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UMI®
THE FINANCIAL AND OPERATIONAL PERFORMANCE IMPLICATIONS OF COMPENSATION PRACTICES: A STUDY OF RELATIVE WAGE PRACTICES AND PAY STRUCTURES

A Dissertation
Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Interdepartmental Program in
Business Administration (Management)

by
Mark P. Brown
B.A. University of the South, 1989
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December 2000
To my parents,
Kenneth and Brenda Brown,
without whose love, patience, and support
none of this would have been possible.
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ABSTRACT

This research examines the organizational performance implications of relative wage strategies and pay structures. Organizations' relative wage strategies and pay structures are key characteristics useful in describing and delimiting various compensation systems, and are therefore particularly relevant for evaluation at the organizational level. The organizational performance implications of organizations' relative wage strategies and pay structures are investigated in terms of both operational and financial indicators of organizational performance. Initially, relevant theory and past research on relative wage strategies and pay structures are discussed. Following this, hypotheses are developed that predict the operational and financial performance implications of pay structures and relative wage rates. Next, the sample and research methodology used to investigate the research hypotheses are presented. Results indicate that relative wage practices and pay structures influence measures of organizational performance. Moreover, results also show that relative wage practice and pay structures interact to influence the operational and financial measures of organizational performance. The research concludes with a discussion of
the results, their limitations, and suggestions for future research.
CHAPTER ONE: THE DISSERTATION TOPIC

Research investigating the strategic implications of human resource management (HRM) practices has found that firms' HRM practices have significant implications for organizational performance (Arthur, 1992; Arthur, 1994; Becker & Gerhart, 1996; Becker & Huselid, 1988; Huselid, 1995; MacDuffie, 1995; Pfeffer, 1994; Terpestra & Rozell, 1993; Wright, McMahan & McWilliams, 1994; Wright & McMahan, 1992). This research includes evidence of HRM's effects on both operational indicators of organizational performance (e.g., scrap rates, product quality, productivity) (Cutcher-Gershenfeld, 1991; Huselid, 1995; MacDuffie, 1995; Youndt, Snell, Dean & Lepak; 1996) and financial measures of performance (e.g., profit, return on assets) (Becker & Huselid, 1998; Cutcher-Gershenfeld, 1991; Delery & Doty, 1996; Huselid, 1995; MacDuffie, 1995; Welbourne & Andrews, 1996). Of particular note, compensation systems have been shown to play a major role in human resource practices' affects on organizational level results (Becker & Huselid, 1998). Becker and Huselid (1996) found that an increase in managers' monetary compensation by one standard deviation is associated with 19% higher market values and 27% higher accounting profits. Research has also found that the use of performance-based contingent compensation practices, such
as bonuses, are associated with organizations' financial performance (e.g. Gerhart & Milkovich, 1990). Similarly, incentive based compensation practices, such as those that focus on service quality, have been shown to relate to operational performance (e.g. Banker, Lee, Potter & Srinivasan, 1996).

A sufficient body of research on compensation practices has thus emerged, illustrating the sizable role that compensation systems play in determining organizational performance (e.g., Becker & Gerhart, 1996); however, the body of research investigating compensation practices' influence on organizational performance is relatively new. Furthermore, considering the importance and complexities of compensation issues, more research on the organizational performance implications of such practices is still needed (Becker & Gerhart, 1996). In particular, research addressing the organizational performance implications of specific compensation practices is pertinent (Becker & Huselid, 1998; Gerhart & Milkovich, 1990; Gerhart & Milkovich, 1992; Gerhart, Trevor & Graham, 1996). This research will address the impact of organizational level compensation practices on organizational performance. Specifically, it will address the question: How do compensation practices affect
operational and financial indicators of organizational performance?

**Compensation Research**

While there has been substantial micro level compensation research investigating compensation practices' relationship with a host of individual level issues including employees' attraction, retention, turnover, absenteeism, participation in union activities, and individual job performance (e.g., Ehrenberg & Smith, 1988; Heneman, 1985; Milkovich & Newman, 1990; Rynes & Barber, 1990) there is only limited research considering compensation practices' impact on organizational level (i.e., macro) variables (Gerhart et al., 1996; Gerhart & Milkovich, 1990; Gerhart & Milkovich, 1992). Notable exceptions include research investigating the impact of several compensation practices' on organizations' staffing levels (e.g., Lineneman, Wachter, & Carter, 1990), return on investments (e.g., Raff & Summers, 1987), and performance (e.g., Banker et al., 1996). However, only limited individual, and little simultaneous attention (i.e., multiple practices investigated at the same time) has been given to the performance implications of key aspects of compensation systems such as their relative wage levels and pay structures (Bloom & Milkovich, 1996; Bloom &
Milkovich, 1998; Gerhart & Milkovich, 1990; Gerhart & Milkovich, 1992; Milkovich & Newman, 1999). This gap in macro compensation research is noteworthy because these compensation practices are critical to developing, implementing, and maintaining a compensation plan. They are thus likely to affect important organizational outcomes, and are inexorably linked to organizations' successes or failures (Gerhart & Milkovich, 1992; Milkovich & Newman, 1999). Furthermore, because relative wage levels and pay structures are readily comparable across organizations, and are useful in describing and delimiting various compensation systems, they are particularly relevant for evaluation at the organizational level (Gerhart & Milkovich, 1992; Milkovich & Newman, 1999). Thus, this research will consider the effects of both pay structures and relative wage levels at the organizational level.

Pay Level, Pay Structures, and Relevant Theory

Relative wage level represents a firm's average compensation level relative to the wages paid by other competing organizations (Gerhart & Milkovich, 1992). Relative wage rates are often expressed as either leading, matching, or lagging the market (Milkovich & Newman, 1999). Pay structures describe the array of pay rates within organizations. Defining characteristics of particular pay
structures include the number of levels in the structure, the size of the pay differentials between each level in the structure, and the rate that employees may progress through each level in the structure (Gerhart & Milkovich, 1992). Pay structures can be described as the degree to which organizations' compensation systems are either egalitarian or hierarchical. Compensation systems are more egalitarian (i.e. less hierarchical) to the extent that their pay structures have fewer levels and compressed pay distributions (Bloom, 1999; Gerhart & Milkovich, 1992). In hierarchical structures, pay distributions have more levels over which pay is more widely dispersed (Bloom, 1999).

While many theoretical perspectives can be employed in investigating the performance implications of relative wage strategies (e.g., compensating differentials theory, efficiency wage theory, signaling theory, reservation wage theory, job competition theory) and pay structures (e.g., expectancy theory, human capital theory, equity theory, tournament theory), efficiency wage theory and equity theory have been most widely applied to gain insights into their strategic implications in organizational settings (Becker, 1975; Bloom & Milkovich, 1996; Gerhart & Milkovich, 1992; Gerhart & Milkovich, 1996; Klaas & McClendon, 1996; Krefting, 1980; Krefting & Mahoney, 1977;
Efficiency wage theory suggests several mechanisms whereby relative wage strategies may influence employee performance, and therefore, organizational performance (Akerlof & Yellen, 1986; Boudreau & Berger, 1985; Klaas & McClendon, 1996). Conversely, equity theory is helpful in explaining why organizational performance may either increase or decrease as pay structures become more or less hierarchical (Bloom, 1999; Cropanzano & Greenberg, 1997; Eriksson, 1999; Lazear & Rosen, 1981; Main et al., 1993; Vroom, 1964). In this research, I will use these approaches to investigate relative wage strategies and pay structures' implications for organizations' performance.

Significance of the Dissertation

Authors of theoretical research agree that both relative wage rates and pay structures are important; however, empirical research has largely been absent on the performance implications of various relative wage strategies and pay structures either singularly or in unison (Bloom, 1999; Klaas & McClendon, 1996). Accordingly, the focus of this research will be on the implications for operational and financial indicators of organizational performance. Operational and financial
indicators are being used because a complete understanding of relative wage strategies and pay structures' effects on organizational performance requires a consideration of their impact in these areas (Boudreau & Berger, 1985; Boudreau, Sturman, Trevor, & Gerhart, 1999; Klaas & McClendon, 1996; Venkatraman & Ramanujam, 1986).

From a research perspective, this study should be useful in understanding the organizational performance effects of organizational level compensation practices. This is consistent with the increased interest in the research literature in understanding the strategic implications of HRM practices (Becker & Gerhart, 1996). Practically, these are important areas for research because organizations ultimately choose pay structures and relative wage rates to influence organizational success (Bloom, 1999). In this respect, increased knowledge of relative wage rates and pay structures is particularly important in an era in which organizational responses to heightened competitive pressures frequently include pay level and pay structure policy changes (Bloom & Milkovich, 1996; Gerhart & Milkovich, 1992; Klaas & McClendon, 1996, Lawler, 1990; Lawler, 1994; Pfeffer & Langton, 1993).
Structure of the Dissertation

This dissertation is organized as follows. Chapter two presents the relevant theory and literature that serve as a basis for the dissertation. It also presents the hypotheses to be investigated in the dissertation. Chapter three presents the dissertation's methods. This includes a discussion of the dissertation's sample, its measures, control variables, and the proposed analytical technique. Results will be presented in chapter four. Chapter five discusses the dissertation's results, its limitations, and directions for future research.
Relative Wage Practices

Effects of Relative Wage Strategies on Operational Indicators of Organizational Performance

Employee efficiency is the primary mechanism through which relative wage practices influence operational measures of organizational performance (e.g., productivity in units per labor hour) (Akerlof & Yellen, 1986; Kim, 1998; Rebitzer & Taylor, 1995). How these effects may manifest themselves can be understood by examining predictions from efficiency wage theory.

