

Review

A critical review of employee turnover model (1938-2009) and development in perspective of performance

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Retaining employees remains a primary concern for many organizations during days of intellectual property, for intellectual capital has become a critical component of wealth creation. This paper provides a theoretical overview of the different periods of motives and domains or targets of employee retention/ turnover and highlights the performing importance from the platform of social capital in research. The objective of this study is to present literature on the complex relationship between individual performance characters and withdraw tendency based on Social Capital Theory. It is generally revealed that in the traditional attitude turnover model the process of employees' volunteer turnover is the reversed transformation process of employees' retention psychology and behaviours, mainly consisting of four sectors (Lee and Mitchell, 1999): first is the quit process caused by job dissatisfaction; then, employees' search for substitutable jobs before turnover; is evaluation on such substitutable jobs; and result is occurrence of turnover behaviour. Finally, an integrative model of the relationship is proposed which argues that performance character may lead to withdraw tendency even turnover behavior through four different routes with the introduction of the Job-Coupling variable. The practical implication of the proposed model for practitioners and researchers encourage further discussion and suggestions.

Key words: Job performance, withdraw tendency, retention, job coupling, social capital.

INTRODUCTION

In Human Resource (HR) research and practice, employee retention or turnover, involves the question of organization employee movement. Research in this area by the mainstream Organizational Behavior School has evolved to the research of factors affecting employee turnover. The positive or negative influences from these factors may either result in employee retention or turnover (Zhang, 2005).

In the research on employee retention, voluntary turnover attracts attention, because employee movement such as recruitment (exterior inflow), personnel allocation,

position adjustment (internal inflow), job displacement and "disemployment" (involuntary turnover) are all controlled by the organization. However, the loss of employees who have relatively high human capital value who choose to leave an organization can cause serious loss and difficulty, especially when the turnover numbers are on the rise (Zhang et al., 2006).

Studies on the voluntary turnover model have attracted much attention amongst academic and practitioners for a long time, making voluntary turnover of knowledge and management talents two major research dimensions (Eriksson, 2001; Potter and Timothy, 2003). Talented employees often comprise the organization's core human capital, making it significant to highlight their turnover behavior influence on an organization's competitive advantage (Lee and Steven, 1997; Shaw, 1999; HoukesInge, 2001). The obvious loss of an organization's

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talent has inspired researchers and practitioners alike to identify the factors that enable organizations to promote effective talent retention and organization performance (Dalton et al., 1982; Allen and Rodger, 1999; Lee et al., 2004).

This study centers on the main achievement of scholars regarding talent retention, the process of developing a retention model, and the relative performance level of leavers and non-leavers. This study also explores the contextual factors affecting organization performance and individual withdrawal decision-making as well as organization performance.

PURPOSE OF THIS STUDY

The main research of the modern mainstream school comprise the factors affecting the core employee's retention or turnover in academic research may comprise of building the construction concept, putting it forward, verifying related assumptions and refining the analysis model based on correlated theories and experiences. For an organization's human resource management, this kind of research pattern could be useful for talent retention, because it reveals comprehensive determining factors, helping managers analyze and diagnose the organization's core employee movement (Xie, 2003).

Therefore, the objective of this study is to review and evaluate the works of scholars and chart a clear roadmap through research in core employee retention. The main content of this study focus on this complexity, and proposes a more effective mediated-route retention model based on the social capital theory in following contexts. Social capital may be defined as the trust (standard), relation, value sharing and behaviour mode, network, cooperation, common commitments and understanding between the organization and the individuals, as well as the sharing income of the intangible asset value with increment will obtain (Nahapiet and Ghoshal, 1998).

PERSPECTIVE OF CURRENT THEORIES

In view of the research model development of the related organizational talent retention or turnover formation in the developed countries, its origins go back almost 50 year. The content was abundant, the view was diversified step-by-step, and the research was advanced unceasingly, forming "the academic mainstream turnover theory", and most of scholars follow the direction in this area (Zhang et al., 2006).

In general, these research models may be divided into the "Classification employee retention/turnover process model" and the "New developed multi-routes model". Traditional and classic turnover intermediary variable "Job attitude" is caused directly by "Job satisfaction" and "Organizational commitment". The multi-routes model

has been constructed according to the "New turnover theory" and be explained based on the various specific influencing factors since the 1990s, and the evolutionary direction of the guiding ideology for constructing these research models (Mitchell et al., 2003, 2009).

The multi-route unwrapped turnover model and the job coupling model on employee turnover on employee turnover, which were developed by Lee (1999) and Mitchell et al., (2003), may be integrated with the background of social capital, and may be combined closely with social factors with more comprehensive inclusiveness.

Therefore, the developed model may demonstrate an adaptable situation whereby different period features put the accent on knowledge economy development, especially the job coupling model by Mitchell (2003) and Lee (2004) reveals employee retention or turnover tendencies and behaviours. They are a more significant explanation for the traditional- manner turnover model, which is attracting attention and is increasingly quoted by the mainstream school (Maertz and Griffeth, 2004). Coupling means the economic activities are rooted in the social structure, but the core of the social structure should be the social network of the people living and coupling. Its mechanism should be the "dependence on each other".

The practical verification of the job coupling model may reveal the performance factors of the organization included by the employee job coupled, this may possibly be the link or process which connects employee organizational behaviour decision-making and withdraw behaviour decision-making at the concept and the experience of the organization. In other words, the job coupling variables may not only be predetermined variables causing the employee to stay or leave, but also strong variables affecting the employee's performance (Lee et al., 2004).

The "job coupling" analysis pattern may also be advantageous for developing one worthy widening domain for understanding the organization talent retention question in view of the social capital coupling of the organization performance in the empirical verification study (Liao, 2007).

PROBLEM STATEMENT AND MOTIVATION

March and Simon (1958) divided employees' decision-making behaviors into individual's "Decisions to Perform" organizational activities and "Decisions to Participate" in organizations. However, this model lacks sufficient demonstrative and empirical validity. In addition, the simple relationship between two variables is lost in many unimportant variables. Therefore, it is necessary to cover key variables into one model for discussion so that the function of every variable can be evaluated adequately based on the performance platform. This has opened up extensive research routes for some scholars (Chen Bh, 1997; Xie, 2003).

REVIEW OF RELATED CONCEPTIONS

In view of human resources management and organizational behaviour, the classical employees' turnover is the rotation of employees around the labour market between firms, jobs and occupations, and between the states of employment and unemployment (Abassi et al., 2000). The term "turnover" is defined by Price (1977) as the ratio of the number of organizational members who have left and divided by the average number of people in that organization during the period.

Frequently, managers refer to turnover as the entire process associated with filling a vacancy: each time a position is vacated, either voluntarily or involuntarily, a new employee may be hired and trained. This term is also often utilized in efforts to measure relationships of employees in an organization as they leave, regardless of reason. Because people have paid more attention to employee voluntary turnover or loss influencing organization in treatment of staff movement, the organization employee turnover defined by Mobley (1982) has been widely used, namely employee turnover is regarded as the "termination of the process of an individual obtaining material income from the organization". This definition does not include the movement status of the possibly existing staff in an organization instead it adopts the wage labor contract to stipulate the relations among organization members, which easily distinguishes the shareholder status' turnover transformation.

