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DRAFT - The Impact of Human Resource Practices on Business-Unit Operating and Financial Performance

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This paper has not undergone formal review or approval of the faculty of the ILR School. It is intended to make results of Center research available to others interested in preliminary form to encourage discussion and suggestions.

Abstract

This study examined the impact of HR practices and organizational commitment on business-unit operating performance and profitability. Using a predictive design with a sample of 50 autonomous business-units within the same corporation, the study revealed that both organizational commitment and HR practices were significantly related to operational measures of performance as well as operating expenses and pre-tax profits.



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The Impact of Human Resource Practices on Business-Unit Operating and Financial Performance

Firms have increasingly recognized the potential for their people to comprise a source of competitive advantage (Pfeffer, 1994). Creating competitive advantage through people requires careful attention to the practices, which best leverage these assets. This change in the mindset of executive decision makers has spurred an increasing body of academic research attempting to reveal a relationship between a firm's human resource (HR) practices and its performance.

Much of this research has demonstrated statistically significant relationships between measures of HR practices and firm profitability (Delery & Doty, 1996; Guthrie, 2001; Huselid, 1995). While these studies have been quite useful for demonstrating the potential value created through HR practices, they have revealed very little regarding the processes through which this value is created (Wright & Gardner, in press). Some authors have referred to this as the "black box" problem, noting that the conceptual development of the mediating mechanisms through which HR impacts profitability has thus far eluded empirical testing.

In addition, the vast majority of studies examining the relationship between HR practices and firm performance have been entirely cross-sectional in their design. Again, while providing useful information, such designs are somewhat problematic. In essence, cross-sectional designs preclude making any causal inferences regarding the direction of the relationship. Thus, while we may believe that the HR practices are driving firm performance, we cannot rule out that the reverse is actually the case.

Thus, the purpose of this study is to examine the relationship between HR practices and firm performance in a way that improves the causal inferences that can be drawn. This study goes beyond previous work in three ways. First, it examines the phenomenon at the business-unit level, thus minimizing the amount of potential noise introduced when studying more heterogeneous HR systems across various businesses within corporations. Second, it uses more proximal measures of business-unit performance rather than only the distal profitability or

stock price measures. Finally, it uses a predictive research design enabling more confident causal inferences.

Research on the HR – Firm Performance Relationship

The body of research examining the relationship between HR practices and firm performance has grown exponentially over the past few years. The seminal work in this area was produced by Huselid (1995) who examined the relationship between HR practices and corporate turnover, profitability, and market value. Huselid (1995) surveyed Senior HR executives in a sample of 968 publicly traded corporations in the United States regarding the percentage of employees who were covered by a set of HR practices he considered representative of a High Performance Work System (HPWS). After controlling for a number of variables, he found that his HR index was significantly related to the gross rate of return on assets (a measure of profitability) and Tobin's Q (the ratio of the market value of a firm to its book value). This study provided the foundation for much of the research that followed.

Delery and Doty (1996) examined the relationship between HR practices and profitability in a sample of banks in the U.S. In testing universalistic, contingency, and configurational approaches to HR, they found that in general, HR practices were positively related to profitability. Guthrie (2001) examined the impact of HR practices on turnover and firm productivity among a sample of firms in New Zealand. He found both that HR practices impacted turnover, and that the relationship between retention and productivity was positive when firms implemented high involvement HR practices, but negative when they did not.

Two major studies at the plant level have been conducted examining the relationship between HR practices and firm performance. MacDuffie (1995) found that the HR practice “bundles” he measured were related to quality and productivity on auto assembly lines. Youndt, Snell, Dean and Lepak (1996) found that human capital enhancing HR practices were related to operational performance among a sample of manufacturing plants.

While much of the research on the relationship between HR practices and performance has somewhat consistently revealed a significant relationship, some recent debates have

emerged regarding the value of different approaches to studying this phenomenon. Debates have arisen regarding the proper sources for gaining the most valid reports of HR practice measures, the proper level of analysis and proximity of the performance measures to HR practices, and the timing of measurement.

