

Unlocking the Black Box: Exploring the Link Between High-Performance Work Systems and Performance

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With a growing body of literature linking systems of high-performance work practices to organizational performance outcomes, recent research has pushed for examinations of the underlying mechanisms that enable this connection. In this study, based on a large sample of Welsh public-sector employees, we explored the role of several individual-level attitudinal factors—job satisfaction, organizational commitment, and psychological empowerment—as well as organizational citizenship behaviors that have the potential to provide insights into how human resource systems influence the performance of organizational units. The results support a unit-level path model, such that department-level, high-performance work system utilization is associated with enhanced levels of job satisfaction, organizational commitment, and psychological empowerment. In turn, these attitudinal variables were found to be positively linked to enhanced organizational citizenship behaviors, which are further related to a second-order construct measuring departmental performance.

Keywords: high-performance work systems, organizational citizenship behavior, job satisfaction, organizational commitment, empowerment

Over the past 25 years, strategic human resource management (HRM) scholars have consistently found a positive relationship between a variety of measures of high-investment, high-involvement, or high-performance work systems and various firm performance outcomes (e.g., Datta, Guthrie, & Wright, 2005; Guthrie, 2001; Huselid, 1995; Subramony, 2009). High-performance work systems (HPWS) have recently been defined as “a group of separate but interconnected human resource (HR) practices designed to enhance employees’ skills and effort” (Takeuchi, Lepak, Wang, & Takeuchi, 2007, p. 1069). Measures of HPWS have traditionally included practices related to structured and comprehensive approaches to recruitment and selection, pay for performance and other incentive-based compensation plans, informa-

tion sharing, rigorous performance appraisal processes, and training in both generic and company-specific skills (Datta et al., 2005; Huselid, 1995; Takeuchi, Chen, & Lepak, 2009).

Though the terminology is not always consistent, this literature has linked various operationalizations of HPWS to factors such as productivity, voluntary turnover, profitability, growth, innovation, customer service, survival, and firm-level performance metrics (Arthur, 1994; Batt, 2002; Cappelli & Neumark, 2001; Datta et al., 2005; Delaney & Huselid, 1996; Delery & Doty, 1996; Guthrie, 2001; Huselid, 1995; Huselid & Day, 1991; Huselid, Jackson, & Schuler, 1997; Ichniowski & Shaw, 1999; Macduffie, 1995; Messersmith & Guthrie, 2010; Way, 2002; Welbourne & Andrews, 1996; Youndt, Snell, Dean, & Lepak, 1996). Despite this growing body of work, theorists have lamented a lack of clear understanding of the key mediating factors that link the utilization of HPWS to firm performance (Becker & Gerhart, 1996; Becker & Huselid, 2006; Chadwick & Dabu, 2009; Delery, 1998; Takeuchi et al., 2007). In short, researchers have fairly strong evidence that HPWS “work” but are less clear as to exactly how this relationship unfolds.

Several researchers have suggested that HPWS operate by influencing employee skills, motivation, and opportunities to contribute (Lepak, Liao, Chung, & Harden, 2006; Liao, Toya, Lepak, & Hong, 2009). This approach has tended to emphasize the entire HR system, with the recognition that different components of these systems (i.e., recruitment and training) affect one of the three drivers of employee performance. This literature base has argued that when high-performance work practices are in alignment, employee performance should be at its highest levels due to higher

This article was published Online First July 25, 2011.

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The first two authors contributed equally to this article. We acknowledge the Economic and Social Research Council, and the UK Data Archive for data access and funding. The original data creator, depositor, or copyright holders, the funder of the data collection, and the UK Data Archive bear no responsibility for the analysis or interpretation of the data.

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skills, more motivation, and greater opportunities for employees to contribute.

In addition, researchers have recently reframed their energies to more explicitly examine the role of employee interpretations of HR systems in this relationship between HR systems and performance. For example, Takeuchi et al. (2009) found that HPWS utilization was associated with individual employee job satisfaction and affective commitment. Although this study did not focus explicitly on whether or not these individual factors function as mediators, it is reasonable that employee satisfaction and commitment, in the aggregate, may influence unit-level performance metrics (Klein & Kozlowski, 2000). Indeed, Nishii, Lepak, and Schneider (2008) found that individual HR attributions made by employees about their company's motive for using certain HR practices were directly related to unit-level citizenship behaviors, which, in turn, were related to customer satisfaction. In the context of mediating factors, the Nishii et al. study provides support for the potential role of collective interpretations and attitudes as a mediator in the HPWS–performance relationship.

Our purpose in this study was to explore potential individual attitudinal and behavioral mediators aggregated at the unit level that operate in the black box between HR systems and departmental performance. We argue that the discretionary efforts (Morrison, 1996; Nishii et al., 2008) of employees represent one key mediating path through which performance is enhanced in organizational units. Further, we theorize that the relationship between HPWS and discretionary behavior is mediated by three employee attitudes: job satisfaction, organizational commitment, and employee empowerment. Each of these individual mediators is argued to be linked to organizational citizenship behaviors, which, in the aggregate, are linked to unit or departmental performance.¹ The aggregated (department-level) path model was tested in a large, multi-unit sample of governmental agencies in Wales.

This paper contributes to the existing literature base in three important ways. First, it addresses a blind spot in the literature with respect to the mediating mechanisms that HPWS operate through to affect performance outcomes. The study demonstrates how a combination of important attitudinal variables is affected by HPWS utilization and how these variables impact the discretionary behaviors of employees that ultimately enhance departmental performance outcomes. In doing so, the paper begins to build on recent scholarly conversations linking HPWS to employee attitudes, behaviors, and performance outcomes (e.g., Green, Wu, Whitten, & Medlin, 2006; Macky & Boxall, 2007; Takeuchi et al., 2007) and to discussions of the “black box” linking HPWS utilization to performance (Becker & Huselid, 2006).

In addition, this paper contributes to existing knowledge by providing an empirical test of key attitudinal and behavioral constructs that may link HPWS implementation to performance at the unit level. By assessing the relationships between HPWS adoption, unit-level attitudes, unit-level discretionary behaviors, and departmental performance, we assess a more complete model that may spur continued refinement of the theoretical models currently employed by strategic HRM scholars. Many studies have found a strong connection between HPWS and organizational performance outcomes, but most have relied on single-respondent data (for a notable exception, see Takeuchi et al., 2007). Although this approach certainly does not invalidate the findings, a multisource model offers additional insights to this research base.

In this study we utilize aggregated data on individual attitudes and behaviors at the unit level to test hypothesized associations with unit-level outcomes. By aggregating employee data at the unit level we are able to tap into the shared meanings of the employment base that may be established, in part, by HPWS. As Kozlowski and Klein (2000) stated, aggregating to a shared construct allows us to tap into the “characteristics that are common to—that is, shared by—the members of a unit” (p. 30). This unit-level focus allows for an empirical assessment of Bowen and Ostroff's (2004) conception of the strength of the HRM system. By aggregating individual attitudes we are able to test the strength of perceptions generated across different departments as they affect attitudes, behaviors, and, ultimately, performance. This approach also serves to further the work of Nishii et al. (2008), who assessed the link between perceptions of the HR system and aggregate levels of organizational citizenship behavior (OCB). Here, we extend this work to look at the mediating factors between these important unit-level constructs.