The narrowed meaning and serviceability on the organization employee voluntary turnover concept defined by Mobley may become the foundation for most organizational turnover studies (Abelson, 1984; McEvoy, 1985; Cotton et al., 1986). For example, in the model study on the Chinese IT industry employee turnover or loss motivation carried out by domestic scholars. Zhang Mian et al. (2005) defined this kind of employee turnover or loss based on Mobley's definition as: "the process in which the individual obtaining the material income from an organization should terminate their organization labour contracts", therefore this definition may be suitable for the reality of there being a massive number "remaining at post without wage" and "laid-off" in some Chinese organizations at present.

For voluntary turnover, a conception often used, is the voluntary "Turnover Intent", whose connotation generally may be involved with the individual work selection opportunities and job-hunting behaviours, but may lack the direct connection with staff performance, and was considered as the most direct independent variable to employee turnover behaviour, and also the dependent variable of numerous predetermined variables which affect employee voluntary turnover factors (Allen, 1999; Price, 1977). However, "withdraw tendency", which is closely related with "turnover intent" and has an equal status put forward by Mobley (1978) at first in the construction turnover model, may be considered to include process variables in the different periods from

"thinking of quitting" to "job searching", "intention of turnover" and "voluntary turnover" behaviour occurring. The conception may be simplified as turnover tendency instead of turnover behaviour (Jaros et al., 2001; Hanish and Hulin, 1991).

However, Harnish and Hulin (1991) started the variation processes from employee organization performance to turnover behaviour, which may be extended to performance decision-making. They considered that the withdraw organization tendency may contain the processes from employee organization performance lowering (for example, worsening relation and deterioration of organization performance, absence from duty etc.) to the final turnover decision-making. Therefore, this behaviour acts as the foundation of the research path on the relationship between employee performance and voluntary turnover behaviour. For simplicity and to easily analyze the effect of talents' performance and withdraw tendency, the dependent variable "withdraw tendency" is used as equivalent to voluntary turnover in this paper.

EVOLUTION OF TURNOVER MODEL

The primary period of turnover thinking

Generally, there were primary study in organizational employee's movement from view of macroscopically economic at the beginning of the 20th century, for searching the factors influencing employees' turnover, such as salary, common training, labour market structure, and job opportunities, and their achievements have laid the foundation for later construction of organizational employees' retention/ turnover theory (March, 1958; Burton, 1969; Chen, 1997; Zhang et al., 2006).

In terms of the integrative theory concerning management of employees' retention/ turnover, as early as Barnard (1938, 1997), from the perspective of organizational society, personal psychology, and interaction of economic interest, made profound discussions about the determinate factors (individual goal, desirability, impetus, and other available opportunities which can be perceived) for people to join certain "collaborative organizations", theory on effectiveness of organizational "inducement" for attracting organizational members and keeping their willingness to contribute to organization, maintaining social structure in organizations, and realizing the target of organization. In Barnard's Function of the Executive, described among material and non-material inducements provided by organizations, social integrating relation generated by organizations to employees, takes a crucial position and usually plays "determinant" role in effective operation of organizations or socially collaborative system.

However, defects of it have been revealed by succeeding psychologists with a less independent scope was adopted for interpreting employees' turnover which

stresses only on the influence of economic factors; and it was less elucidating how the determinate factors influence employees' turnover behaviour (Zhang and Li, 2005).

The job- attitude period

Since the 1950s, with the rapid development of the western economy after post-war rebuilding, swiftly increasing management cost, such as the costs of control, replacement, and training from organizational employees' retention or turnover accompany lower unemployment rate. Promoting scholars and managers to embark on systematic research on employee movement in which empirical research became the mainstream in this field.

From establishment and evolution of research model on organizational employees' turnover, it is generally believed that the source during this period is combination of the developed organizational equilibrium theory in the classic work "Organization" of March and Simon (1958), who both are inheritor and promoter of social system school on the research of turnover decision behaviour of employees (Xie, 2003; Lee and Mitchell et al., 2004).

In their work, March and Simon divided employees' decision- making behaviors into individual's "Decisions to Perform" and "Decisions to Participate". Then put forward the earliest overall model about employees' voluntary turnover, the so-called model of "Decision to Participate". March and Simon were the earliest figures who tried to integrate labor market and individual behaviors for investigating and studying employees' turnover behaviors. Their outstanding contributions lie in the introduction of labor market and behavior variables into the research on turnover process of employees from organizations, laying a theoretical foundation for later research on employee turnover.

The Organizational Equilibrium Theory indicates clearly that the movement desirability and perceived mobility by employees are the most important theoretical precursor variables for their turnover behavior. The Classic School with the idea of the "Job attitude model" in the last 60 years took the main position in classic mainstream research. This is based on job attitude and oriented at the construction element of organizational commitment from the concept of movement desirability perceived by individuals. In the classic model, the ease of apperceived mobility by individuals is understood as selectable job opportunities or actual unemployment rate perceived by individuals, and is constructed as an external influencing factor which acts directly on employees' withdraw tendency or turnover behavior in the traditional research model based on job attitude (Xie, 2003; Lee et al., 2004).

Classic turnover models based on job attitude are constructed on the basis of a psychological process. It puts research focus on the mutual relations of employees' turnover behavior, including job satisfaction, organizational

commitment and expansion of their sub-structure variables as the mediator variables, generating various representative organizational employee voluntary models in different periods. The model's variables were increasingly generated and their relationships among variables gradually became complicated (Griffeth et al., 2000; Lee et al., 2004). Examples of the differing variables include the psychological process model of Price (1977) with job satisfaction as the direct mediator for employee voluntary turnover; the "Extended Media Chain" model put forward by Mobley (1979); Steers and Mowday's turnover model (1981) with the introduction of organizational commitment as a mediator; and the so-called "non-mainstream" voluntary turnover model called "Cusp-Catastrophe" of Sheridan and Abelson's (1983), which regards job satisfaction as the key measuring indicator and did not treat turnover as a process of continuous psychological changes.

The above-mentioned models introduced respectively by Price (1977), Mobley (1979), Steers and Mowday (1991) are regarded as typical "Attitude models" in the development of research on organizational employees' turnover in the monograph of Hom Griffeth, published in 1995.

Griffith (2000) conducted a review research in the model of element analysis on all papers on employees' volunteer turnover published in classic management magazines, he describes that related variables around attitude models reached eleven kinds of demographic predictors; sixteen kinds of sub-structure variables related to job satisfaction and organization factors and work environment factors, such as expectations, pay satisfaction, distributive justice, supervisory satisfaction, leader- member exchange, work group cohesion, co-worker satisfaction, role clarify; six kinds of variables related to job content and external environment factors, such as job scope, routinization, job involvement, alternative job opportunities, comparison with present job etc.; three kinds of other behavioural predictors; nine kinds of adjusting variables for withdraw process. As Griffith (2000) review, a general research model and analyzing route for traditional attitude research model are displayed in Figure 1.

Hausknecht (2008) listed the major 12 retention factors that have been published in the literature over the last 60 years from 24,829 employees in leisure and hospitality industry of US, which help explain why employees stay or quit. A brief summary of these content models is described in Table 1.

