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A survival model based on met expectations

Application to employee turnover in a call center

Un modelo de sobrevivencia basado en el cumplimiento de expectativas

Aplicación a la rotación de empleados en un centro de llamados

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Employee turnover in a call center

177

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Abstract

Purpose – The purpose of this paper is to propose a model of voluntary employee turnover based on the theory of met expectations and self-perceived efficacy of the employee, using data from a field survey conducted in a call center.

Design/methodology/approach – The paper formulates a model of employee turnover. First explaining the fulfillment of expectations from initial expectations of the employee (before starting work) and their experience after a period of time. Second, explaining the turnover of employees from the fulfillment of their expectations.

Findings – Some of the variability in the fulfillment of expectations can be explained by the difference between expectations and experiences in different job dimensions (e.g. income levels and job recognition). Results show that the level of fulfillment of expectations helps explain the process of employee turnover.

Research limitations/implications – This work provides evidence for the met expectation theory, where the gap between the individual's expectations and subsequent experiences lead to abandonment behaviors in the organization.

Practical implications – The results suggest two paths of action to reduce the high turnover rates in the call center: the first, through realistic expectations setting of the employee, and the second, with a constant monitoring of the fulfillment of those expectations.

Originality/value – A statistical model of survival is used, which is appropriate for the study of the employee turnover processes, and its inherent temporal nature.

Keywords – Self-efficacy, Employee turnover, Job tenure, Met expectations

Paper type Research paper



Resumen

Propósito – El propósito de este trabajo es proponer un modelo de rotación voluntaria de empleados basado en la teoría de cumplimiento de expectativas y autoeficacia del empleado, utilizando datos de un estudio de campo llevado a cabo en un centro de llamados (call center).

Diseño/metodología – Este trabajo formula un modelo de rotación de empleados. Primero, explica el cumplimiento de expectativas laborales a partir de las expectativas iniciales (antes de comenzar a trabajar), y las experiencias laborales después de un periodo de tiempo. Segundo, explica la rotación de empleados a partir del cumplimiento de las expectativas laborales.

Resultados – Parte de la variabilidad del cumplimiento de expectativas laborales puede ser explicado a partir de la diferencia entre expectativas y experiencias en distintas dimensiones del trabajo (por ejemplo, niveles de salario y reconocimientos laborales). Los resultados muestran que el nivel de cumplimiento de expectativas ayuda a explicar el proceso de rotación de empleados.

Limitaciones/implicaciones – Este trabajo porvee evidencia empírica de la teoría del cumplimiento de expectativas, en donde la brecha entre las expectativas individuales y las subsecuentes experiencias, conducen a comportamientos de abandono en la organización.

Implicaciones prácticas – Los resultados sugieren dos distintas vías de acción para reducir la alta rotación de empleados en los centros de llamados. La primera es a través de fijación de expectativas iniciales realistas al empleado, y la segunda, un monitoreo constante del cumplimiento de tales expectativas.

Originalidad/valor – Se utiliza un modelo estadístico de sobrevivencia, el cual es apropiado para estudios de procesos de rotación, cuya naturaleza es inherentemente temporal.

Palabras clave Rotación de empleados, Cumplimiento de expectativas, Autoeficacia

1. Introduction

High turnover rates result in costs associated with repeated publications for job search vacancies, interview processes, and ongoing training and induction. Typically, sales representatives and front-line personnel are constantly under pressure to meet goals, trying to maintain a level above minimum productivity and subject to constant direct supervision. Additionally, managers and supervisors incur high training and supervision costs because of the constant need to be training new entrants. Besides the pressure to which some sales and front-line personnel are subjected, failure to comply with the expectations of the employee leads to turnover intentions (Batt, 2002).

This is one of the few studies that addresses the problem of turnover in a Latin American context, identifying specific job dimensions that helps to explain this problem. In emerging markets with the presence of multinational companies with offshore services, labor is intensive, and employees typically have low qualifications and, therefore, earn lower wages (Boletín Oficial, Dirección del Trabajo – Gobierno de Chile, 2011). These market features are present in various industries in emerging markets, like Chile.

According to Moss *et al.* (2008) turnover is associated with new employees who realize that the nature of the job does not suit them. The gap generated between employee expectations and experiences increase job dissatisfaction and, in turn, help to drive up the high rates of turnover. Some studies used operational performance measures to predict employee turnover (Dursun and Karsak, 2010; Schaubroeck *et al.*, 2008; Taylor *et al.*, 2007; Valle *et al.*, 2012), however, few models are tested to explain it. The present study attempts to develop a model that explains the turnover process from the perceived met expectations, i.e., the gap generated between experiences and initial job expectations. The concept of expectations used in this work is related to the subject's prediction of relevant outcomes regarding the job in a particular organization (pay, work colleagues, etc.), i.e., what the person expects to find at work, in the sense indicated by Vroom (1964). Thus, the unit of study focusses on the attitudes of the subject that encourage certain behavior (for instance, a withdrawal decision).

Met expectations have constituted an intensively studied psychological variable in the field of organizational behavior that cause a variety of post-entry adjustment problems, which lead to low job satisfaction and withdrawal intentions. This leads to the concept of matching that involves the fit between the needs and desires of the employee or candidate for the job, and the needs required by the organization (see, e.g. Irving and Meyer, 1994; Wanous *et al.*, 1992; Wotruba and Tyagi, 1991).

