

## TECHNICAL AND STRATEGIC HUMAN RESOURCE MANAGEMENT EFFECTIVENESS AS DETERMINANTS OF FIRM PERFORMANCE

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**We evaluated the impact of human resource (HR) managers' capabilities on HR management effectiveness and the latter's impact on corporate financial performance. For 293 U.S. firms, effectiveness was associated with capabilities and attributes of HR staff. We also found relationships between HR management effectiveness and productivity, cash flow, and market value. Findings were consistent across market and accounting measures of performance and with corrections for biases.**

There is broad agreement that a strategic approach to human resource management (HRM) involves designing and implementing a set of internally consistent policies and practices that ensure a firm's human capital (employees' collective knowledge, skills, and abilities) contributes to the achievement of its business objectives (Baird & Meshoulam, 1988; Jackson & Schuler, 1995; Schuler & Jackson, 1987). Fundamental to the strategic HRM perspective is an assumption that firm performance is influenced by the set of HRM practices firms have in place. Recent empirical evidence supports this basic assumption (Arthur, 1994; Cutcher-Gershenfeld, 1991; Huselid, 1995; Huselid & Becker, 1996; MacDuffie, 1995).

Paradoxically, the preliminary empirical research, which established a relationship between HRM policies and practices and firm performance, made little distinction between policies and practices that reflect the more traditional, or technical, personnel perspective and those that reflect the adoption of the strategic human resource management perspective. Moreover, prior work has not considered the types of capabilities of human resources staffs associated with the effective implementation of these two types of HRM policies and practices.

In this article, we attempt to improve upon the prior empirical literature on this topic by focusing on the impact of overall HRM quality on firm performance. We first develop the argument that HRM effectiveness, which

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includes the delivery of high-quality technical and strategic HRM activities, will be reflected in valued firm-level outcomes. We then assert that two types of HRM staff capabilities will have a significant impact on the effective management of firms' human capital. To study the impact of HRM effectiveness and human resources staff capabilities on valued firm-level outcomes—employee productivity and corporate financial performance—we examined a large sample of firms drawn from a wide range of industries. Finally, we consider two important methodological issues that could bias our results: (1) the potential endogeneity of firm profitability and managerial assessments of HRM effectiveness and (2) survey response bias.

## THEORETICAL BACKGROUND AND HYPOTHESES

### Technical and Strategic HRM Effectiveness

Institutional theorists view organizations as entities that seek approval for their activities in socially constructed environments. Conformity to expectations for behavior is the means through which firms gain legitimacy and acceptance in the eyes of stakeholders. Consequently, over long periods of time, HRM activities of interest to these stakeholders spread throughout the population of firms. External stakeholders whose expectations are particularly relevant in shaping technical HRM activities include the government, which regulates a wide range of employment practices, and various professional organizations (Baron, Jennings, & Dobbin, 1988; Tolbert & Zucker, 1983). The expectations of these stakeholders tend to be similar for all firms, and all firms feel some pressure to conform. In addition, key internal stakeholders (line managers and executives) prefer high-quality technical HRM activities (Tsui, 1987). Technical HRM activities that have been increasingly regulated through stakeholder expectations include recruiting, selection, performance measurement, training, and the administration of compensation and benefits. Reflecting the high level of knowledge and expertise associated with these activities are occupational specializations for those who carry out these activities, professional criteria for judging the effectiveness of these activities, and professional certification programs for those who carry them out (Baron et al., 1988).

In contrast to technical HRM activities, strategic HRM activities are relatively recent innovations, so stakeholders are not yet likely to hold strong expectations or put pressure on organizations to adopt these practices (cf. Johns, 1993; Wright & McMahan, 1992). Although scholars have yet to reach agreement about how best to define strategic human resource management, there is, nevertheless, broad agreement that it involves designing and implementing a set of internally consistent policies and practices that ensure a firm's human capital contributes to the achievement of its business objectives (Baird & Meshoulam, 1988; Jackson & Schuler, 1995; Schuler & MacMillan, 1984). During the past decade, compensation systems in particular have been studied as a way to deploy HRM systems strategically (Gerhart &

Milkovich, 1992; Gomez-Mejia & Balkin, 1992). The strategic role of a firm's HRM system has become the focus of empirical investigation somewhat more recently (Jackson & Schuler, 1995). Other strategic HRM activities include team-based job designs, flexible workforce, quality improvement practices, employee empowerment, studies designed to diagnose a firm's strategic needs, and planned development of the talent required to implement competitive strategy and achieve operational goals. For these strategic HRM activities, there is little shared understanding about how to achieve effective implementation, and there are few regulatory guidelines; in addition, occupational specialization is not yet apparent. Given these conditions, effective strategic HRM activities should be relatively rare across a population of firms. Thus,

*Hypothesis 1: U.S. firms have achieved higher levels of technical human resource management effectiveness than of strategic HRM effectiveness.*