Sources of HR Practice Measures. Regarding the use of single respondent designs, Gerhart, Wright, McMahan and Snell (2000) provided evidence calling into suspicion the reliability of measures of HR practices stemming from single respondents. They found single rater reliabilities to be frighteningly low. These results were largely replicated by Wright, Gardner, Moynihan, Park, Delery and Gerhart (2001). Huselid and Becker (2000), in response to the original Gerhart et al. (2000) paper, suggested that in many cases single respondents (i.e., the Senior HR executive) were the best placed (and perhaps the only ones qualified) to provide HR practice information across a number of jobs.

This led to the debate regarding the most valid source of HR practice information. As noted above, Huselid and Becker (2000) defended their use of Senior HR executives as the most valid source of HR practice data. However, they also argued that the construct to be measured should be the HR practices (those actually implemented in the firm) rather than the HR policies (what is supposed to be done, but not necessarily is done). This led Gerhart, Wright and McMahan (2000) to suggest that if one seeks to assess the actual practices, then going directly to the employees as the source of HR practice data would be a more logical approach.

Outcomes and Level of Analysis Issues. Dyer and Reeves (1995) reviewed much of the existing research on the relationship between HR practices and performance, and proposed that measures of performance could be broken down into four categories. First, employee outcomes deal with the consequences of the practices on employees such as their attitudes and behavior, particularly behaviors such as absenteeism and turnover. Organizational outcomes focus on more operational measures of performance such as productivity, quality, and shrinkage, many or all of which would be precursors to profitability. Financial/accounting

outcomes refer to the actual financial performance measures such as expenses, revenues, and profitability. Finally, they suggested market-based outcomes were those outcomes reflecting how the financial markets valued a firm, particularly stock price or variations of it.

Rogers and Wright (1998) reviewed the empirical research on the HR – Performance relationship, and noted two particularly relevant trends. First, although strategic HRM largely focuses on the link between HR and business strategy, the largest bulk of research had been conducted at the corporate level of analysis. A lesser amount of research has used the establishment level. Almost entirely ignored was research on the link between HR and performance at the business-unit level of analysis.

Second, with regard to the types of performance outcomes, they found that very few studies had examined human resource outcomes (3 effect sizes examined turnover), many had used accounting and financial market measures, and the largest number of effect sizes was observed for organizational outcomes (productivity, quality, service, etc.) However, interestingly, while 34 effect sizes used these organizational outcomes, sixty-eight percent of them (25) were gathered from surveys with only a small number coming from company records (7) or public data-bases (2).

One is hard pressed to separate the choice of outcomes from the choice of level of analysis. For instance, Becker & Huselid (1998) argue that the corporate level of analysis is valid because this enables examining shareholder wealth (a financial market outcome), which is the corporation's *raison d'etre*. However, Huselid and Becker (2000) recognized potential methodological issues at this level as they suggested that one reason for the low reliabilities in the Gerhart et al. (2000a) study was the inclusion of large diversified corporations. They noted that the original Huselid study had an average company size of approximately 4,000 employees.

On the other hand, Wright et al. (2001) questioned the usefulness and validity of research at the corporate level of analysis. They noted that given the potential for huge variations in HR practices across business-units and sites, the potential for gaining accurate and valid measures of HR practices was quite low. In addition, Rogers and Wright (1998) suggested

that conceptually, studying the link between HR and business strategy suggests focusing at the business-unit level of analysis.

Regardless of the level of analysis, numerous authors have suggested the need to better understand the processes through which HR practices might impact performance (Becker & Huselid, 1998; Dyer & Reeves, 1995; Hutchison, Kinney, & Purcell, 2002; Wright & Gardner, in press). While a number of models have been proposed (e.g., Becker & Huselid, 1998; Dyer & Reeves, 1995; Truss & Gratton, 1994), very little empirical research has examined multiple potential linkages (Wright & Gardner, in press). Dyer and Reeves (1995) categorization of outcomes suggests that (a) some outcomes, such as HR outcomes, are more proximal to HR practices than others, and (b) HR practices' impact on more distal outcomes are through the impact on more proximal outcomes. Given the paucity of research on HR outcomes alone, and the lack of research examining multiple outcomes in a causal chain, the existing research base presents little empirical data to shed light on the causal process through which HR practices impact performance.

