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# Synergy and Its Limits in Managing Information Technology Professionals

Thomas W. Ferratt

*University of Dayton*, [tferratt1@udayton.edu](mailto:tferratt1@udayton.edu)


Jayesh Prasad

*University of Dayton*, [jprasad1@udayton.edu](mailto:jprasad1@udayton.edu)

Harvey Enns

*University of Dayton*, [henns1@udayton.edu](mailto:henns1@udayton.edu)

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## **Synergy and Its Limits in Managing Information Technology Professionals**

**Dr. Thomas W. Ferratt**

School of Business Administration, University of Dayton, 300 College Park, Dayton, OH 45469-2130,  
ferratt@udayton.edu

**Dr. Jayesh Prasad**

School of Business Administration, University of Dayton, 300 College Park, Dayton, OH 45469-2130,  
prasad@udayton.edu

**Dr. Harvey G. Enns**

School of Business Administration, University of Dayton, 300 College Park, Dayton, OH 45469-2130,  
enns@udayton.edu

### **Abstract**

We examine the effects of human resource management (HRM) practices (e.g., career development, social support, compensation, and security) on IT professionals' job search behavior. Job search is a relatively novel dependent variable in studies of voluntary withdrawal behavior, in general, and for IT professionals, in particular. From a universalistic perspective, HRM practices individually and in combination exhibit independently additive effects on job search behavior. Our study contrasts this perspective with configurational theory, hypothesizing that proposed ideal-type configurations of HRM practices have synergistic effects on job search behavior. We contribute to the IT and broader HRM literature by theoretically explicating and empirically demonstrating with IT professionals the power of configurational theory to explain the relationship between HRM practices and job search behavior. Our empirical results show that two configurations of HRM practices – Human Capital Focused (HCF) and Task Focused (TF), which are high and low on all HRM practices, respectively – exhibit a synergistic relationship with the job search behavior of IT professionals. HCF has lower job search behavior than would be expected based on the independently additive effects of the HRM practices, whereas TF has correspondingly higher job search behavior. Our results also show that less than perfect horizontal fit detracts from the synergy of these extreme configurations. Just as importantly, several other non-extreme configurations of HRM practices exhibit independently additive effects for the HRM practices but not synergy, suggesting that synergy is limited to extreme configurations. We also discuss a number of implications for research and practice.

**Keywords:** Synergy; configurations; information technology professionals; management of IT resources; human resource practices; staffing; strategic human resource management

## **Synergy and Its Limits in Managing Information Technology Professionals**

### **Introduction**

Managing information technology (IT) professionals has typically been a top concern of CIOs for decades (Luftman and Ben-Zvi 2010). Organizations utilize a variety of human resource management (HRM) practices (e.g., training, compensation level, etc.) in managing their IT work force to obtain desired outcomes. An important outcome is IT professionals' withdrawal behavior as organizations seek to achieve appropriate levels of turnover that balance, for example, the costs of recruiting new employees with benefits such as access to new skills. Job search behavior, which is on the continuum of attitudes, cognitions, and behaviors related to withdrawal (Griffeth, Hom, and Gaertner 2000), is an observable behavior that leads to voluntary turnover. Despite its practical importance, job search behavior has been the subject of only a small (but growing) body of research (Avey, Luthans, and Jensen 2009, Kanfer, Wanberg, and Kantrowitz 2001, Bretz, Boudreau, and Judge 1994, Blau 1993). In particular, studies of this behavior are rare in the literature on IT professionals. By focusing on this relatively novel dependent variable, our study contributes to understanding how HRM practices shape IT professionals' ties to their employing organization and represents a substantial advance over prior IT research in linking HRM practices to a broader range of outcomes than the typical turnover or turnover intentions.

An issue with both practical and theoretical implications is the manner in which HRM practices affect job search behavior of IT professionals. The issue is whether some combinations of HRM practices are synergistic, i.e., are they actually configurations of practices that provide additional leverage beyond the independent effects of individual constituent practices? Most investigators of HRM configurations have not empirically examined an underlying assumption that the configurations they theoretically define or empirically identify have synergistic effects (Verburg, Den Hartog, and Koopman 2007, Ferratt, Agarwal, Brown, and Moore 2005). Indeed, empirical support for this assumption is extremely limited. The IT HRM literature has no such empirical studies of synergy. Some previous IT studies of configurations present theoretical arguments for synergy without empirical confirmation or they assume that synergy exists (e.g., Ferratt et al. (2005) and Agarwal and Ferratt (1999, 2001)). We extend this work by testing for synergy rather than assuming that configurations are synergistic.

Even in the broader HRM literature, as we show later, the few studies (e.g., Ichniowski, Shaw, and Prennushi 1997) that have conducted an empirical test of synergy exhibit inadequacies. We address this critical gap in the literature. Thus, our purpose is to investigate theoretically and empirically the synergistic effect of combinations of HRM practices on the job search behavior of IT professionals. Our study clearly articulates the theoretical arguments for synergy, notes the limitations of prior empirical studies of combinations of HRM practices, and conducts a more complete empirical investigation of this issue with IT professionals.

### **Job Search Behavior**

Job search behavior is observable behavior along the causal path leading to voluntary turnover in various models of the turnover process (Holtom, Mitchell, Lee, and Eberly 2008, Price 2000, Hom and Griffeth 1995). For example, Mobley's (1977) influential model of the turnover process includes job satisfaction/dissatisfaction, thinking of quitting, intention to search for alternatives, search for alternatives (i.e., job search behavior), intention to quit/stay, and quitting/staying. Hom and Griffeth (1991) re-conceptualize some of Mobley's variables, but their model continues to include job search behavior as a variable in the causal chain between job satisfaction and retention. Voluntary turnover models, such as these, are based on a rational, step-by-step causal chain in which job dissatisfaction is an influential factor affecting job search behavior, which in turn affects voluntary quitting or turnover.

A major alternative to these turnover models is Lee and Mitchell's (1994) unfolding model of turnover. In this model, voluntary turnover results from a shock, not necessarily job dissatisfaction. Although the unfolding model excludes job search behavior from some paths that lead to voluntary turnover, recent research on turnover of IT professionals (Niederman, Sumner, and Maertz 2007) adds paths to those theorized by Lee and Mitchell, including a path with no particular shock other than slowly building dissatisfaction, and reports job search behavior as an essential feature in all of these paths. Clearly, job search behavior is an important antecedent of voluntary turnover for IT professionals. Thus, developing an understanding of antecedents of job search behavior should also contribute to developing an understanding of turnover.

Studies of job search behavior are not nearly as numerous as those studying withdrawal cognitions, particularly turnover intention (Griffeth et al. 2000). Nevertheless, the role of job search behavior in the turnover process is worthy of attention. Griffeth et al.'s (2000) meta-analysis of turnover antecedents shows that the corrected

effect size for job search behavior on turnover is .28. This effect size is comparable to corrected effect sizes for withdrawal cognitions, which range from .22 to .38. Furthermore, job search behavior is an essential feature in the turnover process for IT professionals, whether the turnover process is initiated by dissatisfaction or a positive shock, such as an unsolicited job inquiry (e.g., see Niederman et al. 2007). IT managers may seek to intervene in the turnover process as job search behavior occurs to influence an IT employee's evaluation of alternatives, the current job, or expectations about prospects.

The consequences of turnover (Hom and Griffeth 1995) make it important for IT managers and professionals to understand factors influencing the turnover process. Among the negative consequences for the organization are the economic costs of separation, replacement, and training. For the individual they potentially include forfeiting seniority and fringe benefits, transition stress in a new job, and relocation costs. Among the positive consequences for the organization are the infusion of new knowledge and technology by replacements. For the individual they include obtaining a better job and avoiding a stressful former job. Given such a range of possible consequences, we recognize that not all organizations strive to minimize turnover. Indeed, different organizations manage their human resources with the expectation of achieving different levels of turnover (Agarwal and Ferratt 2001) and, thus, experience different levels of job search behavior.

### **Effect of HRM Practices on Job Search Behavior**

HRM practices are actionable "levers" that managers use to effect outcomes. In a meta-analysis of High Performance Work Practices (HPWPs) in the broader HRM literature, Combs, Liu, Hall, and Ketchen (2006) identified the following consensus HPWPs (or simply, HRM practices): flexible work, participation, teams, training, internal promotion, information sharing, compensation level, incentive compensation, employment security, selectivity, HR planning, performance appraisal, and grievance procedures. They report a positive correlation between individual practices and retention. Price's (2001) model of turnover, based on an exemplary program of turnover research (e.g., see Felts, Mitchell, Hekman, Lee, Holtom, and Harman 2009), includes a number of these practices and job search behavior in the causal chain. In this model, HRM practices (e.g., promotional chances, pay, and social support) are antecedents to job satisfaction and organizational commitment, both of which have a negative relationship with job search behavior, an early behavior in the turnover process.

An important theoretical issue with practical implications is the manner in which HRM practices affect outcomes such as job search behavior. A common perspective on the effect of HRM practices on outcomes is the universalistic perspective (Martín-Alcázar, Romero-Fernández, and Sánchez-Gardey 2005, Delery and Doty 1996). In this perspective greater use of specific HRM practices will always result in better (or worse) outcomes. Research based on this perspective has hypothesized and demonstrated that HRM practices individually and in combination have independently additive linear effects on outcomes (Delery and Doty 1996). Indeed, HRM practices have been theoretically modeled as having independent effects on job search behavior. However, configurational theory, as explained next, provides a different perspective that creates theoretical tension with the universalistic perspective.