More recently, research on met expectations, and their effects on work outcomes, has included additional elements such as the fit between the employee's work values and the supplies offered by the organization (Taris *et al.*, 2005), the type of recruitment source (internal vs external) (Moser, 2005), and the strength of the effects of unmet expectations as function of perceived importance of different work aspects (Taris *et al.*, 2006).

In this paper, we propose to empirically model employee job turnover using the gap between experiences and expectations on different aspects of the job, incorporating the temporal component into the definition of turnover behavior through the estimation of a non-proportional hazard model. To achieve this goal, we take two data sources. On the one hand, we take operational performance data available for employees with records indicating entrance and retirement date from the company, and on the other hand, measures of expectations and experiences through surveys.

A model of voluntary turnover using the met expectations and job performance was developed by Bridges *et al.* (2007). The model assesses the impact of personal sales expectations on job satisfaction and tendency to leave or remain in the company. The fit of the model to the observed data suggests that turnover prediction is possible using expectations and sales performance data. The results of this study confirm that the use of met expectations information and data of sales performances may be useful predictors for intention to quit. A weakness of the study by Bridges *et al.* (2007) is that they used only monetary expectations. We know that expectations can be multidimensional covering aspects not only related to the reward, but also, for instance, with comfort and responsibility at work (Manhardt, 1972). The model presented in this study seeks to extend the model of expectation gaps based only on incomes (e.g. the model developed by Bridges *et al.*, 2007), capturing the different dimensions involved in job expectations, in addition to recognizing a crucial element in the turnover process: the gaps between what the individual experiences at work and their initial expectations. A common feature of studies involving expectations is that their research methods use samples drawn from industries where rotation is not very high. This allows for the time between the measurements of pre-entry expectations and post-entry experiences to be more than 12 months. Commonly, job performance is measured by question items answered by a supervisor, constituting a subjective measure of job performance. In this study, we used objective measures of job performance.

The approach presented in this paper to study employee turnover is novel, and so far, represents a comparatively small portion of the literature in this area (Somers and Birnbaum, 1999). Statistical survival models provide an appropriate tool for the study of job withdrawal intentions, because of the inherent temporal nature of this phenomenon (Morita *et al.*, 1989, 1993). The results found with this non-traditional methodology of turnover literature, allow us to suggest from a theoretical standpoint, new findings that complement the prior turnover research, and from a practical standpoint, the possibility of maintaining at reasonable cost, measurements of expectations and experiences to anticipate possible resignations, and consequently, take preventive actions.

The paper is organized as follows: first, we develop our explanatory survival model turnover process. Next, we test this model on a sample of sales agents from a call center. Finally, we conclude with the results and implications for the management of this model.

2. Model development

The model presented in this study is richer because it incorporates elements of multidimensional expectations and not just expectations regarding performance. Also, the incorporation of past performance in this model is an advance because it has proved to be a precursor to update the expectations of sales agents. The model is based on the theory of met expectations (Porter and Steers, 1973; Wotruba and Tyagi, 1991) and the expectations-performance reciprocal relationship (Bandura, 1978). Because the model involves performance variables, it is well suited to jobs with compensation systems contingent on performance or when a significant part of the salary is based on performance.

2.1 Modeling job expectations and job turnover

The initial expectations of the individual running for the job will be given by; information that they have regarding the company, word of mouth, and past experience in similar jobs. As well as in consumer behavior literature, we note that expectations change over time. As the individual receives more information, his expectations change. Also, job expectations are a multidimensional construct consisting of J dimensions.

To our knowledge, there is no literature indicating the relative importance that wage expectations have on jobs whose compensation system are heavily based on outputs. In addition to the J dimensions of job expectations, we believe that in workplaces where compensation has a low ratio of salary (fixed component) to total compensation, wage expectations should have significant weight. For this reason, our model incorporates this expectation separately.

We define time t_0 , the event at which the j th pre-entry expectations of the i th individual are measured. The time t_1 is the event at which the j th post-entry expectations of the i th individual are measured and, the time $t = 2$, is the event at which the j th job experiences of the i th individual are measured. Let E_{ijt} the i th individual expectations on j th dimension at time t . For $t = 2$, we specify this notation as an experience rather than expectations.

In the same way as Boulding *et al.* (1993) models the consumer expectations, let X_{i1} the vector of information generated from the time that the employee enters work until time $t = 1$. This vector of information has an influence on the original expectations of the individuals, changing them to a new state. Presumably, a test period (whether it exists or is part of company policy) to which the applicant is subject to normal job conditions, operates as a realistic job preview. Thus, this period might work as a screening device as a result of a poor match with the organization (Wanous *et al.*, 1992). The work of Buckley *et al.* (1998), puts in evidence that the expectations that newcomers bring and the changes to such expectations through the realistic job preview and expectation lowering procedure influence the subsequent relationship between individuals and the organization. We hypothesized that when the individuals are undergoing the first days of work under a test period, initial expectations are updated. The result of updated expectations may be unique to each individual, because each one has initial expectations that can be explained by varying degrees of motivation and previous work experience.