### **HRM Effectiveness and Firm Performance**

The resource-based view of the firm suggests that a firm's pool of human capital can be "leveraged" to provide a source of competitive advantage (cf. Barney, 1991; Wright, McMahan, & McWilliams, 1992). Assuming heterogeneity among firms with respect to their human capital, competitive advantage is possible if a firm insures that its people add value to its production processes and that its pool of human capital is a unique resource, both difficult to replicate and difficult to substitute for. HRM practices comprise the many activities through which firms create human capital that meets these conditions. Specifically, firms can use technical HRM activities to select high-ability employees, whose talent is rare by definition (cf. Wright & McMahan, 1992), and to train employees so they have the unique skills needed. Strategic HRM activities, on the other hand, help a firm to ensure that its human resources are not easily imitated. Because of the social complexity and causal ambiguity inherent in strategic HRM practices such as team-based designs, empowerment, and the development of talent for the long term, competitors can neither easily copy these practices nor readily replicate the unique pool of human capital that such practices help to create. These arguments suggest

*Hypothesis 2: In U.S. firms, both strategic and technical human resource management effectiveness will be positively associated with firm performance.*

### **Capabilities That Enhance HRM Effectiveness**

An obvious extension of this line of inquiry concerns the issue of *how* organizations can maximize HRM effectiveness. That is, how can firms increase the probability that they will adopt and then effectively implement appropriate HRM practices? Insuring that members of the HRM function

have the appropriate capabilities (or competencies) has been suggested as one way to increase the likelihood of effective HRM (Lawler, 1992; Ulrich & Lake, 1990). Specifically, two types of HRM staff capabilities have been identified as important: professional HRM capabilities and business-related capabilities.

Historically, the presumption of the field was that *professional HRM capabilities* related to the delivery of traditional technical HRM practices were both necessary and sufficient for assuring the development and effective implementation of HRM practices. As the strategic HRM paradigm emerged, this assumption was called into question by those who argued that, although professional HRM capabilities may be necessary to ensure technical HRM effectiveness, they are not sufficient; *business-related capabilities* were required also (e.g., Schuler, 1992; Walker, 1992). Presumably, business-related capabilities enable members of a human resources staff to understand how business considerations unique to a firm can create firm-specific HRM needs. This logic suggests

*Hypothesis 3: Human resources staffs in U.S. firms will have achieved higher levels of professional capabilities than of business-related capabilities.*

*Hypothesis 4: Technical human resource management effectiveness will be associated with professional human resources capabilities, and strategic HRM effectiveness will be associated with both professional and business-related capabilities.*

## METHODS

### Sample

Respondents were senior executives in human resource management (92%) and line (8%) positions. Because there were no significant differences in the effectiveness or capabilities ratings provided by the line and HR managers, our analyses combine the two subgroups. These survey responses were matched with publicly available financial data for the 293 publicly held U.S. firms that participated in the study. Financial data were obtained for the years 1991 (contemporaneous measures, used as control variables) and 1992 (prospective measures, used as the outcomes to be predicted).

### Measures

Based on an extensive review of the literature, the survey instrument included items that assessed HRM effectiveness across a wide range of practices (23 items) and items that assessed the capabilities of a firm's human resource staff's members (18 items; cf. Towers-Perrin, 1992). We explored the dimensionality of these 41 items, treated as a single set, using principal

components factor analysis with oblique rotation.<sup>1</sup> As Table 1 shows, these analyses indicated that the constructs of strategic HRM effectiveness, technical HRM effectiveness, business-related capabilities, and HRM professional capabilities could be represented in four factors. Items with factor loadings of .40 or greater on only one factor, shown in bold in Table 1, were retained and used to construct the indexes described below.

**HRM effectiveness.** The 23 relevant items asked respondents to indicate how satisfied they were with “the results currently being achieved” using a scale ranging from 1 (highly satisfied) to 5 (very dissatisfied). Responses were reverse-coded, so higher values indicate higher perceived effectiveness. The two dimensions of HRM effectiveness shown in Table 1 were labeled *strategic HRM effectiveness* (factor 2, Cronbach’s  $\alpha = .75$  for 8 items) and *technical HRM effectiveness* (factor 3, Cronbach’s  $\alpha = .66$  for 8 items). Strategic HRM effectiveness describes perceptions of how well the HRM function developed a firm’s employees to support its business needs, including facilitating teamwork, communications, and involvement, enhancing quality, and developing talent to serve the business in the future. Technical HRM effectiveness describes perceptions of how well the HRM function performed activities traditionally associated with personnel management, including recruitment, selection, training, performance appraisal, and compensation administration.<sup>2</sup>

**HRM capabilities scales.** The 18 relevant items in the survey asked respondents to “indicate the extent to which HRM staff currently possess the capabilities and attributes listed” using a scale ranging from 1 (applies to most) to 5 (applies to very few). Responses were coded in such a way that higher values indicated higher levels of perceived capability. The two dimensions of HRM capabilities, shown in Table 1, were labeled *professional HRM capabilities* and *business-related capabilities*. Professional HRM capabilities (factor 1, Cronbach’s  $\alpha = .85$  for 11 items) describe expertise and skill relevant to performing excellently within a traditional HRM functional

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<sup>1</sup>Nearly identical results were obtained when confirmatory factor analyses were conducted. Each standardized factor loading generated by these analyses was significantly different from zero, and alternative analyses using a variety of specifications did not yield a model with significantly better fit. The results shown are also nearly identical to results obtained when effectiveness items and capabilities items were analyzed separately. Interested readers can obtain a full description of these analyses by contacting the first author.