#### *Configurational Theory and the Scope of Our Study*

Configurational theory builds on general systems theory (Boulding 1956). Configurations refer to combinations (or systems) of multiple variables. In the HRM domain configurations refer to combinations (or systems) of HRM practices (Delery and Doty 1996). Configurational theory seeks to understand these combinations of variables – what leads to them, how they change, and what effects they have. Key concepts from systems theory are synergism (“The whole is not just the sum of the parts; the system itself can be explained only as a totality”) and equifinality (“Equifinality suggests that certain results may be achieved with different initial conditions and in different ways”) (Kast and Rosenzweig 1972, p. 450). In contrast with the universalistic perspective, configurational theory leads to hypothesizing that configurations of HRM practices have synergistic effects on outcomes (i.e., HRM practices are not just independently additive) (Meyer, Tsui, and Hinings 1993) and that certain results (e.g., high job search behavior) may be achieved by more than one configuration (i.e., equifinality occurs) (Payne 2006).

Additional concepts in configurational theory include vertical fit, which refers to the relationship between the system and its environment, and horizontal fit, which refers to the relationship among the components of the system. Examples of these concepts in the HRM literature are found in Delery and Doty (1996). They note that vertical fit refers to the congruence of the HRM system with other characteristics of the HRM system’s environment, e.g., the organization’s strategy. Horizontal fit in the HRM domain refers to the complementarity of HRM practices.

A proposed ideal-type configuration (also referred to variously as a pattern, gestalt, profile, or archetype in the literature (Miller 1987, Greenwood and Hinings 1993) is expected to have horizontal fit, i.e., complementarity

among combinations of practices, and consequently synergy. Complementarity mechanisms for achieving synergy include reinforcement, flanking, and compensation (Horgan and Mühlau 2006), which we explain later to make our arguments for the synergy of specific configurations. Empirical evidence is needed to confirm that a proposed ideal-type configuration achieves the proposed synergistic effects.

Consider an example of a configuration of two HRM practices: compensation and employment security. Assume that each practice has a negative effect on job search behavior (i.e., lower values of each lead to higher job search behavior and vice versa). Assume further that an IT professional in an organization initially has had low pay with high security, but that the employer's financial position has worsened and that employment security is now low. If job search behavior now increases based on lower employment security, that increase reflects the independently additive effect of security on job search behavior. However, the combination of low pay and low security could result in the IT professional searching even more than the negative relationship of each HRM practice would predict. The two together could complement each other, e.g., through mutual reinforcement, such that the level of job search behavior is due to each practice plus an amount beyond any independent effect of each practice. This additional amount reflects synergy.

Configurational theorists have examined factors that lead to specific configurations (Miller 1987, Meyer et al. 1993), changes in configurations (Greenwood and Hinings 1993), and the effects of configurations (Ketchen, Thomas, and Snow 1993, Lee, Miranda, and Kim 2004). Introducing configurational theory to the IT HRM literature provides opportunities for similar studies in this domain. The scope of our research does not include factors that lead to specific configurations, including the concept of vertical fit, nor does it include how configurations change. Our scope focuses on the effects of HRM configurations, including horizontal fit, on job search behavior.

#### *General Hypothesis Based on Configurational Theory*

We examine two effects essential to configurational theory. Specifically, our focus within configurational theory is on the following theoretically interesting relationships between ideal-type configurations and outcomes: (1) ideal-type configurations are synergistic, i.e., the relationship between HRM practices and outcomes is different from the independently additive effect of the practices on outcomes (Martín-Alcázar et al. 2005) and (2) the farther an

organization's combination of HRM practices is from an ideal-type configuration, the less the synergistic effect (Delery and Doty 1996, Doty, Glick, and Huber 1993); lower deviation represents greater horizontal fit.

Synergy means that the whole is greater than the sum of the parts; thus, by definition, synergistic configurations have effects on outcomes beyond the independently additive effects of the individual practices. As indicated above, a configuration of HRM practices is synergistic if it conforms to an ideal type. How do we know that a configuration is synergistic and, thus, an ideal type? We can theoretically argue that a specific configuration is synergistic, i.e., that a specific combination of practices is complementary (e.g., see Delery and Doty, 1996), as we will do later when we propose specific synergistic configurations. Empirical research is then needed to confirm that a theoretically defined configuration is, indeed, synergistic and, thus, truly an ideal type. However, prior research has not empirically confirmed that the proposed configurations in our study are synergistic. Indeed, as we explain below, prior research has not adequately confirmed the synergy of any HRM configuration in the IT domain. To confirm that specific configurations are synergistic, empirical evidence should demonstrate that the configurations have effects on outcomes beyond the independently additive effects of the individual practices.

Moreover, synergistic effects must be investigated in the presence of (or controlling for) horizontal fit. The synergistic relationship of HRM practices to outcomes is assumed to occur when there is perfect horizontal fit. An indicator of horizontal fit is the degree of adherence of perceived HRM practices to the profile of those practices in a proposed ideal-type configuration. Perfect horizontal fit occurs when there is complete adherence to the profile. Deviations from an ideal type are expected to reduce synergistic effects. Deviations occur in our study because IT professionals do not perceive the organization's actual HRM practices identically with the profile of practices in an associated ideal-type configuration. Based on configurational theory, the farther the perceived configuration is from an ideal-type configuration (i.e., the worse the horizontal fit), the less the synergistic effect (e.g., Delery and Doty, 1996; Doty et al., 1993). Thus, using configurational theory to explain the effect of HRM practices on job search behavior yields this general hypothesis:

- H1: The effect of proposed ideal-type configurations of HRM practices on job search behavior is synergistic, i.e., while controlling for horizontal fit, the proposed ideal-type configurations of HRM



practices explain an additional amount of variation in job search behavior beyond that explained by the independently additive relationships between the practices and job search behavior.

Our test of Hypothesis 1 is needed since prior empirical studies have not effectively articulated nor investigated hypotheses for assessing the validity of configurational theory, particularly in the IT HRM domain. Prominent studies of HRM configurations in the IT domain (e.g., Ferratt et al. 2005, Agarwal and Ferratt 2001, Ang and Slaughter 2004) find relationships between configurations and turnover, but none investigates whether the relationship is synergistic, i.e., they implicitly assume that H1 holds and do not attempt to empirically demonstrate support for the hypothesis. The broader HRM literature has a few studies that include investigations of synergy, but each of those studies also has limitations, as described below. Further, these few existing studies do not examine job search behavior (or turnover or retention), which makes our examination of H1 essential.

Combs et al. (2006) note in their meta-analytic review of HPWP that a core belief of the strategic human resource management literature is that a configuration of such HRM practices has synergistic effects. However, they note that only two studies (Guerrero and Barraud-Didier 2004, Ichniowski et al. 1997) directly test whether such a configuration has a greater effect than any individual practice. However, as explained below, essentially only one of these tests for synergy, but that test is incomplete. Guerrero and Barraud-Didier (2004) include a latent variable representing a bundle of individual practices, but not the practices themselves, in their model. Their test does not make it possible to determine whether the greater explained variance associated with the bundle of practices results from an independently additive or a synergistic effect. In using hierarchical regression analysis to conduct a test of the effect of configurations of HRM practices on productivity, Ichniowski et al. (1997) briefly report that configurations add explanatory power to the HRM practices already in the regression model. However, they overly simplify their operationalization of practices as dichotomous (presence/absence) variables, thus assuming implicitly that horizontal fit is irrelevant. Horgan and Mühlau (2006) used an analytic approach based on Ichniowski et al. (1997). Their dependent variable was a composite of employee work performance, cooperation, and discipline. They did not use any measure of horizontal fit. Unlike in Ichniowski et al. (1997), the overall variance explained when adding configurations to HRM practices did not show a significant increase.

To summarize, prior research on HRM configurations in the IT domain has not attempted to test H1 empirically. Even the empirical research on HRM configurations in the broader literature suffers from limitations. For example, it does not focus on job search behavior and empirical limitations in tests of hypotheses similar to H1 (for other dependent variables) preclude drawing reliable inferences for HRM configurations in the IT domain. Thus, it is important to conduct our study of H1 for HRM configurations in the IT domain. To this end, we propose ideal-type configurations of HRM practices and then elaborate H1 (in the form of sub-hypotheses) for specific configurations.

#### *HRM Configurations in the IT Domain*

We build on prior research in the IT HRM domain to identify HRM practices and configurations. That research is consistent with research in the broader HRM literature. For example, consider this construct: desired length of employment relationship from an organization's perspective. Given our interest in job search behavior as an outcome, we use this construct as a relevant theoretical driver together with empirical results from prior studies to identify the configurations that form the foundation for our empirical study. Desired length of employment relationship, ranging from short- to long-term, has been explicitly used to define a theoretically based typology (Agarwal and Ferratt 2001, 1999) and an empirically derived taxonomy (Ferratt et al. 2005) in the IT HRM literature. Moreover, consistent with the broader HRM literature, it is an essential dimension in differentiating configurations in other typologies (Delery and Doty 1996, Miles and Snow 1984), and is a primary differentiator of transactional and relational employment relationships (Rousseau 1995). We draw on the taxonomy of Ferratt et al. (2005) as well as the typology in Agarwal and Ferratt (2001, 1999) to identify proposed ideal-type configurations. Configurations with higher HRM practices, such as social support, compensation, and employment security, would be associated with longer desired length of employment relationship.

