HIGH-PERFORMANCE WORK SYSTEMS, DYNAMIC WORKFORCE ALIGNMENT,
AND FIRM PERFORMANCE

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Funding for this research was provided by Gevity HR, Cornell University’s Center for Advanced Human Resource Studies (CAHRS), and the Benjamin Miller Scholarship Fund.
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ABSTRACT

There has been growing interest in demonstrating that high-performance work systems contribute to firm performance, yet limited research attention has been paid to the workforce attributes that mediate the relationship, particularly under changing workforce conditions. In this study, I examine the extent to which, and the conditions under which, workforce alignment positively affects firm performance. Results from a study of 196 small businesses indicate that workforce alignment mediates the relationship between high-performance work system use and sales growth. Findings further suggest that firms that attain dynamic workforce alignment grow faster than firms that attain workforce alignment under stable workforce conditions.
Strategic human resource management (SHRM) is concerned with the role human resource management systems play in firm performance, particularly focusing on the alignment of human resources as a means of gaining competitive advantage (Becker & Huselid, 2006; Wright & Sherman, 1999). Within the field, scholars generally believe that (1) firm performance is a function, at least in part, of particular workforce attributes (employee skills, deployment patterns, and behaviors) and (2) particular HR systems (combinations of HR policies, programs, and practices) engender these particular workforce attributes (Cappelli & Singh, 1992; Schuler & Jackson, 1987). According to the workforce alignment approach, then, the central SHRM goal of any firm is to design and implement an HR system that matches employees’ skills, deployment patterns, and behavioral contributions to the strategic goals of the firm.

A large proportion of SHRM research has been devoted to the study of high-performance work systems (HPWS). Many of these studies have applied alignment-based reasoning and the resource-based view of the firm (RBV) to predict a positive relationship between HPWS use and firm performance (Wright, Dunford, & Snell, 2001). For example, one common argument has been that HPWS use creates a human resource advantage by enhancing employee knowledge and skills, increasing employee discretion and opportunity, and raising employee motivation (and thus the likelihood that employees will choose to engage in behaviors that benefit the firm) (Bartel, 2004; Batt, 2002; MacDuffie, 1995). However, although prior research has demonstrated that HPWS use is positively related to firm performance across a wide range of business strategies, contexts, and performance indicators (see Becker & Huselid [2006], Delery & Shaw [2001], and Wright and Gardner [2002] for recent reviews), little research has examined whether HPWS use enhances firm performance through these particular workforce attributes.
Therefore, my first goal was to develop and test theory suggesting that workforce alignment mediates the relationship between HPWS use and firm performance.

Thus far, most SHRM research has been predicated on human resource stability. Yet workforce alignment is a transitory notion for many firms because the workforce skills, deployments, and behavioral contributions that are aligned under one set of circumstances may be of little value, or even detrimental, when circumstances change (Kraatz & Zajac, 2001; Miller & Shamsie, 1996). Attaining workforce alignment under changing conditions requires firms to adapt their workforces to fit changing business needs (Rindova & Kotha, 2001; Siggelkow, 2001). Dynamic RBV scholars have argued that this type of resource reconfiguration is not only quite valuable, but also exceedingly difficult to achieve (Eisenhart & Martin, 2000; Teece, Pisano, & Shuen, 1997). SHRM scholars, in turn, have suggested, but not yet shown, that workforce alignment is more likely to lead to a temporary competitive advantage when it is achieved under dynamic, rather than stable, circumstances (Dyer & Shafer, 1999, 2003; Wright & Snell, 1998). Therefore, my second goal was to ascertain whether firms that attain dynamic workforce alignment achieve greater firm performance than firms that attain workforce alignment under stable workforce conditions.

In this study, I examine the extent to which, and the conditions under which, workforce alignment positively affects firm performance. More specifically, I elaborate and test the model of dynamic workforce alignment shown in Figure 1. To begin, I define workforce alignment and draw on the RBV to argue that workforce alignment is a valuable firm resource that mediates the relationship between HPWS use and firm performance. Next, I use the dynamic RBV to suggest that workforce alignment is more likely to be rare, and thus to lead to a temporary competitive advantage, when it is attained under changing workforce conditions. In particular, I propose that
the relationship between workforce alignment and firm performance is moderated by internal workforce adaptation, external workforce adaptation, voluntary turnover, involuntary turnover, and contract worker use. Finally, I develop and validate a measure of workforce alignment and test these predictions on a sample of 196 small businesses.

THEORY AND HYPOTHESES

Workforce Alignment

Vertical alignment (or fit) exists when a firm’s extant workforce attributes are in synch with the attributes required by its business strategy (Wright & Sherman, 1999). Within the field, two types of vertical alignment have been examined: HR system alignment (or alignment-as-moderation) and workforce alignment (or alignment-as-mediation). Initially, researchers focused on HR system alignment. Here scholars developed normative models to show how intuitively derived typologies of HR strategy should be paired with similarly derived typologies of business strategy to maximize performance (Miles & Snow, 1984; Schuler & Jackson, 1987). These efforts were followed by a series of studies that sought to determine whether firms that matched their HR strategies to their business strategies in the prescribed ways performed better than those that did not (Arthur, 1992; Delery & Doty, 1996; Youndt et. al., 1996). However, the results of the studies “failed to consistently support the efficacy of fit between strategy and HR practices” (Wright & Sherman, 1999: 18).

More recently, scholars have invoked the RBV to argue for the importance of workforce alignment. According to the RBV, resources that are both valuable and rare have the potential to lead to a temporary competitive advantage in the marketplace because they are useful strategically and, further, they are useful in ways that competitors are not matching or obviating.
at least for the moment (Barney, 1991; Wernerfelt, 1984). According to the RBV, mediated SHRM models are necessary because resource value and rarity reside in workforce attributes, not HR systems (Wright, McMahan, & McWilliams, 1994). In a recent review of the SHRM and the RBV, for example, Wright et. al. (2001: 709) noted that a firm’s workforce is more likely to constitute a source of competitive advantage than its HR system and concluded that the majority of SHRM research “fails to adequately test the RBV” because it doesn’t “demonstrate that HR practices actually impact the skills or behaviors of the workforce, nor that these skills or behaviors are related to any performance measures.” Despite its conceptual appeal, however, workforce alignment has not been directly examined. This is, at least in part, due to the lack of an available measure of the construct. As Becker and Huselid (2006: 908-909) recently noted, future SHRM research “will require new direct measures of fit [that do not rely] on the more familiar moderator variable approach.”

Workforce alignment refers to the fit between workforce attributes and the strategic goals of the firm. But what precisely are these workforce attributes? As noted above, many scholars have suggested that firm performance is enhanced when employees have the skills, opportunity, and motivation necessary contribute to firm goals (Bartel, 2004; Batt, 2002; MacDuffie, 1995). Similarly, others have claimed that greater firm performance accrues to firms that have the right types of people, in the right places at the right times, doing things which result in the organization receiving maximum benefits (Vetter, 1967: 15; Dyer & Ericksen, 2005). Likewise, still others have alternately argued for the performance inducing benefits of employee skills, employee deployment patterns, and employee behaviors (Becker & Huselid, 1998; Wright & Snell, 1998; Wright et. al., 2001).
Prior SHRM theory suggests that workforce alignment exists when a firm has people with the requisite skills, properly deployed and utilized, and actively contributing to firm goals. Therefore, I define workforce alignment as a multidimensional construct comprised of three dimensions: (1) skill alignment (the degree to which employees possess the knowledge and abilities necessary to contribute to firm goals), (2) deployment alignment (the degree to which employees occupy assignments that allow them to utilize their knowledge and motivation to pursue firm goals), and (3) contribution alignment (the degree to which employees actively and appropriately engage in behavior that helps the firm achieve its goals). This definition allows for multiple configurations of particular workforce attributes to be equally capable of fostering firm performance. Thus, the employee skills, deployment patterns, and behavioral contributions that are “aligned” for one firm pursuing competitive advantage under one set of circumstances may be quite different from those that are “aligned” for another firm operating under a different set of circumstances.