In conclusion, it is generally believed that in the traditional attitude turnover model the process of employees' volunteer turnover (including the turnover intention and behaviour of turnover) is the reversed transformation process of employees' retention psychology and behaviours, mainly consisting of four sectors (Lee and Mitchell, 1999): first is the quit process caused by job dissatisfaction; then, employees' search for substitutable jobs before turnover; is evaluation

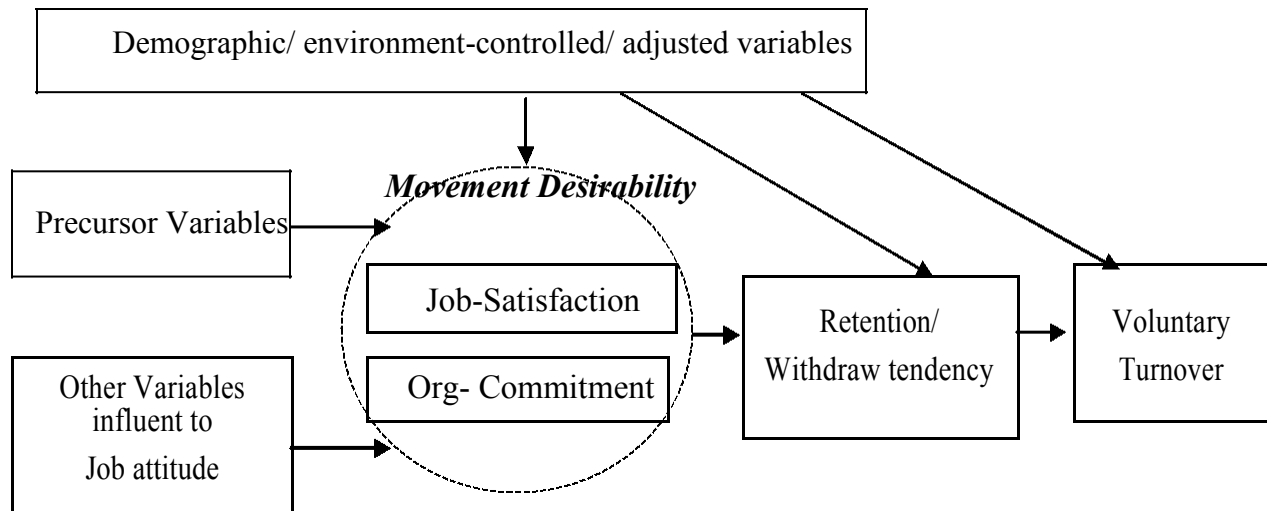


Figure 1. The Traditional Turnover Model. Adapted from Griffeth et al. (2000); pp. 463-488.

Table 1. Description and definition of retention factors.

Retention factor	Definition
1.Job satisfaction	The degree to which individuals like their jobs
2.Extrinsic rewards	The amount of pay, benefits, or equivalents distributed in return for service
3.Constitution attachments	The degree of attachment to individuals associated with the organization such as supervisor, co-workers, or customers
4.Orgnizational commitment	The degree to which individual's identify with and are involved in the organization
5.Orgnizational prestige	The degree to which the organization is perceived to be reputable and well-regarded
6.Lack of alternatives	Beliefs about the unavailability of jobs outside of the organization
7.Investments	Perceptions about the length of service to the organization
8.Advancement opportunities	The amount of potential for movement to higher levels within the organization
9.Location	The proximity of the workplace relative to one's home
10.Orgnizational justice	Perceptions about the fairness of reward allocations, policies and procedures, and interpersonal treatment
11.Flexible work arrangement	The nature of the work schedule or hours
12.Non-work influences	The existence of responsibilities and commitments outside of the organization

on such substitutable jobs; and result is occurrence of turnover behaviour.

NEW DEVELOPMENT

Introduction of the performance character

Although studies on the issues of organizational employees' turnover have been conducted over the past 60 years and will continue to take a prominent position in the theory and practice of organizational behaviour management, since the end of the 1970s and the beginning of the 1980s, Porter and Steer (1973), Spencer and Steers (1981) noticed the difference between leavers

with low and high performances. They stressed the necessity to study the level of job performance as a factor influencing turnover to study.

Dalton and Todor (1979, 1982), and Muchinsky and Tuttle (1989), believed that previous studies overstressed the negative impact on organizations caused by employees' turnover, and brought forward the turnover classification model based on the interactive appraisal of employees' performance and inducement of reward to employees. Therefore, further specifying the orientation of research on the voluntary turnover of employees with high employee performance feature appeared, the so-called "unfavorable drain" on organizations. This makes the relation between employees' job performance and their voluntary turnover become a special research realm possessing more value to improve organizations'

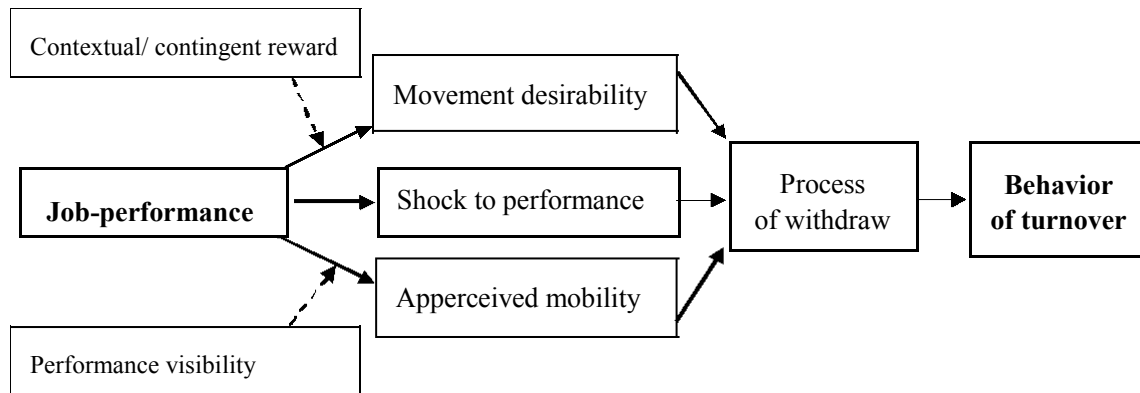


Figure 2. The Integrated Mediated Multi-routes Model. Adapted from Allen and Rodger Griffeth (2003); pp. 525-548.

to improve organizations' competitiveness and needing clarification. In the construction of this type of research models, features of relative performance levels of leavers and retainers, background factors influencing their decisions to perform and participate, and organizational performance consequence induced by turnover become the keys to understand employee turnover behaviours (Dalton and William, 1982; Allen et al., 1999; Dess et al., 2001).

Allen and Griffeth (1999), concerning research on the influence of employees' performance level to their voluntary turnover, summarized into three categories. These were developed from classic organizational equilibrium theory (March, Simon, 1958), and media chain process theory on turnover (Mobley, 1977), then put forward a comparatively complete integrating research model for discussing the relation between employees' performance level and their withdraw tendency even voluntary turnover. This model consists of three analytical routes as shown as Figure 2. Therefore, the proposed model consists of three analytical routes as follows: first, is employees' performance character in organizations will influence their job satisfaction and organization commitment; secondly, employees' performance character will influence their turnover behaviors through movement in the labor market with a definitive variable of apperceived mobility easiness; and the third concerns the different key degrees of employees' performance in organizations influencing their turnover behavior in a more direct way, so-called "short-circuiting" (Mobley et al., 1978; Lee and Mitchell, 1999).