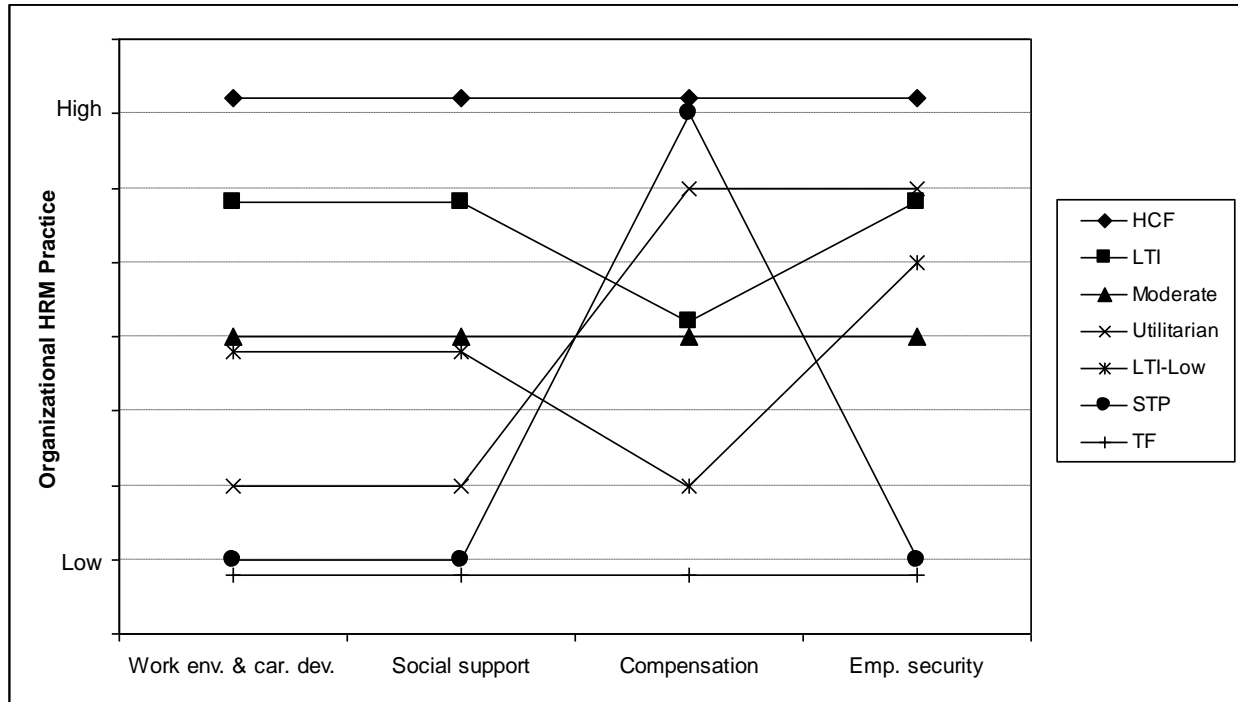
Based on their review of the literature and factor analysis of items consistent with HRM practices used with IT professionals (Agarwal and Ferratt 2002, 1999), Ferratt et al. (2005) derived five factors representing HRM practices used with IT professionals: (1) work environment and career development, (2) community building, including information sharing and social activities, (3) incentives, (4) employment security, and (5) non-technical skill recruitment (i.e., the extent to which non-technical skills are used to recruit IT professionals). These practices are consistent with the broader HRM literature's HPWP (Combs et al. 2006), best practices (Pfeffer 1998), and strategic

HR practices (Delery and Doty 1996). From these practices, their cluster analysis identified five configurations: Task Focused (TF), Human Capital Focused (HCF), Utilitarian, Incented Technician, and Secure. The TF and HCF configurations (all low and all high HRM practices, respectively) are consistent with archetypes in the broader HRM literature, e.g., the market type employment system and internal employment system in Delery and Doty (1996).

We do not explicitly use the Incented Technician configuration from Ferratt et al.'s (2005) taxonomy. The only difference in the pattern of constituent HRM practices between that configuration and the Utilitarian is in the degree of nontechnical skill recruitment. Given the low number of Incented Technician organizations in their study, the similarity of this configuration with the Utilitarian configuration on four of the five HRM practices in their study, our study's focus on the practices that apply after the recruitment and employment of IT professionals, and the fact that these two configurations have similar turnover, we do not distinguish between the Incented Technician and the Utilitarian configuration in our specification of configurations and just refer to the Utilitarian configuration.

Rather than limiting our proposed ideal types to the selection above from Ferratt et al.'s (2005) taxonomy, we examined the typology in Agarwal and Ferratt (2001, 1999). We chose for inclusion in our study their long-term investment (LTI) and short-term producer (STP) configurations but not the Balanced Professional (BP) and High Performance Professional (HPP) configurations. The HRM practices in LTI are designed to achieve a relatively long employment relationship, similar to the HCF configuration. The HRM practices in STP are designed to achieve a relatively short employment relationship, similar to the TF configuration. The BP and HPP configurations are not as distinctly different as LTI and STP, since they are designed to fall between LTI and STP in terms of the desired length of the employment relationship. Our choice to include only the more distinctly different configurations is supported by the research of Toh, Morgeson, and Campion (2008) in the broader HRM literature, which identifies configurations similar to LTI ("resource makers" configuration) and STP ("competitive motivators" configuration) but none similar to BP or HPP. As will be seen later, our analysis procedure led us also to use an emergent configuration similar in pattern to the LTI configuration but with lower values on the HRM practices and job search behavior between LTI and STP, as a substitute for the Secure configuration from the Ferratt et al. (2005) taxonomy. The five proposed ideal-type configurations (HCF, TF, Utilitarian, LTI, and STP), this emergent configuration (LTI-Low), and a moderate configuration (described later), which we use to test the general hypothesis (H1), are graphically depicted in Figure 1.

Figure 1. HRM Configurations Used to Guide Empirical Analysis of Synergy



Configuration	Work environment and career development	Social support	Compensation	Employment security	Expected job search behavior	Origin*
HCF	High	High	High	High	Low	Taxonomy
LTI	Relatively High	Relatively High	Relatively Low	Relatively High	Low	Typology**
Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	**
Utilitarian	Relatively Low	Relatively Low	Relatively High	Relatively High	High	Taxonomy
LTI-Low	Moderate	Moderate	Relatively Low	Moderate-High	***	***
STP	Low	Low	High	Low	High	Typology
TF	Low	Low	Low	Low	High	Taxonomy

\* Taxonomy refers to Ferratt et al. (2005). Typology refers to Agarwal and Ferratt (2001).

\*\* This configuration is defined in the current study. It is a baseline against which proposed ideal-type configurations can be compared.

\*\*\* This configuration, rather than the Secure configuration (Low on Work environment and career development, Social support, and Compensation and High on Employment Security) from Ferratt et al. (2005), emerged from our cluster analysis. It is similar in pattern to the LTI configuration but with lower values on the HRM practices; thus, we refer to it as LTI-Low.

Beyond the rationale for this general hypothesis based on contrasting configurational theory with universalistic theory, we elaborate on H1 next by offering sub-hypotheses of why specific configurations should be synergistic. We limit our offering of sub-hypotheses to the two extreme configurations, TF and HCF, since the

rationale for synergy for these configurations is more clearly justified than for other configurations. Furthermore, using extremes is consistent with studies prevalent in the HRM literature (e.g., see Ferratt et al., 2005, Table 1, p. 239; Delery and Doty, 1996). Even though the assumption is that the other proposed ideal-type configurations are synergistic, we take a more exploratory approach, rather than hypothesis testing, to examine the synergistic effect of configurations other than TF and HCF.

#### *Synergy Expectations: HCF and TF Configurations*

The synergy of the HCF and TF configurations should affect outcomes similarly, but in opposite directions. The high level of all HRM practices in the HCF configuration should have a synergistic effect in reducing job search behavior, whereas the low level of the practices in the TF configuration should synergistically increase job search behavior. The rationale for these synergistic effects emerges from not only applying the general definition of synergy, but also providing further explanation for what makes a set of HRM practices synergistic. Researchers have argued that reinforcement, flanking, and compensation are bases for synergy (Horgan and Mühlau 2006). Using the reinforcement argument, having high (or low) levels of all the practices should be mutually reinforcing, yielding a positive (or negative) boost to the individual's intention to stay or reduction (or increase) in job search behavior that is beyond the effect of individual practices. Reinforcement contributes to the complementarity of the set of HRM practices. This complementarity is reflected in how well the practices contribute to one or more criteria, which in our study is the IT organization's desired length of the employment relationship. To illustrate with the HCF configuration, high employment security should contribute to the IT professional's belief that the IT organization desires to maintain an employment relationship. A perception of a high level of social support should provide the social glue that makes it attractive to be a part of the workplace, making it more difficult for the IT professional to break the employment relationship. A high level of work environment and career development means that the IT professional perceives that there is a high level of work flexibility and clear performance requirements with strong opportunities for growth and development, contributing to a long term employment relationship. A high level of compensation in conjunction with the other practices in the HCF configuration signals that the organization highly values the IT professional and desires to maintain an employment relationship.

As Horgan and Mühlau (2006) note, consistent signaling is needed to reduce ambiguity or noise associated with the signal from any one HRM practice and, thus, achieve the desired results. Note that a high level of compensation in conjunction with low levels of security, social support, and career development is probably not the same signal as in the HCF configuration. It probably signals that the organization is treating the IT professional as a “hired gun,” desiring only a short-term relationship. The potential ambiguity of compensation in signaling the organization’s desire for maintaining an employment relationship is reduced when the set of practices is jointly, rather than independently considered. Collective reinforcement creates a stronger signal than each practice independently provides, affecting the IT professional’s understanding of the organization’s desire for maintaining an employment relationship and, in turn, the IT professional’s organizational commitment. As a result, when all HRM practices are high, they synergistically reduce job search behavior. At the other extreme, low levels on all these practices contribute in a mutually reinforcing manner to the IT professional’s belief that the IT organization desires a short-term relationship, thereby synergistically increasing job search behavior.