Formally, we can specify:

$$\mathbf{E}_{ij1} = f_1(\mathbf{E}_{ij0}, \mathbf{X}_{i1}) \quad (1)$$

Employee
turnover in
a call center

We are assuming in Equation (1), that the expectations are updated only from new information that the individual acquires during an initial period of work (i.e. a test period of work). For example, consider an individual that has high job expectations in a specific j th dimension at the moment of joining the firm (i.e. \mathbf{E}_{ij0}). If he updates his expectations so far $\mathbf{E}_{ij1} < \mathbf{E}_{ij0}$, $\mathbf{X}_{i1} < 0$. In these circumstances, for every individual, there is a minimum level of expectations with which the person will want to continue working. If the updating of expectations (i.e. \mathbf{E}_{ij1} for all i and $j = 1, \dots, J$) is below this minimum, the person does not want to stay involved and will look for other job alternatives outside.

If we specify the Equation (1), as follows:

$$\mathbf{E}_{ij1} = \mathbf{E}_{ij0} + \mathbf{X}_{i1} + \epsilon_{ij1} \text{ for all } i \text{ and } j = 1, \dots, J \quad (2)$$

where ϵ_{ij1} is the stochastic error term.

We can find the vector of information that updates the job expectations:

$$\mathbf{E}_{ij1} - \mathbf{E}_{ij0} = \mathbf{X}_{i1} + \epsilon_{ij1} = \Delta \mathbf{E}_{i10} \quad (3)$$

The pre-entry expectations of the individual take into account his self-efficacy and past experience. At moment t_1 , the individual has updated his pre-entry expectations given the new information received during the trial period. There is an adjustment phase where the expectations are updated (Chen and Klimosky, 2003). Therefore, given the information received in this period and his proven ability in the field, the individual projects the chance of meeting these expectations. If these chances are met and perceived favorable (i.e. there is a high chance of meeting them), then the possibility of voluntary turnover is lower. The opposite is true when they are perceived unfavorable.

Let H_i be the hopes that the i th individual has to achieve his expectations given this new information \mathbf{X}_{ij1} . Due to the interaction between person, environment, and behavior, there is a mutual influence between the efficacy expectations and the environment, so consequently, the effect created by past actions alters the efficacy expectations (Bandura, 1977). This is in fact what is happening with the vector information \mathbf{X}_{ij1} on updated expectations \mathbf{E}_{ij1} . The behavior derived from this new efficacy expectation, is a precursor to new outcomes expectations (interpreted here as a representation of the new job expectations). According to Bandura (1977), the sources of efficacy expectations are: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. Out of these, the most influential is performance accomplishments. This is information that the person has received during work and it is directly related with his job performance. So, the hopes that the individual has to achieve his expectations reported at t_1 are a kind of future performance for him. This follows from the psychological idea that expectations and performance are mutually determined. Judgments concerning future events are linked to the application or projection of past events (Bandura, 1978; Oettingen and Mayer, 2002).

At t_2 the individual is capable of comparing his expectations with his experiences. This is not an update process of expectations, so there is no information vector. The gap between experiences and expectations is described by:

$$\Delta E_{i21} = E_{ij2} - E_{ij1} \quad (4)$$

Let W_i be the expectations of salary that the applicant has at the time of applying to the firm. During a period of work until t_2 , the employee achieves some kind of performance, which can be expressed in terms of revenue money equal to I_{i2} . This is the achieved wage between $t = 0$ and $t = 2$. We define the wage gap as:

$$\Delta W_i = I_{i2} - W_i \quad (5)$$

If the individual perceives that the gap $\Delta W_i < 0$ is too large, then he will be unlikely to participate longer and will seek other job alternatives. If this gap exists, but is not too large, the person may decide to continue participating for more information regarding the possibilities to achieve or exceed their wage expectations. If the gap is positive (i.e. $\Delta W_i > 0$), the possibility that the person continues to participate is much higher. Those individuals who stayed on for a second period of work (e.g. they signed a second contract of work for a longer extension), had sufficient time for new job experience indications and have received income for their outputs. Equation (5) represents the wage gap at time t_2 and Equation (4) is the expectation-experience gap.

Let C_i be the degree to which the i th employee perceived the fulfillment of their expectations at time t_2 . Met expectations are defined as the discrepancy between what a person encounters at work in terms of positive or negative experiences, and what he or she expected to encounter (Porter and Steers, 1973). We establish that the fulfillment of expectations are related to the expectation-experience gap and hopes to meet updated expectations as:

$$C_i = g(\Delta E_{i21}, \Delta W_i, PR_i) \quad (6)$$

First, met expectations depend of the expectation-experience gap ΔE_{i21} and ΔW_i following the theory of met expectations gaps. Second, met expectations depend on self-perceived efficacy expectations or H_i and past performance represented here as the productivity achieved (PR_i) during the whole job experience (between t_0 and t_2). Productivity is a measure of outcome vs effort. Low productivity may be due to low performance in output and effort, which reduces the possibility to fulfill the expectations. However, a good result in outputs subject to a fixed effort, improves the prospects for the individual. Williams and Livingstone (1994) examined the relationship between performance and turnover. They found that when rewards are contingent on performance, there is an inverse relationship between performance and voluntary turnover, and it was strong when rewards were not linked to individual performance. This highlights the importance of incorporating the performance as a predictor of turnover in jobs with a system of compensation based on performance. From a psychological perspective, with the early work of Bandura in social learning and self-efficacy theory, it is possible to complement the expectations theory to get a better understanding of turnover processes. The convictions that the individual has on his own efficacy affects the ability to maintain behavior that allows dealing with certain situations, such as tolerance to the frustration and persistence in a job (Bandura, 1977). According to Bandura (1996), people can be influenced by their own behavior.