According to efficiency wage theory, high relative wages improve employee and organizational efficiency because firms that offer high relative wages can attract and retain highly qualified job candidates (Akerlof & Yellen, 1984; Campbell, 1993; Yellen, 1984; Weiss, 1988). High relative wages also generate large applicant pools which allow organizations to be more selective when hiring (Boudreau, 1992; Boudreau & Rynes, 1985; Raff & Summers, 1987; Williams & Dreher, 1992). Because organizations are more able to hire the most capable employees, those that pay high relative wages experience increases in both employee and organizational efficiency. Therefore, the ability to attract and retain better employees due to high relative wages will positively influence operational
indicators of organizational performance (Becker & Huselid, 1998; Boudreau & Rynes, 1985; Campbell, 1993; Hunter & Hunter, 1984; Williams & Dreher, 1992). Illustrating this, Raff and Summers (1987) have included this perspective as one explanation for Henry Ford's 1914 decision to pay employees above market wages. Specifically, even though Raff and Summers (1987) discount this perspective's applicability to the situation at Ford, they do note its effectiveness in increasing Ford's employee attraction and retention.

Efficiency wage theory also suggests that high relative wages improve employee and organizational efficiency by decreasing employees' unproductive or shirking behavior (Akerlof & Yellen, 1984). These effects may be particularly important when employees' job performance is costly and/or difficult to monitor (Capelli & Chauvin, 1991; Rebitzer & Taylor, 1995; Walsh, 1999). Indeed, when relative wages are high, employees who shirk will suffer personal economic costs from involuntary turnover (Akerlof & Yellen, 1984). Personal costs result because employees who are fired may have a difficult time finding other jobs with similarly high wages (Akerlof & Yellen, 1984; Capelli & Chauvin, 1991). Illustrating this, Cappelli and Chauvin (1991) found low levels of shirking
and shirking related disciplinary problems when wage rates were high.

Although not considered part of efficiency wage theory, Lazear (1979) has used a similar explanation to demonstrate why employees might be compensated lower than their marginal productivity (i.e., the value of their organizational contributions) early in their careers and higher than their marginal productivity later in their careers. Delayed compensation, as this is called, is attributed to the positive employee agency effects (i.e., employees acting in the best interest of their organizations) associated with these increasing wage profiles. The prospects of higher wages (i.e., efficiency wages) keep employees motivated and focused on tasks at hand and discourage unproductive activities. Prospective future higher wages are motivational because employees realize that current poor performance will eliminate their opportunities to receive higher wages in the future.

Norm-gift exchange models provide another efficiency wage theory based explanation for relative wage practices’ effects on employee and organizational efficiency (Akerlof, 1982; Gerhart & Milkovich, 1992). Norm-gift exchange models assert that, as a consequence of employee-firm exchanges, employees acquire sentiments for their firms and feel
obliged to maintain equity in these exchanges (Akerlof, 1982; Cropanzano & Greenberg, 1997; Gerhart & Milkovich, 1992; Yellen, 1984). Therefore, when inequity occurs in these exchanges, employees seek to return the relationship to a state of equity (Adams, 1963; Akerlof, 1982; Cropanzano & Greenberg, 1997; Festinger, 1954; Gerhart & Milkovich, 1992; Yellen, 1984). Accordingly, one explanation for high relative wages' positive influence is that they create a disequilibrium in the employee-firm relationship resulting in increases in employee effort and efficiency (Adams, 1963; Akerlof, 1982; Cropanzano & Greenberg, 1998; Festinger, 1954; Gerhart & Milkovich, 1992; Akerlof, 1984). Yellen (1984), describes this as firms paying "workers a gift of wages in excess of the minimum required, in return for their (workers) gift of effort above the minimum required." (p.204)

To summarize, each of these explanations based on efficiency wage theory suggests that high relative wages will positively contribute to increased employee and organizational efficiency.

Hypothesis 1. Organizations' relative wage levels will be positively related to operational indicators of organizational performance.
Effects of Relative Wage Strategies on Financial Indicators of Organizational Performance

The effects of relative wage strategies on financial indicators of organizational performance are more complex than their effects on operational indicators of organizational performance. Financial indicators of organizational performance, such as return on assets (ROA) or profit margin, reflect organizations' fulfillment of their economic goals, and focus on both the efficiency benefits and costs of relative wage strategies (Venkatraman & Ramanujam, 1996). Costs of relative wage strategies primarily reflect the pay associated with pursuing a particular relative wage strategy. Costs of relative wage strategies vary because the pay associated with each strategy varies. Importantly, the efficiency benefits of relative wage strategies also vary. Thus, depending upon the specific circumstances, more costly relative wage strategies may yield efficiency benefits which either exceed or fall short of their costs. Moreover, the effects of relative wage strategies on financial indicators of performance depend upon the difference between the strategies' costs and their efficiency benefits (Walsh, 1999).

Considered from the perspective of financial indicators of performance, optimal relative wage strategies
are those which maximize the differential between their costs and benefits. As relative wage strategies move from lagging to leading market wages, both their costs and efficiency benefits increase. Initially, efficiency wage theory would suggest that greater relative wage levels' efficiency benefits outweigh their associated costs. Thus, financial indicators of organizational performance are positively influenced. However, there are likely to be limits on potential efficiency gains, such as those due to limits in individual ability, the circumstances of work (e.g., equipment limitation), and/or the opportunity to perform (Blumberg & Pringle, 1982; Peters & O’Connor, 1980). Therefore, at some point, the efficiency benefits of higher relative wages likely cease to outweigh their costs and financial indicators of organizational performance are adversely influenced. This suggests the following hypothesis.

**Hypothesis 2.** An inverted U-shaped relation exists between organizational level relative wage strategies and financial indicators of organizational performance.

**Pay Structures**

In addition to relative wage practices, pay structures may also influence organizations' performance (Bloom, 1999;
Bloom & Michael, in press). Pay structures' effects on organizational performance have received less attention than relative wage practices. One explanation for this is that pay structures present researchers with what at first appears to be a paradoxical situation in that prior research provides very dissimilar descriptive statements regarding pay structures' impact on individual and organizational performance (Bloom, 1999). Specifically, some suggest positive consequences as pay structures become more hierarchical (e.g. Becker & Huselid, 1992; Ehrenberg & Bognanno, 1990; Eriksson, 1999; Knoeber & Thurman, 1994; Krefting & Mahoney, 1977; Krefting, 1980; Lazear & Rosen, 1981; Main et al., 1993), while others suggest negative consequences as pay structures become more hierarchical (e.g., Bloom, 1999; Pfeffer & Langton, 1993). In short, research has suggested that both hierarchical and egalitarian pay structures are useful. To clarify these seemingly inconsistent perspectives, hypotheses are proposed to explain how hierarchical and egalitarian pay structures impact performance.

Hierarchical Pay Structures

Tournament theory has been widely used to explain the positive effects of hierarchical pay structures (Gerhart & Milkovich, 1992; Milkovich & Newman, 1999). According to
tournament theory, pay structures have motivational characteristics consistent with their degree of pay dispersion (Eriksson, 1999; Lazear & Rosen, 1981). Specifically, as pay dispersion increases, employees become more competitive and therefore more motivated to demonstrate those behaviors that move them from their current to the next pay level (Becker & Huselid, 1992; Bloom, 1999, Ehrenberg & Bognanno, 1990; Eriksson, 1999; Lazear & Rosen, 1981; Milkovich & Newman, 1999). Thus, hierarchical pay structures positively affect individual and organizational performance.

Because tournament theory has been widely used to explain pay structures positive effects, pay structures have mostly been investigated in tournament like athletic settings. These settings have been employed because they conceptually resemble tournaments as proposed in tournament theory. Prior research has found support for hierarchical pay structures in these settings. For instance, Ehrenberg and Bognanno (1990) investigated golfers' individual performance based upon overall prize levels in golf tournaments. Since tournaments' prize structures are frequently similar, Ehrenberg and Bognanno (1990) hypothesized that golfers' performance should be related to overall prize levels because greater prize money should
lead to proportionate increases in prize differentials (Knoeber & Thurman, 1994). Ehrenberg and Bognanno (1990) found that as prize levels increased, golfers’ performance, on average, also increased. Similarly, building on the work of Ehrenberg and Bognanno (1990), Becker and Huselid (1992) investigated performance among automobile race car drivers. In this study, Becker and Huselid (1992) focused on the incentive effects of prize differentials associated with various race finishing positions. Becker and Huselid (1992) found that these prize differentials have incentive effects on both individual performance and driver safety practices (e.g., wreck less or careless driving habits). Moreover, incentive effects were found to peak as prize differentials became greater.