Besides reinforcement, another mechanism through which HRM practices complement each other to achieve synergy is flanking, where one HRM practice assists the working of another, in effect altering its ‘inputs’, to facilitate goal achievement (Horgan and Mühlau 2006). Combs et al. (2006) summarize such supportive contingencies of HRM practices similar to those in our study with regard to their flanking effects on performance. In general, HRM practices have flanking effects on performance through their direct effects on knowledge, skills, and abilities (KSAs), motivation, and opportunity, each of which is needed for performance. Specifically, training/career development supports skill development. Higher KSAs lead to higher performance if employees have the motivation and opportunity to apply those skills. Combs et al. (2006) note that employment security, flexible work schedules, and high overall compensation can increase motivation by increasing commitment. Skilled and motivated employees will perform well if they have the opportunity to do so, which is more likely if practices such as social support (Chiaburu and Harrison 2008) and employment security (Combs et al. 2006) are in place. Similar arguments of the flanking effects of ability, motivation, and opportunity have been advanced by others, e.g., Chenevert and Tremblay (2009) and Delaney and Huselid (1996). Through subsequent effects of performance on satisfaction and

organizational commitment (Judge, Thoresen, Bono, and Patton 2001, Zimmerman and Darnold 2009), the flanking effects of HRM practices extend to job search behavior (Price 2001, Locke and Latham 2004).

A third mechanism through which synergy occurs is compensation (Horgan and Mühlau 2006), which is distinct from the HRM practice of (financial) compensation. HRM practices may have unintended side effects which undermine their effectiveness. For instance, training (an aspect of work environment/career development) may be provided for the intended purpose of developing an employee's skills and abilities to improve job performance, which affects job satisfaction and organizational commitment. However, the unintended effect may be an increase in the employee's externally marketable skills and ability to be 'poached' by another organization. This effect may test the employee's organizational commitment. Horgan and Mühlau (2006) refer to compensation as a synergy mechanism by which a practice serves to block or mitigate such negative side effects of another practice. HRM practices that generate organizational commitment, such as financial compensation and employment security (through engendering a sense of obligation or reciprocity) and social support (through creating a sense of community and belonging), provide this compensation mechanism to synergistically counteract the unintended consequences of training.

Thus, the high levels of HRM practices for IT professionals in the HCF configuration and the low levels for those in the TF configuration contribute synergistically to job search behavior through reinforcement, flanking, and compensation. To summarize:

H1a: The HCF configuration has lower job search behavior than would be expected if there were just independently additive relationships between the HRM practices and job search behavior.

H1b: The TF configuration has greater job search behavior than would be expected if there were just independently additive relationships between the HRM practices and job search behavior.

An extension of the reasoning above would be that a combination of practices that recedes to the mean between these extremes on all HRM practices for IT professionals would dampen any synergistic effects and have no differential effect on job search behavior compared with the independently additive effect of the HRM practices. Indeed, this reasoning leads us to define a combination of practices that is moderate on all HRM practices. This combination is not an ideal-type (i.e., synergistic) configuration; rather, it is a baseline against which proposed ideal-type configurations can be compared.

## **Methodology**

### *Sample*

To obtain a wide variety of HRM configurations, we sought a sample from several organizations across a variety of industries. We were able to obtain a broad-based sample of IT employees through a national professional organization of IT employees, the AITP (Association of Information Technology Professionals). The entire membership was encouraged to participate in a web-based survey through a series of initial and follow-up email messages from the organization's Executive Director. These emails provided legitimacy to the survey and provided an intangible incentive to participate. The only other incentive for participation was the promise of a summary of the results to the AITP for dissemination to its members. The emails noted that participation was voluntary and part of a research project. They referred potential respondents to a web site that had the survey. The first page displayed a letter from one of the researchers that explained that responses would be treated with confidentiality and that only grouped data would be reported back to the professional organization. These steps were taken to protect respondent anonymity and reduce evaluation apprehension, which is a remedy for common method variance (Podsakoff, MacKenzie, Jeong-Yeon, and Podsakoff 2003).

The survey was divided into pages that were displayed to the respondent one at a time with a heading containing the page number and the total number of pages, e.g., "Page 1 (of 6)," with a button at the bottom of each page to go to the next page, e.g., "Go to Page 4 (of 6)," but there was no explicit button to go back to a previous page. The questions for job search behavior were on pages that were displayed earlier than the questions about the perceived HRM practices. Thus, the measurement of the outcome and practice variables was, to some extent, separated in time and proximity to reduce common method variance (Podsakoff et al. 2003).

Of the organization's 3,369 members, 262 voluntarily completed the on-line survey with the set of questions relevant for this research. (The number of respondents reported in the findings below is less than 262 due to missing values on one or more variables. For the hypothesis tests we deleted cases in a listwise manner and have an effective sample of 251.) Of these respondents, 71.4% reported they were men and 26.0% women; 2.7% did not report gender. For race/ethnicity, 88.2% reported they were white, 2.3% Black/African-American, 2.3% Hispanic, and 1.9% another category; 3.4% selected more than one category, and 1.9% did not select any category. The average



age was 49.2 (which ranged from 21-76 with a standard deviation of 9.97). The average years worked in a full-time IT position was 21.6 (which ranged from 0-51 with a standard deviation of 11.16) and the average number of years with their current organization was 8.6 (which ranged from .08-39 with a standard deviation of 8.90). These respondents came from 41 U.S. states and the District of Columbia.

Additionally, we had some limited demographic data about the membership of the national professional organization as a whole, viz., the percentage of people in specific IT position categories. For each category we compare the organization population (first %) vs. respondents (second %): Senior IT Executives (21% vs. 17%), Middle IT Managers (20% vs. 22%), Programmers/Analysts/IT Specialists (28% vs. 32%), Consultants/Marketing-Sales/Other (16% vs. 16%), and Academicians (15% vs. 13%). This provides some evidence to suggest that there is little difference between the members of the organization as a whole and our respondents.

### *Measures*

Although the HRM practices measured in our study are similar in many respects to practices in Agarwal and Ferratt (2002, 1999) and Ferratt et al. (2005), the measurement limitations described in the latter suggest the need for new measures. Instrument development followed an iterative process similar to the procedure described by Churchill (1979). An initial instrument for measuring the research constructs - HRM practices and job search behavior - was developed for administration to individual IT professionals. This instrument was pilot tested with two organizations. Further refinements of the instrument were then made. For example, we discarded items that did not demonstrate good measurement properties (e.g., their reliabilities were low). Since we obtained data about the practices and outcome variable from the same source, we took certain palliative steps as described herein and recommended in the literature (e.g., Podsakoff et al. 2003) to minimize risks from common method variance.

*Perceived HRM practices.* Based on our instrument development process above, we included items measuring these HRM practices previously studied in the IT HRM literature: opportunities for growth and development, participation/work flexibility, specificity of performance requirements, social interaction and support, compensation level, and employment security. Factor analysis led us to combine the first three into a factor which is similar to Ferratt et al.'s (2005) work environment and career development. The remaining factors are similar to their

community building, incentives, and employment security factors. Thus, these four HRM practices are consistent with practices used in Ferratt et al. (2005) and studies in the broader HRM literature.

Multiple 5-point Likert-scale items, ranging from 1 (Low) to 5 (High), measured the perceived extent of each of the four HRM practices provided by the employer. Participants were directed to rate their “Actual current situation” for these items. The scale value for a perceived HRM practice is the mean of the responses to the multiple items measuring that practice. Thus, our study measures an organization’s HRM practices as perceived by IT professionals rather than a managerial informant, as reported in Ferratt et al. (2005). (See Appendix, Table A1, for the items.)

*Configurations.* We used the initial set of proposed ideal-type configurations (HCF, TF, Utilitarian, Secure, LTI, and STP), plus the baseline moderate combination, as a basis for seeding a cluster analysis to validate the existence of these configurations. Respondents’ perceptions of their organizations’ implementation of the four HRM practice measures served as the clustering variables. Since configurations had not been identified using these measures previously, the scale values used for seeds were based on the theoretical definitions (see Figure 1). For example, the initial seeds for HCF were 4.5 for each of the HRM practice measures, whereas for TF they were all 1.5, and for the moderate combination they were all 3.0. The clustering method was k-means, with seven clusters specified, as noted above, in the Quick Cluster procedure of SPSS. As presented in the Findings below, clusters similar to five of the initial set of proposed ideal-type configurations, plus the moderate combination, were identified. The Secure configuration was not identified; instead, a cluster emerged that was similar in pattern to the LTI configuration of Agarwal and Ferratt (2001, 1999) but with lower values for the HRM practices, which we refer to as LTI-Low. Thus, seven configurations, based on the theoretically defined configurations of Figure 1, were used in the subsequent analysis. Sensitivity analysis on the original seeds, e.g., using 4.6 for HCF and 1.4 for TF, yielded substantively similar results.

Using seeds corresponding to the cluster centroids derived from the Quick Cluster analysis above (see Appendix Table A2), we re-ran the same cluster analysis procedure to classify each participant’s perceptions of the organization’s HRM practices into one of the proposed ideal-type configurations (HCF, TF, Utilitarian, LTI, and STP),

the moderate combination, or the emergent LTI-Low configuration.<sup>1</sup> The resulting cluster means on the HRM practices (presented later in Figure 2) are typically within .25 of their seeds. These theoretically and empirically grounded seeds also serve as the defining means for the proposed ideal-types' HRM practices and, thus, are used subsequently as the standards for calculating the value of horizontal fit. We used these seeds rather than the resulting cluster means to specify ideal types since the ideal types should be consistent across research studies rather than vary from one result to another. Research with additional samples could eventually lead to refinement of these specifications.

Figure 2 also shows job search behavior for each configuration. Given that greater job search behavior occurs with the TF and STP configurations, which are designed for a short term employment relationship, and less job search behavior occurs with the HCF and LTI configurations, which are designed for a long-term employment relationship, job search behavior corresponds to a reverse measure of the organization's desired length of employment relationship. Using job search behavior as a reverse proxy for desired length of employment relationship from the employer's perspective, ANOVA shows that the resulting clusters differ significantly ( $p = .000$ ) on this theoretical differentiator of configurations. For example, HCF, with the longest desired length of employment relationship, has the lowest job search behavior (1.48), and TF, with the shortest desired length of employment relationship, has the highest job search behavior (3.66). These results support the validity of our measurement procedure for identifying configurations.