Finally, the data collected for this study allow us to connect these shared perceptions to an objective and relevant measure of departmental performance for each of the local authorities assessed in this study. This provides an opportunity for actionable knowledge to be created that may benefit practitioners in the field. The theoretical links from practices to attitudes to behaviors provide a useful assessment of tangible factors that department managers can utilize to enhance performance.

The remainder of the paper proceeds as follows. First, we discuss the primary theoretical mechanisms linking HPWS to employee attitudes, employee discretionary behaviors in the form of OCBs, and, ultimately, departmental performance. This theoretical discussion builds specific hypotheses that are then tested by leveraging a multisource model using data from 1,372 Welsh governmental employees, representing 119 service departments. All analyses are completed at the department level of analysis. Discussion of the results is followed with an assessment of how study findings fit within the existing strategic HRM paradigm, and future directions for analysis are proposed.

Theoretical Background and Hypotheses

The macro HRM literature often relies on the resource-based view of the firm to describe the processes through which firm performance is enhanced through the use of HPWS (Becker & Huselid, 2006; Colbert, 2004; Delery, 1998; Lado & Wilson, 1994; Wright & McMahan, 1992; Wright, McMahan, & McWilliams, 1994). The resource-based view argues that sustainable competitive advantage results from combining idiosyncratic resources that are valuable, rare, inimitable, and nonsubstitutable (VRIN; Barney, 1991; Penrose, 1959; Wernerfelt, 1984). This perspective is predicated on the notion that firm-level resources are heterogeneous and that the differences in combinations of resources over time lead to sustainable competitive advantage (Amit & Schoemaker, 1993; Barney, 1991; Eisenhardt & Martin, 2000). One of the main resources cited as a potential lever of sustainable competitive advantage is the human resource (Barney, 1991; Becker, 1964; Delery, 1998). Human resources are viewed as potentially

¹ Department and unit are used synonymously in this article.

fitting the VRIN typology; they allow organizations to garner profitability enhancements that help to build a sustainable competitive advantage (Chadwick & Dabu, 2009).

Despite its popularity in the strategic HRM literature, the resource-based view has met challenge (i.e., Foss & Knudsen, 2003; Priem & Butler, 2001). One particularly important criticism of this perspective is that it operates at a very general level of abstraction, suggesting that human resources have the potential to be a source of competitive advantage and, as a result, that HR systems are important. Researchers working from the resource-based view infer that linking HR systems to organizational performance implies that people are a source of competitive advantage. This is certainly plausible but not demonstrative. Thus, these approaches provide a general background for why HPWS might be important, but most examinations relying on this perspective fail to demonstrate clear evidence documenting how HPWS impact performance metrics.

Yet, conceptually organizational performance does not stem from the HR practices themselves but rather from the human efforts that result from using HR practices (Barney & Wright, 1998; Delery, 1998; Lado & Wilson, 1994; Teece, Pisano, & Shuen, 1997; Way, 2002; Wright et al., 1994). HR systems are effective to the extent that they help to positively affect employees and inspire them to contribute to important organizational outcomes. Taking this logic a step further, we conceive that the contributions of employees to organizational performance metrics are likely to be at least partially dependent on the extent to which employees display discretionary behaviors that lead to organizational effectiveness.

Further, as HPWS have traditionally been argued to represent a system-level construct (Becker & Huselid, 2006; Delery, 1998), we test the effects of HPWS utilization on aggregated OCB and attitudinal variables at the unit level. Following Bowen and Ostroff's (2004) conceptualization of a climate for HRM strength, we expect to see HPWS affect department-level behaviors, attitudes, and performance. As they argued in their theoretical model, "The characteristics of strong HRM systems are more likely to promote shared perceptions and give rise to the emergence of a strong organizational climate about the HRM content" (Bowen & Ostroff, 2004, p. 212). Conceptually, HPWS may be viewed as strong systems comprising internally coherent practices that send reinforcing messages and cues to employees. From this meso-level perspective, various departments and agencies are likely to develop differing perceptions of the strength of the

HRM system within the entire organization, but these perceptions will likely be shared among individuals within the same department exposed to the same system. In other words, perceptions of the HRM system will likely differ across departments, but the strength of the HRM system will be perceived similarly within each department. This will likely have an effect on discretionary behaviors at the unit level. The specific model assessed in this paper is shown in Figure 1.

OCBs represent the activities of employees that "do not support the technical core itself as much as they support the organizational, social, and psychological environment in which the technical core must function" (Borman & Motowidlo, 1993, p. 73). OCBs are extrarole behaviors that support the more defined and codified work roles within the organization (Brief & Motowidlo, 1986; Graham, 1991; Van Dyne, Graham, & Dienesch, 1994). Logically, if employees in the aggregate go above and beyond their required tasks to help their coworkers and support their organization, the level of organizational performance should increase (Lado & Wilson, 1994). Indeed, researchers have demonstrated that discretionary behaviors by employees, such as OCBs, are related to important organizational outcomes (Podsakoff, Ahearne, & MacKenzie, 1997). A recent meta-analysis supported this theoretical supposition by finding support for a positive relationship between OCBs at the unit level and unit-level performance (Whitman, Van Rooy, & Viswesvaran, 2010). Further, Nishii et al. (2008) found that OCBs were related to measures of customer satisfaction. These findings provide additional support to Organ's (1988) work, which has alluded to the importance of OCBs in enhancing unit and organizational performance when considered in aggregate and over time.

In the strategic HRM literature, the importance of employee behaviors has a long-standing theoretical tradition. According to the behavioral perspective, HR systems influence firm performance by affecting the role behaviors of human resources (Jackson, Schuler, & Rivero, 1989; Schuler & Jackson, 1987; Wright & McMahan, 1992). Differences in the composition and focus of HR systems are expected to be associated with differences in employee behaviors. HR systems that are control oriented, for example, may result in compliance-oriented behaviors by employees. In contrast, HR systems that are more performance oriented (e.g., HPWS) are likely to be associated with discretionary behaviors that may prove beneficial for unit and organizational results (Lado & Wilson, 1994).

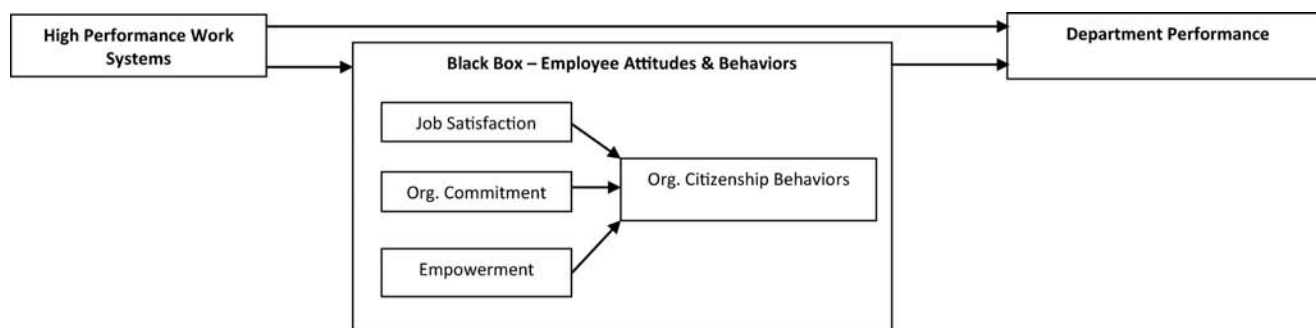


Figure 1. Theoretical model linking high performance work systems to departmental performance.