Moreover, behavior can be influenced by the environment, but the environment can also influence behavior, i.e., there is a reciprocal relationship between person, environment, and behavior. The perceived self-efficacy and past events allow for prospection of future events. If an employee firmly believes that he can change future consequences (e.g. high perceived self-efficacy coupled with a good past performance), he will have a positive view of the future in relation to his outcomes. It is important to distinguish between efficacy expectations and outcome expectations. The former is the conviction that the person will achieve the desired result with a given behavior. The second is the belief that a person with a given behavior will lead to a desired result (Bandura, 1977). This distinction is important because it differentiates between what a person hopes to achieve with a given behavior, and the necessary behavior to achieve that result. To our purposes, the result or outcome is equivalent to meeting the job expectations of the person.

A problem with the functional form of Equation (6) is the difference in scores of a construct, which poses methodological problems (Edwards, 1991; Edwards and Cooper, 1991). To overcome these problems, we follow the recommendation of Irving and Meyer (1994) by using direct measurements of pre-entry and post-entry expectations. Thus, the functional form of Equation (6), is re-written as:

$$C_i = h(\mathbf{Z}_i, H_i, \mathbf{E}_{ij2}, \mathbf{E}_{j21}, \Delta W_i, PR_i) \text{ for all } i \text{ and } j = 1, \dots, J \quad (7)$$

where \mathbf{Z}_i reflects effect of the i th-person variable. Based on theory, we hypothesize the following effects on met expectations:

$$(H1) \frac{\partial h}{\partial \Delta W_i} < 0$$

$$(H2) \frac{\partial h}{\partial PR_i} > 0$$

$$(H3) \frac{\partial h}{\partial H_i} > 0$$

H1 indicates that as the wage gap is more negative, there are strong unmet expectations and, therefore, the perceived met expectations reported will be low. On the other hand, productivity achieved by the individual must be related positively with met expectations because good performance relative to the effort exerted on the work is indicative of good production. This is tested with *H2*. *H3* tests the hypothesis of reciprocity of Bandura. A person with a good prospect of future performance (efficacy expectations) will lead to good outcomes, i.e., high perceived met expectations.

From Porter and Steers (1973) and Wanous *et al.* (1992) we noted that unmet expectations are strongly negatively associated with job satisfaction and staying at work. In this same field, Irving and Meyer (1994) provided support for met expectations as a predictor of job satisfaction, organizational commitment, and intention to leave during the first year of employment. Irving and Meyer (1995) found that direct measures of met expectations accounted for a small, but significant amount of variance in job satisfaction and turnover intentions, controlling for perceptions of post-entry experiences. More recently, Irving and Montes (2009) and Taris *et al.* (2005, 2006) showed that job satisfaction and turnover intentions, are affected by met expectations. The theory of met expectation tells us that if the gap between expectations \mathbf{E}_{j1} and job experiences \mathbf{E}_{ij2} is high, then the propensity of the individual to leave is higher and their satisfaction (dissatisfaction) will not be enough to make them decide to stay.

Based on this premise, we hypothesize that the turnover rate should be related to met expectations:

$$T_i = h_1(\mathbf{Z}_i, C_i) \text{ for all } i \text{ and } j = 1, \dots, J \quad (8)$$

where T_i is the rate of voluntary job turnover.

3. An example in a company

The application of this model was carried out in a call center in Santiago, Chile. The main activities of the call center are telephone sales of life and fraud insurance and cellular telephone services. The company has databases of employees: daily work and personal information that include job start and end dates. An outbound call center is an interesting opportunity to test the model, since the turnover cycle time is short with a high rate, which allowed us to take enough measurements in a few months. In addition, the call center we selected has several sales campaigns of different services, so that the model is not limited to a specific sample, but included different employees from different areas of the firm. The company has a gradual inclusion system. Initially, applicants are selected and enter a trial period that can last between 15 and 30 days. In this trial and training session, a supervisor offers feedback to the newcomers. The supervisor determines, based on the capabilities of the individuals, whether the newcomers are selected for a starter contract lasting one month. Once that month is over, the supervisor decides whether the person continues for another month. The decision is based on performance. If after the second month, the employee's performance is acceptable, he is given a permanent contract. The information required to operationalize our conceptual model comes from the company's own records and from employee attitude survey results. This information was collected using three measurements over the employee's first three months of work as follows.

At the job interview, the applicant must answer a survey requesting information about the job expectations, salary expectations, and ideal salary, according to his personal and family responsibilities. Socio-demographic information is also collected at this time. Individuals who pass the test period are selected for a first month of work under contract, and they are again asked about their expectations. At this stage, we also asked for their hopes of meeting their expectations. A third and last measurement was made a month and a half after the second. At this time, employees have been working at the call center for two or more months. On this occasion, we asked them about experiences they have had in this job. They are asked to indicate whether they have been fulfilling their original expectations.

