											
2.Work location: customer location					0.108***	0.017	0.109***	0.017	0.110***	0.017	0.107***	0.017
3.Work location: remote work					-0.027***	0.006	-0.024***	0.006	-0.021***	0.006	-0.018**	0.006
Conflict Management							-0.024***	0.006	-0.023***	0.006	-0.022***	0.006
Interpersonal Savvy							-0.013*	0.006	-0.013*	0.006	-0.011*	0.005
Span of control (SPOC)									-0.018***	0.003	-0.017***	0.003
Lag_Perceived Supervisor Support (PSS)									-0.056***	0.010	-0.051***	0.009
c.SPOC#c.Lag_PSS									0.004***	0.001	0.003***	0.001
Promotions/year											-0.608***	0.040
Standardized Salary Increase											-0.017***	0.003
Standardized Salary Decrease											0.031***	0.007
_cons	0.235***		1.523***		1.552***		1.655***		1.881***		1.985***	
	(0.010)		(0.050)		(0.095)		(0.095)		(0.102)		(0.102)	
N	25327		25327		25327		25327		25327		25327	
r2	0.072		0.191		0.201		0.204		0.209		0.225	
r2_a	0.064		0.184		0.194		0.196		0.202		0.217	
="* p<0.05 ** p<0.01 *** p<0.001"												

Employee Performance.

This hypothesis was tested through a model in which the performance in the previous year (t-1) was used as a predictor of turnover. For hypothesis 1a, the performance levels were expressed through 3 indicator levels. Table 6 shows that coefficients for levels 2 (medium) and 3 (high) are significant and negatively related to performance, relative to the base category (low performance). In the full model (6), medium and high performance decreases the likelihood of turnover by 7 and 8 percentage points, respectively, compared to low performance. The coefficients for performance remained significant but decreased through the final model. As new covariates were incorporated in the model the previously unobserved effects of such variables (contained in the error term) accounted for additional variance in turnover hence reducing the performance coefficients. The standard errors remained low and basically the same in the six models, which meant that the variable performance was no collinear with other variables. In summary, the performance coefficients were significant at the 1% level, therefore Hypothesis 1a was confirmed.

Hypothesis 1b and 1c were tested using direct effects of the term for lagged performance and an interaction between standardized salary changes and lagged performance. In order to test for the effects of a non-linear relationship between performance and turnover, the LPM was run including an interaction between lagged performance and standardized salary change. Table 7 shows both the direct and the interaction coefficients, accounting for the same variables used in the full model described in Table 6. The negative direct effects of performance on turnover are significant and greater for medium than for high performers, hence confirming hypothesis 2b that stated a lower turnover probability for middle performers than for low or high performers.

The interaction between standardized salary change and performance terms on turnover was not significant. Therefore, hypothesis 1c that stated that pay increases moderated the effects of performance on turnover for was rejected.

Table 7: Linear Probability Model. Nonlinear relationship between lagged performance and turnover, moderated by standardized salary change.

Dependent Variable: Stayers / Leavers	Coefficient	S.E.
1.Lag_Perf Low	Reference Category	
2.Lag_Perf Medium	-0.0621***	0.010
3.Lag_Perf High	-0.0613***	0.010
Standardized Salary Increase	-0.056***	0.010
Lag_Perf#c.zSalaryIncR	Reference Category	
2	-0.003	0.010
3	0.000	0.010
Other variables omitted		
_cons	1.992***	.101
N	25327	
r2	0.234	
r2_a	0.226	

Standard errors in parenthesis - * p<0.05 ** p<0.01 *** p<0.001

Age, tenure and gender.

Table 6 reports the LPM coefficients for age and tenure, including a quadratic term for both variables. Age and tenure coefficients were significant and explain that for every additional year of age the probability of turnover decreased by about 4 percentage points and for every additional year of service in the company the probability of turnover was reduced by about 2 percentage points. Age and tenure were tested for non-linear effects to understand if the negative effects of age or tenure on turnover dominated up until a certain point and became positive thereafter. The square of each variables was entered in the regression and the quadratic effects in both terms were positive meaning that the otherwise downwards slope would change the direction upwards (a convex relationship tenure/age with turnover). The coefficients were significant but with negligible effects, each additional year of tenure or age reduced the slope by 0.03 percentage points. Hypothesis 2a and 2b were confirmed.