*Horizontal Fit.* Fit was calculated for each participant based on differences between the participant's perception of the organization's HRM configuration and the associated proposed ideal-type configuration. Perceived HRM configurations that are closest to a proposed ideal-type configuration are defined to have the greatest degree of horizontal fit. The seeds for the HRM practices of the ideal-type configuration associated with a participant, i.e., the cluster in which a participant is classified, served as the base from which horizontal fit was calculated. These *a priori* seeds are grounded in realistic responses to the instrument used for measuring configurations of HRM practices and are consistent with the theoretical definitions of the ideal-type configurations. The negative of the sum of the squared

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<sup>1</sup> To include all participants, we report our results with the emergent LTI-Low configuration. Nevertheless, we ran our analysis with and without this configuration. The results are substantively identical.

deviations from the cluster's seeds to the participant's perception of HRM practices is our measure of fit. This measure is similar to Doty et al.'s (1993, p. 1248) ideal types fit. A score of zero represents perfect fit; thus, a more negative (or lower) score represents lower fit.

*Outcome Variable.* We used job search behavior, a precursor to turnover (Griffeth et al. 2000). This variable was measured using items based on 5-point scales, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). These scale anchors are different than those for the perceived HRM practices (Low/High) in keeping with a recommendation of Podsakoff et al. (2003) for avoiding common method variance. (See Appendix, Table A1, for the items.)

*Control Variables.* We used two control variables that are known to be associated with lower turnover and, thus, by extension, to job search behavior: organizational tenure and managerial status. Organizational tenure, measured in years, generally has a negative relationship with turnover (Griffeth et al. 2000). Joseph, Ng, Koh, and Ang (2007) also found that tenure has a negative relationship with turnover intention in samples of older IT professionals (mean of 40 years and above). Managerial status refers to whether the participant occupies a supervisory/managerial position or not. Research has shown that promotions are negatively associated with turnover (Carson, Carson, Griffeth, and Steel 1994). By extension, we included managerial status (no, not a supervisor/manager = 0; yes, a supervisor/manager = 1) as a control variable.

#### *Analytic Procedures*

Hierarchical regression was used to investigate whether combinations of HRM practices have synergistic effects (see Ichniowski et al. 1997). We entered organizational tenure and managerial status as control variables and the variables for the four HRM practices in the first stage to establish the baseline for testing H1. In the second stage, we entered configuration variables and the horizontal fit control variables, allowing us to test hypothesis H1.

The configuration variables are dummy variables. In our hierarchical regression analysis, six dummy variables were used to represent the five proposed ideal-type configurations and the emergent LTI-Low configuration; the Moderate combination of HRM practices, which is assumed to be non-synergistic, serves as the baseline configuration. All six configuration variables (HCF, TF, Utilitarian, LTI, STP, and LTI-Low) have values of zero (0) if a participant perceives the HRM configuration to be the Moderate combination, i.e., if the assigned cluster is the Moderate combination; otherwise, the configuration variable for the assigned configuration has a value of 1.

Six additional variables, one for each of the proposed ideal-type configurations and the emergent LTI-Low configuration, are used to represent horizontal fit. Only the fit variable associated with the participant's assigned cluster has the calculated horizontal fit score. All other fit variables for that participant have a score of zero (0). This formulation allows us to model differences in the effect of horizontal fit for each configuration. The expectation is that perceived configurations that are farther from the ideal type, i.e., lower horizontal fit, will be less synergistic.

Horizontal fit should be controlled while testing for the synergy of configurations (see H1). As noted above, this occurs at the second stage of hierarchical regression analysis when both configuration and horizontal fit variables are entered. If the increase in variance explained at this stage is significant, configuration theory is supported and more specific tests regarding synergy for specific configurations may be conducted. An advantage of our analytic approach is that it does not require specifying the form (non-linear or otherwise) of the synergistic relationship other than as broadly stated in H1.

To test the sub-hypotheses, H1a-H1b (for TF and HCF configurations), and explore the synergy of the other potentially synergistic configurations (i.e., LTI, Utilitarian, STP, and LTI-Low), we must examine the significance of the dummy coefficients for each specific configuration in the second stage if H1 is supported. Given H1a and H1b, one-tailed tests apply to the coefficients for TF and HCF configurations. Given our exploratory approach for all other configurations, two-tailed tests apply to them.

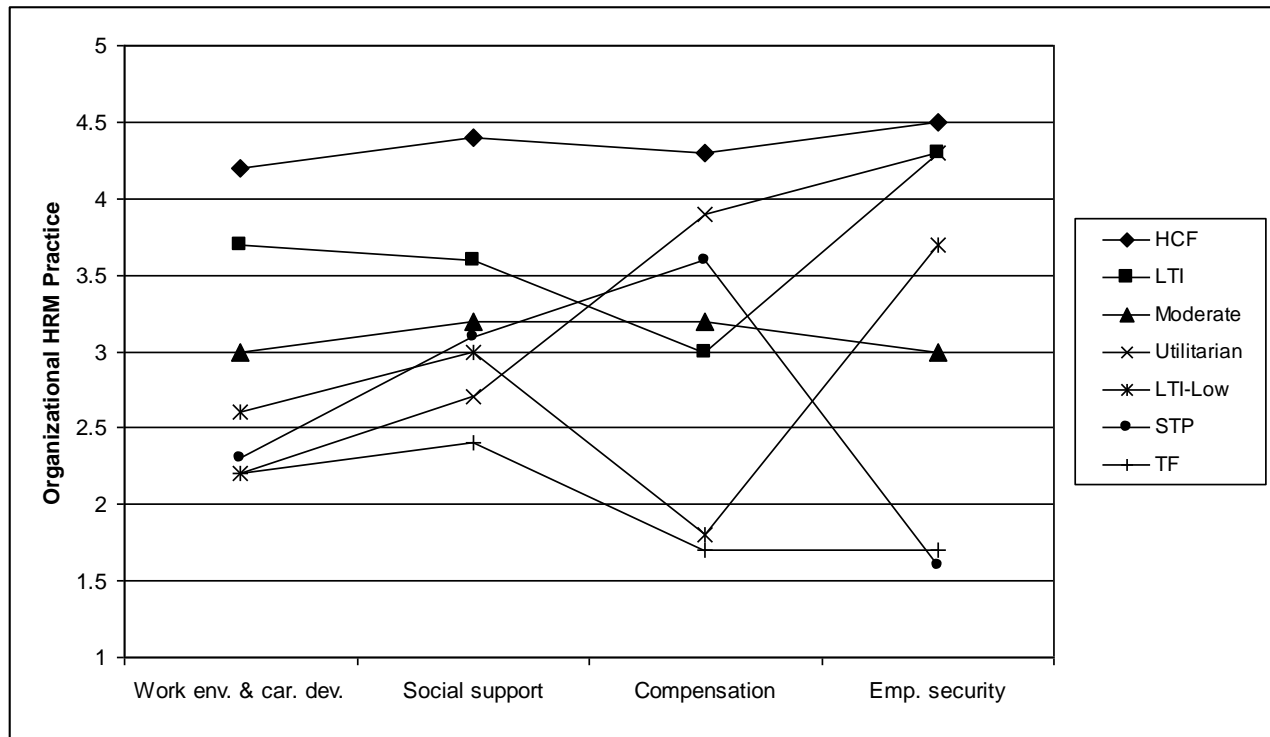
## **Findings**

Before conducting our tests of synergy, we jointly factor analyzed the items measuring HRM practices and job search behavior. Table A1 (see Appendix) shows that the items measure five factors. Four factors represent HRM practices of work environment and career development, social support, compensation, and security (used to define the configurations). The fifth factor represents job search behavior. All reliabilities are greater than .80. We used the four factors representing HRM practices as clustering variables to identify the combinations of HRM practices shown in Figure 2. Job search behavior is lowest in HCF and LTI and highest in STP and TF.

We also used the single-factor test as a diagnostic test for common method variance. Podsakoff et al. (2003) point out that this test is widely used but insensitive at detecting common method variance. Thus, we examined not only the direct results of the single-factor test but also related data. Based on principal component

factor analysis, a single factor (i.e., the first extracted factor) accounts for less than a majority of the variance (39.8%). Additionally, five factors have eigenvalues greater than 1.0. Furthermore, these five factors (See Table A1 in the Appendix) have correlations ranging from .150 to .420 (in absolute value) with a median absolute value for the ten correlations of .276. The correlation of the first factor with the remaining four factors ranges from .227 to .420 (in absolute value) with a median absolute value of .326. The results of this examination suggest that a single, common method factor does not account for the pattern of results presented below.

Figure 2. HRM Configurations with Means (Std. Devs.) and Reliabilities of HRM Practices Used to Identify Configurations with Associated Job Search Behavior Means (Std. Devs.)



Configuration	n	Work environment and career development	Social support	Compensation	Employment security	Job search behavior
HCF	30	4.20 (0.66)	4.43 (0.47)	4.30 (0.57)	4.48 (0.53)	1.48 (0.84)
LTI	46	3.74 (0.52)	3.58 (0.63)	2.96 (0.48)	4.34 (0.42)	1.97 (1.17)
Moderate	47	3.02 (0.55)	3.24 (0.74)	3.22 (0.62)	2.97 (0.38)	2.17 (1.18)
Utilitarian	27	2.20 (0.73)	2.69 (0.91)	3.85 (0.72)	4.27 (0.59)	2.44 (1.20)
LTI-Low	38	2.59 (0.58)	3.01 (0.89)	1.80 (0.44)	3.72 (0.61)	2.51 (1.14)
STP	31	2.25 (0.65)	3.05 (0.80)	3.56 (0.72)	1.62 (0.53)	3.32 (1.28)
TF	32	2.21 (0.72)	2.38 (0.90)	1.70 (0.51)	1.69 (0.60)	3.66 (1.14)
Total	251	2.94 (0.94)	3.22 (0.95)	3.00 (1.04)	3.32 (1.21)	2.46 (1.32)
Cronbach's alpha*		.90	.83	.93	.88	.83

\* In calculating a reliability coefficient, a missing value on one or more items of a scale for an individual participant results in omission of that participant from the calculation, resulting in n for reliability coefficients ranging from 215 (for work environment and career development) to 257 (for job search behavior) with a median of 235. In the analysis of configurations, values for HRM practices and job search behavior for each individual participant are based on the mean of non-missing items. An individual case is omitted from the analysis of configurations only if it is missing an HRM practice or job search behavior mean.