The sample used to estimate the model is based on the surveys applied in $t = 0$, $t = 0$, and 2, and on performance data of employees, which were obtained from internal company records. This data includes production achieved by the individual in terms of amount of sales and money made, and number of logged hours on the system. It is important to note that at each measurement recording the employee was informed that responses would be confidential and would not be part of an internal selection process or be seen by the supervisors. Every participant was informed about the aim of the survey, expected duration, and his or her participation was always voluntary. The measurements and interviews were undertaken by one of the authors of this study, unrelated to the call center. The total size of the usable observations was 189, taken from August 2010 to August 2011.

3.1 Measures

Socio-demographic information. At the time of application to the job, individuals were asked about age, gender, marital status (1 = married, 0 = not married), whether he/she has children (1 = yes, 0 = no), experience in sales (1 = yes, 0 = no), and level of education with four options: primary and secondary school completed (1), high school completed (2), technical education (3), university education (4). This information was collected at time $t=0$.

Job expectations and job experiences. The measures of pre-entry and post-entry expectations, and post-entry experiences used in the model were the same as those used by Irving and Meyer (1994). In the same way that Irving and Meyer (1995) measured expectations and experiences, we used 20 job attributes from Manhardt (1972). The items for expectations were presented on a five-point scale (1 = extremely unlikely, 5 = extremely likely). The items for experiences were presented on a five-point scale (1 = strongly agree, 5 = strongly disagree). According to the measures of expectations and experiences developed by Irving and Meyer (1994), there are three job dimensions. These dimensions were comfort, reward, and responsibility. Information regarding expectations and experiences were collected at time $t=0,1$ and 2. Reliability coefficients can be seen in Table I.

Single item measures. Since the surveys were answered in the workplace of the sales agents, it was imperative that the time spent on the survey was short in order to not make an impact on daily production. With this limitation, the survey had to be answered in approximately ten minutes and therefore could not incorporate many questions. Because of that, met expectations and hopes to meet expectations were measured with a single item. Item hopes to meet expectations, refers to the possibility, that the individual foresees in the near future, to meet their new expectations in the light of information received in his/her test period in the job. This construct was measured on a ten-point scale (1 = I will not meet my expectations, 10 = I will definitely meet my expectations) at time " $t=1$ ". Job satisfaction was measured on a ten-point scale (1 = very dissatisfied, 10 = very satisfied) at times $t=1$ and 2. Met expectations were measured on a ten-point scale (1 = my expectations are not met, 10 = my expectations are fully met). This question was asked at time $t=2$ and refers to the degree to which their initial expectations have been met so far.

4. Model testing

4.1 Preliminary results

We used data collected in a longitudinal design, following the employees from entering the organization for the trial period (t_0), until the first contract (i.e. whether the employee gets through this stage in t_1). Job pre- and post-expectations were measured along the three job dimensions. A sample of 176 measurements of pre- and post-entry expectations, were taken.

The means, standard deviations, internal consistencies, and intercorrelations for all the variables are reported in Table I. Internal consistencies are presented in parenthesis in Table I. Similar results were found by Irving and Meyer (1994) but with a greater number of items. However, this structure guarantees a clear identification of the components underlying people's job expectations and experiences. The mean of the wage gap is negative indicating that, on average, there is a negative disconfirmation of the expectation relative to income.

Table I.
Descriptive statistics
and Pearson's
correlations between
all variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1 C_i	6.20	2.40										
2 H_i	8.35	1.74	0.32***									
3 PR_i	1,9746	2,031	0.09	0.12								
4 ΔW_i	-10,687.4	9,200	0.18*	0.05	0.16*							
5 E_{i11}	9.67	0.65	-0.18**	-0.31***	0.02	0.10	(0.56)					
6 E_{i21}	14.13	1.35	-0.15*	-0.44***	-0.05	-0.00	0.65***	(0.75)				
7 E_{i31}	13.0	1.87	-0.14*	-0.31***	0.03	0.10	0.48***	0.66***	(0.61)			
8 E_{i12}	3.25	1.32	-0.47***	-0.22**	0.06	0.00	0.28***	0.26***	0.09	(0.61)		
9 E_{i22}	6.75	2.34	-0.63***	-0.38***	0.04	-0.04	0.29***	0.36***	0.22**	0.74***	(0.73)	
10 E_{i32}	6.54	2.36	-0.38***	-0.36***	0.11	0.07	0.26***	0.39***	0.43***	0.55***	0.74***	(0.66)

Notes: Cronbach's coefficient α 's are in parentheses on the diagonal. All significance levels are two-tailed. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

4.2 The perceived met expectations

The data for this part of the model was collected in a longitudinal design, following the employees remaining after the test period, from their first job contract (t_1) up to 35 days after that date (t_2). At t_2 , experiences at work and perceived met expectations were measured.

A sample of 176 measurements of post-expectations and experiences in the job were usable to model Equation (7). This equation establishes the relationship between perceived met expectations, i.e., the gap between expectations and experiences after working about two months.