<sup>2</sup>A disadvantage of these measures is that they cannot differentiate between the presence of operationally appropriate HRM practices and the quality of their implementation. In addition, our questionnaire did not define effectiveness for respondents, and the measures do not explicitly address differences in how various constituencies might evaluate HRM effectiveness (cf. Tsui, 1987). Thus, our measures to some degree depend on managerial expectations of what an appropriate level of HRM effectiveness represents. However, if managerial assessments were related to HRM effectiveness in such a way that managers in more effective firms had *higher* standards (perhaps because of their greater skills or better information), then our findings would provide *underestimates* of the impact of HRM effectiveness on firm performance.

**TABLE 1**  
**Principal Components Factor Structure of the Human Resource Management Items<sup>a</sup>**

Item	Factor 1	Factor 2	Factor 3	Factor 4	Alpha
<i>Professional HRM capabilities</i>					.85
Anticipates the effect of internal and external changes	<b>.73</b>	.18	-.07	.10	
Exhibits leadership for the function and corporation	<b>.71</b>	.16	.08	.10	
Demonstrates the financial impact of all HR activities	<b>.71</b>	.11	.05	.00	
Defines and communicates HR vision for the future	<b>.67</b>	.20	.01	.01	
Educates and influences line managers on HR issues	<b>.64</b>	.18	.10	.18	
Takes appropriate risks to accomplish objectives	<b>.63</b>	.25	.05	.11	
Broad knowledge of many HR functions	<b>.61</b>	.21	-.06	-.01	
Knowledgeable about competitors' HR practices	<b>.56</b>	-.06	.13	-.04	
Focuses on the quality of HR services	<b>.46</b>	.20	.16	.06	
International experience	<b>.43</b>	.00	-.08	.06	
Influences peers in other companies	<b>.43</b>	.03	.23	.06	
Significant external customer contact	.36	.01	.18	.16	
Foreign language capability	.28	-.01	-.02	.09	
Computer literacy	.26	-.02	.16	.06	
Highly specialized knowledge of a few HR functions	-.06	-.23	.22	.09	
<i>Strategic HRM effectiveness</i>					.75
Teamwork	.14	<b>.70</b>	.08	-.10	
Employee participation and empowerment	.18	<b>.70</b>	-.02	-.13	
Workforce planning—flexibility and deployment	.11	<b>.60</b>	.05	.13	
Workforce productivity and quality of output	.21	<b>.57</b>	.07	-.05	
Management and executive development	.08	<b>.55</b>	.19	.23	
Succession and development planning for managers	.00	<b>.51</b>	.18	.26	
Advance issue identification/strategic studies	.02	<b>.45</b>	.04	.35	
Employee and manager communications	.13	<b>.45</b>	.23	-.01	
Work/family programs <sup>b</sup>	.08	.03	.22	.49	
<i>Technical HRM effectiveness</i>					.66
Benefits and services	.02	.07	<b>.60</b>	-.10	
Compensation	.05	.16	<b>.57</b>	-.21	
Recruiting and training	.04	.01	<b>.55</b>	-.02	
Safety and health	.03	-.04	<b>.48</b>	.10	
Employee education and training	.06	.37	<b>.46</b>	.28	
Retirement strategies	.11	.05	<b>.45</b>	.18	
Employee/industrial relations	.25	.07	<b>.43</b>	-.36	
Social responsibility programs	.09	.08	<b>.43</b>	.39	
EEO for females, minorities, etc.	.04	.08	.35	.26	
Management of labor costs	.12	.24	.35	-.20	
Selection testing	-.05	.14	.28	.01	
Performance appraisal	.02	.24	.27	-.02	
Human resource information systems	.18	.09	.26	-.02	
Assessing employee attitudes	.09	.22	.18	.05	
<i>Business-related capabilities</i>					.61
Experience in other key business areas	.34	.13	.02	<b>.62</b>	
Line management experience	.30	.04	-.03	<b>.55</b>	
HR-career-oriented	-.02	.01	.15	<b>-.49</b>	
Eigenvalue	6.60	2.78	2.02	1.93	
Proportion of variance accounted for	16.10	6.80	4.90	4.70	

<sup>a</sup>N = 293. Bold type indicates an item was included in the index.