Table 1. Means, Standard Deviations, and Correlations for Variables Used to Test Hypotheses (N=251)

	Mean	Std. Dev.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. Job search	2.46	1.32																		
2. Organizational tenure	8.66	8.87	-.28																	
3. Managerial status (0=no, 1=yes)	.60	.49	-.04	.10																
4. Work environment and career development	2.94	.94	-.36	.04	.10															
5. Social support	3.22	.95	-.22	.04	-.06	.45														
6. Compensation	3.00	1.04	-.21	.19	.04	.26	.28													
7. Employment security	3.32	1.21	-.45	.23	.00	.46	.29	.26												
8. HCF	.12	.33	-.28	.08	.00	.49	.47	.46	.35											
9. LTI	.18	.39	-.18	.03	.01	.40	.18	-.02	.40	-.17										
10. Utilitarian	.11	.31	-.01	.19	-.01	-.28	-.19	.28	.27	-.13	-.16									
11. LTI-Low	.15	.36	.02	-.08	.00	-.16	-.09	-.49	.14	-.16	-.20	-.15								
12. STP	.12	.33	.25	-.03	.01	-.27	-.06	.20	-.53	-.14	-.18	-.13	-.16							
13. TF	.13	.33	.35	-.14	-.05	-.30	-.34	-.48	-.52	-.14	-.18	-.13	-.16	-.14						
14. HCF fit	-.15	.46	.18	-.03	-.02	-.41	-.42	-.38	-.28	-.86	.15	.11	.13	.12	.12					
15. LTI fit	-.20	.54	.13	.06	-.05	-.38	-.11	.04	-.31	.14	-.80	.13	.16	.14	.14	-.12				
16. Utilitarian fit	-.25	.82	-.04	-.12	.04	.31	.16	-.27	-.25	.11	.14	-.87	.13	.11	.12	-.10	-.11			
17. LTI-Low fit	-.27	.95	-.06	.09	.00	.17	-.03	.39	-.10	.11	.14	.10	-.68	.11	.11	-.09	-.11	-.09		
18. STP fit	-.23	.75	-.22	.06	.02	.28	-.04	-.21	.43	.11	.15	.11	.13	-.82	.12	-.10	-.12	-.09	-.09	
19. TF fit	-.24	.78	-.19	.10	.07	.23	.28	.41	.42	.11	.15	.11	.13	.12	-.81	-.10	-.12	-.09	-.09	-.10

Table 2. Hierarchical Regression Analysis Results

Stage	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.520	.270	.253	1.137	.270	15.076	6	244	.000
2	.597	.356	.307	1.096	.086	2.583	12	232	.003

Stage 1: Baseline for testing H1: Control variables (Organizational tenure, Managerial status) and HRM practices (Work environment and career development,

Social support, Compensation, Employment security) entered

Stage 2: Configurations (HCF, LTI, Utilitarian, LTI-Low, STP, TF) and their associated horizontal fit (HCF fit, LTI fit, Utilitarian fit, LTI-Low fit, STP fit, TF fit) added



Table 3. Stage 2 Hierarchical Regression Results with Job Search as the Dependent Variable.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	2.517	.775		3.249	.001		
Organizational tenure	-.028	.008	-.186	-3.255	.001	.845	1.183
Managerial status	-.016	.146	-.006	-.110	.456	.942	1.062
Work environment and career development	-.024	.123	-.017	-.197	.422	.359	2.785
Social support	.040	.097	.029	.414	.340	.560	1.784
Compensation	.110	.126	.087	.870	.193	.277	3.615
Employment security	-.176	.141	-.161	-1.242	.108	.165	6.054
HCF	-1.165	.566	-.288	-2.059	.020	.142	7.048
LTI	.078	.391	.023	.200	.841	.209	4.779
Utilitarian	.019	.508	.005	.038	.970	.193	5.183
LTI-Low	.369	.354	.101	1.043	.298	.297	3.366
STP	.835	.454	.209	1.839	.067	.214	4.666
TF	2.162	.471	.549	4.591	.000	.194	5.160
HCF fit	-.544	.299	-.192	-1.820	.035	.250	3.997
LTI fit	-.017	.219	-.007	-.076	.470	.345	2.898
Utilitarian fit	-.247	.181	-.153	-1.367	.086	.221	4.522
LTI-Low fit	-.127	.104	-.092	-1.226	.111	.497	2.012
STP fit	-.014	.170	-.008	-.080	.468	.292	3.426
TF fit	.420	.151	.250	2.780	.003	.342	2.923

Notes:

1. Given H1, H1a, and H1b, significance levels are one-tailed for all coefficients except those for LTI, Utilitarian, LTI-Low, and STP, which are two-tailed.
2. HCF, LTI, Utilitarian, LTI-Low, STP, and TF are dummy variables. Given an individual's ideal type (i.e., the individual's assigned cluster), that dummy has a value of 1 and all others are zeroes. The baseline is the Moderate combination of HRM practices; in other words, all dummies are equal to zero if the individual is assigned to the Moderate cluster.
3. An individual's ideal-type fit score is the negative of the sum of the squared differences between the individual's ideal-type HRM practices (i.e., the seeds of the individual's assigned cluster) and the individual's perceived HRM practices; the individual's fit scores for all other configurations are zeroes.

### *Tests of Synergy*

The means, standard deviations, and correlations for the variables used in testing for synergy are shown in Table 1. Hierarchical regression analysis establishes the baseline relationship between HRM practices and job search behavior. Table 2 shows that the variance explained by the baseline relationship between HRM practices and job search behavior, while controlling for organizational tenure and managerial status of IT professionals, is .270 with a significance of .000.<sup>2</sup> Hierarchical regression analysis also confirms the general hypothesis (H1). To confirm hypothesis H1, the increase in variance explained at the second stage of hierarchical regression analysis, when configurations and horizontal fit variables are entered, must be significant. Table 2 shows the increase is .086. The F-value associated with this increase has a significance of .003. These results validate configurational theory's synergy expectations. The synergy expectations about specific configurations were examined next.

Synergy expectations about specific configurations were tested by first examining the regression coefficients for the dummy variables (see Table 3). The results indicate that the HCF and TF configurations are significant. The negative coefficient for HCF means that job search behavior is less than would be predicted by the independently additive relationship between HRM practices in the HCF configuration and job search behavior. The positive coefficient for TF means that job search behavior is greater than would be predicted by the independently additive relationship of HRM practices in the TF configuration and job search behavior.

Additional insights arise from examining the regression coefficients for the horizontal fit variables. These coefficients are significant for the HCF and TF configurations. The sign for HCF indicates that greater horizontal fit is associated with less job search behavior. Individuals in HCF who perceive their HRM practices closer to this ideal-type have less job search behavior than those who are in this configuration but not as close to the high scores found in the ideal type. Since the HCF configuration has lower search than expected if an independently additive theory applied, lower horizontal fit is associated with greater search and, therefore, weakens the synergistic effect. Results for the TF configuration are analogous in the opposite direction. Synergistic effects of the HCF and TF configurations in conjunction with the horizontal fit associated with them are, thus, consistent with the hypothesized effects.

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<sup>2</sup> Although not shown in Table 2, the variance explained by the two control variables is .078. The addition of the HRM practices results in an increase of variance explained to .270. The significance of that change is .000.

Contrary to the implicit assumption about other proposed ideal-type configurations, the regression analysis does not support the synergy of the LTI, Utilitarian, and STP configurations. None of the regression coefficients for these configurations or their associated horizontal fit is significant. Similarly, neither the emergent LTI-Low configuration nor its horizontal fit is significant.

## **Discussion**

Our research on the relationship of HRM practices to job search behavior has addressed an important gap in the literature at the intersection of theories of employee withdrawal (specifically, job search behavior) and configurations. Our findings support two key relationships not empirically validated in prior research. One key relationship is inherently included in the definition of ideal-type configurations of HRM practices. By definition, such configurations are assumed to have synergistic effects on job search behavior. Notably, we empirically found that HCF and TF configurations have synergistic effects on job search behavior and, thus, qualify as ideal-type configurations. As part of our empirical findings, we have also supported another key relationship. Specifically, we found that horizontal fit matters for these two configurations. Lower horizontal fit reduces the synergy of the HCF and TF configurations. We discuss this finding more fully when presenting Figure 3 below. Our findings have moved us to an understanding of the relationship between HRM practices and job search behavior that goes beyond an explanation based on universalistic theory to one based on configurational theory. In comparison with prior research that has proposed theoretical arguments for HRM configuration synergy but failed to support these arguments with empirical evidence, e.g., Delery and Doty (1996), our work represents an important advance. Specifically, it is the first study to provide appropriate empirical support for synergy, particularly for the relationship of HRM practices to job search behavior.

Our findings show that the percent of variance explained in job search behavior via synergy is 8.6%. The additive effects of the four HRM practices after control variables are considered (see Footnote 2) explain 19.2% of the variance in job search behavior. The additional 8.6% of variance explained by synergy represents a 44.8% improvement in explanatory power. Finding that synergy provides this substantial improvement in explanatory power is a valuable contribution of this study. As our literature review indicates, we found no comparable empirical studies of the synergistic effects of HRM practices on job search behavior or any other outcomes.