Scholars discovered that, in some special circumstances, turnover resulted without any causative mechanisms by mediator variables, for instance, dissatisfied to job, job search or shock of performance. Lee (1999) and Mitchell (2003) explained that many turnover phenomena are absent from the traditional model, on the other hand, "match for the script" may replace assumptions of the traditional model. The traditional model assumes that employees may rationally judge the

turnover anticipation to be greater than in actuality.

Contents of the "match" may refer to ideas and plans, which are unrelated to the traditional mediator variables. Once these ideas and plans appear at suitable circumstances, for instance, opportunities of further education, career transition, move of residential place, child-bearing, invitation of other organization by offering more temptation, and failure in personal performance, and so on, will result in "Shock to the system", leading to withdraw tendency and turnover behavior rapidly. In particular, those "shocks" related to individuals' organizational performance, for example, the sudden negative performance appraisal (leading to a sense of failure) or outstanding positive performance feedback (likely to lead to immediate re-evaluation on the possibility to remain in the original organization, or strong attraction towards other organizational invitation by offering more temptation), are more likely to cause withdraw tendency and turnover behavior directly (Allen et al., 1999). Advantages of aforesaid integrative multi-routes analytical model on employee job performance and turnover may lie in the following factors. Firstly, clearly identifying and analyzing the simultaneous effects of the determinant factors contained in movement desirability and apperceived mobility between employee performance and turnover; Secondly, including an additional comprehensive research model with integration of the classic media chain, multi-routes theory, and the newly developed idea of "shock to the system"; Thirdly, facilitating the practice of organizational behaviors with a multi-routes platform to improve effective mechanisms on employee organizational performance to withdraw tendency and even turnover.

Job coupling

The basic hypothesis, in the traditional job attitude turnover model on employees' turnover process includes various exogenous variables, related to jobs in an organization, leading to turnover tendency and job-searching behaviours

through influencing employees' job satisfaction and organizational commitment (mediator variable), and further resulting in turnover. Thus, the model, with continuous research, tries to extend the predetermined factors (exogenous variables) which influence the mediator variables for improving its interpretation force.

However, recent element analyses by Griffeth and Hom (2000) on previous mainstream literature shows that the mediator attitude variables (job satisfaction and organizational commitment) can only interpret 3.6% variance of actual turnover behaviours, and withdraw tendency as the precursor variable, which is believed as to be the most direct mediator variable to turnover behaviour, could only interpret 12% of actual turnover behaviours.

In view of the lower interpreting power to traditional turnover model, Lee and Mitchell (1994, 1999, and 2004), renowned researchers in turnover, discovered that the various turnover variables can interpret only 25% by the traditional mainstream of actual turnover behaviors, that is to say, to use job satisfaction, organizational commitment, job searching, and selection of job opportunities as major predetermined variables. Moreover, Lee (2004) found that many voluntary turnover behaviors are caused by events which are called "system shockers", neither accompanied by job searching and job opportunity selection nor dissatisfaction to jobs. Factors leading to employees' retention are not psychological factors resulting in employees' turnover only, but involving different complex psychological and emotional processes coupled with social relations.

Job coupling as a new variable which is introduced into the traditional model is defended in two dimensions, it being known as "on-job-coupling" and "off- job-coupling". The key structure variables of job-coupling are basically described into three factors as linkage, fitness and sacrifice. "Fitness" is defined as an employee's perceived compatibility or comfort with an organization and with his or her environment. According to the theory of Coupling, an employee's personal values, career goals and plans for the future must "compatible" with the larger corporate culture and the demands of his or her immediate job, such as job knowledge, skills and abilities. In addition, a person will consider how well he or she fits the community and surrounding environment. This study posits that the better the compatibility, the higher the likelihood that an employee will feel professionally and personally tied to the organization.

"Linkage" is the formal or informal connections between an employee and institutions or people. Job coupling suggests that a number of threads connect an employee and his or her family in a social, psychological, and financial web that includes work and "off" work friends, groups, community, and the physical environment where they are located. The higher the number of links between the person and the web, the more an employee is bound to the organization. "Sacrifice represents "Sacrifice" represents the perceived cost of material or

psychological benefits that are forfeited by organizational departure. For example, leaving an organization may induce personal losses, such as losing contact with friends, personally relevant projects, or perks. The more an employee will have to give up when leaving, the more difficult it will be to sever employment with organization. Examples include nonprofit able benefits, like stock options or defined benefit pensions, as well as potential sacrifices incurred through leaving the organization like job stability and opportunities for advancement. Similarly, leaving a community that is attractive and safe may be difficult for employees.

The expanded empirical demonstrations on the job-coupling model indicate that job-coupling with factors for promoting organizational performance, may be a type of indicator to conceptually and experientially associate the behavior decisions on performance, withdraw tendency and quitting behaviors. Therefore, job-coupling variable is both the predetermined variable to employees' retention or turnover and one of the strong effects influencing organizational performance. Lee and Mitchell (1999, 2004) put forward and improved the "unwrapped job-coupling model" of voluntary turnover for employees' retention. Above 92% of samples were interpreted satisfactorily for their turnover behavior through combining social background on the angle of turnover decisions and multi-route analysis. Researchers discovered that the effects of job-coupling on employees' retention or voluntary turnover are more significant than job satisfaction and organizational commitment.

Requena and Felix (2003) and Watson and George (2002) believe that organizational performance characters based on organizational social capital coupling are found to more significant organizational behaviors made by individual employees. Moreover, job coupling is an important part for appraising employees' performance which is consistent with the connotation of organizational social capital. Job-coupling is the socialized factor of cognitive scenes in which employees interact with the organizational network. Sometimes, job coupling can lead to job satisfaction and organization commitment. Therefore, job coupling is a decisive factor to the formation of job attitude model. It reveals, in contrast to the traditional model, multi-routes job-coupling model may provide more advantages for interpreting the actual turnover behaviors, and be of practical significance to expand the field of organizational behavior.

In the model (Figure 3), Mitchell and Lee (2003) described job relationship as "binding" people in it. Those employees with high job-coupling characters have abundant close and distant social linkages, and enjoy themselves in their working and living networks. For the purpose of creating a systematic analysis model, researchers construct three analytical dimensions such as linkage, fitness, and sacrifice for job coupling, and combining it with the employees' organization and community, through job-coupling to interpret or forecast employees' retention, on-job coupling (organizational coupling) and

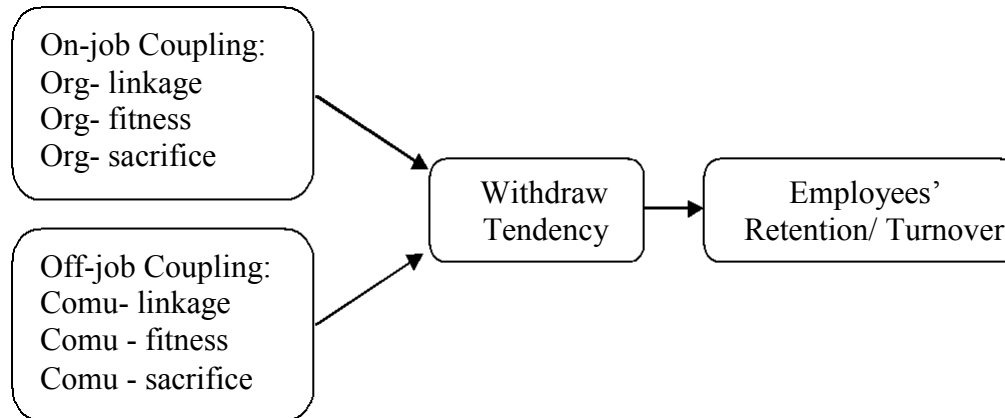


Figure 3. The Job-coupling Model. Adapted from Mitchell, Holtom and Lee et al. (2001); pp. 1102-1121.

off-job coupling (community coupling), which are described respectively through the three analytical dimensions.