<sup>b</sup>This item was not included in any index, despite meeting our .40 criteria for inclusion. We excluded this item because its content was not logically appropriate for inclusion in the business-related capabilities index.

department. Items assess both capabilities important to managers in any function and capabilities that specifically insure that technical HR knowledge is both present and used within a firm. Business-related capabilities (factor 4, Cronbach's  $\alpha = .61$  for 3 items) describe the amount of business experience HRM staff members have had outside the functional specialty. These capabilities should facilitate the selection and implementation of HRM policies and practices that fit the unique characteristics of a firm, including its size, strategy, structure, and culture (Jackson & Schuler, 1995). The negative loading for the item "HR-career-oriented" confirms that a business orientation is viewed as being quite distinct from that typical of HR managers.

**Firm performance.** The three indicators of firm performance used in this study were based on data taken from annual financial statements obtained primarily from the database Compact Disclosure. We retrieved data missing from this source from *Moody's Industrial Manual* or *Standard & Poor's Corporation Records*. Information concerning share prices was obtained from the *Investment Statistics Laboratory Daily Stock Price Record* and the *Standard & Poor's Stock Price Guide*. All performance data were matched to the same accounting period. Performance measures for the period July 1, 1991, through June 30, 1992, are labeled "1991" and are contemporaneous with the collection of survey data, and data reflecting the period July 1, 1992, through June 30, 1993, are labeled "1992" and are prospective vis-à-vis the survey.

Our definition of *employee productivity* as the logarithm of net sales per employee was consistent with prior empirical work (Huselid, 1995). This measure tends to reflect employee efforts that are somewhat insulated from variations in the capital and product markets. Net sales per employee is an incomplete measure of firm performance, however, as it does not reflect overall firm profitability. Therefore, drawing from the literatures in accounting and financial economics (Hall, Cummins, Laderman, & Mundy, 1988; Hirsch, 1991; Hirschey & Wichern, 1984), we selected two standard measures to capture profitability: *gross rate of return on assets* (GRATE) and Tobin's *q*. GRATE is an accounting-based profitability indicator, whereas Tobin's *q* is a market-based one. Accounting-based profitability indicators are subject to numerous biases not present in market-based measures, which are generally considered to be more accurate reflections of a firm's financial health. However, accounting measures of firm profits provide information not contained in market-based measures (Hirschey & Wichern, 1984). We calculated the gross rate of return on assets (GRATE), which reflects short-term (annual) profitability, by dividing cash flow by gross capital stock (Hall et al., 1988; Hirsch, 1991). GRATE is superior to more traditional measures of accounting profits (return on assets or equity) in that it is less sensitive to depreciation and other noncash transactions (Hall et al., 1988). We calculated Tobin's *q*, which is a future-oriented and risk-adjusted capital-market measure of performance that reflects both current and anticipated profitability, by dividing the market's valuation of a firm's assets by their current replacement cost (Hall et al., 1988; Hirsch, 1991). Conceptually, *q* is a mea-

sure of the value added by management, as it reflects the premium the capital market will pay for a given portfolio of assets.<sup>3</sup>

### Control Measures

Recent reviews of the literature (cf. Huselid, 1995; Jackson & Schuler, 1995) suggest that a variety of conditions in the external and internal organizational environments influence both HRM activities and firm performance; these conditions represent sources of potential extraneous variance. To reduce the possibility of spurious results caused by correlations among these variables and our constructs of interest, we included the following control measures in our statistical analyses (all control measures reflect 1991 conditions): union coverage, firm size, capital intensity, industry concentration, sales growth, R&D expenditures, stock price variability (beta), and firm industry. Union coverage (the percentage of a firm's employees belonging to a union) was reported by respondents. All other control measures were created from publicly available information, as follows: As an indicator of firm size, we used the logarithm of total employment. Capital intensity was calculated as the logarithm of the value of property, plant, and equipment divided by total employment. We calculated industry concentration by dividing sales from the relevant industry's largest four firms by the total sales for that industry. Sales growth and R&D expenditures (which were normalized by sales) were calculated directly from the accounting data. We calculated beta, the systematic component in the variability of a firm's stock price, for a period of 250 trading days (one year) using the Center for Research on Stock Prices (CRSP) database. To control for industry, we created nine dummy codes (not listed in the tables) Finally, some analyses included 1991 firm performance as a control measure (see below).

## ANALYSES AND RESULTS

### Descriptive Statistics

Table 2 shows means, standard deviations, and zero-order correlations. The zero-order correlations among the four human resource management measures were positive and statistically significant ( $p < .05$ ), yet sufficiently low to indicate that different constructs were assessed. Similarly, correlations among the measures of firm performance were positive and generally significant, yet sufficiently low to indicate that consideration of each dependent variable was warranted.

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<sup>3</sup>Our calculations for both  $q$  and GRATE were taken from Hall and colleagues (1988) and Hirsch (1991), who outlined corrections to accounting data to serve as proxies for replacement costs. Because there were missing data, we were unable to complete all of the adjustments to firm capital structure those authors recommended. However, we were able to estimate the sensitivity of the results to each of the missing variables by substituting values for these variables across all reasonable ranges into our calculations for  $q$ . The analyses indicated that the missing variables did not materially affect our estimates of  $q$ .