While positive results such as those of Ehrenberg and Bognano (1990) and Becker and Huselid (1992) provide compelling support for hierarchical pay structures, their findings must be cautiously interpreted. Specifically, while tournament theory is useful in investigating pay structures in tournament-like settings, application of the theory to organizational settings may be questionable because few organizational settings resemble tournament environments (O’Reilly et al., 1988). Moreover, because these studies were performed in athletic settings, their
generalizability to organizational settings is further limited (Bloom & Milkovich, 1996; Gerhart & Milkovich, 1992; Knoeber & Thurman, 1994).

Tournament theory suggests a hierarchical system, but it assumes that people can all compete for higher positions. However, in business settings, not every employee is qualified to compete for positions higher up in the organization. Thus, although there are a number of notable limitations to tournament theory, it is this assumption of movement that is most limiting in organizational settings. Therefore, perspectives on pay structures that specifically address the idea of individual qualifications may be more applicable. Moreover, notions that (a) people in jobs requiring greater skill should receive greater pay, and that (b) greater skills are required at higher organizational levels, seem particularly supportive of the use of hierarchical pay structures.

Higher earnings should accrue to those who improve their productivity by investing in themselves through greater education, training, and experience (Becker, 1975; Milkovich & Newman, 1999). The value of an individual’s knowledge, skills and abilities (KSAs) is a function of the time spent developing them (Becker, 1975; Milkovich & Newman, 1999). Moreover, the skills and time necessary to
gain certain skills restrict individuals' entry into various occupations (Becker, 1975; Milkovich & Newman, 1999). Thus, people in jobs that require long expensive training should be paid more than people in jobs that require less extensive preparation (Milkovich & Newman, 1999).

Different levels of knowledge are required to perform essential job tasks throughout an organization (Becker, 1975; Milkovich & Newman, 1999). Specifically, greater KSAs are necessary for effective performance in higher level positions due to these positions greater sophistication, complexity, and consequence for organizational performance (Becker, 1975; Milkovich & Newman, 1999).

Based on the above ideas, organizations with hierarchical pay structures benefit because employees with greater KSAs prefer these organizations. Moreover, employees with high KSAs prefer these organizations because they pay comparatively more compensation at higher organizational levels where employees need greater KSAs. In short, hierarchical pay structures are useful in both recruiting and retaining employees with high KSAs to these organizations (Livernash, 1957). Thus, in organizations where significant skill difference requirements exist between jobs or occupations, hierarchical pay systems will
yield positive results. However, unlike tournament theory, this explanation for hierarchical pay structures positive effects does not rely on the assumption that those at different levels throughout the organization can all compete for prize jobs that are associated with higher levels of compensation.

**Egalitarian Pay Structures**

In contrast to the positive implications of hierarchical pay structures, equity theory suggests potentially dysfunctional consequences of hierarchical pay structures, and proposes positive consequences as a result of a more egalitarian pay structures. Specifically, equity theory suggests that as pay structures become more hierarchical, (i.e., less egalitarian), organizational performance will be adversely influenced because employees will become both less cooperative and less inclined towards teamwork (Bloom, 1999; Main et al., 1993).

An important characteristic of exchange processes is that their consequences have the possibility of being perceived as just or unjust (Adams, 1965). Employees evaluate equity in exchange relationships based upon comparisons of their inputs and outputs to those of others involved in similar relationships (Adams, 1965). When employees perceive inequity, they may respond with a host
of potentially negative reactions. Negative reactions represent a means of restoring equity in the exchange relationship. Specific negative responses to hierarchical pay distributions may include decreases in employee coordination and cooperation which may adversely influence organizational performance (Adams, 1965; Bloom, 1999; Pfeffer & Langton, 1993). Illustrating this, Pfeffer and Langton (1994), in a study of university faculty, found less research collaboration in academic departments where wage dispersion was greater. Indeed, hierarchical pay structures, when seen as unfair by employees, may create a "trust gap" (Gerhart & Milkovich, 1992). Under these circumstances, employees may become so disenchanted with pay differentials that they cease to trust the direction and guidance of employees at higher organizational levels. Negative consequences may be further exacerbated if compensation becomes a means of signaling organizational value (Bloom, 1999; Folger, 1993). In these cases, more hierarchical structures may create employee feelings of social and psychological, as well as economic injustice (Bloom, 1999; Deutsch, 1985; Folger, 1993). Thus, from an equity theory perspective, egalitarian pay structures seem preferable to hierarchical pay structures.
Bloom (1999) found support for the effectiveness of egalitarian pay structures. Moreover, Bloom (1999), supported the precepts of equity theory. Using baseball teams, Bloom (1999) found that team performance was negatively related to the degree of hierarchy in teams' pay structures. Bloom (1999) suggested that, as baseball is a team game where success is dependent upon effective team performance, more hierarchical pay distributions may decrease employees' cooperativeness, and therefore their teamwork. While Bloom (1999) shares the generalizability limitations of the earlier athletic based studies, it does provide a compelling explanation for the use of egalitarian pay structures.

A Hypothesized Curvilinear Relation between Pay Distributions' Degree of Hierarchy and Organizational Performance

Bloom's (1999) finding of a negative linear relationship between pay distributions' degree of hierarchy and organizational performance does not forgo the possibility that the actual relation may be curvilinear. Equity theory, as mentioned earlier, is based on inputs and outputs. Thus, variance among employees' KSAs represent different inputs which, according to equity theory, does not imply a purely egalitarian system is most preferred. Rather, just as a purely hierarchical system may be
perceived as unjust by some employees, a purely egalitarian system may be perceived as unjust by others.

A curvilinear relation between the degree of hierarchy in pay distributions and organizational performance is thus appropriate based upon the positive and negative consequences of egalitarian and hierarchical pay distributions. Moreover, the curvilinear relation arguably occurs because egalitarian pay structures are ineffective in recruiting and retaining employees with high KSAs while hierarchical pay distributions are problematic because they generate employee equity concerns and hinder employees' cooperation (Bloom, 1999; Gerhart & Milkovich, 1992; Pfeffer & Langton, 1994). Taken together, these extremes of pay dispersion (i.e. highly egalitarian and highly hierarchical) suggest an optimal level of pay dispersion is somewhere between these two extremes. Therefore, these conclusions lead to the following hypotheses regarding the relationship between pay structures and organizational performance:

**Hypothesis 3.** An inverted U shaped relation exists between pay structures' level of dispersion and operational indicators of organizational performance.
Hypothesis 4. An inverted U shaped relation exists between pay structures' level of dispersion and financial indicators of organizational performance.

A Hypothesized Interaction between Pay Distributions' Degree of Hierarchy and Relative Wage Levels

An argument for an interactive relation between relative wage strategies and pay dispersion has recently been presented in the compensation literature (i.e. Bloom and Michael, in press). So far, this dissertation has examined the implications of relative wage practices and pay distributions independently. Indeed, the prior review suggests that a substantial body of literature is relevant for such a discussion, and that a gap exists in this area of compensation research. However, as relative wage levels and pay distributions are characteristics of any single pay plan, it may also be important to consider how these components may influence the effects of each other. Thus, I now turn to consider the potential interaction between these characteristics.

Frank’s (1985) work on employees relative standing is useful in illustrating a potential interaction between relative wage levels and pay distributions. Frank (1985) suggests workers may accept perceived inequality when they are paid above their marginal products. Thus, when pay structures are hierarchical, high relative wages may negate
lower level employees’ feelings of inequity. Similarly, when pay structures are egalitarian, high relative wages may lessen the negative impact of low pay dispersion on employees with high KSAs. However, although the effect of high relative wages on the performance effects of egalitarian and hierarchical pay structures will likely be positive, there is reason to expect that the impact of high relative wages will be greater when pay structures are hierarchical than when they are egalitarian. Employee performance at high organizational levels, or in more complex (and hence higher paid) jobs, is of greater organizational consequence than employee performance at low organizational levels (i.e., Boudreau et al., 1999; Hunter & Schmidt, 1983; Hunter Schmidt, & Judiesch, 1990). When pay is too egalitarian it is these employees who will hold feelings of inequity. Leading the market, on average for the organization as a whole, is unlikely to have a notable effect on the pay level of these high KSA/importance employees. In other words, leading on average by 10% will probably still lead to top employees being paid under market in an egalitarian system. On the other hand, when pay is hierarchical, leading the market may indicate that the organization values these high KSA/importance employees
because, under these circumstances, these employees will be paid above market wages.

**Hypothesis 5.** The positive effects of relative wage strategies on operational indicators of organizational performance will be generated under a hierarchical pay structure rather than an egalitarian pay structure.

**Hypothesis 6.** The positive effects of relative wage strategies on financial indicators of organizational performance will be generated under a hierarchical pay structure rather than an egalitarian pay structure.
CHAPTER THREE: METHODS

Sample

The sample for this dissertation is 394 short term stay acute care general hospitals in the state of California. Hospitals present a valuable opportunity for studying the organizational performance effects of compensation practices since over 50 percent of their expenditures are devoted to salaries and benefits (American Hospital Association, 1993; Langland-Orban, Gapenski, & Vogel, 1996). Short-term stay hospitals are defined as those facilities with average lengths of stay less than thirty days (OSHPD, 1991). Acute care general hospitals are those hospitals that provide a comprehensive range of services as opposed to those hospitals which provide only specialized services such as psychiatric care (MacEachern, 1957). Only short-term acute care hospitals are examined so that the results are not confounded by the different types of services or clients associated with different hospital types.