Timing of Measurement. While not obvious to most, the timing of measurement in much of the research on the impact of HR practices on performance has precluded drawing firm causal conclusions of this relationship. Very few studies have used simple cross-sectional designs, which would call into question the causal inference. However, many of the studies accepted as being somewhat predictive are not true predictive designs. For instance, Ichniowski, Shaw and Prennushi (1997) used monthly performance data from steel finishing lines over a three-year period. However, they measured HR practices by asking respondents after the three-year production period to recall what the HR systems were in place at different points during the time frame. Similarly, Guthrie used performance data from 1996/7 but asked respondents during that time to report the practices that existed during 1995/6.

Others, while not using purely cross-sectional designs, gathered contemporaneous data. For instance, Delery and Doty (1996) gathered HR practice data during 1992, and used the year-end performance data. Because the year-end data includes performance from months

prior to and concurrent with the HR practice measure, it is difficult to draw firm causal conclusions. Huselid (1995) gathered both contemporaneous and subsequent year data, and reported only the subsequent year data in his study in order to provide more conservative estimates.

Again, some of the seminal studies in the HR – performance literature fail to provide predictive designs that allow drawing more confident causal inferences. This study seeks to provide more definitive causal inferences by (a) using business-units as the level of analysis; (b) using multiple employees as the sources of HR practice measures; (c) assessing HR, organization, and financial outcomes; and (d) using a predictive design where the operational and financial performance measures temporally follow the gathering of the HR and employee attitude data.

Hypotheses

To date, Becker and Huselid (1998) offer the most logical and definitive model of the processes through which HR practices impact firm performance. They suggest that HR practices directly impact employee skills, motivation, and job design and work structures. These variables elicit certain levels of creativity, productivity, and discretionary effort, which subsequently translates into improved operating performance. Operating performance impacts profitability and growth, and these variables directly impact the firm's market valuation.

The model we suggest in this study diverges slightly from the basic Becker and Huselid (1995) model, not so much in logic as in the actual variables measured. We base our hypotheses in job performance theory (Campbell, 1990). Campbell (1990) argues that performance is behavior; things that people do and actions that they take have an impact on the organization's goals. The impact on the organization's goals can be positive or negative, and the behavior can be either prescribed as part of the job or go outside of the prescribed job duties.

Researchers examining various task elements and role behaviors in both micro and macro OB literature seem to agree on three categories of job behavior relevant to organizational

performance. First, in-role behaviors refer to the behaviors expected of employees, largely based on job requirements and commonly accepted norms. This has also been referred to as “core task proficiency” (Campbell, 1990). In essence, these behaviors entail doing what one was hired to do.

Extra-role behaviors consist of behaviors that go outside those required within the job but which have a positive impact on organizational performance. For instance, helping others, redesigning processes to be more efficient, or deviating from standard operating procedure when necessary to serve a good customer might exemplify extra-role behavior. These have sometimes been referred to as citizenship behavior (Organ, 1988), prosocial behavior (Brief & Motowidlo, 1986), organizational spontaneity (George and Brief, 1992) and discretionary behavior (MacDuffie, 1995). In essence then, extra role behavior consists of going beyond the call of duty for the good of the organization.

Finally counterproductive behavior (or dysfunctional behavior) usually consists of behavior, in-role or extra-role, that is specifically aimed at harming the organization (Sackett & Devore, 2000). For example, theft (either of time or materials), sabotage, or strikes are specifically aimed at harming the organization’s performance. In essence counterproductive behavior consists of doing things either specifically or implicitly forbidden because of their negative impact on organizational goals.

The attitudes of core workers can have considerable influence on these three categories of work behavior in organizations. Because attitudes include behavioral as well as affective and cognitive components (Fishbein & Ajzen, 1972), they are important antecedents of employee participation and role behaviors in work environments. In fact, a recent meta-analysis found that a number of business-unit level outcomes were positively associated with employee attitudes (Harter, Schmidt, & Hayes, 2002). The present research examines the effects of organizational commitment and a positive work attitude on a variety of performance outcomes of central importance to organizational effectiveness, which are likely to be influenced by the different categories of job behaviors discussed above.