The firms in this study represented manufacturing (36%), financial services (14%), utilities (8%), and miscellaneous service industries (42%). The average total employment was 28,650 (the logarithm of this variable was used in all subsequent analyses), and firm-level unionization averaged 20.55 percent. These values are larger than those generally reported as the average for U.S. firms because large firms were overrepresented in this study.

### Hypothesis 1

As predicted, respondents described their firms' technical HRM activities as more effective than their firms' strategic HRM activities ( $\bar{x} = 3.36$  vs. 2.79; paired-  $t_{292} = 16.55$ ,  $p < .01$ ). These findings are consistent with the argument that large firms in the United States are more proficient in their technical HRM capabilities than in their strategic HRM capabilities. Thus, as time goes on, a ceiling effect may begin to constrain the ability of U.S. firms to gain competitive advantage through continued improvements in technical HRM activities.

### Hypothesis 2

Hypothesis 2 predicts that technical and strategic HRM effectiveness will be positively associated with firm performance. Table 3 shows the results of the regression analyses used to test this hypothesis. For each of the three performance outcomes, two equations are shown. In the first equation for each prospective (1992) performance outcome (models 1, 3, and 5), we included all control variables except contemporaneous (1991) firm performance when estimating the effects of the two facets of HRM effectiveness. The second equation shown for each outcome measure includes controls for contemporaneous firm performance (models 2, 4, and 6). For models 1, 3, and 5, a clear pattern of results emerged: strategic HRM effectiveness was significantly associated with firm performance, but technical HRM effectiveness was not associated with firm performance.

The assumption implicit in models 1, 3, and 5 is that the observed HRM effectiveness-firm performance results portray an equilibrium relationship, so that most of the impact of current levels of effectiveness will be reflected in a current or prospective year's financial performance. However, it is also possible that some portion of current levels of HRM effectiveness are the result of recent actions not yet reflected in firm performance. We don't know how much of each firm's HRM effectiveness is the result of such recent actions, but it is reasonable to expect higher levels of HRM effectiveness in a given year to be positively related to an *increase* in performance the following year. An estimate of the magnitude of such an implementation-to-benefit lag can be calculated by adding contemporaneous (1991) measures of firm performance to models 1, 3, and 5, which produces models 2, 4, and 6. With one exception (model 6), the coefficients for strategic HRM effectiveness were all positive and significant ( $p < .05$ ) or marginally significant ( $p < .10$ ). Conversely, with one exception (again, model 6), the coefficients for technical HRM effectiveness were nonsignificant ( $p > .10$ ). Given the

**TABLE 2**  
**Means, Standard Deviations, and Correlations for All Variables<sup>a</sup>**

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
HRM effectiveness																			
1. Strategic HRM	2.79	0.56																	
2. Technical HRM	3.36	0.48	.35																
HRM capabilities																			
3. Professional HRM capabilities	2.98	0.65	.41	.25															
4. Business-related capabilities	2.09	0.71	.23	.08	.30														
Dependent and control variables																			
5. Employee productivity, 1991	12.17	0.84	.03	.07	.02	.00													
6. Employee productivity, 1992	12.12	0.66	.08	.02	-.04	.01	.75												
7. Gross rate of return, 1991	0.07	0.14	.08	.13	.00	.09	.15	.14											
8. Gross rate of return, 1992	0.09	0.14	.13	.09	-.01	.09	.10	.10	.70										
9. Tobin's q, 1991	0.51	1.07	.16	-.05	.10	.06	.05	.10	.40	.47									
10. Tobin's q, 1992	0.61	1.10	.10	-.01	.12	.09	.07	.11	.33	.48	.79								
11. Total employment	28,650.51	62,188.05	.06	.01	-.02	-.07	-.08	-.10	.02	.11	-.04	-.10							
12. Capital intensity	4.35	1.27	.02	.10	-.07	-.01	.38	.42	.01	-.12	-.36	-.36	-.01						
13. Union coverage	20.55	24.25	-.03	.05	-.15	.13	.00	.01	-.08	-.14	-.35	-.35	.15	.29					
14. Concentration ratio	0.38	0.10	-.02	-.02	.05	.02	.00	.04	-.06	-.08	-.05	.00	.07	.12	.07				
15. Sales growth	0.66	0.66	.06	.03	-.02	.10	.08	.09	.05	.05	.09	.10	.02	.07	-.01	.01			
16. R&D intensity	0.02	0.04	-.03	-.12	.01	-.12	-.06	-.05	.01	-.07	.12	.08	-.10	.02	-.23	-.04	.09		
17. Systematic risk	1.08	0.18	-.12	-.10	.01	-.12	-.03	-.04	-.05	-.03	-.02	.01	-.13	-.17	-.16	.06	-.05	-.14	

<sup>a</sup>All correlations greater than or equal to .10 are significant at the .05 level;  $r \geq .13$  are significant at the .01 level; and  $r \geq .16$  significant at the .001 level; all two-tailed tests.