Despite a focus on inrole behaviors, other relevant perspectives address the possibility of extrarole behaviors being associated with HR systems. For example, social exchange theory (Blau, 1964; Takeuchi et al., 2007) suggests that when employees perceive that their organization is providing for them via a system of interconnected and well-designed management systems, they are more likely to be committed to the organization and willing to exert extrarole behaviors (Masterson, Lewis, Goldman, & Taylor, 2000; Rupp & Cropanzano, 2002). These extrarole behaviors then serve to enhance departmental performance through increased contributions by unit members (Podsakoff et al., 1997). For instance, Takeuchi et al. (2007) found that HPWS were positively related to the degree of social exchange, which in turn was related to establishment performance. Morrison (1996) argued that investments in HR systems are positively linked to OCBs, which then serve to improve service quality. Furthermore, a recent study in China found that OCBs served as a significant mediator of the relationship between high-performance HR practices utilization and organizational performance (Sun, Aryee, & Law, 2007).

Given the results of these studies, we anticipate that HPWS are likely to influence performance, in part through their ability to enhance the OCBs exhibited by employees. OCBs should be realized among departmental members to the extent that the department is able to build a strong desire for teamwork and collaboration via appropriate reward and information-sharing systems. In turn, aggregate OCBs are expected to be associated with a more efficient work environment in which members are willing to display citizenship behaviors beneficial for organizational functioning. We propose OCBs as a partial mediator of this relationship, as HPWS may also work through other behaviors related to task performance, which were not captured in the present study.²

Hypothesis 1: The relationship between high-performance work system utilization and departmental performance will be partially mediated by the aggregate level of OCBs of employees.

Employee Attitudes Mediating the HPWS–Discretionary Behavior Relationship

We also explore the potential role of several critical attitudes as mediators of the HPWS–OCB relationship. As demonstrated in Figure 1, the enhanced attitudes developed by a department's utilization of HPWS are expected to result in greater discretionary effort on the part of employees. For instance, Takeuchi et al. (2009) argued that HPWS affect individual perceptions of job satisfaction and affective commitment. Similarly, Pfeffer (1994) and Guthrie (2001) highlighted the importance of employee empowerment as a result of HPWS implementation. Various potential attitudes might be influenced by HPWS, but we focus on the three attitudes—job satisfaction, affective commitment, employee empowerment—that have been shown to be related to the use of HPWS but to also have theoretical importance in influencing employee performance in general and employee discretionary behaviors in particular (i.e., Delery & Shaw, 2001; Green et al., 2006; Guthrie, 2001; Huselid, 1995; Pfeffer, 1994; Takeuchi et al., 2007; Way, 2002).

Job satisfaction. One path by which HPWS are likely to affect OCBs among department members in an organization is through the effect that HPWS have on the satisfaction level of

employees. The heart of this theoretical argument is that employees who perceive that departments implement HPWS for the betterment of employees will have higher levels of job satisfaction. Recent work by Macky and Boxall (2007) reported a positive relationship between the utilization of HPWS and employee job satisfaction in a large national sample of employees in New Zealand. This finding echoes previous studies that have found direct or indirect effects between models of HPWS and levels of employee job satisfaction (Guest, 1999; Takeuchi et al., 2009; Vandenberg, Richardson, & Eastman, 1999; Wu & Chaturvedi, 2009).

There are several reasons why HPWS may relate to satisfaction. Employees will be more likely to have been screened by a rigorous selection procedure and trained in company- and industry-specific skills. Also, through elements of HPWS such as selective staffing and training initiatives it is likely that organizational units will better fit employees to jobs. This better fit will increase satisfaction as employees perceive that they are well suited to the task and more able to efficiently perform their respective duties. Further, HPWS allow for greater information sharing, higher levels of job security, and tighter linkages between one's performance and one's compensation. These factors will likely result in a group of human resources that are more satisfied with their work.

In turn, employees who are satisfied will be more motivated to engage in discretionary behaviors, and this will ultimately assist the department in achieving better performance results. A recent meta-analysis provided support for this linkage. Whitman et al. (2010) found that unit-level job satisfaction was strongly related to unit-level performance and OCBs. Lapierre and Hackett (2007) provided further support that higher levels of job satisfaction are associated with OCBs by employees. These findings support the logic that HPWS may produce greater levels of employee discretionary behavior as a result of creating a more satisfied workforce at the department level.

Hypothesis 2: The relationship between high-performance work system utilization and aggregate OCBs will be partially mediated by aggregate employee job satisfaction.

Organizational affective commitment. An additional means through which HPWS will likely have an effect on the discretionary behavior of employees is by influencing the level of affective commitment among employees. Organizational affective commitment is a reflection of an employee's identification with and loyalty to the employing organization (Meyer & Allen, 1991; Porter, Steers, Mowday, & Boulian, 1974). Affective commitment has been studied widely and has been shown to be a predictor of a variety of employee behaviors, such as employee absenteeism and turnover (Mathieu & Zajac, 1990) and individual job performance (Applebaum, Bailey, Berg, & Kallerberg, 2000; Keller, 1997; Meyer, Paunonen, Gellatly, Goffin, & Jackson, 1989; Wright & Bonett, 2002).

Existing research has demonstrated that HPWS are associated with affective commitment of an organization's workforce. For instance, Macky and Boxall (2007) found a positive relationship

² We thank an anonymous reviewer for suggesting the presence of other behavioral mediators that were not captured in the present analysis.

between HPWS utilization and organizational commitment. Wright, Gardner, and Moynihan (2003) reported a positive association between HR practice use and organizational commitment, and Applebaum et al. (2000) found a positive link in two of the three industries they studied between aspects of HPWS and organizational commitment. In addition, a recent analysis by Takeuchi et al. (2009) supported a positive relationship between HPWS adoption and affective organizational commitment as mediated by an organizational focus on employee climate.

This body of work suggests that there is a relationship between HPWS and affective commitment and also between affective commitment and individual behaviors. From a theoretical perspective, this relationship advances the notion that HPWS help to select employees with organizationally aligned values and assist in ensuring that employees are provided with opportunities to contribute to the success of the department and of the organization. In this manner, greater commitment is fostered, and this ultimately enhances motivation within the human resources in the unit. In addition, by establishing practices and routines that elicit greater participation from employees, sharing greater levels of information with employees, and offering better job security prospects, departments are likely to see more committed employees within their ranks. As employees sense a stronger commitment to their development, social exchange theory suggests, they will respond in kind by offering higher levels of commitment and identification to the department and the organization (Blau, 1964). Increased commitment is likely to result in behaviors that are beneficial to the department, which will ultimately enhance discretionary effort. This leads to the following hypothesis:

Hypothesis 3: The relationship between high-performance work system utilization and OCBs will be partially mediated by aggregate employee organizational commitment.

Psychological empowerment. It also likely that HPWS will have an effect on the psychological empowerment felt by employees. Psychological empowerment has been defined as having a sense of voice in helping to mold and influence organizational activities (Spreitzer, 1995, 1996, 2007). As a construct, empowerment has traditionally been assessed as a function of four related cognitions—meaning, competence, self-determination, and impact—as perceived by an individual employee (Spreitzer, 1995, 1996; Thomas & Velthouse, 1990). Meaning refers to the degree of fit between an individual's ideals and the value of the work-related goals or purposes the individual is asked to achieve. The cognition of competence is synonymous with self-efficacy, or an individual's belief in his or her ability to skillfully perform job-related tasks. The self-determination notion references an employee's feeling of choice in initiating and regulating work-related activities or actions (Deci, Connell, & Ryan, 1989). Finally, impact is a measure of how much influence an individual can have on outcomes at work (Ashforth, 1989; Spreitzer, 1995).