Data is drawn from state mandated (i.e., Chapter 1326, California statuses of 1984) annual hospital disclosure reports provided by hospitals to the California Office of Statewide Health Planning and Development (OSHPD). Through a system of uniform accounting and reporting procedures,
California hospitals are required to annually provide financial disclosure reports to the OSHPD. Hospitals must provide the reports no later than four months after the end of their fiscal year. These reports enable the public, third-party payers, and other interested parties to study and analyze the financial aspects of hospitals in California (OSHPD, 1991). Annual reports from 1991 to 1996 are used in this dissertation.

Although all hospitals in the sample provide the same types of services, they still vary along several characteristics. These include size, ownership, and profit (versus not for profit) status. As is the norm in the health care field, hospital size is measured using bed count based measures (Goes & Parker, 1997). Size is presented in terms of staffed beds (Leiyu, 1996). Ownership considers whether a hospital is privately or publicly owned. Profit status considers whether the hospital is a for profit or not for profit venture. Table 1 lists summary statistics of hospitals in the sample.

Data has been provided by the OSHPD in a CD format. Supporting documentation used in analyzing the data included both hard copy and computer generated data guides. Published research has used these data to investigate hospital employment trends (e.g., Anderson & Kohn, 1996),
Table 1
Sample Summary Statistics

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
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<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
</tr>
<tr>
<td>Number of Hospitals</td>
<td>354</td>
<td>71.47%</td>
<td>345</td>
<td>72.46%</td>
<td>333</td>
<td>70.87%</td>
<td>336</td>
</tr>
<tr>
<td>Not for Profit</td>
<td>253</td>
<td>71.47%</td>
<td>250</td>
<td>72.46%</td>
<td>236</td>
<td>70.87%</td>
<td>243</td>
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<tr>
<td>For Profit</td>
<td>101</td>
<td>28.53%</td>
<td>95</td>
<td>27.54%</td>
<td>97</td>
<td>29.13%</td>
<td>93</td>
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<tr>
<td>Privately Owned</td>
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<td>285</td>
<td>82.61%</td>
<td>286</td>
<td>85.09%</td>
<td>283</td>
</tr>
<tr>
<td>Publicly Owned</td>
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<td>17.51%</td>
<td>60</td>
<td>17.39%</td>
<td>47</td>
<td>14.11%</td>
<td>53</td>
</tr>
<tr>
<td>Average Bed Size</td>
<td>192</td>
<td>182</td>
<td>169</td>
<td>176</td>
<td>175</td>
<td>174</td>
<td>178</td>
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</tbody>
</table>
vertical integration strategies (e.g., Cody, 1996), and the relationship between interorganizational links and innovation (e.g., Goes & Park, 1997). This dissertation represents the first use of these data in the field of human resource management, and the first to specifically examine the pay practices of the hospitals.

Independent Measures

Relative Wage Strategy

Relative wage strategy considers the level of an organization's average wage relative to the average wages of other organizations. Organizations that lead the market pay their employees more than the average wage of other organizations. Organizations which match the market pay their employees the average wage of other organizations. Organizations that lag the market pay their employees less than the average wage of other organizations. In this research, organizations' average wages are being determined using a weighted average of average wages for job categories throughout the hospitals. The data set has job categories for physicians, nonphysician medical practitioners, managers and supervisors, technicians and specialist, registered nurses, licensed vocational nurses, aides and orderlies, clerical and other administrative staff, and environmental and food service staff. Weights
are assigned to each job category based upon the total number of hours worked by employees in that category. Relative wage levels are calculated by dividing each organization's average wage by the average wage of all other organizations. Degree of either lead or lag of average market wages is calculated by subtracting 1 from this value. The resulting value represents each organization's percentage of either lead or lag of the average market wage. Negative values indicate that the organization lags the market. A zero value indicates that the organization matches the market. Positive values indicate that the organization leads the market.

Pay Dispersion

Gini coefficients are used to capture pay dispersion. Gini coefficients are widely used in the economics literature to calculate indices of national income inequality (Atkinson, 1969; Chakravarty, 1985; Donald & Weymark, 1980). Recently, management researchers have both suggested (e.g., Gerhart & Milkovich, 1992) and employed (e.g., Bloom, 1999) gini coefficients in investigating pay dispersion.

Gini coefficients may be calculated using individual or subpopulation level data (Dagum, 1997). When calculated using subpopulation level data, gini coefficients represent
a measure of inequality between groups (Dagum, 1997). In this research, I will follow the subpopulation approach to calculating gini coefficients and use average wage values at the job category level to determine gini coefficients. Calculated in this manner, the gini coefficients reflect the average difference between all possible pairs of job category average wage values expressed as a percent of the sum of the job category average wage values (Cowell, 1995). The gini coefficients represent a measure of dispersion in the organizations' pay structures because the job categories used in calculating the gini coefficients represent categories of employees at different organizational levels. This facet of the gini coefficients is fundamental to the dissertation because pay dispersion between employees at unequal organizational levels is pivotal to how pay structures influence employee and therefore organizational performance.

Gini coefficients are calculated based upon a procedure presented by Cowell (1995):

\[
Gini \text{ coefficient } = \frac{(2/n^2)(\text{mean } y)[y_{[1]} + 2y_{[2]} + 3y_{[3]} + \ldots + ny_{[n]}] - ((n+1)/n)}
\]

where \( y_{[1]} \ldots y_{[n]} \) are the average wages of each organization's job categories arranged in increasing order of size, \( \text{mean } y \) is the mean of the average wages for each
organization's job categories, and n is the number of job
categories in each organization (Bloom, 1999; Cowell,
1995). Job categories used in calculating gini coefficients
are the same as those used to calculate relative wage
levels. The maximum gini coefficient value of 1 represents
(hypothetically) the greatest degree of pay dispersion or
absolute inequality in the pay distribution (Bloom, 1999).
An example of this would be an organization where the
managers receive all of the compensation and other
employees receive no compensation. The minimum value of
zero represents the lowest degree of pay dispersion or
total equality in the pay distribution (Bloom, 1999). An
example of this would be an organization where all jobs
receive the same level of compensation. The higher an
organization's gini coefficient the more hierarchical their
pay distribution (Bloom, 1999).

**Dependent Measures**

Previous strategic HRM research has observed that one
challenge in this area is accurately defining and assessing
firm performance measures when they are the dependent
variables of interest (Rogers & Wright, 1999). Moreover,
firm performance is a concept with a substantial number of
possible indicators (Venkatraman & Ramanujam, 1986).
Important in the selection of firm performance measures in
HRM research is recognition that HR interventions are primarily designed to influence HR outcomes, and that their influence on higher level outcomes will diminish relative to other factors which are more proximal to these higher level outcomes (Rogers & Wright, 1999). Therefore, when selecting organizational performance measures it is imperative that the rationale for the particular measures be carefully considered.

**Average Length of Stay**

In this research, I have chosen to evaluate the impact of relative wage practices and pay structures on operational and financial indicators of organizational performance. Since relative wage strategies and pay structures are expected to influence organizational efficiency through their effects on employee efficiency, hospital's average length of stay has been selected as an operational indicator of organizational performance because it represents hospitals' efficiency of patient treatment (Sear, 1992; Thomas, 1997).

Average length of stay (ALOS) is the average length, measured in days, patients stay in a particular hospital. Average length of stay has been used as a measure of performance in previous hospital research (e.g., Phillips, 1999; Sear, 1992; Thomas, 1997) and is often seen as an
important measure of both treatment quality and efficiency. Typically, hospitals with low lengths of stay are considered to be efficient in their use of resources whereas hospitals with higher lengths of stay are presumed to be less efficient (Thomas, 1997). Moreover, hospitals with low lengths of stay have been found to be more profitable than hospitals with high lengths of stay (Langland-Orban et al., 1996). Clinical studies in areas such as cardiac surgery (e.g., Moore, 2000), orthopedic surgery (e.g., Todara & Schott-Baer, 2000), and psychiatry (e.g., Tucker & Brems, 1993), to name but a few, have used length of stay as a measure of treatment quality and efficiency. Length of stay is calculated by dividing the total number of patient days by the total number of discharges (OSHPD, 1997).

Return on Assets

Return on assets is being selected as a financial indicator of organizations' performance because it is the most pervasive measure of organizational firm performance for strategy studies examining firm performance (Venkatraman & Ramanujam, 1986). Return on assets (ROA) is a measure of organizational performance that is widely used in strategic management (e.g., Brush, Bromiley, & Hendirck, 1999; Keats & Hitt, 1988; Mauri & Michaels, 1998; Rumelt,
1991; Schmalensee, 1985), strategic HR research (e.g., Gerhart & Mikovich, 1990), and hospital research (e.g., Gardner et al., 1996; Ginn, Young, & Beekun, 1995, Langland-Orban, 1996). Prior research suggests that ROA is likely to reflect the degree to which cost-benefit considerations of HR programs influence organizations' achievement of their economic goals (Gardiner, Oswald, & Jahera, 1996; Ginn et al., 1995; Sear, 1991). ROA reflects a hospital's ability to both control its expenses and use its assets to generate income (Langland-Orban et al, 1996). Return on assets is calculated as net gain from operations and interest income divided by total current assets and the value of plant, property, and equipment (OSHPD, 1998).