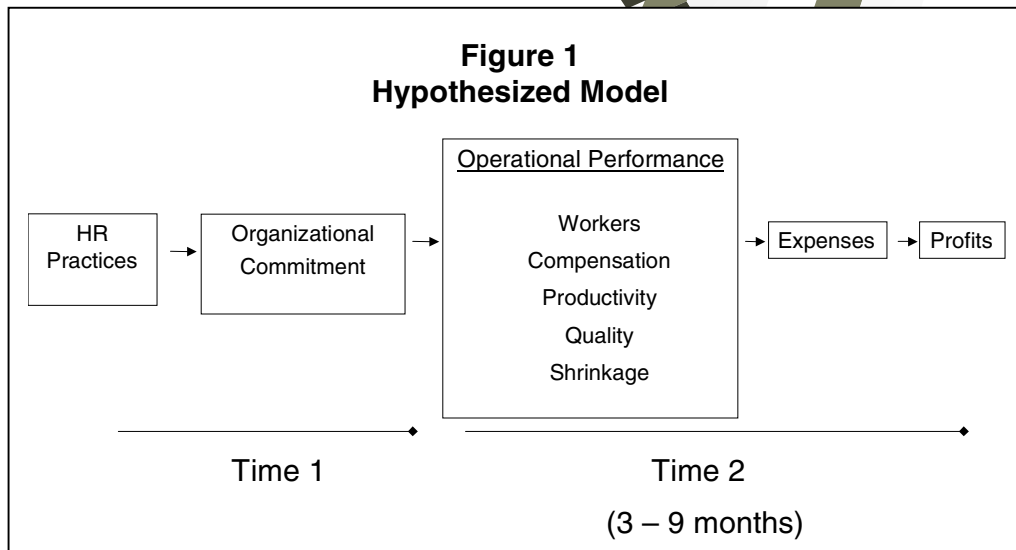
In addition to examining the outcomes of commitment, we posit that HR practices are an important lever driving this type of attitude. Prior research at the individual level of analysis supports the notion that the management practices of an organization influence individual employees' feelings of commitment to an organization (e.g. Konovski & Cropanzo, 1991; Meyer & Allen, 1997). There are a number of ways an organization's human resource practices can foster a collective level of commitment in its workforce. First, we suggest that the initial impact of the HR practices on employees' commitment to the organization begins with selection and staffing. When firms invest in selecting the most highly skilled people, and providing them with increased skills through continuous training and development opportunities, employees find a workplace filled with well-qualified co-workers. This makes for a positive work environment by enabling them to focus on successfully serving their own customers and doing their own job well, and not having to constantly clean up other co-workers' messes. Additionally, by using valid performance management systems and monetary incentives to elicit high performance, employees can see a more direct line of sight between their behavior and their personal outcomes. This creates a positive work environment where individuals feel fairly and equitably rewarded for their efforts. Finally, having open communications and participatory systems enables employees to both understand the organization's competitive position, and to participate in processes to help improve it. This creates a positive work environment where people feel they are respected and listened to. An environment created by the systems discussed above is one in which people are highly unlikely to want to leave. They personally identify with the organization, and want to see it succeed. This describes the construct of organizational commitment (Porter, Steers, Mowday, & Boulin, 1974).

Virtanen (2000) argues that the social nature of commitment includes such issues as consistency of observable behavior and loyalty together with ideology, conviction, and value systems. Thus, commitment influences an employee's view of obligations, utilities, and emotions in any work situation and thus impacts employees' behavior. Consequently, employees who are committed to an organization should be motivated to (a) exhibit higher

quality in-role behaviors, (b) exhibit a greater volume of positive extra-role behaviors, and (c) engage in less counterproductive behavior relative to those who are not committed. These role behaviors likely impact a number of operational performance measures. For instance, committed employees following safety rules (in-role) are less likely to be injured and are unlikely to either exploit minor injuries or make spurious or fictitious injury claims (counterproductive) resulting in fewer workers' compensation claims for the business.

Businesses with committed employees also should experience higher productivity as their employees seek to better execute required behaviors, go beyond the job to devise more efficient ways of working (extra-role), and are not likely to shirk or free-ride (counterproductive). Such businesses should also experience higher quality performance, as employees are more likely to execute job behaviors well (in-role) and less likely to purposefully sabotage order deliveries (counterproductive). Finally, committed employees are far less likely to steal or damage goods (counterproductive) resulting in inventory shrinkage for the business.

Because workers' compensation claims, productivity, quality, and shrinkage all directly impact the costs of an organization, by influencing these variables employee commitment should impact operating expenses. Profitability is largely determined as the difference between revenues and expenses, leading to the conclusion that if commitment impacts operating performance which in turn impacts expenses, then it should subsequently be related to profitability.