The coefficients scores for gender are also significant, implying that males are about 1.5 percentage points higher probability of turnover compared to females. Hence, hypothesis 2c is confirmed.

Employee Skills.

The reported significant coefficient for the variable conflict management offered support for the hypothesis stating a negative relationship with turnover, essentially reducing turnover probability by 2.2 percentage points, consequently confirming Hypothesis 3a.

The second skill tested, interpersonal savvy, showed a negative relationship between turnover and the level of interpersonal skills but such relationship was not significant at the 5 % level. Therefore, hypothesis 3b was rejected.

Work Location.

The significant coefficients for the variable work location showed that compared to a reference category of work in company offices, employees who performed work in customer or government sites were almost 11 percentage points more likely to leave than the office employees. Contrarily, employees working remotely or from home were about 2 percentage points less likely to leave the organization compared to those who worked in the office. Therefore hypothesis 4 was confirmed.

Supervision.

The coefficient for perceived supervisor support (PSS) at t-1 was significant and negative. Table 6 shows that an increase of 1 point in perceived supervisor support reduced the probability of turnover by 5 percentage points. Therefore, hypothesis 5a was confirmed.

The interaction between span of control and perceived supervisor support reported a significant and positive coefficient, meaning that as the span of control got larger, the effects of employee perception of supervisor supports on turnover diminished. Hence, hypothesis 5b was confirmed.

To further test the moderating effects at different levels of SPOC, a factor variable was created with categories according to the number of director reports to a supervisor at the 25%, 50% and 75% quartiles, and the regression was re-run using an indicator variable for the interaction SPOC and PSS. The results in Table 8 show that the moderating effects of SPOC on PSS were positive and significant at the 5 percent level for a SPOC larger than 9 and positive and significant at the 1 percent level when SPOC is larger than 12.

Table 8: Moderating effects of SPOC on PSS at different levels of SPOC.

SPOC_cd#Lag_PSS	Coefficients	S.E.
6-9 direct reports	0.021	-0.01277
9-12 direct reports	0.0282*	0.0139
more than 12 direct reports	0.0531***	0.014

Standard errors in parenthesis - * $p < 0.05$ *** $p < 0.001$

Pay and Promotions.

The last two hypotheses cover the relationship between pay changes and turnover, and promotions and turnover. The effects of salary changes were tested using two separate variables to measure the positive and negative effects of pay changes separately. In both cases the regression coefficients were significant, and the direction of the effects show that positive pay changes increased the probability of turnover and negative changes decreased the probability of turnover. Specifically, one standard deviation change in positive pay decreased the probability of turnover by 1.7 percentage points, and a decrease in one standard deviation in pay increased the probability of turnover by 3.1 percentage points. Hence, hypothesis 7a was confirmed. The variable promotion was included as promotions over years of tenure. The result of the regression shows a negative significant coefficient of a large magnitude. For every promotion received in a year, the probability of turnover was reduced by 61 percentage points. Hence hypothesis 7b was confirmed.

4.3 Probit regression results.

The model was also estimated using Probit to further check if the estimates obtained from the LPM were robust to this alternative estimation method. The Probit model was estimated and marginal effects at means were computed for the explanatory variables. The marginal effects reported in Table 9 represent the changes in the predicted probability of leaving the firm in t due to the change in each explanatory variable. For discrete variables, the marginal effects are the changes in probability associated with the switch of each dummy from zero to one. The marginal effects are estimated at the mean value for all the variables in the Probit model. The results using Probit model directionally and quantitatively mirror the results obtained from the LPM.

Table 9: Probit regression coefficients and marginal effects at means (MEM).