HPWS use should positively affect workforce alignment. In particular, skill alignment should be increased by staffing selectively, hiring based on candidates’ long-term potential, and investing in training and development (Batt, 2002). These practices expand individuals’ general- and firm-specific skills and enhance the likelihood that people will have ability to succeed in their current and future assignments. Deployment alignment, in turn, should be greater when employees are given challenging roles and responsibilities and then granted a great deal of discretion when carrying them out (Applebaum et. al., 2000). In addition, HPWS practices such as internal promotion, job rotation, and developmental feedback raise the likelihood that, at any given time, the firm will have the right people in the right assignments. Finally, contribution alignment should be enhanced when employees share a common mission and purpose and
receive reciprocal investments from the firm (Lawler, Mohrman, & Ledford, 1995). Practices
such as linking compensation to firm outcomes, sponsoring company-wide social events, and
sharing company information, improve employees’ understanding of, and dedication to, firm
goals (Pfeffer, 1995). Further, practices such as paying high wages, investing in training and
development, and providing internal promotion opportunities demonstrate a firm’s investment in
its workforce and thereby increase individuals’ willingness to do whatever it takes to help the
firm succeed (Lawler, 1992).

Workforce alignment, in turn, should be positively related to firm performance. In RBV
terms, workforce alignment is a valuable resource (by definition) because it represents an asset
or strength that the firm can use to successfully pursue opportunities or mitigate threats in its
particular strategic context (Barney, 1991, 2001). Further, three proposed dimensions of
workforce alignment collectively represent a sufficient set of workforce characteristics necessary
for firm performance. For example, employees with the requisite general and firm-specific skills
are better able to execute the firm’s current strategy (Wright, Smart, & McMahan, 1995) as well
as to enhance the firm’s “prospects for spontaneity, innovation, and alternative strategy
generation” (Datta, Guthrie, & Wright., 2005: 136). Yet firms may have access to the valuable
human capital “but either through the poor design of work, or the mismanagement of people,
may not adequately deploy it” (Wright, et. al., 2001: 705). In addition, a properly skilled and
deployed workforce will be of little strategic value unless employees individually and
collectively choose to engage in the behaviors that benefit the firm (MacDuffie, 1995).
In sum, one assumption underlying research on SHRM is that HPWS use does not affect firm performance directly. Instead, these systems lead to higher performance when they engender a workforce with the skills, deployment patterns, and behavioral contributions necessary for the firm to successfully formulate and implement its strategic goals. Thus:

*Hypothesis 1: Workforce alignment mediates the relationship between HPWS use and firm performance.*

Thus far, I have argued that workforce alignment is a valuable resource. However, according to the RBV, a valuable resource that is easily obtained is at best a source of competitive parity. Workforce alignment (as with any other resource) becomes a source of temporary competitive advantage only when the firm is able to obtain a resource level that is not widely held. Therefore, in order to claim that workforce alignment constitutes even a short-term competitive advantage, it is necessary to identify the circumstances under which firms can achieve levels of workforce alignment that competitors find difficult to match (Barney, 1991).

Firms operating under stable and enduring conditions seek to attain a competitive advantage by aligning their workforces to their business goals and then integrating them with other resources to foster complementarities (Milgrom & Roberts, 1995). Here firms seek to develop specialized human resources focused on primarily on doing what they do well even better and workforce adaptation occurs incrementally and slowly. In these settings, workforce alignment alone is likely to be a “hygiene” factor—it can be a problem if done poorly, but it offers no real chance for competitive advantage because sooner or later most firms will figure it out. In contrast, things are quite different for firms pursuing competitive advantage under changing circumstances. Here workforce alignment is a moving target because each strategic or environmental shift requires a (somewhat to totally) different configuration of workforce alignment.
attributes, each one of which, for value, must be aligned to extant circumstances. Prior research suggests that this type of dynamic resource reconfiguration is not only quite valuable, but also exceedingly difficult to achieve (Kraatz & Zajac, 2001; Miller & Shamsie, 1996; Rindova & Kotha, 2001; Siggelkow, 2001). As a result, workforce alignment should be more likely lead to a temporary competitive advantage when it is attained under dynamic, rather than stable, conditions (Eisenhart & Martin, 2000; Teece, et. al., 1997).

**Dynamic Workforce Alignment**

Dynamic workforce alignment generally refers to the successful transition from one aligned workforce configuration to another. More specifically, dynamic workforce alignment exists when a firm adapts its workforce to produce a human resource configuration that allows the firm to effectively formulate and implement its strategic goals. Empirically, dynamic workforce alignment is the multiplicative interaction between workforce alignment and five distinct forms of workforce adaptation: internal workforce adaptation, external workforce adaptation, voluntary turnover, involuntary turnover, and contract worker use. This is conceptually important because RBV critics and advocates generally agree that the RBV is more powerful and less tautological when employed using a contingent approach because resource value is not defined in terms of performance (see the recent debate between Barney [2001] and Priem & Butler [2001]). Further, the use of an interaction term allows one to distinguish firms that have achieved dynamic workforce alignment, from firms with workforces that are aligned and stable, misaligned and adapted, and misaligned and stable. Dynamic workforce alignment thus allows for the possibility that firms will adapt their workforces in ways that reduce, as well as enhance, workforce alignment (Kraatz & Zajac, 2001; Ruef, 1997).
Dynamic workforce alignment resembles what HR scholars have referred to as HR flexibility (Atkinson, 1984; Bhattacharaya, Gibson, & Doty, 2005; Lepak, Takeuchi, & Snell, 2003; Wright & Snell, 1998). However, dynamic workforce alignment and HR flexibility are conceptually distinct. Dynamic workforce alignment focuses on the degree to which the firm “has effectively adapted its workforce to achieve alignment to changing or diverse demands from either its environment or from within the firm itself” (Milliman, Von Glinow, & Nathan, 1991: 325). HR flexibility, in contrast, emphasizes “the extent to which the firm’s human resources possess the skills and behavioral repertoires that give the firm options for pursuing strategic alternatives in the firm’s competitive environment” (Wright & Snell, 1998: 761). HR flexibility thus emphasizes workforce traits (the capacity to) whereas dynamic workforce alignment emphasizes workforce outcomes (alignment under changing circumstances). The former may strongly predict the later, of course, but they are not conceptual substitutes.

Internal workforce adaptation. One way a firm can attain dynamic workforce alignment is through internal workforce adaptation; that is, by adapting the skills, deployments, and behavioral contributions of its existing employees to fit changing business needs (Atkinson, 1984; Wright & Snell, 1998). Here internal workforce adaptation is defined as a single construct comprised of three dimensions: (1) skill adaptation (the extent to which employee knowledge and skills have changed); (2) deployment adaptation (the degree to which employee roles and assignments have changed); and (3) contribution adaptation (the extent to which employee tasks and behaviors have changed). Prior research suggests that firms generally find it difficult to “reorganize, reallocate, or retrain their employees to respond to changing markets [and] technologies” (Cappelli & Neumark, 2004: 176). For example, firms attempting to probe new market opportunities are often inhibited by an inability to identify, deploy, and utilize the right
types of people (Ericksen & Dyer, 2004). The slowness with which firms adapt to technological changes is typically attributed to the “stickiness” or immobility of resources, including human resources (Henderson & Clark, 1990; Tripsas, 1997). Other studies indicate that firms find it difficult to explore new prospects while simultaneously executing against current goals, in part because exploitation-oriented employee behaviors tend to overwhelm and extinguish exploration-oriented behaviors in such settings (Benner & Tushman, 2002; O’Reilly & Tushman, 2004). Finally, firms attempting to execute two or more strategic initiatives at once are often unsuccessful, in part because people are overwhelmed and coordination suffers (Barnett & Freeman, 2001; Vermuelen, & Barkema, 2002). These challenges suggest that workforce alignment is more likely to be rare, and thus to lead to a temporary competitive advantage, when internal workforce adaptation is high than when internal workforce adaptation is low. Thus:

*Hypothesis 2: Internal workforce adaptation will moderate the relationship between workforce alignment and firm performance. Specifically, the relationship will be stronger when internal workforce adaptation is high.*

*External workforce adaptation.* Another way that a firm can attain dynamic workforce alignment is through external workforce adaptation; that is, by expanding or contracting the overall size of its workforces to fit changing business needs (Atkinson, 1984). Yet consider the workforce challenges firms face when growing. According to the “Penrose-effect,” acquiring human resource is “both the accelerator and the brake for the growth process” (Starbuck, 1965: 490; Penrose, 1959). Influxes of talent increase the performance potential of the firm, but they also create coordination problems and require existing organizational members to devote time and energy training and assimilating new hires. Anderson (2001), for example, showed that firms that expand workforce size in times of rapid market growth often under-perform by
delivering lower quality products and services at higher costs. Or take downsizing. Here firms regularly cut too deeply in some areas, not deeply enough in other areas, or some combination of both (thus leaving the firm with an inappropriate mix of talent) (Cascio, 2002). Further, survivors of the process often experience reduced levels of motivation (Brockner, 1992; Charness & Levine, 2000). And, even if employees’ motivation is not adversely affected, their capacity to effectively pursue firm goals often is due to overwork, altered social networks, and disrupted internal processes (Dougherty & Bowman, 1995; Fisher & White, 2000). Taken together, these challenges suggest that workforce alignment is more likely to be rare, and thus to lead to a temporary workforce alignment advantage, when external workforce adaptation is high than when external workforce adaptation is low. Thus:

*Hypothesis 3: External workforce adaptation will moderate the relationship between workforce alignment and firm performance. Specifically, the relationship will be stronger when external workforce adaptation is high.*

**Voluntary turnover.** A firm can also attain dynamic workforce alignment by effectively restocking talent when employees voluntarily choose to leave the firm. Prior research has generally demonstrated a negative relationship between employee turnover and firm performance (Kacmar et. al., 2004; Shaw, Gupta, & Delery, 2005). From a workforce alignment perspective, these findings suggest that firms generally find it difficult to achieve high levels of workforce alignment when voluntary turnover is high. Although HPWS use has been shown to reduce voluntary turnover (Arthur, 1992; Batt, 2002; Huselid, 1995), it does not entirely eliminate the need to restock talent, particularly in highly competitive markets for talent (Gardner, 2005; Rao & Drazin, 2002). Therefore, all things equal, the ability to effectively “restock” talent—i.e.,
obtain high levels of workforce alignment when voluntary turnover is high—may provide firms with a temporary competitive advantage. Thus:

**Hypothesis 4**: Voluntary turnover will moderate the relationship between workforce alignment and firm performance. Specifically, the relationship will be stronger when voluntary turnover is high.

**Involuntary turnover**. Human resource scholars and practitioners have increasingly argued that firms can enhance workforce alignment by firing low performing employees and replacing them with more capable people (Grote, 2005; Scullen, Bergey, Aiman-Smith, 2005). For example, a simulation study conducted by Scullen et. al. (2005: 25) showed that “the most significant key to greater and quicker [workforce] improvement is firing greater numbers of low-ranked employees” (Scullen, et.al., 2005: 25). According to the business press, companies such as GE, Microsoft, Lucent, Conoco, and EDS have all used this so-called “fire and rehire” strategy to “maintain or improve the quality of their workforce” (Jenkins, 2001). Yet other research has suggested that organizations often find it is difficult to “fire and rehire” in ways that enhance workforce alignment (Pfeffer, 2001). In the National Basketball Association, for instance, teams with the best talent (based on player salaries and draft position) do not always (or even usually) have the best records or win championships (Berman, Down and Hill, 2002). On Wall-Street, firms that replaced existing stock analysts with “stars” (those ranked by *Institutional Investor* as one of the best in a particular industry) generally found that the star’s performance plunged, the functioning of the team the star worked with suffered, and the firm’s market value declined (Grosyberg, Nanda, & Nohria, 2004). These findings suggest that workforce alignment is more likely to be rare, and thus to lead to a temporary workforce alignment advantage, when
involuntary turnover is high than when involuntary turnover is low. Thus, controlling for firm size change (and downsizing):

*Hypothesis 5: Involuntary turnover will moderate the relationship between workforce alignment and firm performance. Specifically, the relationship will be stronger when involuntary turnover is high.*

**Contract worker use.** Managers have increasingly reported using contract workers—or individuals who work at the firm but who are managed and paid by another firm—to enhance workforce flexibility (as well as to minimize labor costs) (Abraham & Taylor, 1996; Houseman, 2001; Pfeffer & Baron, 1988). However, the role of contract worker use on the relationship between workforce alignment and firm performance remains open for debate. On the one hand, prior research has indicated that the use of contract workers can reduce standard employees’ loyalty and commitment to the firm, their trust in management, and their desire to remain with the firm (Davis-Blake, Broschak, & George, 2003; George, 2003). Therefore, workforce alignment may be more difficult to obtain, and thus more likely to lead to a temporary workforce alignment advantage, when firms employ a high proportion of contract workers than for firms that employ a low proportion of contract workers. On the other hand, contract workers are most likely to be used for assignments that require knowledge and skills that are neither particularly valuable (to the firm’s business strategy) nor unique (in the labor market) (Lepak & Snell, 1999; Lepak et. al., 2003). Therefore, firms that employ a high proportion of contract workers may be less likely to compete on the basis of workforce alignment than firms that employ a low proportion of contract workers. If this is true, then one would expect the relationship between workforce alignment and sales growth to be stronger when contract worker use is low than when
contract worker use is high. These competing predictions can be tested through the following hypothesis:

_Hypothesis 6:_ Contract worker use will moderate the relationship between workforce alignment and firm performance. Specifically, the relationship will be stronger when contract worker use is high.

**METHODS**

**Context, Sample, and Procedure**

The context of the study was small businesses, defined as companies that employ fewer than 150 employees. Prior research has shown that small businesses regularly: make adjustments to management skills, priorities, and structural configurations; ask employees to perform multiple roles; experience rapid growth in the numbers of people they employ; and struggle when coping with economic downturns (Cardon and Stevens, 2004; Heneman, Tansky & Camp, 2000). Further, although small businesses represented over 98 percent of US firms and 40 percent of US jobs at the time of the study (US Small Business Administration), prior SHRM research has focused almost exclusively on larger firms (see Way [2002] for an exception).

This study represents part of a larger research effort to better understand how human resources affect small business performance. This larger, project was a collaborative effort between researchers from a large private university and Gevity HR, a publicly-traded HR outsourcing firm that provides an array of HR services to small businesses (e.g., payroll systems, employee benefits systems, and insurance pooling). Gevity HR funded the majority of the project’s costs and provided a list of its client firms to survey. An examination of the firms that participated in this portion of the project indicates that the firms represented a wide range of industries. Specifically, 27 percent of the firms provided basic services while 21 percent were in
retail, 28 percent provided professional services, 15 percent were in construction, and 9 percent were in manufacturing. Further, the average firm was small (about 21 employees) and fairly well-established (approximately 14 years old).

Firm CEOs (CEOs, owners, presidents, or top managers) provided all of the information used to test the study’s hypotheses. However, to help assess the reliability and validity of key variables, information was also collected from the employees of a smaller subset of participating firms. After an initial survey pilot test, surveys were mailed to the CEOs of 2250 Gevity HR clients in the summer of 2004 and followed with a second survey two months later. Complete responses were received from 196 CEOs for a response rate of 8.7 percent. This response rate, while low, is consistent with other survey-based studies of high-performance work systems (Becker and Huselid, 1998; Datta et. al, 2005; Lepak and Snell, 2002). At the end of the survey, CEOs were invited to identify up to 15 “core” employees for a follow-up survey. The CEOs of 124 firms agreed to participate and provided the contact information for 623 employees. Initial and follow-up mailings and emails yielded usable responses from 308 employees representing 96 different firms. These figures represented an employee response rate of 49 percent and an average of 4.18 surveys for each firm from which at least one employee response was received.

Measures

**HPWS use.** HPWS use has been measured in a variety of ways (Becker & Gerhart, 1996). I used an index measure based on the work of Collins and Smith (2006) and Snell and colleagues (Snell, 1992; Youndt et. al., 1996). Specifically, HPWS use was computed as the mean of 13 HR practices found in Appendix A. All items in the study were rated from 1, “strongly disagree,” to 5, “strongly agree.” Cronbach’s alpha for the composite HPWS use scale was .76 for the CEO data and .79 for the employee data.
Workforce alignment. To measure workforce alignment, I developed a nine-item scale that included three items for each of the three proposed dimensions. Table 1 provides the specific items. I measured skill alignment with three items assessing the degree to which a respondent believed that the firm’s employees possessed the knowledge and abilities necessary to contribute to firm goals ($\alpha = .71$ for CEOs and .80 for employees). I measured deployment alignment with three items assessing the degree to which a respondent believed that the firm’s employees occupied assignments that allowed them to utilize their knowledge and motivation to pursue firm goals ($\alpha = .78$ for CEOs and .81 for employees). I measured contribution alignment with three items assessing the degree to which a respondent believed that the firm’s employees actively and appropriately engaged in behavior that helped the firm achieve its goals ($\alpha = .86$ for CEOs and .86 for employees). Cronbach’s alpha for the nine-item internal workforce adaptation scale was .85 for the CEO data and .87 for the employee data.