Method

Overview.

This study consisted of examining the relationships of both HR practices and organizational commitment with various operational measures of performance using a predictive research design. Employee attitude surveys were conducted and related to subsequent performance measures collected in the three to nine month timeframe after the survey data were collected.

Sample.

The sample consisted of 50 business-units of a large food service company. In each of the business-units, we used the survey responses from three core jobs, M&A (salespersons), delivery drivers, and warehouse employees. These three jobs represent those that have the most direct impact on the customer from sale to delivery. Each company had an average of 38.30 M&A, 34.96 drivers, and 39.44 warehouse employees report both HR practices and organizational commitment for a total of 112.70 employees per company. In order to eliminate the possibility of common method variance (or percept-percept correlations), we used the reports of HR practices from half of the respondents from each organization and the reports of organizational commitment from the other half of the respondents.

This company's management philosophy, emphasizing structural ways to create an entrepreneurial environment, presents a unique opportunity to study the relationship between HR and performance in a controlled field setting. First, the company tries to keep every business between \$350 million and \$700 million in revenues with a corresponding employee count of between 250 and 600 employees. If a company grows beyond the \$700 million mark, it is then divided into two companies. This creates a sample where size (both in terms of revenues and employees) is strongly controlled. Also, the basic products and information technology are largely uniform across all of the business-units. While regional differences may result in different volumes and mixes of products, the products available for sale are uniform. Similarly, while localized changes might be made to the information technology, the basic

systems are largely uniform. Thus, again the sample controls for performance differences due to products and technology.

However, while size, technology and products provide little opportunity for variance, considerable variance exists with regard to HR strategies. Guided by the corporate principle of “earned autonomy,” business-units are largely free to manage their employees however they see fit. Minimal uniformity in HR practices exist with regard to legally mandated benefits, but the majority of HR practices (e.g., specific selection processes and practices, pay systems, performance management systems, training and development strategies and practices) are left to the business-units to design, develop, and implement. Thus, this sample provides a unique opportunity to study the HR – performance relationship where many sources of extraneous variance are controlled through design (thus negating the need for statistical controls), while the major focus of variance is with regard to the phenomenon of interest: HR practices.

Measures.

HR Practices. Employee respondents in each work unit were asked whether or not eight specific HR practices existed for their job category (1=yes, 2=no, 3=I don’t know). “I don’t know” responses were classified as “No.” See Table 1 for the complete listing of the HR practice items used in this study.

One training item was originally written in a different response format than the rest of the HR practice items. This item was “On average, how many hours of formal training do employees in this job receive each year?” This item was re-coded to comply with the yes/no dichotomous response format of the other practice items. If the number of training hours entered is equal to or greater than 15, that response was coded as “1”=yes. Hours below 15 were coded as “0”=no, as such low levels arguably do not represent significant investment in employee training.

One communication practice item asking about the frequency of communication about company goals (1=Never, 6=Daily) was also re-coded to a dichotomous response format (See Table 1). Responses of “quarterly” or more frequently were coded as “1”=yes. Responses of

“annually” and “never” were coded as “0”=no, as these do not represent significant investments in communication.

Consistent with previous research, we used an additive index of these HR practices (e.g. MacDuffie, 1995, Youndt, et al. 1996). Because there was no reason to believe that these practices should be conceptualized as a unidimensional construct (see Delery, 1998), interrater reliability was deemed to be the most appropriate reliability assessment. Intraclass correlations were computed for this scale at the job group level because differences in HR practices exist across these job groups. For each individual, a ratio was calculated of the number of practices they stated were present divided by 8. The business unit index of HR practices was created by taking the mean of this ratio for the half of the employees providing information about this measure (average item ICC(1)=.07, average item ICC(2)=.77; scale ICC(1)=.13, scale ICC(2)=.89).

Table 1
Human Resource Management Practice Questions
Selection and Staffing

1. Applicants undergo structured interviews (job related questions, same questions asked of all applicants, rating scales) before being hired.
2. Qualified employees have the opportunity to be promoted to positions of greater pay and/or responsibility within the company.
3. Applicants for this job take formal tests (paper and pencil or work sample) before being hired.