<sup>b</sup>The raw mean of total employment is reported here to ease interpretation. The logarithm of this variable is used in all subsequent analyses.

**TABLE 3**  
**Results of Regression Analyses for Firm Performance<sup>a</sup>**

Variables	1992 Productivity Model 1	1992 Productivity Model 2	1992 GRATE Model 3	1992 GRATE Model 4	1992 Tobin's q Model 5	1992 Tobin's q Model 6
Constant	11.426*** (0.556)	4.002*** (0.629)	-0.159*** (0.134)	-0.089 (0.097)	1.710*** (0.871)	-0.314 (0.549)
Control variables						
Total employment	-0.008 (0.021)	0.051*** (0.016)	0.006 (0.005)	0.008** (0.004)	-0.039 (0.034)	-0.021 (0.021)
Capital intensity	0.199*** (0.033)	-0.093*** (0.031)	-0.011† (0.008)	-0.008† (0.006)	-0.208*** (0.053)	-0.001 (0.034)
Union coverage	-0.001 (0.002)	0.000 (0.001)	-0.001* (0.000)	-0.001† (0.000)	-0.009*** (0.003)	-0.003* (0.002)
Concentration ratio	0.203 (0.334)	0.450 (0.245)	-0.049 (0.081)	-0.014 (0.058)	0.823† (0.528)	0.251 (0.325)
Sales growth	0.045 (0.051)	0.008 (0.037)	0.003 (0.012)	-0.001 (0.009)	0.135* (0.080)	0.061 (0.049)
R&D/sales	-0.067 (0.963)	0.857 (0.707)	-0.083 (0.233)	-0.147 (0.168)	1.613 (1.520)	-0.627 (0.941)
Beta	0.169 (0.194)	-0.023 (0.142)	0.003 (0.047)	0.024 (0.034)	-0.411† (0.306)	0.146 (0.190)
Contemporaneous firm performance		0.657*** (0.042)		0.666*** (0.042)		0.835*** (0.039)
HRM effectiveness						
Strategic HRM	0.104* (0.062)	0.059† (0.046)	0.022† (0.015)	0.018* (0.011)	0.183* (0.094)	-0.066 (0.062)
Technical HRM	-0.093 (0.076)	-0.057 (0.055)	0.006 (0.018)	-0.013 (0.013)	-0.004 (0.108)	0.103† (0.074)
R <sup>2</sup>	0.328	0.642	0.166	0.566	0.290	0.733
Adjusted R <sup>2</sup>	0.286	0.618	0.115	0.537	0.246	0.715
F	7.888***	27.244***	3.230***	19.844***	6.598***	41.722***
N	293	293	293	293	293	293

<sup>a</sup>N= 293. Standard errors are in parentheses. All models include nine dummy variables reflecting ten 1-digit Standard Industrial Classification controls (not shown).

<sup>b</sup>Value is a logarithm.

† p < .10, one-tailed test

\* p < .05, one-tailed test

\*\* p < .01, one-tailed test

\*\*\* p < .001, one-tailed test

extreme degree of multicollinearity created by the inclusion of 1991 firm performance as a control, the results of these highly restrictive specifications can be interpreted as providing additional confirmatory evidence of the impact of HRM effectiveness on firm performance.

In analyses not shown, we used Hausman's (1978) test to evaluate the impact of simultaneity and selectivity biases. In essence, the Hausman test is a two-stage procedure that begins by generating predicted values (instrumental variables) for both dimensions of the HRM effectiveness scales, which are then included in an ordinary-least-squares (OLS) regression equation for each dependent variable. A significant coefficient on the predicted value for either or both facets of HRM effectiveness would indicate that they were endogenous in the equation and thus provide evidence of simultaneity bias (Hausman, 1978). We found no such evidence, leading us to focus on the single-equation OLS regression results presented in Table 3.

Selectivity bias and a nonrandom sampling procedure are also potential sources of error. If the firms included in this study differed in systematic ways from those not included, and if the control variables included in the model did not capture those differences, the models could be misspecified. To correct for selectivity bias, we used Heckman's (1979) procedure. It begins by regressing a "probit response" model on the variables included in the system. The procedure then generates an inverse Mills's ratio, which is included as a control in subsequent models. The selectivity bias indicators were mostly nonsignificant. More importantly, the magnitude and significance of the result were essentially the same as those reported in Table 3. In fact, the corrections generally strengthen the result, and in no case was the net effect of human resource management effectiveness found to be negative. Thus, we concluded that our results supported Hypothesis 2.

### **Hypotheses 3 and 4**

As Hypothesis 3 predicts, respondents described the professional HRM capabilities of their firms' HRM staff members as greater than their business-related capabilities ( $\bar{x} = 2.98$  vs. 2.09; paired- $t_{292} = 18.84$ ,  $p < .01$ ). Thus, Hypothesis 3 was supported.