Internal workforce adaptation. To measure internal workforce adaptation, I developed a nine-item scale that included three items for each of the three proposed dimensions. Table 1 provides the specific items. I measured skill adaptation with three items assessing the degree to which a respondent believed that employees’ knowledge and skills had changed ($\alpha = .71$ for CEOs and .80 for employees). I measured deployment adaptation with three items assessing the degree to which a respondent believed that employees’ roles and assignments had been adjusted ($\alpha = .78$ for CEOs and .81 for employees). I measured contribution adaptation with three items that assessing the degree to which a respondent believed that employees’ tasks and behaviors had changed ($\alpha = .86$ for CEOs and .86 for employees). One potential problem with this measure is that respondents were asked to characterize workforce changes that occurred over the past three years even if they had not been with the company for the entire period. Fortunately, the majority
of study participants did not fall into this category; over 90 percent of CEOs and 62 percent of employees had firm tenures of three years or more. Cronbach’s alpha for the nine-item internal workforce adaptation scale was .87 for the CEO data and .84 for the employee data.

**External workforce adaptation.** External workforce adaptation was measured as the relative change in firm size. To compute external workforce adaptation, I used the following formula: \([\text{ABS} (\text{size}_2 - \text{size}_1)] / \text{size}_2\), where \(\text{ABS}\) was absolute value, \(\text{size}_2\) was the total number of employees at the time of the study, and \(\text{size}_1\) was the total number of employees three years prior to the study. External workforce adaptation thus ranged from 0 to 1 and a firm that grew its workforce received the same external workforce adaptation score as a firm that reduced its workforce size by the same proportion. In the study, 71.4 percent of the firms increased workforce size by an average of 38.8 percent, 15.3 percent of the firms did not change workforce size, and 13.3 percent of the firms reduced workforce size by an average of 41.6 percent.

**Employee turnover.** Voluntary and involuntary turnover data were obtained from CEOs using the following questions, respectively: “How many employees quit your firm in the last year?” and “How many employees left your firm in the last year because they were terminated or released by the firm?” To standardize these figures, I divided the absolute voluntary and involuntary figures by the number of firm employees at the time of the study.

**Contract worker use.** Contract workers were defined as individuals who work at the firm but who are paid by another organization (Houseman, 2001). Examples include staff from temporary agencies or other independent contractors. To assess contract worker use, CEOs were provided with the preceding definition and asked to report the number of contract workers the firm employed at the time of the study. These figures were then standardized by dividing the contract worker use figure by the number of firm employees.
**Firm performance.** Sales growth was selected as the firm performance indicator. Firms with aligned workforces should be more likely to satisfy customers and to modify products or services to meet customer needs, which should be reflected in firms’ sales growth rates (Batt, 2002; Collins & Smith, 2006). Further, one would expect firms that have obtained a temporary competitive advantage to report higher levels of sales growth than firms operating under conditions of competitive parity (Anderson, 2001; Penrose, 1959). Recent sales growth figures were obtained directly from CEOs and calculated as the natural logarithm of the percentage change in firm sales. Although externally validated indicators of firm performance are generally preferable to self-reported figures, no such data were available because none of the firms in the study were publicly traded. However, prior research suggests that the CEOs of small firms typically provide accurate estimates. For example, Collins and Clark (2003) reported a correlation between CEO-reported and COMPUSTAT generated sales growth figures of .94.

**Control variables.** To control for industry effects, each firm was coded into one of five industry categories on the basis of CEO industry identifications as well as firm background descriptions provided by Gevity HR. As noted above, the five industry groups were service, retail, professional service, construction, and manufacturing. I also controlled for firm age and firm size in all analyses. Firm age was measured as the natural logarithm of number of years since founding. Firm size, in turn, was measured as the natural logarithm of the number of employees at the time of the study. Gardner, Wright, and Gerhart (2000) suggested that prior estimates of the HPWS-firm performance relationship may be overstated due to an “implicit theory of performance” bias among respondents. Specifically, Gardner et al, (2000) showed that individuals asked to represent fictional high-performing firms were more likely to report having “innovative” HR practices than were individuals asked to represent fictional low-performing
firms. Therefore, in order to eliminate an “implicit theory of performance” bias in the study, I controlled for CEOs general perceptions of firm performance using Gibson and Birkinshaw’s (2004) four-item scale (e.g., this firm’s performance is much better than the performance of our main competitors). Cronbach’s alpha was .77. Finally, five additional control variables were considered but not used: (1) the presence of an HR manager, (2) HR costs, (3) the number of prior firm CEOs, and (4) the degree to which the firm relied on Gevity HR to carry out employee management practices. Bivariate correlation and ordinary least squares (OLS) regression analyses indicated that none of these variables significantly affected study hypotheses.

**Confirmatory factor analysis.** Confirmatory factor analysis (CFA) was used to assess the discriminant validity of the workforce alignment and internal workforce adaptation scales. For each measure, I compared the fit of five models: a one-factor model in which all nine items were specified to a single factor, all three possible two-factor models, and the proposed three-factor model representing skills, deployments, and contributions. Individual items were permitted to load only on their hypothesized first-order factors with no cross-loadings or correlated measurement errors. The results provided strong evidence for a three-factor model of workforce alignment. As Table 1 shows, each of the 9 items loaded significantly onto its first-order construct (skill alignment, deployment alignment, and contribution alignment) for both the CEO data and employee data and the correlations among the three dimensions were positive and significant (from $r = .48$ to $r = .70$, $p < .01$). Further, as Table 2 indicates, the three-factor model achieved good fit with both the CEO data ($X^2/df = 1.25$, GFI = .98, CFI = .99, RMSEA = .04) and the employee data ($X^2/df = 2.18$, GFI = .96, CFI = .98, RMSEA = .06). The results also provided strong evidence for a three-factor model of internal workforce adaptation. As Table 1 shows, each of the 9 items loaded significantly onto its first-order construct (skill adaptation,
deployment adaptation, and contribution adaptation) for both the CEO and employee data and
the correlations among the three dimensions were positive and significant (from $r = .39$ to $r =
.69, p < .01$). Further, as Table 2 indicates, the three-factor model also achieved good with the
CEO data ($X^2/df = 2.35$, GFI = .97, CFI = .97, RMSEA = .07) and acceptable fit with the
employee data ($X^2/df = 3.79$, GFI = .94, CFI = .94, RMSEA = .09).

I also used CFA to assess the convergent validity of the workforce alignment and internal
workforce adaptation scales. Here I modeled workforce alignment and internal workforce
adaptation as two distinct second-order constructs. Specifically, each of the workforce alignment
and internal workforce adaptation items was specified to load only onto its expected first-order
construct. The first-order constructs, in turn, were specified to load only onto their respective
second-order constructs (workforce alignment and internal workforce adaptation). The results,
shown in Table 1, provided strong evidence for convergent validity. All items loaded
significantly onto their first-order constructs, and all first-order constructs loaded significantly
onto their second-order constructs. Further, good fit was obtained for both the CEO data ($X^2/df =
2.21$, GFI = .97, CFI = .96, RMSEA = .07) and the employee data ($X^2/df = 1.54$, GFI = .99, CFI
= .99, RMSEA = .04).

**Interrater agreement and reliability.** HPWS use, workforce alignment, and internal
workforce adaptation are firm-level variables. Therefore, in order to justify using CEO
responses to represent these firm-level constructs, it is necessary to show that that the ratings
from different informants within the same firm are similar to one another and that they are more
similar to one another than they are to informant ratings from other firms (Gerhart, Wright, &
McMahan, 2000; Huselid & Becker, 2000). I used data from the 96 firms with both CEO and
employee respondents to investigate within-firm agreement and between-firm variance using the
average interrater agreement coefficient ($r_{wg}$; James, Demaree, & Wolf, 1984) and the interclass correlation coefficient (ICC[1] and ICC[2]; Bliese, 2000). Median $r_{wg}$ values were .87 for HPWS, .83 for workforce alignment, and .79 for internal workforce adaptation, suggesting that informant ratings within a given firm were highly consistent with one another. One way analyses of variance suggested that informant ratings of high-performance work systems, workforce alignment, and internal workforce adaptation all differed significantly between firms ($p < .01$ or greater). Further, ICC[1] values easily cleared established “hurdle rates” with values of .36 for HPWS, .30 for workforce alignment and .26 internal workforce adaptation, indicating that much of the variance in ratings is due to firm membership (Bliese, 2000). Finally, the reliability of the group means, as measured by the ICC[2] coefficient, was .70 for HPWS, .64 for workforce alignment, and .60 for internal workforce adaptation. Taken together, these analyses supported using CEO responses to represent firms’ levels of HPWS use, workforce alignment, and internal workforce adaptation.