Training

4. On average how many hours of formal training do employees in this job receive each year?^b

Pay for Performance

5. Employees in this job regularly (at least once a year) receive a formal evaluation of their performance.
6. Pay raises for employees in this job are based on job performance.
7. Employees in this job have the opportunity to earn individual bonuses (or commissions) for productivity, performance, or other individual performance outcomes.

Participation

8. Employees in this job are involved in formal participation processes such as quality improvement groups, problem solving groups, roundtable discussions, or suggestion systems.

^a With the exception of those marked, the response option for these questions was “Yes, No, I don’t know.”

^b Response option was “Hours _____”

^c Response options for these questions were: “Never, Annually, Quarterly, Monthly, Weekly, Daily.”

Organizational Commitment. Five items were used from two different organizational commitment scales (Meyer & Allen, 1997; Porter et al, 1974). Sample items include “I feel a strong sense of belonging to this organization,” “I am willing to work harder than I have to help this company succeed,” and “I am proud to be working for this company.” Items were averaged to create one index per person, then were aggregated to the business level using half the sample of employees providing information about commitment ($\alpha = .86$, $ICC(1) = .07$, $ICC(2) = .78$).

Performance. Six measures of performance were provided from archival company records. Each measure was for a six month period beginning three months after the administration of the attitude survey and ending nine months after its administration. These measures represent the major performance measures tracked by the corporate headquarters as indicators of a business success. “Workers’ Compensation” was the workers’ compensation expenses incurred during the six months divided by sales; the lower the number the better. “Quality” was measured as the number 100,000 pieces per error where each piece represents a carton. “Shrinkage” was measured as the percentage of inventory loss including loss due to spoilage, warehouse outs, inventory adjustments, cycle count adjustments, warehouse damage, delivery shorts, delivery damage, samples shrinkage, and sales return damage. “Productivity” was assessed as payroll expenses for all employees divided by the number of pieces; the lower the number the better. “Operating Expenses” consisted of all relevant business operating expenses including warehouse, occupancy, delivery, selling, data processing, and G&A expenses. Finally “Profitability” was assessed as the operating pre-tax profit of the business-unit as a percentage of sales where operating pre-tax was calculated as $Sales - (Cost\ of\ Goods\ Sold + Operating\ Expenses + Cash\ Discounts)$.

Results

Due to the small sample size, we chose to examine the relationships among the relevant variables using only bivariate correlations. We are less interested in interpreting any specific results than in understanding the overall pattern of results in how HR practices and employee commitment relate to more proximal performance measures. The intercorrelations are provided in Table 2.

Table 2
Correlations of HR Practice, Commitment, Operational, and Financial Performance Measures

	HR Practices	Commitment	Workers' Compensation	Payroll per Piece	Piece per Error	Shrink	Operating Expenses
HR Practices							
Commitment	.55**						
Worker's Comp./Sales	-.27 [†]	-.44**					
Payroll per Piece	-.20	-.44**	.50**				
Pieces per Error	.42**	.27 [†]	-.32*	-.21			
Shrink	-.27 [†]	-.27 [†]	.25 [†]	.33*	-.52**		
Operating Expenses	-.40**	-.50**	.62**	.77**	-.40**	.46**	
Profit	.35*	.32*	-.37**	-.40**	.58**	-.43**	-.66**

P < .01 * P < .05 † p < .10
 Means and Standard Deviations are not reported due to a confidentiality agreement with the company studied.

As can be seen in this table, the first link in the hypothesized causal chain shows a relationship between HR practices and organizational commitment. The observed correlation of $r = .55$ ($p < .01$) demonstrates support for this relationship.

The next hypothesized set of relationships was between these two variables and the four operational performance measures. The closer proximal relationships revealed that organizational commitment was strongly and significantly related to workers compensation ($-.44$; $p < .01$) and productivity ($-.44$; $p < .01$) and was marginally related to quality ($.27$; $p = .06$) and shrinkage ($-.27$; $p = .06$). More distally, HR practices were strongly and significantly related to quality ($.42$; $p < .01$), marginally related to workers compensation ($-.27$; $p = .06$) and shrinkage ($-.27$; $p = .06$), and unrelated to productivity ($.20$; n.s.).