Control Variables

Consistent with earlier research hospital ownership, size, and profit status will be controlled for in this research (Goes & Park, 1997).

Ownership

Ownership considers whether a hospital is privately or publicly owned. Private or public ownership may influence the hospitals' values for the dependent variables (Fennell & Alexander, 1987; Goodstein & Boeker, 1991, Sear, 1991). For example, because indigent patients account for a greater proportion of the care given in public hospitals,
these organizations' efficiency and profits may be adversely influenced (Goes & Park, 1997). Efficiency is lessened because indigent patients are more likely to be acutely ill because they forgo treatment until seriously in need (Billings, Zeitel, Lukomnik, & Carey, 1993). Consequently, when they receive treatment they are sicker and require greater care than non indigent patients (Billings et al., 1993). Furthermore, because public hospitals treat more indigent patients, their financial performance will be lower than privately owned facilities where greater revenues are received for services rendered (Gardiner et al., 1996; Phillips, 1999).

**Hospital Size**

Hospital size may also explain differences in the dependent variables (Beekun et al., 1998; Gardiner et al., 1996; Leiyu, 1996; Sear, 1992). Gardiner et al. (1996) observe that "organizational theory would suggest that hospital size and sophistication of services have a positive relationship with performance" (p.443). Furthermore, in a study of U.S. hospitals, Beekun et al. (1998) note that size is a well established indicator of an organization's financial and managerial resources. Larger hospitals outperform smaller hospitals because they can take advantage of scale economies associated with their
size (Frech & Mobley, 1995). Hospital size may further influence organizational performance because larger hospitals may be more innovative (Goes & Park, 1997). Examples of hospital innovation include the timely introduction of new technologies (e.g., laser surgery, fiberoptic endoscopy, magnetic resonance imaging) and administrative services (e.g., home hospice care, in-house and freestanding ambulatory surgery centers, adult daycare health centers) advances (Goes & Park, 1997). The size measure that will be used as a control variable is staffed beds, which is a common measure of hospital size (Leiyu, 1996).

**Profit Status**

Profit and non-profit status may also affect differences among the hospitals on the dependent variables (Phillips, 1999; Sear, 1992; Sear, 1991). For instance, Sear (1991) in a study of Florida hospitals, found that for-profit hospitals were both more efficient and more profitable than not for-profit hospitals. Even though industry-wide competitive and regulatory pressures have brought about a convergence of profit and non-profit hospitals' goals, differences in profit and non-profit hospitals still remain which may influence their performance (Beekun et al., 1998; Phillips, 1999). For
example, Ginn et al. (1995) observe that hospitals' financial structures may differ depending upon their profit status. One illustration of the potential impact of this is that while for-profit hospitals can issue stock to raise additional funds, non-profit hospitals cannot (Ginn et al., 1995). Another explanation for performance differences between profit and non-profit hospitals is that non-profit hospitals may be less innovative than for profit hospitals (Goes & Park, 1997). Innovation may be an important source of competitive advantage for investor owned hospitals because possessing the latest technologies and services may bring greater status and legitimacy to these institutions (Goes & Park, 1997).

**Statistical Analysis Technique**

Several statistical techniques are potentially useful in evaluating pooled longitudinal cross sectional data. These include ordinary least squares (OLS) regression, least squares dummy variable (LSDV) models, and random effects panel data techniques. OLS regression has been chosen as the primary means of analysis. OLS is being used because it addresses the overall effects of each of the compensation practices being considered. Specifically, OLS is the most appropriate technique for hierarchically investigating the effect of particular independent
variables, although other techniques have characteristics that make them superior to OLS regression in certain circumstances (Sayrs, 1989). The next paragraphs discuss the benefits and limitations of each technique and present the rationale for performing further LSDV analyses in addition to the primary OLS analyses.

LSDV models use dummy variables to represent unobserved firm specific effects among cross-sectional units (Hsiao, 1986). Specifically, LSDV models capture differences across cross-sections with a dummy variable defined intercept for each cross-section (Maddala, 1987; Sayrs, 1989). In comparison to OLS regression, LSDV models have the unique advantage of being able to control for unobserved cross-sectional heterogeneity across firms by allowing the intercept of the testing model to vary for each firm (Gimeno & Woo, 1996). Thus, LSDV models are potentially superior to standard constant coefficient OLS regression models because constant coefficient models do not adequately allow for differences across cross sectional units (Judge, Griffiths, Hill, Lutkepohl, & Lee, 1985). When cross sections are pooled using constant coefficient models, unobservable cross-sectional unit heterogeneity effects are placed in the disturbance term with variance due to other unmeasured effects (Conyon & Peck, 1998). The
presence of these effects in the disturbance term may lead to substantial heteroscedasticity in the disturbance term (Sayrs, 1989). The effects of heteroscedasticity in the disturbance term are compounded by the pooling of data which, while increasing sample size, also increases the contribution of firm heterogeneity to the disturbance term (Sayrs, 1989). Consequences of increased firm heterogeneity in the disturbance term include the generation of inefficient and potentially meaningless regression coefficients (Conyon & Peck, 1998; Murphy, 1985; Sayrs, 1989). Specifically, because heteroscedasticity increases error variances, it reduces the power of significance tests (Bobko, 1995).

The primary disadvantage of LSDV, though, is that it requires substantial sample sizes. Specifically, to capture firm specific effects, LSDV analyses use dummy variables unique to each firm in a pool. These dummy variables require substantial degrees of freedom (Maddala, 1987). Furthermore, another limitation of LSDV is that it is impossible to separate the effects of factors which remain constant over time from the dummy variables (Judge et al., 1985). In this research, it is unclear how extensively compensation practices change over time. Thus, if firms' compensation practices remain constant over time their true
effects may be difficult to appraise in LSDV analyses. Moreover, under these circumstances, it is possible that many of the effects attributable to compensation practices may be subsumed by the dummy variables in LSDV models (Maddala, 1987).

Fixed effects LSDV models also presume that differences between firms are fixed as opposed to random in nature. A fixed effects approach is appropriate when inferences will apply only to cross sectional units in a sample (Huselid & Becker, 1996). Random effects are more appropriate when inferences will extend to observations outside the sample (Huselid & Becker, 1996; Maddala, 1987). Thus, initially, a random effects approach seems useful in this research. However, random effects models should not be used when differences captured by dummy variables in a fixed effects model are likely due to characteristics of the firms rather than random variation among the firms (Judge et al., 1985). Hausman tests are used to evaluate the applicability of the random effects approach (Hausman, 1978). Specifically, Hausman tests evaluate the degree to which firm effects are likely correlated with variables under consideration and the extent to which this is likely to influence the results of random effects models (Hausman, 1978). Hausman tests performed in the process of this...
research indicated that fixed effects were more appropriate than random effects. Given both the nature of the present sample (i.e., the possibility that the firm dummy variables were likely some function of unmeasured hospital characteristics), and the results of the Hausman tests, the fixed effects approach is preferable to the random effects approach in evaluating this dissertation’s research questions (Huselid & Becker 1995). Therefore, in addition to the primary OLS regressions, secondary LSDV analyses have also been performed.

Procedure

Pooled longitudinal cross sections composed of an unbalanced panel data sample of 394 California hospitals were used to test the hypotheses. All variables were investigated for potential outlying values (Orr, Sackett, & Dubois, 1991). Initially, using scatter plots of the data, values many standard deviations from the mean were visually eliminated (Netar et al., 1989). Following this, remaining values greater than three standard deviations from the mean of the remaining data were also eliminated. Approximately eight percent of the data was excluded due to outlying values. A qualitative review of these cases seemed to indicate that they may have been mis-codings or
inappropriate classifications (i.e., not acute care), and so were eliminated to ensure an accurate sample.

To investigate causality, compensate for effect lags, and consider policy implications all hypothesis were tested using dependent variables at time \( (t) \) one time period after independent variables at time \( (t-1) \) (Cook & Campbell, 1979; Huselid & Becker, 1996; Kerlinger, 1986; Rogers & Wright, 1999). A lag of one year has been used in previous research investigating the performance implications of compensation practices (Gerhart & Milkovich, 1990). Dynamic models (i.e., models with lagged dependent variables) were not employed because dependent variables were expected to be influenced by values of the independent variables in prior periods (Gerhart & Milkovich, 1990).