COMPARING WITH PERSON-ENVIRONMENT FIT

In recent reviews of the person- environment (P-E) fit literature, Tinsley (2000) called P-E fit models “ubiquitous in vocational psychology” and concluded that the research support was overwhelming “that the P-E fit model provides a valid and useful way of thinking about the interaction between the individual and the environment”. Management scholars have expressed growing interest in the concept of P-E fit, due mainly to its many benefits for employee attitudes and behaviors. PE fit in a work setting is concerned with creating congruence between an employee’s values, skills, knowledge, and behavior and his/her work context. This congruence benefits both the employer and the employee. The employer benefits are likely to include higher levels of productivity, morale, organizational commitment, and employee retention. The employee benefits are largely associated with favorable work attitudes and lower levels of work stress.

Within the P-E fit framework, researchers have found that an individual may achieve congruence with the work environment on one or more levels: the job, the work group, the organization, and the broader vocation (Kristof-Brown, 2005; O’Reilly et al., 1991) . Researchers distinguished different specific types of fit included under the umbrella concept of P-E fit. These include individuals’ compatibility with their vocation (P-V), organization (P-O), job (P- J), and coworkers/group (P-G) (Kristof, 1996; Werbel and Gilliland, 1999) . First, person job (P-J) fit is the oldest and most widely discussed form of P-E fit in literature. P-J fit is defined as the match between the abilities of a person and the demands of a job or the needs/desires of a person and what is provided by a job (Edwards, 1991).

Person group (P-G) is the fit identifies both

supplementary and complementary aspects of fit necessary for successfully working with co-workers in a workgroup or a team (Werbel and Gilliland, 1999). Supplementary fit involves employees sharing similar attributes among their group members, whereas complementary fit is concerned with providing the skills and abilities that are not widely shared by other group members (Muchinsky and Monahan, 1989). Person organization (P-O) fit is the second type of P-E fit mentioned in literature. The concept of P- O fit involves matching employees’ interests, values, and needs to the organizational culture (Chatman, 1989). Kristof (1996) defined Person organization (P-O) fit as: “the compatibility between people and organizations that occurs when: (a) at least one entity provides what the other needs, or (b) they share similar fundamental characteristics or (c) are both”. This definition focuses on fit of the person with the whole organization rather than a specific job, vocation, or group. It takes into account two types of relationships that may occur between an individual and an organization.

The organization and the individual contribute to the fulfillment of needs of the other (for example, complementary congruence) or the organization and the individual share similar characteristics (such as supplementary congruence). Since P-O fit emphasizes fit to the organizational culture, it addresses P-E fit from a macro-level of analysis. P-O fit emphasizes a fit between employees and the work processes that permeate all jobs in an organization. It attempts to create an organizational identity by establishing consistent values that permeate an organizational culture. Whereas P-J fit is relevant to an individual’s compatibility with a specific job, P-O fit pertains to how an individual matches an organization’s values, goals, and mission. P-O fit is operationalized as the correlation between the values of employees and their organizations; P-J fit is measured as the correlation between employees’ skills and their job requirements. A summary of the P-E fit drawn by the author can be referred to in Table 2.

With some of the earliest research in the organizational

Table 2. The type of Person–Environment Fit.

Type of PE fit	Primary focus	Level of analysis	Organizational competencies
Person Job (P-J fit)	Matching employees' skills, knowledge, and abilities to performing specific job-related tasks	Individual	Functionally based competencies: General technical job proficiency, technical knowledge in a key function, or market sectors.
Person Group (P-G fit)	Matching employees' skills, knowledge, and abilities to both the complementary and supplementary requirements of the specific workgroup	Group	Innovation-based competencies: Flexibility and enhanced team decision making with decentralized decisions.
Person Organization (P-O fit)	Matching employees' interests, values, and needs to the organizational culture	Organizational	Culturally based competencies: Shared values and norms associated with corporate identity. Varied but including different dimensions of customer service, product innovation, integrity, fun loving, conservative, etc.

sciences and extending over the next half-century (Edwards, 1991; Kristof, 1996; Tinsley, 2000), scholars have found that P-E fit relates positively to important job attitudes (for example, job satisfaction, organizational commitment, subjective career success) job behaviors (such as core task performance and citizenship behavior) and negatively related to turnover intentions and behaviors (Kristof-Brown et al., 2005). P-E fit operates at both the organizational and individual levels of analysis. At the organizational level of analysis, organization provides the organizational infrastructure to support different organizational competencies (Werbel and Gilliland, 1999). In turn, this leads to a competitive advantage. At the individual level of analysis, P-E fit is concerned with identifying the individually appropriate attributes for a given work context (Kristof, 1996). P-E fit on the individual level is associated with having different types of skills, knowledge, values, and behavior. These assets are then associated with job proficiency. Unfortunately, despite the widespread acceptance and success of P–E fit models, there remain significant challenges to overcome.

The crux of P-E fit model is the “P-O fit paradox”, over-focus the “fitness” or “compatibility” will result in the stiffness and lower efficiency, especially during the changing era. Secondly is the ability to make meaningful predictions about outcome based upon the quality of fit between the characteristics of a person and of an environment. Although many studies report statistically significant relationships between fit and outcome, the amount of outcome variance accounted for remains modest, usually around 10% (Donald, 2004). Lee and Mitchell (2004), who are representatives in the academic field of turnover research, had contributed significantly. The various turnover variables interpreted 25% by job

coupling as major predetermined variables of actual turnover behaviours. Above 45% outcomes variance were interpreted satisfactorily through combining social background which turnover decisions and multi-route analyzing view. Especially in empirical demonstrations, to compare with the mediator variables of the job attitude model, researchers discovered that interpretation of job coupling influent to employees' retention behaviours are higher than job satisfaction and organizational commitment. And the third but not the last, for talent management, social background showed more significance According to Lee (1999) and Mitchell et al. (2003), Job coupling represents a broad cluster of factors that influence an employee's choice to remain in a job. ----

may be integrated with the background of social capital, and may be combined closely with social factors with more comprehensive inclusiveness. Therefore, P-E fit of job-related is not enough although operates from both of the organizational and individual levels of analysis.