The HR practices and organizational commitment were also strongly and significantly related to operating expenses (-.40 and -.50, respectively; both $p < .01$) and profitability (.35 and .32, respectively; both $p < .05$). Completing the causal chain, the operating performance measures of workers compensation, productivity, quality, and shrinkage were all strongly and significantly related to expenses (.62, .77, -.40, and .46 respectively, all $p < .01$) and profitability (-.37, -.40, .58, and -.43, respectively, all $p < .01$), and expenses were strongly and significantly related to profitability (-.66; $p < .01$).

While not conducting a thorough path analysis, the results seem to indicate that HR practices impact operational performance at least in part through their impact on employee commitment (due to HR's weaker relationships relative to commitments), and commitment's impact on profitability is largely through operational performance (due to its weaker relationships relative to the operational performance measures).

Discussion

The results of this study reveal a detailed causal model of HR's impact on profitability consistent with the model hypothesized by Becker and Huselid (1998). The unique nature of the company studied enabled us to control for a number of sources of extraneous variance that would exist in cross-company, and particularly cross-industry studies to provide a much cleaner test of the impact of HR on financial performance.

The results revealed that HR practices were strongly related to organizational commitment. While the observed relationship's reliance on cross-sectional data precludes making any causal attributions, it is important to note that using separate samples for each of the two measures eliminates common method variance as an explanation. It should also be noted that using employees as the source of the HR practice measures ensures that the measure represents the actual practices rather than the espoused policies of the business (Huselid & Becker, 2000; Wright et al., 2001). Finally, using multiple employees provided a

psychometrically sound measure of these practices, something that has rarely been observed in the past (Gerhart et al., 2000a,b, Wright et al., 2001).

These measures of practices and employee attitudes were strong predictors of operational performance measures used within the company to track business-unit performance. The correlations ranged from .20 to .44 (in absolute values) so that even the non-significant relationships were strong, and their non-significance was likely due to the small sample size. Thus, the study tends to support the hypothesized relationships of both HR practices and employee commitment with business-unit operational performance.

Finally, both HR practices and employee commitment were strongly and significantly related to operating expenses and profitability. While the relationship between HR practices and profitability has been demonstrated before at the corporate level (Delery & Doty, 1996; Guthrie, 2001; Huselid, 1995), and at the establishment level (MacDuffie, 1995) this is the first study to demonstrate this at the level of the business-unit.

Thus, it seems that when employees are managed with progressive HR practices, they become more committed to their organization. At least in part, this commitment leads them to exhibit proper role behaviors (thus lower workers' compensation costs, higher quality, and higher productivity) and not to engage in dysfunctional behaviors (that would result in shrinkage). Again, in part these operational performance outcomes result in lower overall operating expenses and higher profitability.

The relatively large effect sizes observed in this study are due to the nature of the design which points to both the strength and weakness of this study. Kerlinger (1973) notes that the purpose of research design is to maximize the experimental variance, minimize error variance, and control systematic variance. The "earned autonomy" philosophy of the corporate headquarters provided a setting which allowed for considerable true variance in HR practices. The constrained size, technology, and products controlled the systematic variance. In addition, the use of multiple raters for the HR and commitment measures minimized error variance (due

to measurement error) resulting in a design that maximized the possibility of finding support for the hypothesized relationships. With much of the systematic and error variance eliminated through design and methodology, the variance explained by HR practices could constitute a larger percentage of the total variance explained. In essence, this mimics a laboratory study conducted in the field, enabling us to more specifically tease out the nature of the relationships we sought to study. Future research with additional waves of data from this organization will help us understand these mediating relationships.

However, because these factors created the equivalent of almost a laboratory study in a field setting, they also lead to the same criticisms that are leveled at laboratory studies. Most importantly, one could easily criticize the generalizability of the results. Large, cross-industry studies such as Huselid's (1995) are subject to considerably more systematic and error variance, but their results are also significantly more generalizable.

Another weakness of this study is its failure to actually assess the behavioral constructs we use to hypothesize the relationships between HR/commitment and performance. We suggest that employees are less prone to engage in counterproductive behavior and more likely to exhibit both proper in-role and discretionary behavior. However, we were unable to actually measure these behaviors, and can only assume they existed based on the performance outcomes of those behaviors.

In summary, this study used a highly controlled setting and sample, and a predictive design to better tease out the processes through which HR practices might impact firm profitability. Our results seem to indicate support for the hypothesized model. Future research should focus on providing both more detailed and more generalizable findings to add to the knowledge base exploring how firms can leverage people as a source of competitive advantage.

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