Dependent Variable: Stayers / Leavers	Coeff	S.E.	MEM
1.Lag_Perf Low	Reference category		
2.Lag_Perf Medium	-0.363***	0.046	-0.0303
3.Lag_Perf High	-0.434***	0.051	-0.0342
Tenure	-0.116***	0.006	-0.0025
Tenure squared	0.002***	0.000	
Age	-0.139***	0.012	-0.0031
Age squared	0.001***	0.000	
Gender Female	Reference category		
Gender. Male	0.100**	0.032	0.0056
1.Work location: company office	Reference category		
2.Work location: customer location	0.367***	0.070	0.0315
3.Work location: remote work	-0.109**	0.041	-0.0059
Conflict Management	-0.127***	0.034	-0.0074
Interpersonal Savvy	-0.046	0.031	-0.0027
Span of control (SPOC)	-0.064**	0.021	-0.0017
Lag_Perceived Supervisor Support (PSS)	-0.198***	0.054	-0.0066
c.SPOC#c.Lag_PSS	0.009	0.006	
Promotions/year	-2.435***	0.212	-0.1428
Standarized Salary Increase	-0.116*	0.048	-0.0068
Standarized Salary Decrease	0.129***	0.033	0.0076
_cons	5.342***	0.533	
N	24744		
Pseudo R2	0.2914		
* p<0.05 ** p<0.01 *** p<0.001			

5 Discussion and Conclusion

The purpose of this study was to analyze the effects of employee performance, skills, rewards and perceived supervisor support on turnover, contextualized by demographic and organizational factors.

Firstly, the present findings suggest that poor performers were more likely to leave compared to the other two groups. Furthermore, the differences between the reported coefficients for performance levels are significant and the estimated coefficients were significant and stable across the six models even when all the set of predictors of turnover were added to the regression. Hence, the risk of omitted variable bias in the relationship between performance and turnover is less of a concern, although it cannot be completely ruled out. It is possible that those employees rated as low performers may have been less gratified with their jobs (Judge, Thoresen, Bono, & Patton, 2001), and thus more likely to leave the organization (Griffeth et al., 2000).

In addition, the relationship between performance and turnover is non-linear, such that low and high performers can experience greater turnover than average performers. Further, the results show that pay does not moderate the relationship between performance and turnover in such way that it would reduce the otherwise higher likelihood of turnover for high performers compared to medium performers. One factor that could be thwarting such moderation effect is the reduced salary increases received on average by top performers. During the period 2011-2015, top performers' salary increases were almost negligible, a 0.4% in real wages. Even for those top performers who remained in the organization, the average salary increase was not meaningful, at 1.2%. Hence, those employees rated as top performers did not receive a consistent message from the organization that aligned their reward expectations with their performance. In other words, pay may not have been an effective retention factor for all high performers. This issue may have created the opposite effect of what was demonstrated by Trevor et al. (1997) in that paying for high performance defuses the turnover probability of high performers relative to low and medium performers.

Similar to the results from meta analytics studies (Griffeth, 2000; Rubenstein, 2018), age and tenure had an effect on turnover such that younger and/or less tenured employees were more likely to leave than older and/or more tenured employees. Studies show that Millennials, born between 1979 and 1994 (Smola & Sutton, 2002), appear to be especially prone to changing jobs.

Nearly 60% of employed Millennials have changed jobs at least once already in their careers (Thompson & Gregory, 2012; Pew Research Center, 2010). Millennials may embrace different work perspectives than Baby Boomers, born between 1946 and 1964, placing more importance on status and freedom at work than the boomers group (Cennamo & Gardner, 2008) and that could be a driving force for changing jobs more frequently.