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**RESULTS**

Table 3 reports the means, standard deviations, and correlations of all variables. Hierarchical ordinary least squares (OLS) regression analysis was used to test Hypothesis 1, which predicted that workforce alignment would mediate the relationship between high-performance HR systems and firm performance. The results are shown in Table 4. Testing for mediation involves three steps (Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998). First, one must show that HPWS use (the independent variable) is positively related to sales growth (the dependent variable). Model 1, which included the control variables (industry, age, size, perceptions of performance), explained 12.7 percent of the variance in sales growth. In model 2,
HPWS use was added to the equation. The results indicated that HPWS use explained an additional 2.7 percent of the variation in sales growth and that the coefficient was positive and significant ($\beta = .18, p < .01$). Second, one must establish that HPWS use (the independent variable) is positively related to workforce alignment (the mediator). As model 4 indicates, other variables equal (model 3), HPWS use incrementally explained 10.9 percent of the variance in workforce alignment and the coefficient was positive and significant ($\beta = .36, p < .01$). Finally, one must show that workforce alignment (the mediator) is positively related to sales growth (the dependent variable) with HPWS use (the independent variable) controlled. If the effect of HPWS use is no longer significant, then full-mediation is supported. If, on the other hand, the effect of HPWS use is reduced but still significant, then partial mediation is suggested. Model 5 shows the results of the regression analysis when workforce alignment was added to the base model (model 1). It indicates that workforce alignment explained an additional 4.5 percent of the variation in sales growth and that the coefficient was positive and significant ($\beta = .25, p < .001$). Further, as model 6 indicates, the coefficient for workforce alignment remained positive and significant when HPWS use was controlled ($\beta = .21, p < .01$). However, with workforce alignment in the equation, the coefficient for HPWS use was no longer significant as both the size of the coefficient and the corresponding test statistic ($t$) decreased from model 2 ($\beta = .18, t = 2.40, p < .01$) to model 6 ($\beta = .10, t = 1.31, p < \text{n.s.}$). Thus, hypothesis 1 was supported.

Moderated regression analyses were used to test hypotheses 2-6. To reduce nonessential collinearity, I standardized the variables prior to creating the product terms (Aiken & West, 1991). The examination of variance inflation factors (VIFs) indicated that multicollinearity was not a problem. Also, since apparent interactions between correlated measures can actually be curvilinear effects of one of the measures (Cortina, 1993), I sought to identify curvilinear
relationships within the variables prior to creating the interaction variables. None were found. The results are shown in Table 5. Hypothesis 2 predicted that the relationship between workforce alignment and firm performance would be stronger when internal workforce adaptation was high than when internal workforce adaptation was low. As Model 8 indicates, the coefficient of the workforce alignment-internal workforce adaptation interaction term was positive and significant ($\beta = .12, p < .05$). A plot of the interaction, shown in Figure 2, indicated that the relationship between workforce alignment and sales growth was stronger when internal workforce adaptation was high than when internal workforce adaptation was low. Thus, hypothesis 2 was supported. Hypothesis 3 predicted that the relationship between workforce alignment and firm performance would be stronger when external workforce adaptation was high than when external workforce adaptation was low. As Model 9 shows, the coefficient of the workforce alignment-external workforce adaptation interaction term was positive and significant ($\beta = .15, p < .01$). A plot of the interaction, shown in Figure 2, indicated that the relationship between workforce alignment and sales growth was stronger when external workforce adaptation was high than when internal workforce adaptation was low. Thus, hypothesis 3 was supported.

Hypothesis 4 predicted that the relationship between workforce alignment and firm performance would be stronger when voluntary turnover was high than when voluntary turnover was low. However, as Model 10 shows, the coefficient of the workforce alignment-voluntary turnover interaction was positive, but not significant ($\beta = .07, p < \text{n.s.}$). Thus, hypothesis 4 was not supported. Hypothesis 5 predicted that the relationship between workforce alignment and firm performance would be stronger when involuntary turnover was high than when involuntary turnover was low. As Model 11 indicates, the coefficient of the workforce alignment-involuntary turnover interaction term was positive and significant ($\beta = .28, p < .01$). A plot of
the interaction, shown in Figure 2, indicated that the relationship between workforce alignment and sales growth was stronger when involuntary turnover was high than when involuntary turnover was low. Thus, hypothesis 5 was supported. Finally, Hypothesis 6 predicted that the relationship between workforce alignment and firm performance would be stronger when contract worker use was high than when contract worker use was low. However, in contrast to hypothesis 6, model 12 shows that the coefficient of the workforce alignment-contract worker use interaction term was negative and significant ($\beta = -.14, p < .01$). A plot of the interaction, shown in Figure 2, indicated that the relationship between workforce alignment and sales growth was stronger when contract worker use was low than when contract worker use was high. Thus, hypothesis 6 was not supported.

Insert Tables 3-5 and Figure 2 about here

**DISCUSSION**

The purpose of this research was to examine the extent to which, and the conditions under which, workforce alignment affects firm performance. To begin, I defined workforce alignment and used the RBV to argue that workforce alignment is a valuable firm resource that mediates the relationship between HPWS use and firm performance. Next, I used the dynamic RBV to suggest that workforce alignment leads to greater firm performance when it is attained under dynamic, rather than stable, workforce circumstances. Finally, I developed and validated a measure of workforce alignment and tested the predicted effects of HPWS use and workforce alignment on a sample of small businesses.
Workforce Alignment

SHRM theory has suggested that HPWS use enhances firm performance by engendering a workforce with the skills, deployment patterns, and behavioral contributions necessary for the firm to successfully formulate and implement its strategic goals. However, extant research has yet to demonstrate that HPWS use positively affects workforce alignment, that workforce alignment positively affects firm performance, or that workforce alignment mediates the relationship between the two.

One important finding pertains to the discriminant and convergent validity of the workforce alignment construct. The results indicated that the three dimensions of workforce alignment were not construct-equivalent and that they loaded onto a single high-order factor that was distinct from internal workforce adaptation. High levels of within-firm agreement in assessments of workforce alignment further suggested that firm-members shared common perceptions concerning the degree to which a firm possessed a workforce with the attributes necessary to successfully formulate and implement its strategic goals. Taken together, these findings provide strong evidence of discriminant and convergent validity and justify future development of, and research with, the workforce alignment construct. However, the workforce alignment scale is not perfect. In particular, although the third item for skill alignment loaded significantly onto its first-order construct, the standardized factor loading was somewhat low (.59 for CEOs and .61 for employees). One likely explanation for the result is that the negative wording (and reverse-coding) of the question confused respondents and increased measurement error. Future researchers using the workforce alignment scale may therefore want to replace this item with “This firm’s people have the knowledge and skills necessary to do the job right.”
As expected, I found that HPWS use and workforce alignment were associated with statistically and practically significant differences in firm performance. In particular, with all study variables held constant, a one standard deviation increase in HPWS use was associated with a sales growth increase of 3.9 percent. This figure represented a substantial 22 percent increase over the average study sales growth rate of 17.7 percent. A one standard deviation increase in workforce alignment, in turn, was associated with a 5.5 percent increase in small business sales growth, or a 31 percent increase over the average study sales growth rate. I also found that HPWS use was positively and significantly related to workforce alignment. This finding, while conceptually important from a RBV perspective, was not too surprising given the fact that HPWSs have been defined as “coherent sets of HR practices that enhance employee skills, participation in decisions, and motivation” (Batt, 2002: 587). What was surprising, however, was the amount of workforce alignment variance left unexplained. In the study, HPWS use explained 10.9 percent of the variance in workforce alignment. This means that nearly 90 percent of the variance was the result of other factors (as well as error). Future research using a wider range of HR practices and a broader set of environmental, strategic, and organizational antecedents is needed to provide additional insights into how firms attain workforce alignment. Future research might also examine the extent to which particular HR practices interact with one another to positively or negatively affect workforce alignment (Delery, 1998; Ichniowski & Shaw, 2003). Most importantly, however, the results indicated that HPWS use was indirectly related to firm performance through its effect on workforce alignment. In particular, the change in the beta coefficient representing the effect of HPWS use on sales growth indicated that workforce alignment explained approximately 44 percent of the HPWS-firm performance relationship.
On the whole, these results represent an important step in demonstrating the overall validity of the workforce alignment construct (DeVellis, 2003; Schwab, 1999). They also support RBV logic that it is a firm’s workforce, and not its HR system, that represents a potential source of competitive advantage. As such, this research adds to a small, but growing, number of SHRM studies that have sought to identify the particular workforce attributes and firm capabilities that mediate the relationship between HPWS use and firm performance (Collins and Smith, 2006; Wright, Gardner, & Moynihan, 2003). Of course, future research using additional indicators of firm performance is needed before any firm conclusions can be drawn. Specifically, it would be helpful to know whether workforce alignment also mediates the relationships between HPWS use and labor productivity, return on assets, profitability, and firm innovation. Unfortunately, I did not have the data necessary to test these relationships.