To evaluate Hypothesis 4, we regressed technical and strategic HRM effectiveness on each facet of HRM capabilities, including the relevant control variables in the equations, as is shown in Table 4. Consistent with our expectations, professional HRM capabilities were positively and significantly associated with technical HRM effectiveness (see model 7), and both technical capabilities ( $p < .05$ ) and business-related capabilities ( $p < .10$ ) were associated with strategic HRM effectiveness (see model 8).

### **Practical Consequences of HRM Effectiveness**

As did Cohen (1994) and Schmidt (1996), we suggest that in an applied domain such as human resource management, it is useful for scholars to move beyond conventional tests of statistical significance and express their results in terms of practical significance. Thus, we evaluated the practical

**TABLE 4**  
**Results of Regression Analyses for Human Resource**  
**Management Effectiveness<sup>a</sup>**

Variables	Technical HRM Model 7	Strategic HRM Model 8
Constant	2.565*** (0.395)	1.465*** (0.444)
<i>Control variables</i>		
Total employment	-0.005 (0.018)	0.026† (0.021)
Capital intensity	0.033 (0.029)	-0.012 (0.033)
Union coverage	0.001 (0.001)	-0.001 (0.001)
Concentration ratio	-0.117 (0.264)	-0.009 (0.297)
Sales growth	0.020 (0.036)	0.029 (0.047)
R&D/sales	-1.278* (0.780)	-0.414 (0.879)
Beta	-0.198† (0.153)	-0.141 (0.172)
<i>HRM capabilities</i>		
Professional HRM capabilities	0.198*** (0.045)	0.335*** (0.050)
Business-related capabilities	-0.027 (0.042)	0.060† (0.047)
$R^2$	0.122	0.198
Adjusted $R^2$	0.070	0.150
$F$	2.325**	4.133***
$N$	293	293

<sup>a</sup> $N = 293$ . Standard errors are in parentheses. All models include nine dummy variables reflecting ten 1-digit Standard Industrial Classification controls (not shown).

<sup>b</sup>Value is a logarithm.

†  $p < .10$ , one-tailed test

\*  $p < .05$ , one-tailed test

\*\*  $p < .01$ , one-tailed test

\*\*\*  $p < .001$ , one-tailed test

impact of HRM effectiveness by calculating the consequence of a one-standard-deviation increase in HRM effectiveness on the numerator of each dependent variable. For productivity, our estimates were scaled in dollars per employee per year. For the gross rate of return on assets (GRATE), our estimates reflect the consequences for cash flow per employee per year. For Tobin's  $q$ , the unit of interest is the change in market value per employee. For all of these practical estimates, the figures presented are adjusted to reflect the mean performance of firms in the sample, so these estimates indicate the value of the average percentage increase in performance per employee per year. Finally, we note that the estimates derived from GRATE and Tobin's  $q$  have the attractive feature of being net of any additional costs

that such an increase in HRM effectiveness might generate. For the gross rate of return on assets, this is so because investments in HRM systems are generally expensed annually, and Tobin's  $q$  reflects the present value of a firm's future cash flows, which by construction are also net of relevant expenses.

On a per employee, present value basis, a one-standard-deviation increase in overall HRM effectiveness corresponds to an estimated increase in sales per employee of 5.2 percent, valued at \$44,380 (95% confidence interval [C.I.]: -\$8,242 to \$100,787). The impact of a one-standard-deviation increase in HRM effectiveness on profits yielded an estimated increase in cash flow of 16.3 percent, valued at \$9,673 per employee (95% C.I.: -\$3,517 to \$22,863). To calculate this estimate, we presumed an 8 percent discount rate over a five-year period. Finally, a one-standard-deviation increase in HRM effectiveness yielded an estimated increase in market value of 6 percent, valued at \$8,882 per employee (95% C.I.: \$3,726 to \$14,611), which again is very similar to the estimated present value of the cash flows. Taken as a whole, these estimates illustrate the impact of effective human resource management on three widely followed measures of firm performance. Moreover, the consistency in the magnitude of these estimates is notable, given the modest correlations among the three performance measures.

## DISCUSSION

For a sample of U.S. firms drawn from a wide range of industries, our evidence suggests that, in 1991, the levels of technical human resource management effectiveness they had achieved were higher than their levels of strategic HRM effectiveness. The average level of perceived technical HRM effectiveness was approximately one standard deviation higher than the average level of perceived strategic HRM effectiveness. Furthermore, perceived strategic and technical HRM effectiveness were only modestly correlated ( $r = .35$ ). These results suggest the extent to which technical HRM activities have become institutionalized. Institutionalized activities, we argued, are inadequate as a means of differentiating from competitors and thus are not powerful tools for gaining competitive advantage. Today and in the near future, therefore, the potential gains to be made by large U.S. firms through increased HRM effectiveness may be greater to the extent firms focus on making improvements within the domain of strategic HRM activities.