HPWS utilization is likely to enhance feelings of empowerment within individual employees. Previous research suggests that sharing information with employees is an antecedent condition to feelings of psychological empowerment (Spreitzer, 1995, 1996). Further, additional work noted that a participative organizational climate is associated with enhanced feelings of empowerment (Spreitzer, 1996). These results highlight the core tenets of HPWS,

whose proponents tend to recommend high levels of employee involvement (i.e., Guthrie, 2001; Huselid, 1995; Pfeffer, 1994) that will likely enhance the sense of psychological empowerment at work. In addition, Spreitzer's (1995) work links rewards with a sense of employee empowerment. HPWS often include core compensation systems that emphasize performance-based pay and other forms of merit-based pay. Such systems by extension would be expected to yield similar results in terms of employee empowerment. Similarly, HPWS are designed to share important information with employees in relation to the strategic, financial, and marketing foci of the business unit. As such, this information sharing allows greater opportunities for employees to contribute and so generates greater feelings of psychological empowerment.

HPWS are likely to provide greater opportunities for participation that ultimately result in more empowered employees who perform their individual and collective jobs with greater skill and passion. Thomas and Velthouse (1990) suggested that empowered employees are expected to perform beyond the formal job requirements, an argument that has received empirical support (Chan, Taylor, & Markham, 2008; Huang, Iun, Liu, & Gong, 2010; Seibert, Silver, & Randolph, 2004). Groups of human resources who feel empowered to affect their work environment and to help mold their organizational environment through proper rewards and information exchange will likely be more engaged with their work, produce more innovative outcomes, be more responsive to the needs of internal and external customers, and therefore more likely to engage in the discretionary behaviors that ultimately enhance performance. Therefore, we hypothesized as follows:

Hypothesis 4: The relationship between high-performance work system utilization and OCBs will be partially mediated by employee psychological empowerment.

Method

Sample

The 22 unitary local government authorities in Wales were asked to participate in a workforce study. The unitary authorities are responsible for providing all local government services, ranging from such services as education, social work, and environment to roads services and waste management. This study focused upon eight specific service departments within each authority. Each local government authority has eight departments: Education (excluding schools), Social Services (children's services), Planning, Housing Management, Revenues and Benefits, Waste Management, Leisure and Culture, and Human Resources. Of the 22 authorities, six were unable to participate because (a) they had experienced internal restructuring, (b) there was a lack of adequate resources to conduct an organization-wide survey, or (c) they had recently conducted a similar workforce survey. The data collection centered on eight service departments from each of the 16 remaining local authorities in Wales. The departments surveyed were Education (excluding schools), Social Services (children's services), Planning, Housing Management, Revenues and Benefits, Waste Management, Leisure and Culture, and Human Resources. These departments cover a wide range of services provided by the local government. The services range from individual services (e.g., children's social services) to impersonal services (e.g., waste

management). Out of the eight surveyed authorities, five authorities declined participation. The key reason for nonparticipation was noncompliance by the heads of service. Overall, responses were obtained from 119 of the potential 128 service departments in the local service authorities asked to participate. A manager and a number of employees were surveyed in each local service department.

Employee Survey

Departmental employees responded to scales on (a) OCB, (b) job satisfaction, (c) organizational commitment, and (d) employee psychological empowerment. The employee survey was conducted between July 2006 and August 2007. Self-completion questionnaires were distributed to a stratified sample with a purposeful oversampling of front-line, nonmanagerial staff. Stratified sampling was necessary because different service departments in each local authority have higher levels of certain occupational classes than others. For instance, some authorities have a higher number of individuals in the Waste Management Department, and others have a higher percentage in the Education Department. The targeted sample of 6,625 employees in 128 service departments held a variety of occupational titles. Of those asked to participate, 1,755 returned questionnaires by the cutoff date, providing a response rate of 26.5%.

To assess sample representativeness, we identified the total number of employees employed in the Wales government authority in 2008 ($N = 22,603$).³ To calculate sampling error, we used total number of employees targeted for the survey ($n = 6,625$, sample proportion 29.31%). The sampling error at 99.9% with 1,755 respondents was 3.4%. The sampling error is below the recommended limit (Särndal, Swensson, & Wretman, 2003). We further tested response bias using years of service (t test = 0.516), sex (t test = 0.453), service department (t test = 0.948), job position (t test = 1.392), job type (t test = 1.246), and work status (t test = 1.153).⁴

Managerial Survey

Managers at the department level completed a 20-item HPWS scale. The next phase focused on measuring HR policies at the service department level in order to match employee data with management policy. Short questionnaires with a cover letter explaining the study were mailed to 103 managers in November 2007. This number is reflective of the fact that 16 of the service departments failed to provide enough employee responses (fewer than three) to warrant a managerial survey. The participants were provided the option of completing the questionnaire by phone or returning it by mail. A total of 91 responses was received from managers, representing a response rate of 88%. Sixty-five managers returned completed questionnaires by post, and 26 managers completed the questionnaire by phone.

Departmental performance. In measuring government or nonprofit performance, two key areas are the quality of the service provided and departmental reputation (Anheier, 2000; Drucker, 2006; Mayston, 2008). Due to higher levels of labor intensity, the proposed outcomes are strongly correlated to employee actions (Delaney & Huselid, 1996; Wall & Wood, 2005).

The departmental performance data were compiled based upon individual departmental performance data provided by the Welsh Assembly Government.⁵ The government of Wales compiles departmental performance information based on a variety of metrics using national strategic indicators and core set indicators in the United Kingdom. Furthermore, the departmental performance data are audited by the Wales Audit Office. Different departments are evaluated on a different set of metrics.

The Planning Department was evaluated on 30 metrics (e.g., “the percentage of applications for development determined during the year that were approved”), whereas Social Services was evaluated on 45 metrics (e.g., “the percentage of first placements of looked after children during the year that began with a care plan in place”). Similarly, Housing Management was evaluated in six separate area metrics: (a) homelessness and housing advice (seven metrics; e.g., “the average number of working days between homeless presentation and discharge of duty for households found to be statutorily homeless”); (b) landlord services (13 metrics; e.g., “the total amount of rent collected during the financial year from current and former tenants as a percentage of the total rent collectable for the financial year, in permanent accommodation”); (c) private-sector renewal (six metrics; e.g., “the percentage of private-sector dwellings that had been vacant for more than 6 months at 1 April that were returned to occupation during the year through direct action by the local authority”); (d) supporting people (six metrics; e.g., “the average number of units of housing related support, per 1,000 head of population, for permanent accommodation”); (e) energy efficiency (three metrics; e.g., “percentage reduction in carbon dioxide emissions in the non-domestic public building stock”); and (f) housing benefit and council tax benefit (one metric; “time taken to process Housing Benefit [HB] and Council Tax Benefit [CTB] new claims and change events”).

Similarly, different evaluation metrics were compiled for Education (19 metrics; e.g., “the average point score for pupils age 15 at the preceding 31 August, in schools maintained by the local authority”); Leisure and Culture (six metrics; e.g., “the number of visits to Public Libraries during the year, per 1,000 population”); Waste Management (six metrics; e.g., “the percentage of municipal waste reused and/or recycled”); Revenues and Benefits (three metrics; e.g., “the percentage of undisputed invoices which were paid in 30 days”); and Human Resources (two metrics; e.g., “the number of working days/shifts per full-time equivalent [FTE] local authority employee lost due to sickness absence”).