The results of the quadratic effects for age supports considering that as employees get closer to retirement age some may decide to leave. There is evidence of this effect in recent studies. For example, Hofstetter and Cohen (2014) found that work experiences or conditions such as age-related stereotypes or perceived organizational support increment the likelihood of departure before reaching retirement age. Although those employees have voluntarily exited the organization, it doesn't mean that their careers have ended. A similar argument could be made about tenured employees who choose to leave the organization after spending a long career in it. In this case studies show that lack of managerial support to develop tenured employees could lead seasoned employees to leave the organization. Russ and McNeilly (1995) found that, for tenured employees, satisfaction with the work and with working colleagues had a greater impact on their turnover intention. Hofstetter (2014) suggests that older workers who reach job content plateau or experience age-related stereotypes at the workplace are more likely to quit. She suggests that managers should focus on integrating older workers in the workplace and encourage continued employee development as a way to reduce early departures of those who are reaching retirement age.

The data analyzed is from the period in the aftermath of the great recession that began in late 2007. Hence caution should be given to the relative impact of age and turnover, given the relative weak state of employment in the aftermath of the recession and its financial impact on pension and retirement plans. It is worth considering how much retirement and pension funds suffered during the recession and how it impacted the financial security of those employees who were counting on a few years of additional earnings before retirement. For example, an economic study by Goda, Shoven, and Slavov (2011) found that the steep drop in asset prices in 2008 increased the reported probability of working at age 62 during the Great Recession. Market fluctuations were more likely to affect probabilities of working for older employees rather than employment levels. Hence, the reported coefficients of the quadratic effects could have been more pronounced if the study was not conducted in the period that followed a strong dip in stock and other financial assets. Armed with more funds in their retirement accounts, older employees might have chosen to leave early.

The regression results showed that males were more likely to leave than females. As it was hypothesized, it is possible that domestic duties for women (who normally affront a bigger responsibility for household) diminishes as they age. Yet another possibility to be considered is that the ability to telecommute could have been an additional incentive for women. A breakdown of the work location by gender shows that, among stayers, female employees worked remotely at a higher proportion than males (27% to 21%) while men worked in the office at a larger proportion than females (77% to 72%).

Both the hypothesized motive to balance work and family responsibilities (Hammer, Neal, Newsom, Brockwood, & Colton, 2005), or the possibility to do remote work are theoretically possible. Because this study could not control for variables such as number of dependents in the household, commuting distance to the office, or other workplace arrangements, it is not possible to conclude further.

Regarding work location, in general the regression results showed a clear difference in turnover depending on where the employees worked. First, remote or home workers in the company experienced lower turnover compared to the other two groups. This was analogous with results from studies that show that new flexible work arrangements such as remote work help to reduce turnover (Sands & Harper, 2007). However, caution should be given to the interpretation of this result. There is a possibility that many of the employees who worked remotely, were actually offered that option because they showed superior performance and higher levels of commitment, elements that all together can have an impact in reducing the probability of turnover. For example, data shows that 25% of the company remote workers were top performers, against 21% of and 18% in middle and low performers.

On the other end of the turnover scale, employees who worked in customer or government sites experienced the highest probability of turnover. Information obtained from the dataset indicates that a large number of these workers performed regular activities in government sites and financial institutions with little access to remote connection with the company, probably because of IT security measures that normally exists in those environments. Hence, the ability to do video calls, use of the company intranet, email, or instant chat functions was severely limited. Studies have shown that for remote employees more face-to-face interactions (e.g. virtual video conference) and access to communication-enhancing technology tend to decrease the isolation impact on turnover (Golden, 2008). The lack of regular connection with supervisor and colleagues

using any of those remote technology features could have been a reason for the higher voluntary turnover.

The coefficient results on conflict management skills shows that a higher score on that skill reduced the turnover probability. Conflict in workplace has been found to create a negative environment that increases the likelihood of turnover. This result is aligned with similar finding in the literature that show that while workplace conflict is positively related with turnover intent, the use of conflict management tactics was positively associated with job performance and organizational commitment and negatively with turnover intent (Reio & Jeannie Trudel, 2016). A word of caution in interpreting this result. It is possible that employees with better conflict management skills were able to achieve goals by engaging other people with a positive attitude, which in turn was reflected in their overall performance. Hence, there is a possibility that good conflict management skills causes performance to improve and a higher performance then had an effect on lowering turnover probability. To control for this possible relationship, correlation and variance inflation factor were completed between the three levels of performance and conflict management. In all cases the, the results were not significant for high correlation or high VIF.