“Organization fitness” is defined as an employee's perceived compatibility or comfort with an organization and with his or her environment. According to the theory of Job Coupling, an employee's personal values, career goals and plans for the future must be “compatible” with the larger corporate culture and the demands of his or her immediate job, such as job knowledge, skills and abilities. In addition, a person will consider how well he or she fits the community and surrounding environment. This study posits that the better the compatibility, the higher the likelihood that an employee will feel professionally and personally tied to the organization. O'Reilly et al. (1991) found that misfits with the organization values organization values terminated slightly faster than fits. Chatman (1989) later reported that when organizational entry produces poor person-organizational fit (P-O fit),

employees are likely to leave the organization. Chan (1996) suggested that having one's personal attributes compatible with one's job may decrease turnover, and found that lack of job compatibility predicted turnover. Cable and Judge (1996), Cable and Parsons (1999) and Werbel and Gilliland (1999) reported that people self-select jobs based on value congruence and that employers try to hire on that basis.

Many socialization practices follow similar processes. More specifically, initial job choice and socialization are related to perceived compatibility which in turn affects turnover. Thus, a person's compatibility with the job and organization relates to attachments to the organization. There are similar community dimensions of fitness as well. The weather, amenities and general culture of the location in which one resides are further examples. The more implication of Job coupling which was consistent with the connotation of organizational social capital, was the socialized factors of cognitive scenes in which employees interact with organizational network, further to achieve Job satisfaction and Origination commitment. Job coupling was a decisive factor to the formation of the job attitude model.

In addition, outdoor activities such as fishing or skiing, political and religious climates, and entertainment activities (college or professional sports, music, and theater) vary dramatically by region and location. Most important, these assessments of fit may be independent of job or organization fit (I love IBM, I hate New York). Relocation would obviously require a recalibration of fit, but even a new job without relocation could disturb ones general patterns with new hours of work or a different commute. There are also two constructs that partially overlap with fitness dimension. The work of Schneider (1987), Chatman (1989) and Kristof (1996) discusses the idea of person-organization fit (P-O fit). More recently, person-job fit (P- J fit) has been researched by Saks and Ashforth (1997) and Werbel and Gilliland (1999). In general these constructs refer to compatibility ideas including the "congruence of the personality traits, beliefs and values of individual persons with the culture, strategic needs, norms and values of organizations" (Netemeyer et al., 1997) for P-O fit and the congruence of knowledge, skills and abilities (KSA) with one's job for P-J fit. The measures include items like, "to what extent are the values of the organization similar to your own values" (Saks and Ashforth, 1997).

In general, these constructs refer to a type of compatibility concept, including the "congruence and consistence between individual features, beliefs and values and organizational cultural strategic requirement, norm and values" (Netemeyer, 1997) at the layer of person-organization, and the congruence between individual KSA (knowledge, skills and ability) and the job at the layer of person-job fit. Measuring items are mainly embodied in "the degree of similarity between organizational values and personal values" (Saks and Ashforth, 1997).

The dimension of organization fitness incorporates a number of the separate fit ideas from this literature. This study asks how well one perceives he/ she fits with his/ her co-workers, group, job, company and culture. In addition, since there is confusion in the literature on the bases of compatibility (e.g., personality, values, needs and goals; Kristof, 1996), therefore, this study simply asks for an overall fitness perception without referring to needs as apparent in the above items. Thus, the organization fitness construct of Job coupling is more encompassing than the separate fit constructs in the literature.

The analytic dimension of organization-fitness in Job-coupling integrates thoughts from these literatures, stressing more on the compatibility perceived to their colleagues, groups, job, units, and organizations. In addition, the bases for analyzing the construct of fitness in previous literatures are omnibus (Kristof, 1996). For instance, mixing personality, values, needs, and targets, but what is measured in Job coupling is the general fitness, without the need to highlight some items of fitness. The concept of fitness in JC is more inclusive involving community-fitness.

In summary, there are more overlaps between Organization fitness of Job Coupling and P-E fit which are described as P- O fit and P-J fit respectively. However, as a new platform of Communication about talent retention are suggested in this paper. Apparently, being coupled in an organization and one's community is associated with reduced intent to leave and actual leaving. These findings appear to support the current emphasis in the academic and popular press on the need for organizations to be concerned with talent's lives both on and off -the-job. It also suggests that the focus on money and job satisfaction as the levers for retention may be limited in scope. Many non financial and non- attitudinal factors serve to place people in a network of forces that keep them in their job. Further pursuit of these ideas will hopefully increase our understanding of why people stay, why they leave and how those actions can be influenced.

PROPOSED INTEGRATIVE MODEL

In the aforesaid model of Mitchell et al. (2003), job-coupling is a general coupling conception including non-job factors. Lee and Mitchell (2004) distinguished substructure variables in financial institutions; Liao (2007) in an hospital institution, Zheng and Sharan (2009) in cross-industry samples of MBA students from China and Malaysia, discovered that on-job coupling is a significant indicator to employees' performance, and off-job coupling is more significant to employees' withdraw tendency. Their research also revealed that job coupling have an obvious adjusting effect and even mediating effect on the relationship between employees' organizational performance and withdraw tendency. It provides a basis for empirical studies on the introduction of job-coupling into

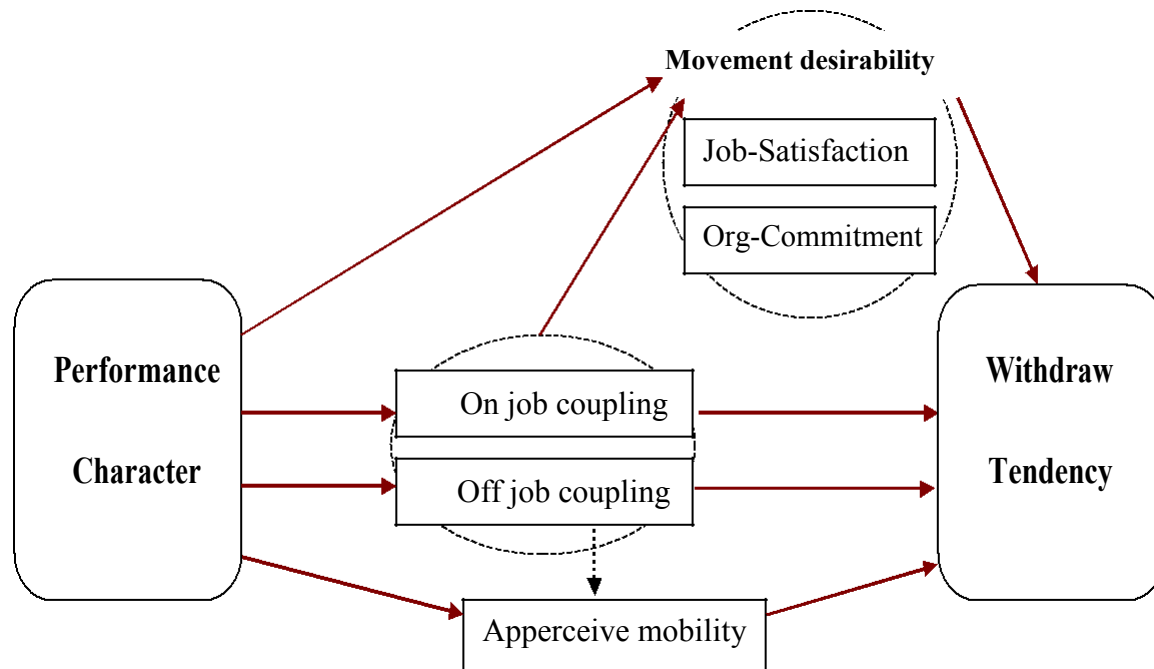


Figure 4. The Proposed Performance-Withdraw Tendency Model.

the network between employees' performance character and turnover tendency, even behavior. Therefore, in the proposed model as shown in Figure 4, this study take job coupling as mediator between performance character and movement desirability, neglect the less-significant relationship between performance characters to movement desirability.