Using department performance data provided by the Government of Wales provides a robust measure of departmental performance. As the survey was conducted in the year 2007, we use a prospective performance measure based on departmental outcomes in the year 2008. Departmental performance is measured as the recorded percentage success on each individual metric for the

³ Details of responses are available in Gould-Williams (2008).

⁴ Service departments: Planning, Social Services, Housing Management, Education, Leisure and Culture, Waste Management, Revenues and Benefits, Human Resources; job position: manager, supervisor, nonmanager; job type: professional, associate professional, clerical, manual, other; work status: temporary, permanent, full time, part time.

⁵ Data are available from <http://dissemination.dataunitwales.gov.uk/webview/index.jsp>

respective departments. Because each department's performance is measured using a different number of metrics, we normalize the departmental performance measure using the following equation:

$$\text{Departmental Performance} = \frac{\sum_{n=0}^N \text{metric}_n}{N}$$

This measure provides us with an overall departmental performance score based upon the percentage of success on each of the performance metrics tracked by the Welsh government. This approach allows us to utilize an actual performance measure of data compiled by Welsh government that enables a comparison across departments.

Independent and Mediating Variables

Below we describe the measures for the independent and mediating variables in the model. The HPWS data were compiled from the managerial survey, and the mediator data were collected from the employee survey and aggregated at the department level.

HPWS. The managers' HR policy questionnaire used a 20-item index. Of these items, 18 were adapted from Datta et al. (2005) and measured various high-performance work practices. Two additional practices were included to measure the use of flexible work arrangements and family-friendly policies. These two questions read: (a) "Employees are offered flexible working options (e.g., job share/term-time employment/flextime, home working)" and (b) "Employees are covered by family-friendly policies (e.g., time off to care for dependents)." The Cronbach's alpha for this scale was .83, intraclass correlations, $ICC_1 = 0.12$, $ICC_2 = 0.89$, $F(90, 1664) = 8.559$, $p < .001$, $r_{wg(j)}^* = 0.87$, average variance extracted (AVE) = 0.688.

In order to ensure convergent validity of the HPWS responses provided by the managers, we assessed the degree to which employee perceptions of HPWS practices were similar to those of departmental managers. To do so, we used a separate 15-item HPWS measure that was provided to the employee sample. The 15-item HR practice scale consists of seven HR practices drawn from the measure used by Gould-Williams and Davies (2005) in their assessment of HRM in local government and eight items from Truss (1999). Employees were asked to indicate (1 = *strongly disagree* to 7 = *strongly agree*) the extent to which they agreed or disagreed that each practice was being utilized in the organization, $\alpha = .81$, $ICC_1 = 0.10$, $ICC_2 = 0.84$, $F(90, 1664) = 9.411$, $p < .001$, $r_{wg(j)}^* = 0.88$, AVE = 0.741. The responses from the managers and the employees demonstrated significant correlation ($r = .59$, $p < .001$, one-tailed). Therefore, the managerial responses were utilized as an assessment of high-performance work system utilization in the organization.

OCB. The OCB measure was based on an eight-item scale proposed by Smith, Organ, and Near (1983). Four items represented OCBs directed toward individual colleagues (altruism: Cronbach's $\alpha = .78$; sample item, "Help new people to settle into the job") and four items measured OCBs directed toward the department (Cronbach's $\alpha = .77$; sample item, "Suggest ways to improve service quality"). Respondents were asked the frequency of their demonstrating various behaviors, with a 5-point response scale (*Not at all* = 1 to *At every available opportunity* = 5). The

overall reliability of the scale was .88, $ICC_1 = 0.12$, $ICC_2 = 0.89$, $F(90, 1664) = 8.21$, $p < .001$, $r_{wg(j)}^* = 0.92$, AVE = 0.649.

Job satisfaction. Job satisfaction was measured with three items derived from existing studies (Bowling & Hammond, 2008; Spector, Chen, & O'Connell, 2000; Vancouver & Schmitt, 1991) using a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). The three items were (a) "In general, I like working here," (b) "In general, I don't like my job" (reverse coded), and (c) "All things considered, I feel pretty good about this job." The Cronbach's alpha was .83, $ICC_1 = 0.16$, $ICC_2 = 0.93$, $F(90, 1664) = 6.84$, $p < .001$, $r_{wg(j)}^* = 0.95$, AVE = 0.704.

Organizational commitment. Organizational commitment was measured with a six-item scale proposed by Allen and Meyer (1990; 1 = *strongly disagree* to 7 = *strongly agree*). The items were as follows: (a) "I would be happy to spend the rest of my career in this department"; (b) "I really feel as if this department's problems are my own"; (c) "I do not feel like 'part of the family' at my department" (reverse coded); (d) "I do not feel a strong sense of belonging to my department" (reverse coded); (e) "I do not feel 'emotionally attached' to this department" (reverse coded); (f) "This department has a great deal of personal meaning for me." The overall reliability of the scale was .84, $ICC_1 = 0.16$, $ICC_2 = 0.91$, $F(90, 1664) = 6.26$, $p < .001$, $r_{wg(j)}^* = 0.92$, AVE = 0.686.

Employee psychological empowerment. We used a 12-item scale (1 = *strongly disagree* to 7 = *strongly agree*) proposed by Spreitzer (1995). As discussed above, this construct is divided into four separate scales measuring (a) meaning, (b) competence, (c) self-determination, and (d) impact. The first three items, $\alpha = .76$, $ICC_1 = 0.15$, $ICC_2 = 0.85$, $F(90, 1664) = 6.48$, $p < .001$, $r_{wg(j)}^* = 0.89$, focus on measuring meaning of work: (a) "The work I do is very important to me," (b) "My job activities are personally meaningful to me," and (c) "The work I do is meaningful to me." Competence items, $\alpha = .74$, $ICC_1 = 0.12$, $ICC_2 = 0.85$, $F(90, 1664) = 4.83$, $p < .001$, $r_{wg(j)}^* = 0.88$, are (d) "I am confident about my ability to do my job," (e) "I am self-assured about my capabilities to perform my work activities," and (f) "I have mastered the skills necessary for my job." The three self-determination items, $\alpha = .79$, $ICC_1 = 0.17$, $ICC_2 = 0.88$, $F(90, 1664) = 7.63$, $p < .001$, $r_{wg(j)}^* = 0.90$, were (g) "I have significant autonomy in determining how I do my job," (h) "I can decide on my own how to go about doing my work," and (i) "I have considerable opportunity for independence and freedom in how I do my job." Finally, impact items ($\alpha = .82$, $ICC_1 = 0.17$, $ICC_2 = 0.88$; $r_{wg(j)}^* = 0.92$) are (j) "I have a large impact on what happens in my section of this department," (k) "I have a great deal of control over what happens in my section of this department," and (l) "I have significant influence over what happens in my section of this department." The overall reliability of the scale was .81, $ICC_1 = 0.17$, $ICC_2 = 0.84$, $F(90, 1664) = 5.21$, $p < .001$, $r_{wg(j)}^* = 0.87$, AVE = 0.742.