This conclusion may not generalize, however, to smaller U.S. firms and to firms competing in environments characterized by lower levels of institutionalization for technical HRM activities, such as large firms in other countries and global firms whose human resource practices have been shaped by the institutional environment of another country. If in these contexts technical HRM effectiveness is low among competitors, improvements in this domain may be a means to gain competitive advantage. Furthermore, if firms in such contexts have not yet achieved at least moderate levels of

technical HRM effectiveness, they may not have the foundation needed to successfully implement strategic HRM activities.

The significant relationships between strategic HRM effectiveness and employee productivity, cash flow, and market value we found are consistent with institutional theory and the resource-based view of the firm. We found no meaningful relationships between technical HRM effectiveness and firm performance, however. These findings, which were consistent across capital-market and accounting-based measures of firm performance, were sufficiently robust to be revealed after we made several corrections for simultaneity and selectivity biases. That the greatest potential gains are through improved effectiveness in the domain in which firms in general are currently least proficient represents a significant opportunity for continuing gains in worker productivity and firm performance.

One important threat to the validity of our results requires further elaboration. Our statistical models rely on the assumption that HRM effectiveness affects firm performance, yet other causal models are also possible. The one-year lag between predictor and outcome measures does not exclude the possibility of a simultaneous relationship between HRM effectiveness and firm performance. Thus, one alternative explanation for the positive relationships found between strategic human resource management effectiveness and firm performance are retrospective attributions that bias respondents' perceptions of such effectiveness. Knowing she works in a firm that is performing well, for example, a manager may conclude that the firm's strategic HRM effectiveness is high. For several reasons, we believe this is an unlikely explanation for the results shown in Table 3. First, if retrospective attributions were at work, it is not obvious that they would bias perceptions of strategic HRM effectiveness in favor of our hypothesis but not have a similar effect on perceptions of technical HRM effectiveness. Second, the pattern of results was fairly consistent for the three different measures of firm performance, although the correlations among these variables were only moderate. Third, our results were similar for current and prospective years' financial performance. Fourth, the results of Hausman tests did not indicate the presence of significant simultaneity.

For practicing managers, evidence supporting the assertion that strategic human resource management effectiveness enhances firm performance may help bolster arguments intended to procure the resources needed to implement strategic HRM systems. Alone, however, such evidence offers little guidance about the resources that are most useful. Concerning the human resources needed to implement strategic HRM systems, our results suggest that professional HRM capabilities and, to a lesser extent, business-related capabilities increase the effectiveness of strategic HRM activities. Two important implications follow. First, professional skills and abilities of human resources staff members appear to support the implementation of strategic HRM activities and should be retained even by firms undergoing a paradigm shift in their approach to human resource management. Second, business-related capabilities appear to be important contributors to strategic

HRM activities, and their development among HRM professionals should be encouraged.

Combined with evidence from recent studies linking HRM activities and firm performance (Arthur, 1994; Cutcher-Gershenfeld, 1991; Huselid, 1995; Huselid & Becker, 1996; MacDuffie, 1995), our results support the decade-old argument that investments in human resources are a potential source of competitive advantage. Nevertheless, scholars have very little understanding of the processes required to realize this potential, or the specific conditions under which the potential is realized. These issues are important for future work to address.

In addition, the modest levels of internal consistency reliability in our measures also represents a challenge for future work on this topic. A potential solution to the data collection challenges described herein is to collect longitudinal or panel data on both firm HRM practices and corporate financial performance and to have multiple raters, perhaps each favoring a different constituency, rate the performance of the human resource function along multiple dimensions (Tsui, 1987). But as has been described elsewhere (Huselid & Becker, 1996), such data are not a panacea, as use of longitudinal data compounds the problems associated with measurement error. Such an approach would, however, allow scholars to develop econometric and psychometric corrections for the biases described here, and also to develop plausible estimates of the impact of HRM systems.

Researchers should also consider the potentially divergent preferences of multiple constituencies in future studies of HRM effectiveness. Human resource management effectiveness is a very broad construct that, conceptually, should reflect diverse needs and desires. Managerial estimates of HRM effectiveness are likely to reflect averaged views of primary stakeholders. To the degree there are diverging interests among the key constituencies of a human resource department, our estimates understate the impact of HRM effectiveness on firm financial performance (the focus of the current study), or any other objective measure of performance that is specific to the interests of a single constituency, such as shareholders.

Another important extension of this work would be to consider potential costs and benefits of technical and strategic HRM to constituencies other than shareholders. For example, the success of firms that employ effective HRM activities should enable them to pay employees higher wages, provide more training and promotion opportunities, and lay off fewer people during economic downturns (Weitzman & Kruse, 1990). Assuming firms act in these ways, effective HRM yields benefits for both individual employees and the broader economic and social system. Conversely, if firms choose not to take advantage of the opportunities for such mutual gains, exploited employees may ultimately pay for the financial successes attained through strategic human resource management (cf. Kochan & Osterman, 1994). The challenge for future work is to develop both grounded theory and practical guidance for practitioners, who can then develop HRM systems that capture the potential gains for all concerned.

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