Employee positive perception about their supervisor support (PSS) was negatively related to turnover, a finding that has been uncovered by other studies as well (see e.g. Eisenberger et al., 2002; Maertz, Griffeth, Campbell, & Allen, 2007). As discussed previously, the company implemented training actions for supervisors, had metrics in place to monitor supervisor's performance and implemented policies directed at promoting only good supervisors, all of which seemed to have made an effect in reducing the turnover likelihood.

The results also support the hypothesis that span of control (SPOC) moderates the Perceived Supervisor Support (PSS), meaning that as the SPOC increases the perception on supervisor support is reduced. Like with the previous regression results, caution in interpreting this result should be taken. The PSS survey was not conducted among those employees who were involuntarily terminated. It was a practice of the organization to limit the survey participation to those employees who were not in the process of being dismissed while the survey was open. It is possible that if those employees were invited to complete the survey, their scores could shift the PSS ratings and that in turn would affect the coefficient of both direct and moderated SPOC interaction with turnover. It could be argued that a higher number of negative PSS ratings can be expected from employees who will be dismissed, the Positive-Negative Asymmetry (PNA)

theory suggest that employees who experience negative events may be stimulated to respond more strongly than those who experience positive events (Rozin & Royzman, 2001; Dasborough, 2006; Poncheri, Lindberg, Thompson, & Surface, 2008). An inflow of negative ratings will affect the PSS scores downwards and it could affect both the PSS-turnover coefficients and the moderated SPOC-PSS effects on turnover. While the relationship between PSS and turnover should directionally be the same (i.e. negatively related), the moderating effects of SPOC on PSS may not be significant at 9-12 direct supervisors but rather at lower ranges for number of direct reports. To test this issue the PSS ratings were reduced by 5 percent across all observations and the regression was re-run with the new modified variable. The results indicated that the moderating effects of SPOC can be observed beginning with 6 direct reports. Interestingly, this new number is much closer to the median SPOC of 6.4 reported as an effective management range by Saratoga Institute (PwC, 2012). In other words, a diminishing effect of PSS on turnover would be observed for SPOC beyond 6 direct reports if PSS ratings were actually lower. This has potential implications for management which will be discussed in the next section.

In terms of employee rewards, both promotions and pay increase were significant and negatively related to turnover. However, the effects of promotion on turnover was far larger than the effects of pay. As discussed in the methodology, the variable promotion was implemented as number of promotions per year of employee service to account for the fact that an absolute number of promotions does not give much information if it is not analyzed in regard to the years of service. Another factor to consider in analyzing the effects of promotions and salary increase on turnover is that a promotion can be a major factor in overall salary growth over time (B. A. Gerhart & Milkovich, 1987), so the observed effects on promotions on turnover intrinsically absorb some of the pay effects on turnover. In fact, a promotion normally creates a pay increase larger than merit-based pay increases. The employee moves to a lower relative position in a new pay grade, creating an opportunity for more frequent within-grade increases (Milkovich, Newman, & Milkovich, 1999).

The regression results also revealed some interesting details beyond the expected effect that a positive salary change negatively affects turnover and vice versa. The magnitude of the change in salary and its effects on turnover are probably more important in this discussion. As it was mentioned in the hypothesis, the assumption from the loss aversion theory (Kahneman, Knetsch, Thaler, Johnson, & Professor, 1991) is that losses and disadvantages have greater impact on preferences than gains and advantages. Applied to salary changes the loss aversion concept

entails that the impact of a salary change should be greater when that change is evaluated as a loss than when the same change is evaluated as a gain. The regression results show that a salary change of salary of positive one standard deviation reduces the probability of turnover by 1.7%. Contrarily a negative one standard deviation salary change, rises the likelihood of turnover by 3.1%, almost twice the effect. These results are aligned with what it was predicted by the loss aversion theory and empirically validated in other studies as well (Kahneman et al., 1991).