Controls. We controlled for number of employees and average employee tenure in each department. The number of employees in each department could provide alternate explanations for challenges in the implementation and perceptions of HPWS practices. Larger departments could face higher implementation and coordination costs and therefore may realize lower benefits than smaller departments. In addition, we controlled for average employee tenure, as employees with longer organizational tenure may be more likely to exhibit OCB type behavior. They are also likely

Table 1
Means, SDs, and Correlations

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Departmental performance	0.72	0.11	—						
2. HPWS	49.52	11.07	0.42	—					
3. Job satisfaction	3.29	1.16	0.36	0.29	—				
4. Organizational commitment	3.79	0.95	0.39	0.32	0.21	—			
5. Employee psychological empowerment	3.27	1.12	0.34	0.26	0.18	0.25	—		
6. OCB	3.48	1.01	0.36	0.29	0.21	0.28	0.19	—	
7. No. employees	148.48	241.78	0.07	0.10	0.06	0.02	0.04	0.02	—
8. Average employee tenure	9.56	17.64	0.09	0.09	0.04	0.04	0.06	0.07	0.04

Note. $N = 92$. All correlations above 0.11 are significant at 0.05 or below on two-tailed tests. Due to the categorical or dichotomous nature of the remaining control variables, correlations for these variables are not listed here. *SD* = standard deviation; HPWS = high-performance work systems; OCB = organizational citizenship behavior.

to have greater knowledge of tasks, tools and processes, which may allow them to adapt better to HPWS practices.

Analysis and Results

Table 1 shows the correlations among the variables. HPWS is significantly related to departmental performance and the mediators. In addition, the mediators have moderate levels of correlation. The results of the path analysis are available in Table 2. We used robust weighted least squares (RWLS) maximum likelihood estimation in Mplus 4.21 to test the partial mediation model. RWLS does not require strict distributional assumptions and provides robust estimates in small sample settings (Finney & DiStefano, 2006). RWLS has also been shown to perform well with moderate sample sizes and categorical and ordinal indicators (Muthén, 1993). We used the RWLS procedure in Mplus 2.41, with relaxed distributional assumptions of the latent variables (i.e., the method does not require normality assumptions). RWLS provides limited information likelihood estimates, robust standard errors, and *t* ratios (Muthén & Muthén, 2004). RWLS is specifically useful when variables included in the analysis are based on different scales. In the proposed model, the outcome variable is a continuous measure whereas the independent and mediator variables are ordered polytomously. Therefore, drawing on Muthén (1984), RWLS estimates are particularly relevant.

Furthermore, although we derived outcome measures from different sources and aggregated independent variable and mediators at the unit level, there is a greater probability of heteroscedasticity as the departments are governed by a larger unit (the Wales government authority). Thus, the assumption of constant error variances (i.e., homoscedasticity) could be violated. A Brown-Forsythe test ($H_0 = \text{constant variance}$) was marginally rejected, $\chi^2(1) = 2.45$, $p = .117$.⁶ Although heteroscedasticity was marginal in the sample, we used RWLS to draw more robust estimates (Muthén, 1984).

We conducted an exploratory factor analysis using varimax rotation for the four independent variables: OCB, job satisfaction, organizational commitment, and employee psychological empowerment. We derived four factors loading on OCB (eigenvalue = 2.163, percent variance extracted = 13.54), job satisfaction (eigenvalue = 2.284, percent variance extracted = 18.85), organizational commitment (eigenvalue = 2.962, percent variance extracted =

19.84), and employee psychological empowerment (eigenvalue = 3.491, percent variance extracted = 22.56). The exploratory factor analysis showed adequate fit (Kaiser-Meyer-Olkin measure of sampling adequacy = 0.843, Bartlett's test of sphericity = $\chi^2/df = 6.804$, $p < .001$).

Confirmatory factor analysis further supported the proposed factor structure of the independent variables modeled in this study: $\chi^2(372) = 608.755$, comparative fit index (CFI) = 0.962, Tucker-Lewis index (TLI) = 0.941, root-mean-square error of approximation (RMSEA) = 0.066, RMSEA 90% CI [0.042, 0.078], root mean square residual (RMSR) = 0.022. Compared to the proposed model consisting of four constructs, a one-factor model resulted in worse model fit, $\chi^2(376) = 819.742$, CFI = 0.843, TLI = 0.821, RMSEA = 0.178, RMSEA 90% CI = [0.132, 0.224], RMSR = 0.159. Also, including a one-factor employee psychological empowerment construct resulted in a worse fit, $\chi^2(384) = 1,048.68$, CFI = 0.822, TLI = 0.817, RMSEA = 0.184, RMSEA 90% CI [0.157, 0.211], RMSR = 0.179, than that of the proposed model consisting of a four-factor employee psychological empowerment construct.

Furthermore, as an indicator of discriminant validity, average variance extracted was above the recommended limit of 0.50. We further assessed discriminant validity by comparing the difference in chi-square values between constrained and unconstrained pairs of measures. The lowest change in chi-square was 7.853 ($p < .001$). The results of this analysis provided a model demonstrating satisfactory fit, $\chi^2(371) = 497.712$, CFI = 0.953, TLI = 0.932, RMSEA = 0.056, RMSEA 90% CI [0.040, 0.072], SRMR = 0.009.

The results in Table 2 show a positive relationship between HPWS and departmental performance ($\beta = 0.447$, $p < .001$), with the full model explaining nearly 45% of the variance in the departmental performance measure ($R^2 = .452$). Further, the results show a positive relationship between HPWS and the four proposed mediating variables (see Table 3). For testing the mediation effects, we used traditional indirect effects analysis ($a \times b$). Given that extant work suggests different pros and cons associated

⁶ The Brown-Forsythe test is robust to significant departures from normality errors. Alternatively, the Bruce-Pagan test, $\chi^2(1) = 1.27$, $p = .26$, and the Goldfeld-Quandt test, $\chi^2(1) = 1.77$, $p = .18$, provide a less conservative test of homoscedasticity.

Table 2
Path Analysis Results

Indirect effect	Standardized beta	SE
HPWS → OCB	0.406***	0.136
HPWS → job satisfaction	0.352*	0.107
HPWS → organizational commitment	0.483***	0.181
HPWS → employee psychological empowerment	0.476***	0.130
OCB → departmental performance	0.318*	0.109
Job satisfaction → OCB	0.153**	0.052
Organizational commitment → OCB	0.162**	0.048
Employee psychological empowerment → OCB	0.137*	0.049
No. employees → departmental performance	0.118	0.143
Average employee tenure → departmental performance	0.162	0.127
HPWS → departmental performance ($R^2 = .452$)	0.447***	0.104
Covariance		
OCB, job satisfaction	0.128	0.140
OCB, organizational commitment	0.088	0.114
OCB, employee psychological empowerment	0.115	0.125
Job satisfaction, organizational commitment	0.129	0.081
Job satisfaction, employee psychological empowerment	0.084	0.145
Organizational commitment, employee psychological empowerment	0.083	0.146
Model fit: $\chi^2(371) = 497.712$, comparative fit index = 0.953, Tucker–Lewis index = 0.932, root-mean-square error of approximation (RMSEA) = 0.056, RMSEA 90% CI = 0.040, 0.072, standardized root mean residual = .009.		