Our results also extend the work of Ferratt et al. (2005) and Agarwal and Ferratt (1999, 2001). We use a different methodology, including a different instrument to measure HRM practices, a different source of the data than Ferratt et al. (2005) by obtaining perceptions of HRM practices from IT professionals rather than CIOs, and a different outcome variable, i.e., job search behavior of IT professionals rather than turnover or turnover intention. We use confirmatory rather than exploratory cluster analysis (Ferratt et al. 2005) to identify configurations. We empirically support the implicit, previously untested, assumption in Ferratt et al. (2005) that HCF and TF configurations are ideal-type configurations. In addition, we find that IT professionals perceive their organization as implementing LTI and STP combinations of HRM practices (Agarwal and Ferratt 1999, 2001), an LTI-Low combination that is a variation of the LTI combination, and the Utilitarian combination (Ferratt et al. 2005). However, contrary to an implicit assumption that these combinations of HRM practices are ideal types, we did not find them to have synergistic effects on job search behavior. Importantly, they are just commonly found combinations of HRM practices, each of which has an independent effect on job search behavior. Consequently, our results support the validity of configurational theory with the caveat that a number of commonly found combinations of HRM practices are not ideal-type configurations.<sup>3</sup>

Although our findings support the synergy of the HCF and TF configurations, they indicate that the synergy mechanisms do not apply to the other combinations of HRM practices that we examined. In general, the results for the LTI, Utilitarian, LTI-Low, and STP combinations suggest that the HRM practices in these configurations do not reinforce, flank, or synergistically compensate for each other. Instead, the practices have independently additive effects on job search behavior. For example, in the Utilitarian configuration, the lower levels of work environment and career development and social support compared with higher levels of compensation and security send mixed, rather than mutually reinforcing, messages about the desired length of the employment relationship. Similarly, in the LTI configuration the relatively high levels of work environment and career development, social support, and security compared with the lower level of compensation send mixed, rather than mutually reinforcing, messages.

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<sup>3</sup> We note that a combination of IT HRM practices corresponding to the proposed Secure configuration was not perceived by a critical mass of the IT professionals in our sample. Perhaps one reason Ferratt et al. (2005) found a Secure configuration was because they asked an organizational representative, instead of IT professionals, to report the importance of IT organization HRM practices. Another reason could be that this configuration was just not employed in the economic environment of the study.

A closer examination of the synergistic TF configuration shows that it is not only low on all HRM practices compared to other configurations; it is even lower on compensation and employment security than it is on the other HRM practices. This characterization of the TF configuration is a refinement of the description in Ferratt et al. (2005). This refinement implies that financial compensation and employment security that are particularly low when all HRM practices are relatively low are required to achieve a synergistic effect on job search behavior. Low training, part of work environment and career development, indicates that the organization desires a short-term employment relationship. Lack of training makes the IT professional less marketable, making it harder for the IT professional to leave. One explanation for lower values of financial compensation and employment security is that they provide synergistic compensation to mitigate the effects of this unintended consequence.

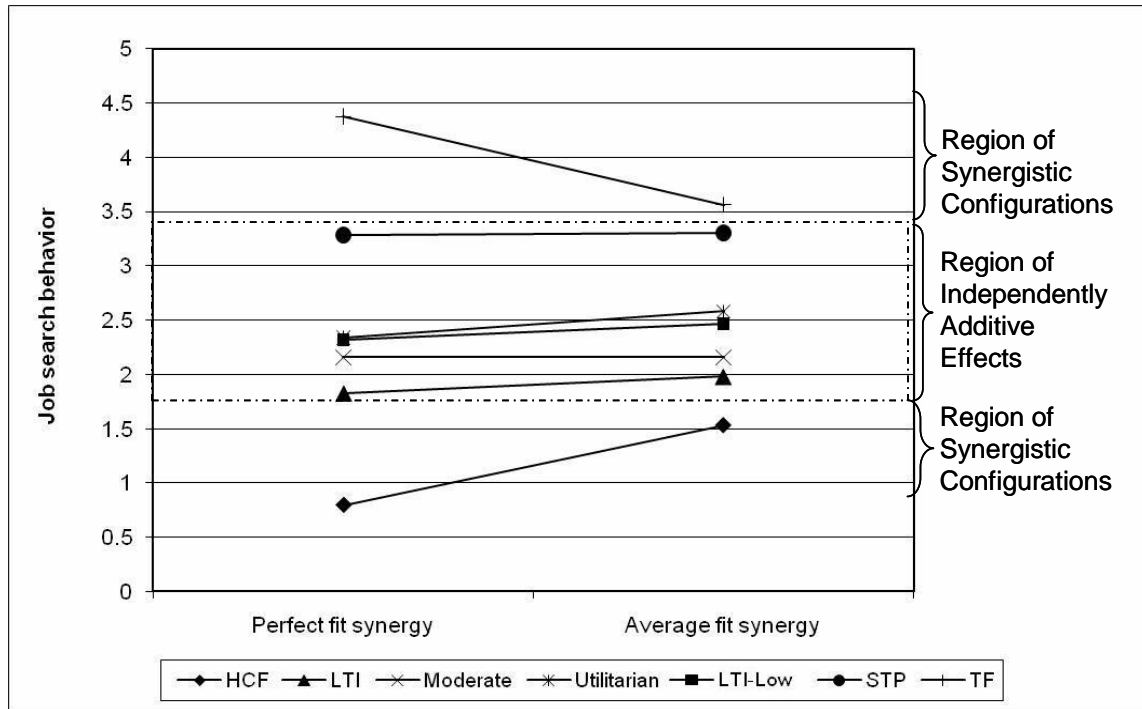
#### *Regions of Synergistic and Independently Additive Effects*

An organization's allocation of investments in various HRM practices should be related to the independently additive or synergistic effects of the practices. Consider an IT manager whose IT professionals currently perceive a Moderate configuration with mid-level values for all HRM practices. If this manager is considering investing more in training and less in building long-term relationships (e.g., through reduced contributions to retirement plans that reward organizational tenure), the net effect on job search behavior results from any decrease in job search behavior (due to increased training) and any increase in job search behavior (due to decreased contributions to retirement plans). This example of independently additive effects reflects trade-offs. However, if the IT manager increases investment in training as well as in retirement plans and IT professionals perceived such changes in HRM practices as an HCF configuration, the net decrease in job search behavior is the sum of any reduction in job search behavior due to each practice plus an amount beyond any independent effects of each practice. This is the synergistic effect.

Figure 3 shows regions of synergistic configurations at the extremes of job search behavior. At the point where horizontal fit is average, the HCF and TF configurations are associated with values at the low and high extremes, respectively, of job search behavior. Consequently, we refer to these two configurations as extreme configurations. The synergy of these configurations means that the HRM practices mutually reinforce, flank, or synergistically compensate for each other. As a result, job search behavior is more extreme than would be predicted by the individual practices. Figure 3 clearly illustrates that as horizontal fit increases, the synergistic effect on job

search behavior is extraordinary for the TF and HCF configurations. An extraordinary increase in search occurs with TF as horizontal fit moves toward perfect fit, and an extraordinary decrease occurs with HCF.

Figure 3. Regions of Synergistic and Independently Additive Effects.



Note:

Regression coefficients used to generate job search for “Perfect fit synergy” and “Average fit synergy” are from stage 2 of hierarchical regression analysis and are shown in Table 3. Values for organizational tenure and managerial status are the mean values in Table 1; values for HRM practices for each proposed ideal-type configuration are those shown at the bottom of Figure 2; values for horizontal fit are all zeroes for “Perfect fit synergy” and the following for “Average fit synergy,” which are mean fit values only for those within a configuration, not the mean fit values across all cases shown in Table 1: HCF fit: -1.22, LTI fit: -1.05, Utilitarian fit: -2.14, LTI-Low fit: -1.66, STP fit: -1.80, and TF fit: -1.87.

Figure 3 also shows the region of independently additive effects in the mid-range of the continuum. It clearly illustrates that the LTI, Utilitarian, LTI-Low, STP, and Moderate combinations of HRM practices are in the region of independently additive effects. This figure must be interpreted with some caution since the job search behavior values are based on sample means and result in a value for job search behavior below the scale minimum.

### *Implications for Research*

An implication of our findings is that researchers should include configurations of HRM practices, as well as HRM practices themselves, in models of job search behavior. Also, it is important to control for horizontal fit. Given the relative novelty of job search behavior research and our finding that configurational theory applies to the HRM practices and job search behavior relationship, future research should seek to replicate and extend our findings.

It is important to study other samples to further validate and extend the generalizability of our findings. Our sample has limitations. For example, our sample consists of members of a professional society rather than a random sample of IT professionals, thereby limiting the generalizability of our results. Some may question whether the academicians in our sample should be considered IT workers. We ran hierarchical regression analysis excluding the 31 academicians. The results are substantively identical to those for the whole sample.

Besides studying other samples, other factors influencing job search behavior, beyond HRM practices and control factors that we examined, could be studied. For example, perceived job alternatives (i.e., ease of movement) has been found to influence job search behavior (e.g., March & Simon, 1958; Hom, Caranikas-Walker, Prussia & Griffeth, 1992). Future research could examine whether our findings hold when other factors are considered.

Our findings also provide a theoretical and empirical foundation for research that examines the relationship between configurations of HRM practices and a broader range of attitudes, cognitions, and behaviors of interest to researchers and practitioners beyond job search behavior. For example, one extension of our findings would be to investigate the relationship of configurations of HRM practices to not only other withdrawal outcomes, such as intention to stay and turnover, but also a broader set of outcomes such as satisfaction, job performance, and organizational effectiveness. These studies could be conducted not only in the IT domain but also in other domains.

Researchers should recognize that independently additive effects and synergy are both important in managing IT professionals. Given Figure 3, we hypothesize that synergy occurs only with extreme configurations and that independently additive effects occur with mid-range configurations. We encourage researchers to examine this hypothesis. We speculate further that IT managers allocate resources to achieve their desired length of employment relationship while minimizing the economic costs of HRM practices. Estimating these costs should certainly be of future theoretical interest.