The variable C_i is an ordered dependent variable, so an ordered logit model was used, meaning that Equation (7) becomes:

$$C_i^* = \beta_H H_i + \beta_Z Z_i + \beta_{j1} E_{ij1} + \beta_{j2} E_{ij2} + \beta_{\Delta W} \Delta W_i + \beta_{PR} PR_i + u_{c_i} \quad (9)$$

where PR_i is productivity achieved by the individual i between t_0 and t_2 . This productivity is defined here as the ratio of production achieved (in monetary terms) divided by the number of talked hours on the system. ΔW_i is the difference between the real production achieved from t_0 to t_2 , and the expected incomes reported by the subject at t_0 . $j = 1, 2, 3$ account for every dimension of expectation and C_i^* is the latent variable which is tied to the observed response C_i . A frequency analysis of the dependent variable reveals that some scores of the scale are scarcely used. The scores were collapsed allowing a better distribution of the scores through the scale, a compromise between an improvement of the asymptotic approximation used in the maximum likelihood analysis and a loss of statistical power, especially in small samples (Murad *et al.*, 2003). Thus, the original ten-point scale is now a four point scale. Of course, the ordinal characteristic of the variable is not lost. The error term u_{c_i} was assumed to be distributed logistically and an ordinal regression was used to estimate Equation (9). The parallel regression assumption was not violated (the approximate likelihood-ratio test of proportionality of odds across response categories gave a $\chi_{28}^2 = 33.17$, $p > \chi_{28}^2 = 0.2297$). Estimations of coefficients are shown in Table II.

For *met expectations*, there is evidence that the theory of gaps expectations is present in this model testing. First, it is possible to observe that the signs of post-expectations and experiences in each dimension are opposite (see Table II, Model A).

Parameter	Model A	Model B	Model C
Hopes to meet expectations β_H	0.40*** (2.80)		0.45** (3.15)
Comfort at job, post-expect β_{11}	0.022 (0.09)	-0.48 (-0.21)	0.009 (0.41)
Comfort at job, experience β_{12}	-0.367 (-1.43)	-0.310 (-1.24)	-0.341 (-1.34)
Recognition at job, post-expect β_{21}	0.566** (2.03)	0.428* (1.68)	0.476* (1.78)
Recognition at job, experience β_{22}	-1.424*** (-3.81)	-1.53*** (-4.17)	-1.403*** (-3.80)
Responsibilities at job, post expect β_{31}	-0.328 (-1.28)	-0.387 (-1.51)	-0.322 (-1.28)
Responsibilities at job, experience β_{32}	0.425 (1.35)	0.368 (1.18)	0.536* (1.74)
Job productivity β_{PR}	0.431* (1.84)	0.519** (2.26)	
Income expectations gaps $\beta_{\Delta W}$	-0.373** (-2.16)	-0.380** (-2.22)	-0.361** (-2.12)
N	176	176	176
LR χ_n^2	($n = 14$) 80.88	($n = 13$) 72.67	($n = 13$) 75.85
$p > \chi_{14}^2$	0.00	0.00	0.00

Notes: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.001$

Table II.
Estimation of met expectations at t_2

However, the coefficients are not statistically significant, except the dimension of job recognition ($\beta_{21} = 0.58, p < 0.05$ and $\beta_{22} = -1.42, p < 0.01$). On all these gaps, experiences always weigh more than post-expectations. Maybe this is because experiences are more in present memory than the past post-expectations. The signs of the coefficients support the importance of the gaps between experiences and expectations to explain the agreement or disagreement with the perceived met expectations. All *H1*, *H2*, and *H3* are supported. *H1* is supported ($\beta_{\Delta W} = -0.37, p < 0.98$ for one-tailed test). A larger discrepancy between what the employee has earned and what he expected to earn implies lower perceived met expectations as we expected. The coefficient of job productivity was significant ($\beta_{PR} = 0.43, p < 0.10$) and *H2* is not rejected ($\beta_{PR} = 0.43, p < 0.97$ for one-tailed test). Finally, *H3* was not rejected ($\beta_H = 0.40, p < 0.99$ for one-tailed test). The coefficient is positive and highly significant which supported the belief that the self-fulfilling prophecy phenomenon is in force among sales executives. Under different specifications of Equation (9) (Models B and C) it is possible to observe that the signs and coefficients of job recognition, and income expectations gaps remains virtually unchanged. This could be considered as the model's level of robustness, at least for these two dimensions.

4.3 The turnover process

Until now, our model has explained the perception that the individual has to meet his expectations in the very early stages of his experience at work, and has explained the met expectations after some time at work. Now, the model proposes that this information is key to explaining employee turnover. Using gaps theory expectations, we model the turnover as the perceived difference between expectations and experience, i.e., *the met expectations* previously defined. To the extent that the larger this gap, the lower likelihood of the employee staying at the firm.