Note. $N = 92$. SE = standard error; HPWS = high-performance work systems; OCB = organizational citizenship behavior; CI = confidence interval. * $p < .05$. ** $p < .01$. *** $p < .001$.

with using particular approaches for measuring indirect effects, we report four widely used approaches: the Sobel test, Aroian test, Goodman test, and bootstrap standard error based tests (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). Due to strict assumptions of normality, the Sobel test may not provide conservative standard error estimates. Given the marginal presence of homoscedasticity, as a nonparametric sampling procedure, a bootstrapping-based approach leads to greater control of Type I error rates and higher power (MacKinnon et al., 2002). Bootstrap standard errors are a better alternative when managing smaller sample sizes, as they do not impose distributional assumptions (Preacher & Hayes, 2008). We used variants of the Sobel test—the Aroian test and Goodman test—as alternatives to test the robustness of standard errors across different estimation techniques in testing the indirect effects. As suggested by MacKinnon et al., using multiple indirect effects tests adds to the robustness of mediation tests. Table 2 provides the results for the direct paths modeled using the above procedure, and Table 3 shows that mediation effects were significant across the four mediation tests.

As shown in Table 3, the indirect effects were consistent across the different indirect effects estimation approaches.

Hypothesis 1 proposed that organizational citizenship behavior partially mediates the relationship between HPWS and departmental performance, which is supported by the model ($\beta = 0.129, p < .05$). In other words, increased HPWS enhances citizenship-related behaviors ($\beta = 0.406, p < .001$) that in turn work to enhance performance ($\beta = 0.318, p < .05$). In order to examine the mediation effect more completely we also tested a full-mediation model, which provided a worse overall fit, $\chi^2(372) = 583.304$, CFI = 0.862, TLI = 0.843, RMSEA = 0.149, RMSEA 90% CI [0.103, 0.195], SRMR = 0.129. This result supports the partial mediation argument presented above.

As shown in Table 2, increased HPWS utilization also increases job satisfaction ($\beta = 0.352, p < .05$) and organizational commitment ($\beta = 0.483, p < .001$). Further, both job satisfaction ($\beta = 0.153, p < .01$) and organizational commitment ($\beta = 0.162, p < .01$) in turn are related to OCB. Hypotheses 2 and 3 proposed partial mediation effects for job satisfaction ($\beta = 0.054, p < .05$)

Table 3
Mediation Effects: Path Analysis Results

Indirect effect	Standardized beta	SE (Sobel test)	SE (Aroian test)	SE (Goodman test)	SE (bootstrap-test) ^a
HPWS → OCB → departmental performance (H1)	0.129*	0.062 (2.086)	0.064 (2.029)	0.060 (2.149)	0.052 (2.472)
HPWS → job satisfaction → OCB (H2)	0.054*	0.025 (2.193)	0.025 (2.138)	0.024 (2.252)	0.025 (2.156)
HPWS → organizational commitment → OCB (H3)	0.078*	0.037 (2.093)	0.038 (2.038)	0.036 (2.152)	0.035 (2.255)
HPWS → employee psychological empowerment → OCB (H4)	0.065*	0.029 (2.234)	0.030 (2.184)	0.028 (2.287)	0.030 (2.203)

Note. $N = 92$. SE = standard error; HPWS = high-performance work systems; OCB = organizational citizenship behavior; H = hypothesis.

^a Bootstrap standard errors based on 100 samples.

* $p < .05$.

and organizational commitment ($\beta = 0.078, p < .05$), respectively, on OCB, which were both supported in the final model. The full mediation models for job satisfaction, $\chi^2(372) = 592.286$, CFI = 0.853, TLI = 0.841, RMSEA = 0.163, RMSEA 90% CI [0.111, 0.215], SRMR = 0.133, and organizational commitment, $\chi^2(372) = 572.377$, CFI = 0.839, TLI = 0.828, RMSEA = 0.168, RMSEA 90% CI [0.124, 0.212], SRMR = 0.122, resulted in worse model fit.

Finally, Hypothesis 4 proposed that increased HPWS utilization is related to higher levels of employee psychological empowerment ($\beta = 0.476, p < .001$), which in turn is associated with OCB ($\beta = 0.137, p < .05$). This relationship was found to be significant, as the partial mediation effects of employee psychological empowerment are supported in the path model ($\beta = 0.065, p < .05$). Supporting the partial mediation between HPWS, employee psychological empowerment, and OCBs, the full mediation model resulted in worse fit, $\chi^2(372) = 598.352$, CFI = 0.846, TLI = 0.838, RMSEA = 0.152, RMSEA 90% CI [0.118, 0.186], SRMR = 0.124.

In order to better understand the strength of the indirect effects, we also assessed the relative indirect effect sizes of the partial mediators analyzed in this study.⁷ In particular, we compared the differences between the partial mediation effects of job satisfaction and organizational commitment ($\Delta\beta = 0.024, z = 0.537$), job satisfaction and employee psychological empowerment ($\Delta\beta = 0.011, z = 0.287$), and organizational commitment and employee psychological empowerment ($\Delta\beta = 0.013, z = 0.276$). As demonstrated in these results, the indirect effects all appear to have a similar effect on departmental performance.

These results support a familiar pattern in the strategic HRM literature in linking the utilization of models of HPWS to various performance metrics. For instance, Huselid's (1995) seminal study estimated that companies generate approximately \$27,000 per employee with every one-unit increase in the HRM system. Batt (2002) estimated an improvement of 16.3% in sales growth from utilizing a model of HPWS. Furthermore, Takeuchi et al. (2007) estimated that HPWS explains approximately 17% of the variance in subjective assessments of establishment-level performance. Because our study utilizes a unique dependent variable that is specifically formed out of departmental performance metrics, it is difficult to compare effect sizes directly; however, the estimates are within a similar range, as we find HPWS to account for approximately 19% ($R^2 = .193$) of the variance in departmental performance. Approximately half of this effect is explained through the indirect effects captured by the mediators assessed in this study ($R^2 = .107$).

Discussion

At a broad level, this study contributes to strategic HRM scholarship by looking into several critical "black box" elements that link HPWS to organizational performance outcomes. Although HR systems themselves may lack the VRIN characteristics prescribed by the resource-based view to be strategically valuable, the human resources selected, trained, developed, compensated, and managed by such practices have more potential to serve as critical resources. Moreover, the results of this analysis suggest that the attitudes and behaviors of individual actors have the potential both to be affected by the system of HR practices employed by the organiza-

tional unit and to affect important performance outcomes. The results are consistent with Bowen and Ostroff's (2004) intermediate model of the linkages between HRM systems and performance and demonstrate that HRM system (as operationalized by HPWS) is linked to unit-level attitudes and behaviors and, ultimately, to department-level performance.

The results of this study contribute to the existing conversation in the strategic HRM literature regarding the variables and processes linking investments in HPWS to departmental performance. These findings suggest that the effects of HPWS may partially operate through a path connecting employee attitudes to discretionary employee behaviors and ultimately to unit-level performance. Although we must remain cautious in drawing causal inferences from the cross-sectional model tested in this study, the results do lend additional credence to the current conversations in the literature regarding the role of HPWS as an organizational capability that may help to configure valuable bundles of satisfied, committed, and engaged human resources (Delery, 1998; Messersmith & Guthrie, 2010; Wright et al., 1994). In particular, this study highlights the important role that employee discretionary behaviors may play in the success of departmental units and, more broadly, organizations. Researchers have clearly demonstrated that, at the individual level, OCBs are associated with a variety of valued outcomes. It appears to be the case that, in the aggregate, OCBs may also function as an important pathway leading to important organizational outcomes.