A less obvious implication is that researchers should carefully consider whether participants classified as perceiving an extreme configuration are classified appropriately. If research participants should be placed more appropriately into a mid-range configuration, their inclusion in an extreme configuration may dilute the synergy of these configurations such that they do not exhibit synergy. This dilution could occur if researchers ignore mid-range configurations and force participants into a limited number of configurations.

Our findings also suggest that IT professionals must perceive that all HRM practices have crossed critical thresholds before the effects of the practices on each other have synergistic effects. We refer to these thresholds as perceptual hurdles. For the HCF configuration these perceptual hurdles are relatively high. For the HCF configuration the practices exceed their perceptual hurdles, whereas for the LTI combination they do not. Similarly, for the TF configuration all the HRM practices fall below their perceptual hurdles, thereby becoming mutually reinforcing. An alternative explanation is that if one of the practices does not reach a perceptual hurdle, it fails to provide the flanking effect needed to achieve synergy. This explanation is consistent with non-linear models, such as the conjunctive model, which have been formulated to represent hurdles or minimum criteria in a judgment, decision, or evaluation (Elrod, Johnson, and White 2004, Ganzach and Czaczkes 1995). Our study did not focus on identifying perceptual hurdles or explaining what leads an IT professional to perceive that the HRM practices have exceeded their perceptual hurdles. Such studies could be the focus of future research.

The scope of our research included horizontal fit, but not vertical fit, which refers to the congruence of the HRM configuration with other characteristics, such as organizational strategy (Delery and Doty 1996). For example, we did not investigate whether HRM configurations are congruent with Miles and Snow's (1984) contrasting prospector and defender organizational strategies. One other example of vertical fit is person-environment fit (Kristof-Brown, Zimmerman, and Johnson 2005). Studies in this paradigm would investigate whether a person's preferences are congruent with the values supplied by the configuration of HRM practices provided by the organizational environment. Future research could extend the IT HRM literature to include studies of vertical fit.

#### *Implications for Practice*

The level of implementation for specific HRM practices will depend on the organization's goals or strategies, as implied by the examples below. The findings from our general hypothesis (H1) suggest that at some threshold



levels of HRM practices, a boost in achieving the organization's goals should be met if the level of implementation is beyond the thresholds. If the goal is to retain IT professionals, the implication of the findings from H1a is to keep all HRM practices high, which should minimize job search behavior and, subsequently, turnover. If the goal is to encourage turnover, the implication of the findings from H1b is to keep all practices low, which should maximize job search behavior and, subsequently, turnover. In between the extremes, when the HRM practices do not reach upper or lower thresholds, we found that a number of non-extreme combinations of HRM practices do not exhibit synergy. The implication is that organizations should implement a combination of practices that still provides a level of job search behavior and, subsequently, turnover, that is acceptable or consistent with the organization's strategy.

Another implication for practice is that the IT organization must be at the extremes of HRM practices to obtain synergy. Our finding that the HCF and TF configurations have low and high job search behavior, respectively, supports the argument of Miles and Snow (1984) that organizations implement different human resource strategies that correspond to their organizational strategies. For example, they present contrasting human resource strategies corresponding to their contrasting prospector and defender organizational strategies. The basic human resource strategy for the prospector organization is to acquire human resources, whereas for the defender organization it is to build human resources. Turnover is expected to be lower in defender organizations as would job search behavior. Assuming our results apply beyond the IT domain, the implication of our finding is that the HCF configuration would fit the defender strategy, whereas the TF configuration would fit the prospector strategy.

Similarly, in the IT domain, our findings for the HCF and TF configurations are consistent with the results of Ang and Slaughter (2004), who studied organizations that follow industrial or craft internal labor market (ILM) strategies. The craft ILM strategy is similar to the acquisition strategy, whereas the industrial ILM strategy is similar to the build HRM strategy of Miles and Snow (1984). The results of their study show that IT professionals in organizations that used an industrial ILM strategy had lower turnover. The implication from our study is that managers of IT professionals desiring lower turnover and, thus, following an industrial ILM strategy, would implement an HCF configuration, which would lead to lower job search behavior and, subsequently, lower turnover; those following a craft ILM strategy would implement a TF configuration.

Also, there is little risk, either upside or downside, in being in the middle region of independently additive effects, where it is simpler to predict the effects of HRM practices. However, for managers who seek to obtain synergistic effects in achieving longer employment relationships via the LTI combination, these results provide sobering guidance that they must do more to obtain synergy. At the other extreme, for managers who seek to retain IT professionals for short periods of productivity, the results for the TF configuration suggest that synergistic effects could lead to even shorter term relationships than they might expect for all low HRM practices. The STP combination of HRM practices, with high compensation in conjunction with low levels on all the other HRM practices, did not result in a mutually reinforcing signal that the organization seeks only a short-term relationship. These latter two findings imply that managers of IT professionals need to pay higher compensation than in a TF configuration to keep from experiencing higher job search behavior (and, subsequently, higher turnover) than they would expect based on the independent effects of the HRM practices. Finally, knowing the cost of implementing HRM practices at specific levels is an important element that managers should understand, in conjunction with our findings, to guide their implementation of HRM practices. Since our research did not include estimates of the economic effects of various HRM practices or the efficiency of their implementation, IT managers will surely seek to understand the relationship between the costs and benefits of various combinations of HRM practices.

### **Summary and Conclusion**

Our study makes important contributions to researchers and managers interested in the management of IT professionals. We have extended our understanding of the effect of HRM practices, viz., work environment and career development, social support, compensation, and employment security, on shaping the ties of IT professionals to their employers. We have examined the effect of these HRM practices on job search behavior, a relatively novel dependent variable in studies of withdrawal behavior, particularly in the IT HRM literature. We have contributed to the IT HRM and broader HRM literatures by developing a clear theoretical foundation for testing whether configurations of HRM practices have a synergistic effect on job search behavior. To be synergistic, ideal-type configurations of HRM practices must explain an additional amount of the variation in job search behavior beyond that which is explained by the independently additive relationship between the practices and job search behavior, while using horizontal fit as a control. Based on prior research, we proposed six ideal-type configurations of HRM

practices expected to have synergistic effects on the job search behavior of IT professionals: HCF (Human Capital Focused), LTI (Long-Term Investment), Secure, Utilitarian, STP (Short-Term Producer), and TF (Task Focused). We also proposed a Moderate combination of practices that was not expected to be synergistic but that should be included in testing configurational theory.

Our study provides the first complete empirical test of the presumed synergy of HRM configurations. Our theoretical foundation, analytic approach, and results not only provide a basis for extending research on configurations in the IT HRM literature, particularly Ferratt et al. (2005) and Agarwal and Ferratt (1999, 2001), but they also provide a clearer, more complete investigation of the synergy of HRM configurations than any studies in the general HRM literature. Our empirical results contribute to building a body of evidence for understanding the validity and limits of theories of HRM configurations and job search behavior. They show that a limited number of HRM configurations – HCF and TF – exhibit synergistic effects on job search behavior while controlling for horizontal fit. Just as importantly, they show that some combinations of HRM practices – LTI, Utilitarian, LTI-Low, and STP – do not exhibit synergistic effects on job search behavior and are, thus, in Figure 3's region of independently additive effects. We hope that our work will provide an impetus for both researchers and practitioners to examine further the theoretical and practical limits of theories of HRM configurations and job search behavior in the context of managing the voluntary withdrawal process of IT professionals.

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## Appendix

Table A1. Items Measuring HRM Practices and Job Search and Their Factor Loadings >.30

Item	Factor				
	1	2	3	4	5
The degree to which I have clear specification of what the performance requirements are	.888				
The amount of clarity in goals and objectives	.886				
The degree to which I know exactly what is expected of me	.839				
The amount of freedom in deciding the specific work/projects I take on or continue to work on	.705				
The amount of flexibility in choosing the specific work/projects I take on or continue to work on	.630				
The extent of opportunities for future growth in responsibilities	.613				
The extent of opportunities for developing skills and competencies	.552				
The degree to which I have a long term employment arrangement		-.912			
The extent of job security		-.826			
The degree of certainty associated with my employment income from one pay period to the next		-.798			
The extent of emotional support at work (e.g., coworkers show concern if I am having a bad day)			.881		
The degree of social acceptance by the people I work with			.856		
The degree of inclusion in social interactions with coworkers			.741		
I am currently searching for an organization other than my organization to work for				.880	
I am actively considering an employment arrangement (at my organization or elsewhere) that would differ from my current arrangement on the characteristics mentioned above				.850	
The amount of pay					-.973
The salary/wage level					-.945

Notes:

1. Extraction Method: Principal Component Analysis; Rotation Method: Oblimin with Kaiser Normalization.
2. Items are grouped together by their constructs here, not so in the survey. In order, Factors 1 to 5 are work environment and career development, employment security, social support, job search, and compensation.
3. The HRM practices prompt was: The following items ask you to rate the Actual current situation for various characteristics of an employment arrangement at your organization on the scale provided next to each item. If you are unable to provide a specific rating, leave that scale blank.
4. HRM practices (a 5-point scale) was anchored with Lo (1) and Hi (5).
5. Job search (a 5-point scale) was anchored with Strongly Disagree (1), Neither Agree Nor Disagree (3), and Strongly Agree (5).

Table A2. HRM Configuration Seeds/Practice Means for Determining Horizontal Fit

Configuration	Work environment and career development	Social support	Compensation	Employment security
HCF	4.25	4.50	4.25	4.50
LTI	3.75	3.75	3.00	4.50
Moderate	3.00	3.00	3.00	3.00
Utilitarian	2.50	2.50	4.00	4.25
LTI-Low	2.75	3.00	2.00	4.00
STP	2.50	3.00	3.50	1.50
TF	2.25	2.50	1.75	1.75