FUTURE RESEARCH DIRECTIONS

The classic school may focus on the complex relationship among variables in the "job attitude model" following direction from the organizational equilibrium theory. However, the New Development School, might extend the empirical study by investigating cross-industry samples, the structure of on-job coupling and off-job coupling, the interaction between job- coupling and other variables, for example, some factors of job coupling or performance shock as moderators. The current operationalization of job coupling combines each item and six dimensions using equal weights. However, the individual's combined strength of one's relationship with others in the network may differ significantly. This means that individuals may have the same coupling score, but the structure of it maybe different. Although the construct of job coupling is proposed in this study with withdraw tendency, the outcome of being coupled may be more than it. Whether or not there is a possibility of a moderating influence by organization commitment and procedural justice from job coupling or performance shock?

DISCUSSION

From the primary thought (Barnard,1938) about employees' retention/turnover to "Decision of participate" model (March and Simaon, 1958), then the "Job-attitude model" groups: Price (1977), Mobley (1979), Steers and Mowday (1991), till now, the new development of employees' retention/ turnover model era, the integrative model (Allen et al., 2001), the "turnover model" of Mitchell and Lee (2003), even the proposed model, all of them, no doubt, provided indispensable theoretical and practical bases for our future research.

The model of Mitchell and Lee (2003), both in terms of theoretical hypothesis and empirical research, shows that job coupling plays a role equivalent to that of job satisfaction and organizational commitment, and is even, under certain conditions, as more decisive mediator variable directly leading to employees' voluntary turnover. However, traditional attitude model ignores the position of this type of influencing factors. The integrative employees' job performance, the hypothesis of multi- route media chain research model on voluntary turnover, which is put forward by Allen and Griffeth (1999), is a pioneering model for discussing the relation between employees with high performance characteristics and their turnover from organizations. But, verification can't be conducted from employees' job performance to job satisfaction route owing to the lack of suitable mediator mechanism.

From the perspective of empirical research, the employee retention model may be established and maintained through managing the dynamic external and

internal organization relations among employees or institutions. In fact, it belongs to the construction area of organizational social capital, through actively improving the transformation cost induced by key employee's turnover; individuals' performance may be activated. As a result, target for key employee retention in organizations may be achieved. Meanwhile, this is also favorable for extending the analytic perspective and management foundation concerning employees' retention which depends on both Classic School and Proposed Multi-routes model. Nevertheless, the discussion of research mentioned in this study provides more areas for the future research as well as information that can be used by actual executive managers on the retention factors or models of employee's retention.

REFERENCES

- Abassi SM, Hollman KW (2000). Turnover: the real bottom line. *Public Pers. Manage.*, 2(3): 333-342.
- Abelson MA, Baysinger BD (1984). Optimal and Dysfunctional Turnover: Toward an Organizational Level Model. *Academy of Management. Acad. Manage. Rev.*, 9(2): 331-341.
- Allen DG, Griffeth RW (1999). Job performance and turnover: a review and integrative multi-route model. *Hum. Resour. Manage. Rev.*, 9(4): 525-548.
- Allen DG, Griffeth RW (2001). Test of a mediated performance turnover relationship highlighting the moderating roles of visibility and reward contingency. *J. Appl. Psychol.*, 86(5): 1014-1021.
- Allen DG, Shore LM, Griffeth RW (2003). The Role of Perceived Organizational Support and Supportive Human Resource Practices in the Turnover Process. *J. Manage.*, 29(1): 99-118.
- Allen NJ, John PM (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *J. Occupational Psychol.*, 63(1): 1-18.
- Barnard CI (1997). The responsibility of businessmen (Y. Sun, Trans.): Beijing social science publishing company.
- Burton JF (1969). Inter-industry variations in voluntary labour mobility. *Ind. Labour Relat. Rev.*, 22: 199-216.
- Cable DM, Judge TA (1994). Pay preference and job search decisions: A person-organization fit perspective. *Pers. Psychol.*, 47(2): 317-348.
- Cable DM, Judge TA (1996). Person-organization fit, job choice decision and organizational entry. *Organ. Behav. Hum. Decis. Processes*, 67, 294-311.
- Cable DM, Parsons CK (1999). Establishing person-organization fit during organizational entry. Paper presented at the Annual Meetings of the Academy of Management.
- Chan D (1996). Cognitive misfit of problem-solving style at work: A facet of person-organization fit. *Organ. Behav. Hum. Decis. Processes*, 68: 194-207.
- Chatman JA (1989). Improving Interactional Organizational Research: A Model of Person- Organization fit. *Acad. Manage. Rev.*, 14(3): 333-349.
- Chen BH (1997). The summaries research of Voluntary turnover. *J. Psychol. New Trends*, 16(1): 26-31.
- Cotton JL, Tuttle JM (1986). Employee Turnover: A Meta-Analysis and Review with Implications for Research. *Acad. Manage. Rev.*, 11(1): 55-70.
- Dalton DR, Todor WD, Krackhardt DM (1982). Turnover Overstated: The Functional Taxonomy. *Academy of Management. Acad. Manage. Rev.*, 7(1): 117-123.
- Dalton RD, Tudor WD (1979). Turnover turned over: An expanded and positive perspective. *Acad. Manage. Rev.*, 4: 225-235.
- Dess GG, Jason D (2001). Shaw. Voluntary Turnover, Social Capital and Organizational Performance. *Acad. Manage. Rev.*, 26:446-456.
- Donald E, Eggerth E (2004). Applying the Bradley-Terry-Luce method to P-E fit. *J. Vocat. Behav.*, 64(1): 92-107.
- Edwards JR (1991). Person-job fit. A conceptual integration, literature review and methodological critique. *Int. Rev. Ind. Organ. Psychol.*, 6:283-357
- Eriksson T (2001). Empirical determinants of CEO and Board Turnover. *Empirical*, 28: 243-257.
- Griffeth RW, Hom PW, Gaertner S (2000). A meta-analysis of antecedents and correlates of employee turnover: update, moderator tests, and research implications for the next millennium. *J. Manage.*, 26(3): 463-488.
- Hanish KA, Hulin CL (1991). General attitudes and organizational withdraw: an evaluation of a causal model. *J. Vocat. Behav.*, 39: 110-128.
- Hausknecht JP (2008). Targeted employee retention: performance-based and job-related differences in reported reasons for staying. Cornell University.
- HoukesInge P (2001). Work and Individual Determinants of Intrinsic Work Motivation, Emotional Exhaustion, and Turnover Intention: A Multi-Sample Analysis. *Int. J. Stress Manage.*, 8(4): 257-283.
- Jaros SJ, Jermier JM, Koehler JW, Sincich T (1993). Effects of continuance, affective, and moral commitment on the withdrawal process: An evaluation of eight structural equation models. *Acad. Manag. J.*, 36: 951-995.
- Kristof AL (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Pers. Psychol.*, 49(1): 1-49.
- Kristof-Brown AL, Ryan DZ, Erin CJ (2005). Consequences of Individuals' fit at work: a meta-analysis of Person-Job, Person-Organization, Person-Group and Person-Supervisor fit. *Pers. Psychol.*, 58(2): 281-342.
- Lee TW, Maurer SD (1997). The retention of knowledge workers with the unfolding model of voluntary turnover. *Hum. Resour. Manage. Rev.*, 7(3): 247-275.
- Lee TW, Mitchell TR (1994). An alternative approach: The unfolding model of voluntary employee turnover. *Academy of Management. Acad. Manage. Rev.*, 19(1): 51-89.
- Lee TW, Mitchell TR, Holtom BC, McDaniel LS, Hill JW (1999). The unfolding model of voluntary turnover: A replication and extension. *Acad. Manage. J.*, 42(4): 450-462.
- Lee TW, Mitchell TR, Sablinski CJ (2004). Theoretical development and extension of the unfolding model of voluntary turnover. *Acad. Manage. J.*, 17(1), 35-49.
- Lee TW, Mitchell TR, Sablinski CJ, Burton JP, Holtom BC (2004). The effects of job embeddedness on organizational citizenship, job performance, volitional absence and voluntary turnover. *Acad. Manage. J.*, 47(5): 711-722.
- Liao JQ, Liang XW (2007). The embeddedness model and keeping of core employees. *J. Technical Dev. Countermeasure*, 1: 119-121.
- Maertz CP, Griffeth RW (2004). Eight Motivational Forces and Voluntary Turnover: A Theoretical Synthesis with Implications for Research. *J. Manage.*, 30(5): 667-683.
- March JG, Simon HA (1958). *Organizations*. In: New York: Wiley.
- McEvoy GM, Cascio WF (1985). Strategies for reducing employee turnover: A meta-analysis. *J. Appl. Psychol.*, 70(2): 342-353.
- Mitchell TR, Brooks CH, Thomas WL, Chris JS, Miriam E (2001). Why people stay: Using job coupling to predict voluntary turnover. *Acad. Manage. J.*, 44(6): 1102-1121.
- Mitchell TR, Hekman DR, Lee TM, Harman W, Holtom B (2009). Turnover Contagion: How Coworkers' Job Coupling and Coworkers' Job Search Behaviors Influence Quitting. *Acad. Manage. J.*, 59(3): 545-561.
- Mitchell TR, Holtom BC, Lee TW, Ted G (2003). How to keep your best employees: Developing an effective retention policy / Executive commentary. *Acad. Manage. Exec.*, 15(4): 96-118.
- Mobley WSH, Adam H (1978). An evaluation of the precursors of hospital employees turnover. *J. Appl. Psychol.*, 237-240.
- Mobley WH (1977). Intermediate linkages in the relationship between job satisfaction and employee turnover. *J. Appl. Psychol.*, 62(2), 237-240.
- Mobley, W. H. (1982). Employee turnover. Reading. In: Addison-Wesley Press.
- Mobley WH, Griffeth RW, Hand HH, Meglino BM (1979). Review and conceptual analysis of the employee turnover process. *Psychol. Bull.*,