The logic for this finding is intuitive. As employees begin to sense greater commitment from departmental leaders as expressed via HPWS, they are more likely to engage in the prosocial behaviors that help organizational units to meet goals and objectives. In combination, these helping behaviors allow organizational units to be more efficient and flexible, as employees are more likely to step beyond the bounds of their narrowly defined job descriptions to assist each other as well as to help maximize their overall departmental functions. In addition, this reciprocity is likely to have continual positive effects in the department as OCBs become enmeshed as a part of the established norms and values in the culture of the unit. It bears noting that there are conceptual challenges that might result from relying on employee discretion as a source of competitive advantage. Because these are discretionary behaviors, is it possible or even plausible to expect them to be sustained over time? Is this a sustainable phenomenon or one that is temporally limited as OCBs either become part of the job requirements or disappear altogether? We encourage future research to explore this issue.

These results also speak to a growing trend in the strategic HRM literature in highlighting the importance of assessing the role of the human element in human resource management (Gerhart, 2005). For instance, Gerhart argued that strategic HRM research should refocus its efforts on determining the effects of general employee relations and employee attitudes on performance and how HR systems can contribute to such processes. In delineating an alternate approach to viewing strategic HRM, Gerhart (2005) stated,

⁷

$$z = \frac{(b_1 - b_2)}{\sqrt{SE(b_1)^2 + SE(b_2)^2}}$$

Our approach is to focus on employee relations, especially as seen from the point of view of employees, which we feel is one of the ultimate goals of HR. Our view is that positive employee relations and attitudes can be achieved via multiple paths using alternative combinations of HR practices. (p. 179)

Related, recent research by Lepak et al. (2006), Macky and Boxall (2007), Morrison (1996), Nishii et al. (2008), Takeuchi et al. (2009), and Wu and Chaturvedi (2009) has emphasized the notion that the path through which HR systems impact higher level outcomes crosses levels of analysis and requires consideration of employee perceptions. We begin to address this effect by assessing aggregated perceptions at the unit level of analysis, though to truly answer this call future work that crosses levels of analysis is necessary.

The findings reported here also provide actionable knowledge to organizational leaders and HR professionals alike. The study demonstrates that building an effective HR system may have a powerful influence on the attitudes and behaviors of individual employees. Not only is this likely to create a more positive work place environment but it also seems to have an influence on departmental performance. Investing in the selection, training, information sharing, compensation, and performance management processes may have a positive effect on employee attitudes and behaviors and may further pay dividends with higher service quality and performance. This highlights the importance of not just managing based upon results but also paying attention to the role that attitudes and behaviors play in creating better results. Managers and department heads need to remain mindful of goals and objectives, but they may need to pay particular attention to the entire system of management practices to ensure that proper attitudes and behaviors are being encouraged and incentivized in the unit.

Finally, the utilization of actual performance data from Welsh governmental units makes the findings from this study particularly relevant to the practitioner community. Rather than relying on perceptual performance measures, we demonstrate a path to greater performance based upon metrics of noted importance and relevance to practitioners. This helps to advance both scientific and practical knowledge in the field of human resource management. In addition, the nature of this sample highlights not only that investments in people pay off in for-profit organizations but also that not-for-profit governmental units are able to realize enhanced employee attitudes and behaviors that translate into better performance outcomes.

Limitations and Future Directions

The results of this study should be considered in light of its limitations. First, the study utilizes data from public-sector employees. Although it is a credit to the field that much of the existing research has been focused on private businesses, it is interesting to note that the same relationships appear to exist among public workers. As governmental organizations seek out ways to enhance their productivity, levels of service, and overall effectiveness, the results of the present analysis suggest that paying close attention to the practices employed to manage the organization's human capital is also important. Public-sector organizations that are able to match some of the best practice ideas found in the strategic HRM literature (Pfeffer, 1994) are likely to see performance improve-

ments, which will likely enhance both the effectiveness and the reputation of governmental agencies. Although this approach offers a somewhat unique contribution relative to existing work in the strategic HRM field, it does call generalizability into question. Future work is needed to extend the model to private enterprises.

In addition, we begin here with a sample of three salient attitudinal variables from the management literature—commitment, satisfaction, and empowerment—but note that there are many other attitudinal factors that may influence the discretionary behaviors exhibited by employees and also employee performance. Future explorations into these other attitudinal factors are necessary to advance the model explored herein. In addition, the measures for HPWS and the mediating variables were collected and then aggregated from the same set of employees, which means that common method bias may be an issue. Additional models that include separate sample measures of the independent and mediating variables within the same departments would be useful for further testing and clarification of the model.

Further, this study limited mediating variables to those that are more attitudinal and behavioral in nature. Although it is likely that these variables have a strong effect on the motivation of human resources, less is known about the connection between HPWS and the ability levels of a firm's human resources. Future research may extend the research model by including measures of human capital to determine the extent to which HPWS affect not just the motivation of existing human resources but also the knowledge, skills, and abilities embodied within those resources and the task performance that results. Such studies would allow for the disentanglement of the effects of HPWS on both the quality and the motivation of a firm's human resources. Furthermore, existing work may seek to identify contingency variables to determine the extent to which HPWS affect attitudes and, ultimately, performance under differing strategic directives. It may be that these relationships are more or less important in certain environments or among certain groups of employees, as often pointed to in the strategic HRM literature (e.g., Delery, 1998; Lepak & Snell, 2002).

Finally, it bears noting that these data represent a cross-section of time and that reverse causality cannot be ruled out entirely. It may be that better performing departments create more committed and empowered workers rather than that HPWS serve as the catalyst to OCB development and, ultimately, to performance improvements. Additional research should be conducted longitudinally to assess the potential of reverse causality and to better understand the interplay of the feedback loops connecting the variables of interest in the present model.

Conclusion

This study extends work in the strategic HRM paradigm by demonstrating a strong and significant effect linking HPWS to departmental performance. Further, this research provides new insights by demonstrating that the effectiveness of HPWS is partially owed to the effect such systems have on employee attitudinal variables such as job satisfaction, organizational commitment, and employee empowerment, which ultimately build higher levels of OCBs. The findings underscore the importance of the human resource and suggest that employee attitudinal variables are an important element of the black box linking HPWS to performance.

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Received May 26, 2010

Revision received April 22, 2011

Accepted April 29, 2011 ■

Correction to Messersmith et al. (2011)

In the article “Unlocking the Black Box: Exploring the Link Between High-Performance Work Systems and Performance” by Jake G. Messersmith, Pankaj C. Patel, and David P. Lepak (*Journal of Applied Psychology*, 2011, Vol. 96, No. 6, pp. 1105–1118), some information concerning the data collection process was omitted from the original published version. All online versions have now been corrected. The details of the corrections are as follows:

Julian S. Gould-Williams has been added as the fourth author on the paper.

The following citation has been added to the reference list: Gould-Williams, J. (2006–2008). *Wales Local Government Staff Survey, 2006–2008* [computer file]. Colchester, Essex: UK Data Archive [distributor], August 2009. SN: 6239, <http://dx.doi.org/10.5255/UKDA-SN-6239-1>

The following text has been added to the author note: We acknowledge the Economic and Social Research Council, and the UK Data Archive for data access and funding. The original data creator, depositor, or copyright holders, the funder of the data collection, and the UK Data Archive bear no responsibility for the analysis or interpretation of the data.

The corrected version of the article is available here: <http://dx.doi.org/10.1037/a0024710>

DOI: 10.1037/a0028854