**Dynamic Workforce Alignment**

Workforce alignment appears to be a valuable firm resource. However, according to the RBV, obtaining a valuable resource alone is not enough to confer a competitive advantage. In order to claim that workforce alignment provides firms with even a temporary competitive edge, it is necessary to identify the circumstances under which firms can achieve levels of workforce alignment that competitors have difficulty matching, at least in the short-run. Although prior research has suggested that workforce alignment is often a moving target and that firms generally find it difficult to adapt their workforces to fit changing business needs, extant SHRM research has yet to examine whether workforce alignment is more likely to be rare, and thus to lead to a temporary competitive advantage, when it is attained under dynamic, rather than stable, workforce circumstances.
The results of this study represent an initial step in this direction. As expected, I found that firms that adapted their workforces were no more likely to achieve workforce alignment than were firms that did not adapt their workforces. Specifically, workforce alignment was not significantly related to internal workforce adaptation \( (r = .01, p = \text{n.s.}) \), external workforce adaptation \( (r = .08, p = \text{n.s.}) \), or contract worker use \( (r = .04, p = \text{n.s.}) \). In addition, workforce alignment was negatively related to voluntary \( (r = -.23, p < .01) \) and involuntary turnover \( (r = -.22, p < .01) \). Thus, on average, firms found it difficult to adapt their workforces to fit changing business needs. Further, although the workforce alignment-voluntary turnover interaction term (and thus the ability to “restock talent”) was not empirically supported, the results did suggest that workforce alignment was a “hygiene” factor when internal workforce adaptation, external workforce adaptation, and involuntary turnover were low. Specifically, with all other variables controlled, a one standard deviation increase in workforce alignment was associated with only a 1.9 percent increase in sales growth when internal workforce adaptation was low \(-1 \text{ s.d.}\), a 0.9 percent increase when external workforce adaptation was low \(-1 \text{ s.d.}\), a 1.5 percent increase when involuntary turnover was low \(-1 \text{ s.d.}\). In contrast, firms that attained dynamic workforce alignment performed significantly better. In particular, a one standard deviation increase in workforce alignment was associated with an 7.0 percent increase in sales growth when internal workforce adaptation was high \(+1 \text{ s.d.}\), a 7.6 percent increase in sales growth when external workforce adaptation was high \(+1 \text{ s.d.}\), and a 8.8 percent increase in sales growth when involuntary turnover was high \(+1 \text{ s.d.}\). These figures represented 40, 43, and 50 percent increases over the average study sales growth rate, respectively. More importantly, firms that reported high levels of workforce alignment grew 3.7 times faster when internal workforce adaptation was high than when internal workforce adaptation was low, 8.4 times faster when
external workforce adaptation was high than when external workforce adaptation was low, and 5.8 times faster when involuntary turnover was high then when involuntary turnover was low. On the whole, these results support the dynamic RBV claim that workforce alignment (as with any valuable firm resource) is more likely to lead to be rare, and thus to lead to a temporary competitive advantage, when it is attained under dynamic conditions.

Somewhat surprisingly, the results of this study did not support the claim that contract worker use enhances dynamic workforce alignment. In contrast, I found that the relationship between workforce alignment and firm performance was stronger when contract worker use was low than when contract worker use was high. Specifically, a one standard deviation increase in workforce alignment was associated with a 10.1 percent increase in sales growth when contract worker use was low (-1 s.d.) and a 0.9 percent decline in sales growth when contract worker use was high (+1 s.d.). This finding is consistent with the idea that firms that employ a high proportion of contract workers are less likely to compete on the basis of human resources because contract workers tend to be used for assignments that require knowledge and skills that are neither particularly valuable to firm goals nor unique in the labor market (Lepak & Snell, 1999; Lepak, et. al., 2003). Of course, it is possible that the use of contract workers provides labor cost savings that are more than offset by challenges to workforce alignment and the resulting negative effects on sales growth. Therefore, future research that examines human resource costs and the ways that contract workers are utilized is needed to provide more definitive insights.

It is important to note that the results reported here are quite conservative. For example, I controlled for HPWS use to ensure that the dynamic workforce alignment results were not confounded by firms’ particular HR practices. I also controlled for the main effects of all forms
of workforce adaptation to capture the unique variance associated with each particular form of workforce adaptation. Without these controls, the statistical and practical results would have been substantially stronger, especially for the workforce alignment-internal workforce adaptation interaction term. Further, the dynamic workforce alignment results pertain only to the workforce alignment-workforce adaptation interaction terms and not the main effects of workforce adaptation. Clearly, firms that adapted their workforces were also more likely to increase sales growth (for example, the correlations between internal and external workforce adaptation and sales growth were .20, \( p < .01 \) and .38, \( p < .01 \), respectively). What was not clear, however, was whether firms that adapted their workforces in ways that fostered workforce alignment would experience greater levels of sales growth than those that did not.

**Limitations and Areas for Future Research**

It is important to note certain limitations of this study. First, although small business sales growth was a conceptually appropriate context in which to initially examine dynamic workforce alignment (Anderson, 2001; Penrose, 1959), the findings may not generalize to other settings, samples, or performance indicators. The results also need to be interpreted in light of the fact that all of the firms used HR services provided by Gevity HR. As noted above, the extent to which firms relied on Gevity HR to carry out employee management practices did not affect the empirical results. Yet the firms in the study were remarkably stable. Thus, it may be that the small businesses that used Gevity HR to manage employee payroll and benefits were also, on average, more stable and successful than firms that did not. It will be recalled, for instance, that the average firm in the study employed slightly more than 21 employees even after 14 years of existence. Further, firms reported relatively low mean internal workforce adaptation scores (2.58 on a 5-point scale), low mean external workforce adaptation scores (33.3 percent, or
a change of about 2 employees per year), and fairly low mean sales growth rates (17.7 percent). Therefore, although it is possible the study’s findings will not generalize to other contexts and settings, it is also perhaps equally likely that dynamic workforce alignment will be even more important for firms operating under more dynamic workforce conditions. Either way, future research in alternate settings is needed to strengthen the conclusions of the study.

Second, CEOs provided the majority of the data used in the study, which raises the specter or common method, or single source, bias (Podsakoff et. al., 2003). However, several characteristics of the study indicate that bias was not a serious problem: (1) the data from firms with multiple responses showed acceptable levels of within-firm agreement for each of the variables; (2) confirmatory factor analyses did not reveal a single or general factor that would have suggested the presence of bias (Brewer et. al., 1970); (3) common method bias inflates the relationships among variables, but it does not increase the likelihood of finding significant two-way interactions; (4) the majority of the dynamic workforce alignment interactions were significant even though internal workforce adaptation was a perceptual measure and the other workforce adaptation measures were not; and (5) I reduced, if not eliminated, the most likely and problematic source of method bias in prior SHRM research—an implicit theory of performance bias—by controlling for CEO perceptions of firm performance (Gardner et. al., 2000).

Third, the study did not address the issue of HR flexibility. According to Wright and Snell (1998), HR flexibility represents a key mechanism through which firms can achieve dynamic workforce alignment. Therefore, the study may suffer from an unmeasured variables problem. However, if one considers how HR flexibility theoretically impacts workforce alignment, the most likely effect would be to reduce the likelihood of finding significant workforce alignment-workforce adaptation interactions. For example, if employees possess a
wide range of skills and behavioral repertoires, then firms should be able to achieve dynamic workforce alignment *without* having to significantly adapt workforce size, skills, deployment patterns, or behavioral contributions. Still, future research should examine the relationships among HR flexibility, dynamic workforce alignment, and firm performance.

Finally, the data used in this study were cross-sectional and thus one cannot conclude that workforce alignment causes greater levels of firm performance. However, this was a preliminary study aimed at providing initial support for the notion of dynamic workforce alignment. In the early stages of research, criterion-related validity may be predictive, concurrent, or even postdictive so long as the constructs relate to the dependent variable in expected ways (DeVellis, 2003; Schwab, 1999). Further, demonstrating causality is a tall order: one that SHRM research has yet to fill with respect to the HPWS use—firm performance relationship (Wright, Gardner, Moynihan, & Allen, 2005). Nevertheless, future research should collect longitudinal data so that clear causal conclusions can be drawn.