To model the turnover, we used survival analysis, similar to that used by Bridges *et al.* (2007), and which has proven effective in numerous other studies of rotation (Harrison *et al.*, 1996; Morita *et al.*, 1989, 1993). An estimation of the survival function using the Kaplan-Meier method reveals that the transition rate is not constant, and it decreases with time. This feature of the survival function is well represented in the Gompertz distribution (Blossfeld and Mayer, 1998) and has been successfully applied on sociological studies about lifetime organizations (e.g. Lomi, 1995) and job duration (e.g. Blossfeld and Mayer, 1998). Under a Gompertz distribution, the transition rate is:

$$r(t) = b \cdot \exp(ct) \quad b \leq 0$$

and the survivor function is:

$$f(t) = \exp\left\{-\frac{b}{c}(\exp(ct)-1)\right\}$$

if $c = 0$, it is assumed that the expression reduces to a simple exponential model, i.e., a constant transition rate. In this model, we assumed that there is a time-dependence for the transition rate. Using the Gompertz distribution to model turnover with covariates linked to the b parameter, Equation (8), becomes:

$$T_i(t) = r(t) = \{ \exp(\beta_0 + \beta_C C_i + \beta_Z Z_i) \} \cdot \exp(\gamma_0 t) \quad (10)$$

where $T_i(t)$ is the hazard for individual i during the period t , and $\beta_0 + \beta_C C_i + \beta_Z Z_i$ are the linear covariates. According to our proposed model, C_i represents the gap between overall expectations and overall experiences from the start until $t=2$. We hypothesized that the transition rate that describes the process of rotation depends on this observable characteristic of individuals. The estimation of Equation (10) was performed by maximizing the likelihood with one single transition.

First, we addressed the survival model without covariates, analyzing the average job change behavior of individuals. A sample of 180 usable observations from measures at $t=1$ and $t=2$ was considered. The value of log likelihood was -213.68 and the estimated coefficients were $b = -5.20$, $p < 0.001$ and $\gamma_0 = 0.004$, $p < 0.001$. Thus, the estimated average rate of job turnover is $r = \exp(-5.22) = 0.0055$. The coefficient γ_0 was not expected to be positive. This result indicates that with increasing job experience, there is an increasing rate of voluntary defections.

The same sample was used to estimate the model of Equation (10) with covariates, and another five control variables. Results for this survival model are presented in column 2 of Table III.

The value of the log likelihood function was -92.45 . The LR test was $\chi^2_6 = 13.57$, and the model was not rejected at 5 percent of significance. The most interesting result was that the coefficients of *met expectations* were highly significant and negative ($\beta_C = -0.15$, $p < 0.01$). A likelihood ratio (LR) test statistics was performed to test the null hypothesis that the additional included covariates do not significantly improve the model fit. Our LR test follows approximately a χ^2 distribution with six degrees of freedom. The computed LR-test was $2((-92.45) - (-213.67)) = 121.22$ and null hypothesis is rejected at 1 percent of significance, so at least one of the included covariates significantly improves the model fit.

The result leads us to suspect that the process that generates turnover is given by the gap between initial expectations and meeting them after a period of time at work. The negative sign of this coefficient confirms the fact that the greater the met

Parameter	Covariates linked to b	Covariates linked to b and c
Met expectations β_C	-0.150*** (-2.75)	-0.116** (-2.10)
Age	-0.14 (-0.94)	-0.021 (-1.42)
Gender	-0.627** (-2.18)	-0.330 (-0.64)
Child	-0.212 (-0.80)	-0.308 (-0.60)
Previous job experience	0.048 (0.18)	1.11* (1.93)
Education level	0.213* (1.65)	-1.08** (-2.40)
Constant	-4.22*** (-6.88)	-3.58*** (-3.83)
γ_0	0.0065*** (4.72)	
γ_{age}		0.0001 (0.50)
γ_{sex}		-0.0030 (-0.53)
γ_{child}		-0.0014 (-0.25)
$\gamma_{previous_experience}$		-0.0107** (-1.96)
$\gamma_{educational_level}$		0.0171*** (3.96)
Constant		-0.0006 (-0.06)
n	180	180
LR χ^2_6	13.57	20.92
$p > \chi^2_6$	0.035	0.002

Notes: * $p < 0.10$; ** $p < 0.05$; *** $p < 0.001$

Table III.
Survival estimated functions

expectations, the lower the turnover rate. Each additional one point increment on met expectations, decreases the rate by about $(\exp(-0.15)-1) \cdot 100$ percent = -13.9 percent. This demonstrates the importance that *met expectations* have for the turnover process.

The γ coefficient, is different from zero and positive ($\gamma_0 = 0.065$, $p < 0.001$). Thus, the time-constant factors linked to the b parameter were not able to explain the declining transition rate completely. Although the effect of this time-dependence is much smaller than the effect of the two previous constructs, it is interesting because it indicates that as employee tenure increases, the possibility of a voluntary desertion increases, but the causes of this behavior are not explained. In order to verify whether the effect of some covariates serves as a signal that increases with job tenure, we estimated a variation of Equation (10) where we linked the covariates to the c parameter[1].

The results are shown in the third column of Table III. The results of this approximation showed us that this model variation is significant at 1 percent (LR $\chi^2_6 = 20.22$, $p > \chi^2_6 = 0.002$). Also, a LR test, taking as reference the model with the covariates linked to the b parameter, showed us that this more sophisticated model provides a better fit. A LR test was performed to test the null hypothesis that the covariates linked to the b and c parameters do not significantly improve the model's fit. Our LR test follows approximately a χ^2 distribution with six degrees of freedom. The computed LR test was $2((-77.96)-(-92.45)) = 28.98$ and the null hypothesis is rejected at 1 percent of significance, so at least one of the included covariates in the c parameter significantly improves the model's fit.