Two hierarchical OLS regression models and two LSDV models were estimated to test the hypotheses. The first model of each type was used to test hypothesis 1, hypothesis 3, and hypothesis 5. The dependent variable for these models was the ALOS operational measure of organizational performance. The independent variable of interest for hypothesis 1 was the relative wage strategy measure. The independent variable of interest for hypothesis 3 was the curvilinear pay dispersion term (i.e., the gini coefficient squared). The independent variable of
interest for hypothesis 5 was the relative wage level pay
dispersion interaction term (i.e., relative wage level
times gini coefficient). The second model of each type
estimated was used to test hypothesis 2, hypothesis 4, and
hypothesis 6. The dependent variable for these models was
the ROA financial measure of organizational performance.
The independent variable of interest for hypothesis 2 was
the curvilinear relative wage strategy term (i.e., relative
wage strategy squared). The independent variable of
interest for hypothesis 4 was the curvilinear pay
dispersion term (i.e., gini coefficient squared). The
independent variable of interest for hypothesis 6 was the
relative wage level pay dispersion interaction term (i.e.,
relative wage level times gini coefficient).

The variables of hospital size, hospital ownership,
and hospital profit status were controlled for in all
models. Additionally, a dummy variable for each of the
longitudinal years of data was included to control for
unobserved year effects by comparing each year to the base
year 1996. Table 2 presents descriptive statistics and
correlations for all study variables.

Variables were entered into OLS models hierarchically
following a procedure established by Cortina(1993) for the
simultaneous investigation of interactions and curvilinear

45
<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
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<td>1. Hospital Size</td>
<td>178.75</td>
<td>130.05</td>
<td>.31***</td>
<td>.07**</td>
<td>.11***</td>
<td>.07**</td>
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<tr>
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<td>0.15</td>
<td>-.22***</td>
<td>-.01</td>
<td>-.17***</td>
<td></td>
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<tr>
<td>3. Organizational Gini Coefficient</td>
<td>0.22</td>
<td>0.03</td>
<td></td>
<td>.05*</td>
<td>.1***</td>
<td></td>
</tr>
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<td>4. Return on Assets</td>
<td>6.06</td>
<td>12.87</td>
<td></td>
<td>-0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Average Length of Stay</td>
<td>5.72</td>
<td>2.78</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N = 2026
*p < .05
**p < .01
***p < .001
relations. In the first step, the time dummy and control variables were entered into the models. Next, the relative wage level and pay dispersion main effects were entered. Following this, the relative wage level and pay dispersion quadratic terms were entered into the models. Lastly, the pay dispersion relative wage level interaction term was entered into the models. All variables were entered into LSDV models simultaneously since LSDV analysis in general, and hierarchical LSDV analysis in particular, will be ineffective if variables are time invariant (Judge et al., 1985; Maddala, 1987). In this research, the degree to which the compensation practices under consideration are time invariant is unclear.

Models were investigated for potential violations of relevant assumptions including heteroscedasticity and autocorrelation (Maddala, 1987; Sayrs, 1989). Heteroscedasticity is likely present in the OLS models due to the effects of cross sectional pooling (Sayrs, 1989). Secondary LSDV analyses specifically address this heteroscedasticity by introducing firm effects (Sayrs, 1989). However, in these analyses (i.e., LSDV), plots of residuals versus predicted values when ALOS was the dependent variable revealed non-constant error variances as predicted values of this variable increased (Kvanli,
Guynes, & Pavur, 1989). This heteroscedasticity was compensated for by performing a log transformation on ALOS (Netar et al., 1989). Thus, a log transformed ALOS variable is used throughout this research.

Heteroscedasticity in the OLS models also made tests of autocorrelation using the generally accepted Durbin Watson tests inappropriate (Sayrs, 1989). Specifically, Durbin Watson auto correlation tests presuppose homoscedasticity rather than heteroscedasticity (Sayrs, 1989). However, to further investigate autocorrelation, Durbin Watson statistics are reported for the LSDV models. Because Durbin Watson tests with large sample sizes and multiple variables require significant computer resources, all Durbin Watson statistics for organizational level models were evaluated using a baseline Durbin Watson dL value of 1.98 for N=2026 with 400 variables at a p<.001 significance level (Savin and White, 1977). Based on this value, all models demonstrated appropriate Durbin Watson values. Thus, this suggests the effects of autocorrelation were minimal.
CHAPTER FOUR: RESULTS

Hypothesis 1

Table 3 presents the results of the OLS models for hypothesis 1. Table 4 presents the results for the LSDV analysis for hypothesis 1. Both analyses lend support to hypothesis 1 which predicted that relative wage levels will be positively related to operational indicators of performance. Importantly, the OLS analysis demonstrates the potential impact of compensation practices on operational indicators of organizational performance in that relative wage practices and pay structures are found to explain over 4% of the variance in ALOS.

In both analyses, the relation between the organizational relative wage level measure and the transformed operational measures of organizational performance, ALOS, is significant and in the hypothesized direction. Lower ALOS is indicative of increased organizational performance. Thus, a negative relation between the relative wage level measure and ALOS supports hypothesis 1. However, because the models used for analyses also include an interaction effect between relative wage practices and pay structures, relative wage practice main effects can not be accurately interpreted (Aiken & West,
Table 3
Summary of Results for the Hierarchical OLS Regression between
Organizations' Relative Wage Strategies, Pay Dispersion, the Relative
Wage Strategy Pay Dispersion Interaction, and
Average Length of Stay

<table>
<thead>
<tr>
<th></th>
<th>Step One</th>
<th>Step Two</th>
<th>Step Three</th>
<th>Step Four</th>
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<tr>
<td>Step One</td>
<td></td>
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<tr>
<td>Profit Status</td>
<td>.048**</td>
<td>.043*</td>
<td>.034</td>
<td>.036</td>
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<tr>
<td>Ownership</td>
<td>.16****</td>
<td>.14****</td>
<td>.11****</td>
<td>.12****</td>
</tr>
<tr>
<td>Size</td>
<td>.18****</td>
<td></td>
<td>.21****</td>
<td>.24****</td>
</tr>
<tr>
<td>Step Two</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gini Coefficient</td>
<td>.062**</td>
<td>.065**</td>
<td>.075****</td>
<td></td>
</tr>
<tr>
<td>Overall Relative Wage Strategy</td>
<td>.13****</td>
<td>.15****</td>
<td>.15****</td>
<td></td>
</tr>
<tr>
<td>Step Three</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Gini Coefficient Squared</td>
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<td></td>
<td>.02</td>
<td></td>
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<tr>
<td>Overall Relative Wage Strategy Squared</td>
<td>.14****</td>
<td>.11****</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step Four</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Wage Strategy * Pay Dispersion</td>
<td></td>
<td>.093****</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall R Squared</td>
<td>0.07</td>
<td>0.09</td>
<td>0.11</td>
<td>0.12</td>
</tr>
<tr>
<td>Change in R Squared</td>
<td>0.07</td>
<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>Adjusted R Squared</td>
<td>0.07</td>
<td>0.09</td>
<td>0.01</td>
<td>0.11</td>
</tr>
<tr>
<td>F-value of Model</td>
<td>18.4890****</td>
<td>20.3194****</td>
<td>20.4606****</td>
<td>20.3176****</td>
</tr>
<tr>
<td>N</td>
<td>2026</td>
<td>2026</td>
<td>2026</td>
<td>2026</td>
</tr>
</tbody>
</table>

Note: Standardized regression coefficients are shown. Model includes a time effect which is not shown.

*p < .1
**p < .05
***p < .01
****p < .001
Table 4
Summary of LSDV Analysis for the Relation between Organizations' Relative Wage Strategies, Pay Dispersion, the Relative Wage Strategy Pay Dispersion Interaction, and Indicators of Organizational Performance

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Average Length of Stay</th>
<th>Return on Assets</th>
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<tbody>
<tr>
<td></td>
<td>Std. Beta</td>
<td>Std. Beta</td>
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<tr>
<td><strong>Organizational Control Variables</strong></td>
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<tr>
<td>Profit Status</td>
<td>.061*</td>
<td>-.13</td>
</tr>
<tr>
<td>Ownership</td>
<td>.056</td>
<td>.23**</td>
</tr>
<tr>
<td>Size</td>
<td>.103**</td>
<td>.097</td>
</tr>
<tr>
<td><strong>Pay Policy Variables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Wage Level</td>
<td>-.12****</td>
<td>-.035*</td>
</tr>
<tr>
<td>Gini</td>
<td>.016</td>
<td>.025</td>
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<tr>
<td><strong>Pay Policy Curvilinear Terms</strong></td>
<td></td>
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<tr>
<td>Relative Wage Level Squared</td>
<td>.0014</td>
<td>.0093</td>
</tr>
<tr>
<td>Gini Coefficient Squared</td>
<td>-.029**</td>
<td>-.052**</td>
</tr>
<tr>
<td><strong>Interaction</strong></td>
<td>-0.032**</td>
<td>.050*</td>
</tr>
<tr>
<td>Relative Wage * Pay Dispersion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Overall R Squared | 0.91 | 0.53 |
| Adjusted R Squared| 0.89 | 0.41 |
| F-value of model  | 42.9452**** | 4.5535**** |
| Hausman test      | 50.52****   | 25.63**  |
| Durbin Watson     | 1.762****   | 1.9666**** |
| N                 | 2026         | 2026     |

Note: F-value = 12.7258**** for inclusion of firm effect in model where Average Length of Stay is the dependent variable.
F-value = 4.4131**** for inclusion of firm effect in model where Return on Assets is the dependent variable.
Standardized regression coefficients are shown.
Models include both firm and time effects which are not shown.