**Conclusion**

This study provides important, but preliminary, insights into the extent to which, and the conditions under which, workforce alignment affects firm performance. More specifically, I found that workforce alignment mediated the relationship between HPWS use and small business sales growth. I also found that firms that achieved dynamic workforce alignment generally grew faster than firms that attained workforce alignment under stable workforce conditions. These findings suggest that business leaders and HR managers would benefit from future research showing how workforce alignment leads to a temporary competitive advantage under changing workforce conditions.
REFERENCES


**TABLE 1**  
Workforce Alignment and Internal Workforce Adaptation Items  
and Standardized Loadings from First- and Second-Order Confirmatory Factor Analysis\(^a,b\)

<table>
<thead>
<tr>
<th>Item</th>
<th>CEOs</th>
<th>Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Workforce alignment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill alignment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>This company has the people with the right knowledge and skill sets</td>
<td>.54</td>
<td>.61</td>
</tr>
<tr>
<td>This company has all the expertise it needs to be successful</td>
<td>.94</td>
<td>.91</td>
</tr>
<tr>
<td>We sometimes lack people with the knowledge and skills necessary to do the job right (reverse)</td>
<td>.65</td>
<td>.81</td>
</tr>
<tr>
<td><strong>Deployment alignment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This company effectively utilizes people at all times</td>
<td>.78</td>
<td>.76</td>
</tr>
<tr>
<td>This company consistently gets the most out of its employees’ knowledge and skills</td>
<td>.82</td>
<td>.82</td>
</tr>
<tr>
<td>This company provides people with ample opportunities to do their best possible work</td>
<td>.91</td>
<td>.74</td>
</tr>
<tr>
<td><strong>Contribution alignment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The people in this company are always working to improve company performance</td>
<td>.81</td>
<td>.81</td>
</tr>
<tr>
<td>The people in this company always act in ways that help the organization achieve its goals</td>
<td>.86</td>
<td>.78</td>
</tr>
<tr>
<td>The people in this company are highly focused on realizing organizational results</td>
<td>.75</td>
<td>.80</td>
</tr>
<tr>
<td><strong>Internal Workforce Adaptation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill adaptation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compared to three years ago, our employees possess different kinds of knowledge and skills</td>
<td>.81</td>
<td>.72</td>
</tr>
<tr>
<td>Three years ago, this company employed completely different types of employees</td>
<td>.81</td>
<td>.67</td>
</tr>
<tr>
<td>Our employees’ knowledge and skills have changed greatly over the last three years</td>
<td>.59</td>
<td>.78</td>
</tr>
<tr>
<td><strong>Deployment adaptation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Every employees’ role at this company has changed over the last three years</td>
<td>.56</td>
<td>.45</td>
</tr>
<tr>
<td>Our employees are working on completely different assignment now than three years ago</td>
<td>.80</td>
<td>.75</td>
</tr>
<tr>
<td>Over the last three years, people in this company shifted roles many times</td>
<td>.74</td>
<td>.79</td>
</tr>
<tr>
<td><strong>Contribution adaptation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the last three years, the ways that employees contribute to this company’s success have changed considerably</td>
<td>.69</td>
<td>.64</td>
</tr>
<tr>
<td>The way work gets done in this company has changed dramatically over the last three years</td>
<td>.98</td>
<td>.83</td>
</tr>
<tr>
<td>What people in this company do on a daily basis has changed a lot over the last three years</td>
<td>.71</td>
<td>.81</td>
</tr>
</tbody>
</table>

\(^a\) n = 196 for CEO;  n = 308 for employees. Underlined figures represent results of second-order CFA
### TABLE 2

**Discriminant Validity of Workforce Alignment and Internal Workforce Adaptation**

<table>
<thead>
<tr>
<th>Workforce alignment</th>
<th>X²/df</th>
<th>GFI</th>
<th>CFI</th>
<th>IFI</th>
<th>RMSEA (C.I.)</th>
</tr>
</thead>
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<tr>
<td>CEOs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-factor (S, D, C)</td>
<td>1.25</td>
<td>.98</td>
<td>.99</td>
<td>.99</td>
<td>.03 (.00, .06)</td>
</tr>
<tr>
<td>2-factor (S, DC)</td>
<td>4.73</td>
<td>.91</td>
<td>.92</td>
<td>.92</td>
<td>.11 (.06, .09)</td>
</tr>
<tr>
<td>2-factor (C, SD)</td>
<td>5.57</td>
<td>.90</td>
<td>.89</td>
<td>.90</td>
<td>.12 (.10, .14)</td>
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<td>2-factor (D, SC)</td>
<td>6.28</td>
<td>.88</td>
<td>.88</td>
<td>.88</td>
<td>.13 (.11, .15)</td>
</tr>
<tr>
<td>1-factor (SDC)</td>
<td>11.52</td>
<td>.88</td>
<td>.89</td>
<td>.90</td>
<td>.18 (.15, .22)</td>
</tr>
<tr>
<td>Employees</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>3-factor (S, D, C)</td>
<td>2.18</td>
<td>.96</td>
<td>.98</td>
<td>.98</td>
<td>.06 (.04, .08)</td>
</tr>
<tr>
<td>2-factor (S, DC)</td>
<td>5.97</td>
<td>.88</td>
<td>.91</td>
<td>.91</td>
<td>.13 (.11, .15)</td>
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<tr>
<td>2-factor (D, SC)</td>
<td>9.75</td>
<td>.82</td>
<td>.83</td>
<td>.84</td>
<td>.17 (.15, .19)</td>
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<td>2-factor (C, SD)</td>
<td>10.54</td>
<td>.82</td>
<td>.82</td>
<td>.82</td>
<td>.18 (.16, .20)</td>
</tr>
<tr>
<td>1-factor (SDC)</td>
<td>13.32</td>
<td>.78</td>
<td>.76</td>
<td>.76</td>
<td>.20 (.18, .22)</td>
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</table>

<table>
<thead>
<tr>
<th>Internal workforce adaptation</th>
<th>X²/df</th>
<th>GFI</th>
<th>CFI</th>
<th>IFI</th>
<th>RMSEA (C.I.)</th>
</tr>
</thead>
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<tr>
<td>CEOs</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3-factor (S, D, C)</td>
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<td>.97</td>
<td>.97</td>
<td>.96</td>
<td>.07 (.05, .09)</td>
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<td>2-factor (D, SC)</td>
<td>6.33</td>
<td>.89</td>
<td>.89</td>
<td>.88</td>
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<td>2-factor (C, SD)</td>
<td>10.69</td>
<td>.84</td>
<td>.84</td>
<td>.83</td>
<td>.16 (.13, .15)</td>
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<td>2-factor (S, DC)</td>
<td>10.99</td>
<td>.79</td>
<td>.79</td>
<td>.80</td>
<td>.18 (.16, .20)</td>
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<tr>
<td>1-factor (SDC)</td>
<td>12.98</td>
<td>.74</td>
<td>.74</td>
<td>.77</td>
<td>.20 (.18, .22)</td>
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<td>3-factor (S, D, C)</td>
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<td>.94</td>
<td>.94</td>
<td>.09 (.07, .11)</td>
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<td>2-factor (D, SC)</td>
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<td>.79</td>
<td>.79</td>
<td>.18 (.16, .20)</td>
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<tr>
<td>2-factor (S, DC)</td>
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<td>.78</td>
<td>.78</td>
<td>.18 (.16, .20)</td>
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<td>1-factor (SDC)</td>
<td>13.18</td>
<td>.79</td>
<td>.72</td>
<td>.72</td>
<td>.20 (.18, .22)</td>
</tr>
</tbody>
</table>

---

\[a\] n = 196 for CEO; n = 308 for employees  
\[b\] S, D, and C refer to skill, deployment, and contribution.  
\[c\] 90 percent confidence interval for RMSEA
TABLE 3
Means, Standard Deviations, Reliabilities, and Correlations