86: 493-522.

- Mowday RT (1991). Equity theory perceptions of behaviour in organizations. In RM Steers, and IW Porter (Eds.), *Motivation and work behaviour*. New York: McGraw-Hill Publishers. pp. 111-131.
- Muchinsky PM, Tuttle JM (1989). Employee absenteeism: A review of the literature. *J. Vocat. Behav.*, 10: 316-340.
- Nahapiet J, Ghoshal S (1998). Social capital, intellectual capital, and the organizational advantage. *Acad. Manage. Rev.*, 23(2):242-266.
- Netemeyer RG, Boles JS, McKee DO, McMurrian R (1997). An investigation into the antecedents of organizational citizenship behaviours in a personal selling context. *J. Mark.*, 61: 85-98.
- O'Reilly CA III, Chatman J, Caldwell DF (1991). People and Organizational Culture: A Profile Comparison Approach to Assessing Person-Organization Fit. *Acad. Manage. J.*, 34(3): 487-516.
- Porter LW, Steers RM (1973). Organizational, work, and personal factors in employee turnover and absenteeism. *Psychol. Bull.*, 80: 151-176.
- Potter JS, Timothy JD (2003). Executive Turnover and the Legal Environment: The Case of California Hospitals, 1960-1995. *Sociological Forum*, 18(3): 441-464.
- Price JL (1977). The study of turnover. In (pp. 45-60): Ames: Iowa State University Press.
- Requena F (2003). Social Capital, Satisfaction and Quality of Life in the Workplace, *Social Indicators Research*, 61:331-360.
- Rice L (2007). The positive analysis about the turnover tendency in the State and Private organization. Huazhong University.
- Saks AM, Ashforth BE (1997). A longitudinal investigation of the relationships between job information sources, applicant perceptions of fit, and work outcomes. *Pers. Psychol.*, 50(2): 395-426.
- Schneider B (1987). The People Make the Place. *Pers. Psychol.*, 40(3): 437-453.
- Shaw D, Jason D (1999). Job Satisfaction and Turnover Intention: The Moderating Role of Positive Affect. *J. Soc. Psychol.*, 139(2): 222-244.
- Sheridan JE, Abelson MA (1983). Cusp Catastrophe Model of Employee Turnover. *Acad. Manage. J.*, 26(3): 418-436.
- Spencer DG, Steers RM (1981). Performance as a moderator of the job satisfaction, turnover relationship. *J. Appl. Psychol.*, 66(4): 511-514.
- Steers RM, Mowday RT (1981). Employee turnover and post-decision accommodation process. In: Cummings L.L., Staw B.M. *Research in Organizational Behaviour*, pp. 235-281.
- Tinsley HEA (2000). The Congruence Myth: An Analysis of the Efficacy of the Person-Environment Fit Model. *J. Vocat. Behav.*, 56(2): 147-179.
- Watson WG, Papamarcos SD (2002). Social Capital and Organizational Commitment. *J. Bus. Psychol.*, 16(4), 537-552.
- Werbel JD, Gilliland SW (1999). The use of person-environment fit in the selection process. In: G. Ferris (Ed.), *Research in Personnel and Human Resources Management*, p.17.
- Xie JY (2003). The analysis of employees' turnover model. *J. Econ. Manage.*, 5: 14-21.
- Zhang M (2004). The positive research on the employees' dynamic turnover model in IT industry of China. Unpublished Master paper, Xi'an Jiaotong University.
- Zhang M, Zhang D (2006). The new development of voluntary turnover model. *J. Econ. Manage. Abroad*, 25(9): 24-28.
- Zhang M, Li SZ (2005). The analysis of psychological dynamic reason model of employees' voluntary turnover. *Dev. Psychol. Sci.*, 10(3): 330-341.
- Zhang QZ (2005). The new economic socialistic. In: *Beijing Soc. Sci.*, 18: 54-75.
- Zheng WB, Sharan K (2009). An Empirical Study on Mediated Multi-routes TR Model based on SC Platform, IECS2009.