In sum, this study set to answer whether some individual, organizational and managerial factors affect the turnover decisions. The results corroborate findings from previous studies that show that a set of individual, organizational and managerial factors explain around 20% of the variance around voluntary turnover (Russell, 2013). One aspect to highlight is the use of information from human resource systems and carry out longitudinal analysis of dynamic factors like performance, pay, or supervisor conditions. Looking at turnover from an employee lifecycle point of view adds more richness than analyzing it statically. In addition, the results from the interaction between variables showed that relations between factors underpinning turnover could be complex and may require managers and leaders to relate seemingly unrelated concepts, such as finding the right balance between span of control and the level of perceived supervisor support perceived among employees.

6 Practical Implications

Any definitive conclusions from this study about turnover in this particular organization requires confirmation from other studies. Nevertheless, the results suggest several implications for managing employee turnover in the company analyzed. The use of a prediction model of turnover has important consequences for the organization's leaders and supervisors. Organization's leaders should use multifaceted and longitudinal approach to understanding turnover beyond the one-dimensional view of pay equity analysis or satisfaction surveys.

For those employees who may seldom slip into a lower level of performance in a cycle but are otherwise good performers, managers should understand that failure to do more close coaching and offer closer follow up may lead to employee dissatisfaction and increase their likelihood of turnover.

When it comes to skills and turnover, one size does not fit all. Rather than developing a long list of behavioral skills, teams should prioritize those that can be effective in reducing turnover chance. That is not to say that other skills are unimportant. Many behavioral skills are critical from a business viewpoint (e.g. creativity in marketing, customer focus in services, etc.), but some may be critical in more than one way. For example, this study identified conflict management, a skill that has been cited in studies to help employees in customer service areas but also has been demonstrated that is a turnover deterrent. To strengthen the fit between the individual and the organization, managers need to be thoughtful in the recruitment and selection of their new hires. They need to test for specific behavioral skills that are known to foster a longer career in the organization. In addition, human resources teams can support employees by offering specific information about how to improve specific skills. Armed with the statistical results and querying employee records human resources can quickly identify employees at fly risk because of any combination of factors. For example, employees with low scores in conflict management can receive emails with online courses and quick learning activities to improve such skill. By leveraging direct marketing, human resources can be more efficient, segmenting populations with different turnover risks, optimize learning budgets since they have a better estimate of what skills needs to be developed and by whom, and can also monitor results over time to make any adjustments.

The notion of job progression and promotions is important to manager employee retention. It may not be possible to vertically promote vast numbers of employees in a single year but the notion of career progress and the opportunity for lateral and vertical move has to be messaged and most importantly, executed. The organization should consider a balanced hiring from outside and promoting from within. If external hires outpace the number of internal promotions, employees will perceive little chance for career opportunities and promotions and may look for openings elsewhere.

Another practical implication is that the organization needs to implement retention policies tailored to different reasons of turnover, as opposed to generic ones. For example, younger employees may be leaving for different reasons than those who are closer to retirement. The study showed that age is a predictor of turnover for both groups. While younger employees may feel the need for fast track development, older employees may feel that their skills are no longer useful in the

organization event though they hold valuable technical knowledge and experience that may be lost once they leave the organization. Managers could establish mentoring programs to strengthen the development of the Millennials asking Baby Boomers to mentor them. Such program may create a bonding relationship that nurture the needs of both groups, making them feel more integrated, while ensuring a successful knowledge transfer in the organization. Human capital practices should be tailored to meet the needs of different employees, and organizations need to provide a realistic picture of their work values during the selection process to screen for those who are a close match to the organization's values.