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>s.d.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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</thead>
<tbody>
<tr>
<td>1. Sales growth&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.87</td>
<td>1.03</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. HPWS use</td>
<td>3.32</td>
<td>0.59</td>
<td>.21&lt;sup&gt;**&lt;/sup&gt;</td>
<td>(.76)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Workforce alignment</td>
<td>3.58</td>
<td>0.74</td>
<td>.23&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.50&lt;sup&gt;**&lt;/sup&gt;</td>
<td>(.85)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4. Internal workforce adaptation</td>
<td>2.57</td>
<td>0.85</td>
<td>.21&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.18&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.01</td>
<td>(.87)</td>
<td></td>
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<tr>
<td>5. External workforce adaptation</td>
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<td>.42&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.09</td>
<td>.08</td>
<td>.28&lt;sup&gt;**&lt;/sup&gt;</td>
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<tr>
<td>6. Voluntary turnover</td>
<td>0.16</td>
<td>0.27</td>
<td>-.15&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.15&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.23&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.02</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7. Involuntary turnover</td>
<td>0.17</td>
<td>0.34</td>
<td>-.02</td>
<td>-.15&lt;sup&gt;*&lt;/sup&gt;</td>
<td>-.22&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.03</td>
<td>.06</td>
<td>.28&lt;sup&gt;**&lt;/sup&gt;</td>
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</tr>
<tr>
<td>8. Contract worker use</td>
<td>0.06</td>
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<td>.01</td>
<td>.04</td>
<td>.15&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.01</td>
<td>.00</td>
<td>-.06</td>
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<td></td>
</tr>
<tr>
<td>9. Firm age&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.70</td>
<td>0.69</td>
<td>-.24&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.04</td>
<td>-.08</td>
<td>-.08</td>
<td>-.23&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.01</td>
<td>.07</td>
<td>.10</td>
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<tr>
<td>10. Firm size&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>.05</td>
<td>.19&lt;sup&gt;**&lt;/sup&gt;</td>
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<td>-.13</td>
<td>-.12</td>
<td>-.08</td>
<td>.04</td>
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</tr>
<tr>
<td>11. Perceptions of performance</td>
<td>3.61</td>
<td>0.75</td>
<td>.06</td>
<td>.34&lt;sup&gt;**&lt;/sup&gt;</td>
<td>.52&lt;sup&gt;**&lt;/sup&gt;</td>
<td>-.05</td>
<td>.01</td>
<td>-.08</td>
<td>-.09</td>
<td>.14&lt;sup&gt;*&lt;/sup&gt;</td>
<td>.01</td>
<td>.08</td>
</tr>
</tbody>
</table>

<sup>a</sup> n = 191
<sup>b</sup> Logarithm.
<sup>*</sup> p < .05
<sup>**</sup> p < .01
Two-tailed tests.
### Table 4
Results of Regression Analyses: High-Involvement HR Systems, Workforce Alignment and Sales Growth

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1 Sales Growth</th>
<th>Model 2 Sales Growth</th>
<th>Model 3 Workforce Alignment</th>
<th>Model 4 Workforce Alignment</th>
<th>Model 5 Sales Growth</th>
<th>Model 6 Sales Growth</th>
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<td>Controls</td>
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<td>.00</td>
<td>.11</td>
<td>.11</td>
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<td>Professional services</td>
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<td>.20**</td>
<td>.02</td>
<td>-.02</td>
<td>.21**</td>
<td>.20**</td>
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<td>Construction</td>
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<td>.23***</td>
<td>-.05</td>
<td>-.09</td>
<td>.26***</td>
<td>.25***</td>
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<td>Manufacturing</td>
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<td>.19**</td>
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<td>-.04</td>
<td>.20**</td>
<td>.20**</td>
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<td>Firm age&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>-.25***</td>
<td>-.08</td>
<td>-.07</td>
<td>-.24***</td>
<td>-.24***</td>
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<tr>
<td>Number of employees&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>.03</td>
<td>.09</td>
<td>.03</td>
<td>.04</td>
<td>.02</td>
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<td>-.01</td>
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<td>-.10</td>
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<td>.21**</td>
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<tr>
<td>$R^2$</td>
<td>.13***</td>
<td>.15***</td>
<td>.29***</td>
<td>.40***</td>
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</table>

<sup>a</sup> Standardized coefficients are shown.

<sup>b</sup> Logarithm.

* $p < .05$

** $p < .01$

*** $p < .001$

One-tailed tests.
## TABLE 5
### Results of Regression Analyses: Dynamic Workforce Alignment and Sales Growth

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 7</th>
<th>Model 8</th>
<th>Model 9</th>
<th>Model 10</th>
<th>Model 11</th>
<th>Model 12</th>
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<td>Retail</td>
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<td>0.13</td>
<td>0.13</td>
<td>0.14</td>
<td>0.12</td>
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<td>Professional services</td>
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<td>0.13</td>
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<td>0.23</td>
<td>0.22</td>
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<td>Manufacturing</td>
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<td>0.14</td>
<td>0.14</td>
<td>0.14</td>
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<td>Firm age&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>-0.17</td>
<td>-0.16</td>
<td>-0.16</td>
<td>-0.16</td>
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<td>Number of employees&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>0.01</td>
<td>-0.01</td>
<td>0.00</td>
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<tr>
<td>Perceptions of performance</td>
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<td>-0.07</td>
<td>-0.07</td>
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<td>-0.07</td>
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<td>Internal workforce adaptation</td>
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<td>0.05</td>
<td>0.06</td>
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<td>0.05</td>
</tr>
<tr>
<td>External workforce adaptation</td>
<td>0.34&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.33&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.35&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.35&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.39&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.33&lt;sup&gt;***&lt;/sup&gt;</td>
</tr>
<tr>
<td>Voluntary turnover</td>
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<td>-0.10</td>
<td>-0.06</td>
<td>-0.12</td>
<td>-0.12</td>
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<tr>
<td>Involuntary turnover</td>
<td>0.03</td>
<td>0.02</td>
<td>0.07</td>
<td>0.04</td>
<td>0.24&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.04</td>
</tr>
<tr>
<td>Contract worker use</td>
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<td>-0.01</td>
<td>-0.01</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.00</td>
</tr>
<tr>
<td>Workforce alignment</td>
<td>0.17&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.18&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.17&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.18&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.16&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.15&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>Two-way interactions</td>
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<tr>
<td>Workforce alignment x internal adaptation</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Workforce alignment x external adaptation</td>
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<td></td>
</tr>
<tr>
<td>Workforce alignment x voluntary turnover</td>
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<tr>
<td>Workforce alignment x involuntary turnover</td>
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<td>0.28&lt;sup&gt;***&lt;/sup&gt;</td>
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<tr>
<td>Workforce alignment x contract worker use</td>
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<td></td>
<td>-0.14&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.30&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.32&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.32&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.31&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.33&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.32&lt;sup&gt;***&lt;/sup&gt;</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
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<td>0.02</td>
<td>0.02</td>
<td>0.00</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>$F$ for $\Delta R^2$</td>
<td>6.19&lt;sup&gt;***&lt;/sup&gt;</td>
<td>3.56&lt;sup&gt;*&lt;/sup&gt;</td>
<td>4.73&lt;sup&gt;**&lt;/sup&gt;</td>
<td>0.69</td>
<td>7.37&lt;sup&gt;***&lt;/sup&gt;</td>
<td>4.54&lt;sup&gt;**&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> Standardized coefficients are shown.

<sup>b</sup> Logarithm.  <sup>*</sup> $p < .05$,  <sup>**</sup> $p < .01$,  <sup>***</sup> $p < .001$. One-tailed tests.
FIGURE 1
HPWS Use, Dynamic Workforce Alignment, and Firm Performance

Workforce Adaptation
• Internal workforce adaptation
• External workforce adaptation
• Voluntary turnover
• Involuntary turnover
• Contract worker use

HPWS Use → Workforce Alignment → Firm Performance
FIGURE 2
Effects of Workforce Alignment and Workforce Adaptation on Firm Performance

- Internal workforce adaptation high (+1 s.d.)
- Internal workforce adaptation low (-1 s.d.)

- External workforce adaptation high (+1 s.d.)
- External workforce adaptation low (-1 s.d.)

- Involuntary turnover high (+1 s.d.)
- Involuntary turnover low (-1 s.d.)

- Contract worker use low (+1 s.d.)
- Contract worker use high (-1 s.d.)
APPENDIX A
Items Measuring High-Performance Work System Use

1. This company primarily selects new employees based on their long-term potential to contribute to the company.
2. This company will leave a position open until it can find the best and brightest possible new employee.
3. When evaluating job candidates, this company focuses on determining if they fit the company’s values.
4. This company has formal job duties and descriptions so that employees know their roles and responsibilities.
5. This company has a formal process of performance appraisals to provide feedback to employees.
6. This company provides employees with challenging work opportunities.
7. Employees are given discretion to complete their tasks however they see fit.
8. This company pays a higher wage than its competitors.
9. This company uses individual bonuses or incentive pay to motivate employees.
10. This company sponsors social events so that employees can get to know one another.
11. This company proves opportunities for employees to continue to learn and grow.
12. Employees here expand their skills by rotating through a range of different jobs.
13. Managers regularly share information with employees through company-wide meetings.