The *met expectations* coefficient is still significant, previous job experience in sales activities and education level are now significantly different from zero, but the signs are opposite, and their effect weight is even more than that of met expectations. Although this is not a central aspect of this research, an interesting thing about this modified model, is that it reveals some elements of the signal theory described by Spence (1973). The previous experience and education level serves as a signal to the employers to infer the individuals' productivity at the beginning of the job. The significant time-dependent coefficient of the previous experience ($\gamma_{previous_experience} = 0.0107$, $p < 0.05$) indicates that as job tenure increases, previous experience helps to reduce the turnover, however, the effect of education level helps to increase the turnover, as job tenure is greater ($\gamma_{education_level} = 0.0171$, $p < 0.001$) possibly due to an increased number of opportunities for mobility in the labor market.

5. Discussion

The present research has developed a model that explains the process of turnover from two constructs that measure the newcomers' hopes to meet their initial expectations and subsequent job experiences. First, individuals evaluate the possibility that they could have met their expectations. We called this measurement *hopes to meet expectations*. We have used this concept, derived from the psychological theory of behavioral change, in which the self-efficacy determines behavior, effort, and persistence for a particular task. Second, after some time at work, it is possible to ascertain the degree of fulfillment of these expectations from the experience that employees have had over a course of time. This measurement was called *met expectations*. Preliminary studies have indicated a relationship between unmet expectations and turnover intentions (e.g. Wotruba and Tyagi, 1991; Wanous *et al.*, 1992; Buckley *et al.*, 1998); however, none of them directly accesses the process of voluntary desertion.

Two general conclusions about the model should be made. First, the cognitive process undertaken by individuals to report met expectations, shows signs of

comparison between what they expected and the experience gained from the job. The results were in line with theory of expectation gaps in which the size and direction of the gap between experience and expectations explain the met expectations. Job recognition was the most influential dimension of met expectations. The job recognition dimension is related with rewards for good performance and the opportunity to develop skills and earn high incomes. We believe that because of the kind of job on which the model was tested, this dimension is the most important for sales agents. Second, the survival model fitted indicated that the met expectations theory was successful in explaining the process of turnover. This process was adjusted to a Gompertz distribution suggesting that the turnover rate is not constant. The perceived met expectations adequately explained the process. The met expectations have a positive influence on survival. A high score reported in this variable, is a sign of lower survival rate. Additionally, our model provides evidence of signal theory showing that characteristics of the individuals, such as job experience and level of education, are strong signals at the beginning of job tenure as predictors of performance, but they decline as the job duration increases. The model implicitly allows a realistic job preview (when the individual works for a short period of time, between t_0 and t_1) and met expectations are reported comparing the job expectations at t_1 with experiences. This leads us to suspect that, because of the realistic job preview, met expectations should be related to job survival which is proven in the results. Even if the model has been tested in a particular environment, the successful fit of a distribution to explain the rate of employee turnover, allow us to calculate, similar to Taris *et al.* (2006), that the greater the differences between expectations and experiences, the greater the reaction of the individual to take action to remove or reduce this gap.

5.1 Limitations and future research

Measurements of *hopes to meet expectations* and the *met expectations*, have been performed using a simple item. While this represents a practical advantage by reducing the survey completion time, it represents potential problems of measurement error. Measurement of these concepts could be improved through a battery of more items, improving the robustness of the measurement instrument.

Unlike other turnover models, the model proposed in this study could be replicated in other types of industry, because as well as a factor relating to income expectations, it also includes others such as comfort at work, which should denote as much importance as income. Because the model has been tested in an industry that is characterized by high employee turnover, it is expected that the main and perhaps, most important factor in job expectations, is income. It is possible that results leading to explain met expectations were determined by more than one factor and not predominantly by the job recognition dimension. It would be interesting to see the results of this study, but considering organizations with full- and part-time employees, which for certain types of industries could be relevant (Senter and Martin, 2007).

5.2 Managerial implications

The test results of the model in the call center showed that job recognition is the main job dimension playing a role in met expectations. This does not mean that other dimensions do not play a role in the model. For example, a low concern by the company for comfort could lead to an intolerable level below the threshold of employee

acceptability with regard to this dimension. But the model testing was undertaken using a sales company, thus, expectations regarding recognition and rewards for good performances should be the main dimension involved in the determination of expectations. Our results of the survival model suggest two actions that the management could take into account in order to decrease the turnover rate: First, an improvement in met expectations. It is important for the management to cultivate realistic expectations from the employee's first day at work and continue to do so during the first month. Inflated expectations could lead to low fulfillment of expectations and therefore increase the turnover rate. Realistic job expectations allow a less traumatic adaptation to the job environment and, therefore, more likelihood of longer-term employment.

Second, high scores in hopes to meet expectations is synonymous of a high perceived self-efficacy, which in turn leads to high perceived met expectations. A regular measurement of hopes to meet expectations could be a good antecedent for met expectations and turnover, and therefore it would be possible to detect and prevent a possible voluntary-dysfunctional turnover by taking preventive actions to avoid resignation.

Note

1. *Met expectations* was not modeled as time-dependent because this variable is endogenous to the process of turnover and has been measured at a specific time within the time window of the study.

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