*p < .1
**p < .05
***p < .01
****p < .001
1991). I will thus interpret this finding below after discussing the results for H5.

**Hypothesis 2**

Table 5 presents the results of the OLS models for hypothesis 2. Table 4 presents the results for the LSDV analysis for hypothesis 2. Statistical results find little support for hypothesis 2, which predicted that there would be an inverted U shaped relation between organizations' overall relative wage strategies and the ROA financial measure of organizational performance. In the OLS analysis, the relation between the relative wage quadratic term and ROA was in the hypothesized direction but not significant. However, in the LSDV analyses the relation between the relative wage quadratic term and ROA was not in the hypothesized direction or significant.

**Hypothesis 3**

Table 3 presents the results of the OLS model for hypothesis 3. Table 4 presents the results of the LSDV analysis for hypothesis 3. Statistical results yield little support for hypothesis 3, which predicted that there would be an inverted U shaped relation between organizational measures of pay dispersion and operational measures of organizational performance. OLS results were opposite the hypothesized direction and not significant while LSDV
Table 5
Summary of Results for the Hierarchical OLS Regression between Organizations' Relative Wage Strategies, Pay Dispersion, the Relative Wage Strategy Pay Dispersion Interaction, and Return on Assets

<table>
<thead>
<tr>
<th>Step One</th>
<th>Step Two</th>
<th>Step Three</th>
<th>Step Four</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit Status</td>
<td>-.0094</td>
<td>-.0099</td>
<td>.0086</td>
</tr>
<tr>
<td>Ownership</td>
<td>.097****</td>
<td>.094****</td>
<td>.103****</td>
</tr>
<tr>
<td>Size</td>
<td>.13****</td>
<td>.13****</td>
<td>.13****</td>
</tr>
<tr>
<td>Step Two</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gini Coefficient</td>
<td>.033</td>
<td>.030*</td>
<td>.029</td>
</tr>
<tr>
<td>Overall Relative</td>
<td>-.020</td>
<td>-.012</td>
<td>-.012</td>
</tr>
<tr>
<td>Wage Strategy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step Three</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gini Coefficient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squared</td>
<td>-.032</td>
<td>-.011</td>
<td></td>
</tr>
<tr>
<td>Overall Relative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage Strategy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squared Squared</td>
<td>-.024</td>
<td>-.0012</td>
<td></td>
</tr>
<tr>
<td>Step Four</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Wage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strategy * Pay</td>
<td>.02</td>
<td>.03</td>
<td>.03</td>
</tr>
<tr>
<td>Dispersion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall R Squared</td>
<td>0.02</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>Change in R Squared</td>
<td>0.02</td>
<td>0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Adjust R Squared</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>P-value of Model</td>
<td>5.8610****</td>
<td>5.0596****</td>
<td>4.5162****</td>
</tr>
<tr>
<td>N</td>
<td>2026</td>
<td>2026</td>
<td>2026</td>
</tr>
</tbody>
</table>

Note: Standardized regression coefficients are shown. Model includes a time effect which is not shown.

*p < .1
**p < .05
***p < .01
****p < .001
results were significant but opposite the hypothesized direction.

**Hypothesis 4**

Table 5 presents the results of the OLS models for hypothesis 4. Table 4 presents the results for the LSDV analysis for hypothesis 4. Study results yield partial support for hypothesis 4, which predicted that there would be an inverted U shaped relation between pay dispersion and financial indicators of organizational performance. Results of the OLS regression, while in the hypothesized direction, were not significant. However, in the LSDV analyses, the relation between the pay dispersion quadratic term and ROA was in the hypothesized direction and significant.

**Hypothesis 5**

Table 3 presents the results of the OLS models for hypothesis 5. Table 4 presents the results of the LSDV analysis for hypothesis 5. Both the OLS and the LSDV results support hypothesis 5, which predicted that organizations’ relative wage strategies would interact with their degree of pay dispersion to influence ALOS. Specifically, high relative wages were hypothesized to positively influence the relation between pay dispersion and ALOS.
Figure 1 plots the relation between relative wage practices and ALOS for high and low levels of pay dispersion. Figure 1 indicates that for each of these levels of pay dispersion, as relative wage levels increase, ALOS is generally positively affected. Thus, in addition to lending support to hypothesis 5, these results also provide graphical support for hypothesis 1.

Figure 2 portrays the interaction between organizations’ relative wage strategies and their degrees of pay dispersion and its effect on ALOS. The nature of the interaction is determined by plotting separate lines for high, low, and average relative wage levels. Low relative wages are represented by a lag relative wage strategy one standard deviation below the mean relative wage level. High relative wages are represented by a lead relative wage strategy one standard deviation above the mean relative wage level. Average relative wages are represented by a match relative wage strategy equal to the mean relative wage level. Figure 2 indicates that when relative wages are high, pay dispersion positively influences ALOS whereas, when relative wages are low, pay dispersion negatively influences ALOS.
Figure 1. The Effect of Relative Wage Levels on Average Length of Stay
Figure 2. The Effect of Pay Dispersion on Average Length of Stay
Hypothesis 6

Table 5 presents the results of the OLS model for hypothesis 6. Table 4 presents the results of the LSDV analysis for hypothesis 6. Both OLS and LSDV analyses support hypothesis 6, which predicted that organizations’ relative wage strategies would interact with their degrees of pay dispersion to influence ROA. Specifically, high relative wages were hypothesized to positively influence the relation between pay dispersion and ROA. Figure 3 plots the relation between relative wage practices and ROA for high and low levels of pay dispersion. Figure 3 demonstrates the hypothesized interaction between organizations’ relative wage strategies and organizations’ degrees of pay dispersion. Figure 4 portrays the effect of the interaction between organizations’ relative wage strategies and organizations’ degrees of pay dispersion on the relation between pay dispersion and ROA. Again, the nature of the interaction is determined by plotting separate lines for the relation between pay dispersion and ROA for low, high, and average relative wage levels. Figure 4 indicates that when relative wages are high, pay dispersion positively influences ROA whereas, when relative wages are low, pay dispersion negatively influences ROA.
Figure 3. The Effect of Relative Wage Levels on Return on Assets
Figure 4. The Effect of Pay Dispersion on Return on Assets
Table 6
Summary of Hypotheses

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Relationship</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Organizations' relative wage levels will be positively related to operational indicators of organizational performance.</td>
<td>Supported</td>
</tr>
<tr>
<td>2</td>
<td>An inverted U-shaped relation exists between organizational level relative wage strategies and financial indicators of organizational performance.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>3</td>
<td>An inverted U-shaped relation exists between pay structures level of dispersion and operational indicators of organizational performance.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>4</td>
<td>An inverted U-shaped relation exists between pay structures level of dispersion and financial indicators of organizational performance.</td>
<td>Not Supported</td>
</tr>
<tr>
<td>5</td>
<td>The positive effects of relative wage strategies on operational indicators of organizational performance will be generated under a hierarchical pay structure rather than an egalitarian pay structure.</td>
<td>Supported</td>
</tr>
<tr>
<td>6</td>
<td>The positive effects of relative wage strategies on financial indicators of organizational performance will be generated under a hierarchical pay structure rather than an egalitarian pay structure.</td>
<td>Supported</td>
</tr>
</tbody>
</table>
CHAPTER FIVE: DISCUSSION

Answers to Research Questions

This dissertation has sought to investigate the organizational performance implications of pay structures and relative wage rates. Specifically, it has focused on these implications in terms of operational and financial indicators of organizational performance. Statistical results suggest that relative wage practices and pay structures influence organizational performance in these areas. Perhaps most noteworthy, results indicate that relative wage practices and pay structures interact to affect these areas of organizational performance.

As suggested by hypothesis 1, the relation between relative wage practices and operational measures of performance appears to be positive as hypothesized. This result must be interpreted cautiously since main effects may be misleading in models with interactive effects (Aiken & West, 1991). However, the previous caveat notwithstanding, plots of the data generally indicate that relative wage practices have a positive effect on operational measures of organizational performance. Thus, lending support to hypothesis 1, a positive relation appears to exist between organizations' relative wage practices and ALOS. Although there are curvilinear and
interactive effects whose influence must be considered, hospitals which pay above average relative wages do seem to have shorter patient lengths of stay (ALOS) than hospitals with lower pay levels.

Limited statistical results for hypotheses 2, 3, and 4 suggests that the actual relations may be other than those hypothesized. One scenario is that, as proposed by hypotheses 5 and 6, relative wage levels and pay dispersion may interact to influence the relations hypothesized. Importantly, Cortina (1993) has observed that curvilinear and interaction effects are both very similar and easily confused. Moreover, Cortina (1993) suggests the importance of simultaneously investigating both curvilinear and interaction effects. Thus, incongruent results for these hypotheses (i.e., hypotheses 2, 3, and 4) may be due to interactive effects such as those proposed by hypotheses 5 and 6 (i.e., an interaction between relative wage levels and pay dispersion). Indeed, as Bedeian and Mossholder (1994) point out, “a significant interaction term suggests that two or more lines fit the data better than a single regression line.” (P.162) This is illustrated by figures 1, 2, 3, and 4. Specifically, these figures demonstrate that the nature of the relevant curvilinear relations depends upon the level of the compensation practice which is not
being directly investigated. Thus, the findings associated with hypotheses 5 and 6 must be discussed as a potential explanation for hypotheses 2, 3, and 4's mixed results.