Lastly, while turnover models may not be able to explain all the variability around turnover for the reasons previously discussed, organizations should not be dissuaded from utilizing analytics techniques, both qualitative and quantitative to better predict turnover outcomes. In fact, if the organization under analysis could improve their retention by 20%, their impact on their top line could be significant. For example, based on numbers that were provided by the company, at a 5 % voluntary turnover in one of their regional sales areas that generates \$2.5 million/year per sales manager and considering that a voluntary departure puts a portion of the sales area at risk for about 8 months (2 months to hire a replacement plus an estimated 6 months to reach full productivity of the new hire), about \$1,7 million of revenue are lost. Improving retention in just one of every five possible voluntary quits will protect a revenue flow of \$1.7 millions on a total of \$8.5 millions that would be lost with five departures.

7 Research Limitations

Unobserved heterogeneity.

The first caveat for this study is that the regression estimations should not interpreted as causal effects. Rather, it would be more appropriate to consider them as conditional correlation between turnover and its predictors. One reason to be cautious interpreting results is the possibility of unobserved heterogeneity. Unobserved elements in the error term that may explain the probability of staying in the company in the period t could be correlated with some of the other covariates. For example, an employee may decide to stay in the organization because he/she had recently bought a house, therefore he/she would be making a bigger effort to perform.

Exclusion of variables.

The study did not consider several variables that have been identified in the attitudinal models to be important determinants of turnover. These include job satisfaction, organizational commitment, and demographical factors such as number of family dependents. Also, the data did not include involuntary terminations, with the risk of possible bias (Morita, Lee, & Mowday, 1993). For example, a sharp increase in involuntary terminations could create a negative work climate, drive commitment down and increase voluntary turnover.

One-dimensional model.

Another limitation of this research was that the model was one-dimensional. It was developed using only data available internally within one organization. The generalization of the results should be taken carefully. While the research model and hypotheses were anchored in previously empirically validated studies and meta-analysis results it cannot be established that the size of the effects are representative for the global technology companies, in general. There is wide variability in terms of specific technology sectors and the age of the organization, etc.

8 Future Research

Future research may need to replicate this study with similar business communications technology organizations that operate in a global setting. While it is not always possible to get such massive level of detail of employee data in a longitudinal study (something unique in this study), a natural drawback is the absence of comparable information from other organizations. There are tradeoffs between choosing depth of the data and the breadth of the organizations that are covered. Companies may feel reluctant to share information if it is aggregated and compared with competitors because, even if the data is provided confidentially. One possibility is to engage companies that already participate in joint academic and human resources forums (e.g. CAHRS at Cornell University). Also, it will be stimulating to see longitudinal research done on similar companies applying different turnover theories or models. Those studies might answer the question if, for example, embeddedness theory explains turnover better than satisfaction and commitment-based models. Or if the classification done by unfolding models reveals a new turnover decision path that is different for high skilled employees compared to others who work in low skilled manufacturing or agricultural jobs.

Studying the effects of work conditions as employees reach retirement age could yield information to assist organization in steering policies towards accommodating the needs of employees who may choose to retire early if they are not offered alternative programs at work (e.g. flexible hours, different medical benefit configuration, enhanced pension contribution, etc.). This offers the opportunity for qualitative research to first understand the phenomenon of “early retirement”, then develop a holistic view of the issues including both organizational and macroeconomic factors and finally build some theories that could be further tested.

Another opportunity for qualitative research is by studying the effects of turnover on non-telecommuters. While a several studies have analyzed the impact of telecommuting in turnover, future research should be done on the impact of organization’s telecommuting policies on those employees who are not offered the possibility of telecommuting. Particularly, it would be interesting to observe if non-telecommuters increase the turnover intention because there are impacted by the telecommuting work arrangement of their colleagues.

Yet another venue for future research could analyze if individuals within a same demographic cohort place different importance on the reasons to stay. Studies are not conclusive on the effects of gender on turnover. In this research women were less likely to leave than men even though recent meta-analysis show virtually no differences. Does this mean that women in technology environments are less likely to change jobs as often as men? Even among the same gender, reasons to stay (or leave) may not be monolithic. While some individuals may value remote work because it allows them to better juggle family needs and work, others may embrace it because it shields them from office politics, or maybe because of the existence of an inauspicious work environment in the office.

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