Hypotheses 5 and 6 investigated the interaction between relative wage levels and pay dispersion and its effect on the relation between pay dispersion and ALOS (hypothesis 5) and ROA (hypothesis 6). Hypotheses 5 and 6 were supported in both the OLS and the LSDV analyses. Hypotheses 5 and 6 represent simultaneous investigations of the impact of relative wage levels and pay structures. Support for these hypotheses asserts the importance of concurrently considering relative wage strategy and pay structure decisions. In fact, the interactions most probably explain the mixed results for the previous hypotheses. Thus, relative wage strategies, it seems, do influence the organizational performance effects of pay structure decisions. Results suggest that high relative wages are preferable when pay dispersion is high, while low relative wages are preferable when pay dispersion is low. Moreover, if given a choice, it seems organizations should pursue a strategy of either high relative wages and hierarchical pay structure or low relative wages and egalitarian pay structures. As illustrated in figures 2 and 4, these relative wage strategy/pay structure combinations
generally appear to most positively affect organizational performance.

Findings that high relative wages and hierarchical pay structures positively affect organizations' performance are consistent with observations by Bloom and Michael (in press) that high relative wages potentially lessen the negative effects of hierarchical pay structures. Specifically, Bloom and Michael (in press) propose that high relative wages limit hierarchical pay structures' adverse effects on employees' cooperation and coordination. Moreover, they suggest employees will tolerate significant pay dispersion so long as they receive wages that exceed their marginal products (Bloom & Michael, in press; Frank, 1985). Thus, while hierarchical pay distributions may decrease employees' coordination and cooperation, the simultaneous application of high relative wages appears to counteract these effects.

Results also indicate that a combination of low relative wages and egalitarian pay structures may positively affect organizations' performance. Deci's (1975) work on intrinsic motivation may be useful in interpreting this finding. Specifically, as previously proposed, egalitarian structures (i.e., under those circumstances where significant differences exist in skill requirements
across job categories) and low relative wages are expected to be ineffective compensation practices. Moreover, because low relative wages and egalitarian structures are potentially ineffective compensation practices, employees in organizations with these characteristics (i.e. low relative wages and egalitarian pay structures) must be influenced by these compensation practices differently than hypothesized. One explanation is that these compensation practices have characteristics that are supportive of employees' intrinsic motivation. Intrinsic motivation is a particularly relevant explanation because, like egalitarian pay structures, it is often discussed in the context of environments which require coordination and cooperation. The concept of participative management is useful to illustrate this. Specifically, participative management concepts are recognized both for the employee coordination and cooperation they require, as well as for their contributions to employees' intrinsic motivation (Deci, 1975). Thus, to the extent that egalitarian pay structures create an environment of employee cooperation and coordination they foster intrinsic motivation. Furthermore, research has found that intrinsic motivation decreases when employees are paid high relative wages for instrumental reasons such as those proposed by efficiency.
wage theory (Deci, 1975). Therefore, while egalitarian pay structures may foster an environment in which intrinsic motivation is maximized, intrinsic motivation is simultaneously lessened if employees are paid high relative wages for purely instrumental purposes. Thus, egalitarian pay structures, while useful in fostering intrinsic motivation when relative wages are low, are ineffective in fostering intrinsic motivation when relative wages are high. This potentially explains why egalitarian pay structures and low relative wage levels positively influence organizational performance.

Hospital size appears to be one characteristic that distinguishes hospitals that pursue combinations of either high relative wages and hierarchical pay distributions or low relative wages and egalitarian pay distributions. Indeed, based on a visual review of the data, larger hospitals appear to more frequently use the combination of high relative wages and hierarchical pay distributions whereas, smaller hospitals seem to more frequently use the combination of low relative wages and egalitarian pay structures. While the potential interpretations of this finding are numerous, one explanation is that it represents some shared understanding among particular size hospitals of optimal compensation practices (i.e., relative wage
practices and pay structures). Moreover, it could reflect the process whereby firms identify and mimic other firms' sources of competitive advantage (Wright et al., 1994). Thus, it may suggest that hospitals recognize particular combinations of relative wage levels and pay distributions as sources of HRM based competitive advantage (Wright et al., 1994).

**Limitations**

Limitations of this research include generalizability issues associated with both the sample and the method of calculating organizational pay dispersion. A sample of hospitals is undoubtably a unique sample. Differences between hospitals and other organizations include that hospitals are highly labor intensive organizations (Langland-Orban et al., 1996). Furthermore, due to recent financial constraints in hospitals which have yielded a less skilled mix of employees than in past, many employees important to a hospital's success are now located at lower organizational levels (Langland-Orban et al., 1996). This likely made the dissertation's dependent variables more susceptible to the effect of relative wage practices and pay dispersion at lower organizational levels.

Another of the dissertation's limitations is the technique whereby organizational pay dispersion was
approximated. Optimally, a pay dispersion measure would consider all of an organization’s employees. Regrettably, the realities of data collection make getting this type of data from a sizable enough sample of organizations nearly impossible. Thus, this dissertation has used organizations’ average wage values for hierarchically unequal job categories in calculating pay dispersion. Moreover, job categories are based upon employee skill requirements for each job category. While this is a potentially meaningful way of viewing hierarchies of organizational members, it may not be applicable to all organizations. Specifically, some hierarchies may be better conceptualized based upon authority rather than skill differences. Thus, the results of this dissertation may be more appropriate to those situations where hierarchies of organizational members are best viewed based upon skill rather than authority differences.

Calculating pay dispersion with job category level data also neglects differences in pay that occur within particular job categories. Thus, any differences in pay within specific job categories are excluded. Consequently, pay dispersion, as considered in this dissertation, does not capture the potentially significant dispersion which occurs within various job categories. While pay dispersion
between job categories is important in its own right, pay
dispersion within job categories may be both meaningful and
significant. Pay dispersion within job categories is
particularly relevant in light of the potential costs and
difficulties (e.g., differences in skill requirements
across job categories in some organizations) associated
with moving between job categories. Were it possible to
include this within job category pay dispersion different
theories might be tested. Most notably, the precepts of
tournament theory might be applicable as employees would be
able to compete against each other within a job type for
pay increases.

Directions for Future Research

Areas for future research include further
consideration of the effects of relative wage levels and
pay dispersion on organizational performance in different
settings with other measures. Specifically, future research
which alleviates the limitations of the current research
setting and pay dispersion measures would be beneficial.
For instance, it might be valuable to investigate pay
dispersion in settings where the importance of employee
cooperation varies. Negative organizational effects of
hierarchical pay distributions occur because increased pay
dispersion adversely affects employees' cooperativeness.
Thus, the negative effects of hierarchical pay distributions may depend upon the level of cooperation necessary in a particular setting. Research could also investigate the micro level influences of employees' cooperativeness on the organizational effectiveness of particular pay structures. Moreover, research could also consider the impact of particular levels of pay dispersion on employee job attitudes. Finally, opportunities where pay dispersion could be calculated using all employees might be valuable in further investigating the organizational performance effects of pay dispersion.

Consideration of the organizational performance effects of relative wage strategies and pay structures in international settings might also prove a useful area for future research. The United States is among the most individualistic of all societies. Research suggests that human resource practices which work in individualistic societies may be less effective in more collective society (Hofstede, 1984). Specifically, compensation practices which directly reward individual performance and achievement may be offensive to members of collective societies. This is particularly the case when these collectivistic societies value more paternalistic factors such as employee tenure or overall group harmony in
determining individual compensation (Beatty, McCune, & Beatty, 1988). Thus, one area for future research would be to evaluate the effectiveness of relative wage strategies and pay structures depending upon a country’s level of individualism.

Another valuable area for future research may be consideration of the organizational performance impact of other strategic human resource management practices. Investigations of the impact of strategic practices in the areas of staffing and training might further elucidate the organizational effect of strategic human resource management practices. Particularly useful would be consideration of the coordination between these practices and compensation practices, and the effect of this coordination on organizational performance (MacDuffie, 1995). Also useful would be consideration of the performance implications of strategic human resource management practices fit with the overall strategy of the organization.

**Conclusion**

In sum, this research makes an important step in describing how compensation practices are related to organizations’ operational and financial performance. However, we are far from understanding how the whole of HRM
impacts organizations' performance. Thus, research into the organizational performance effects of compensation and other HRM practices must continue.

The California Office of Statewide Health Planning and Development deserves credit for making available information that allows researchers to examine HR practices' effects over many organizations and many years. Hopefully, more such data opportunities will be made available, and research will take advantage of such opportunities to advance the field's understanding of how HRM impacts the strategic functions of organizations.
REFERENCES


VITA

The author, born in Anchorage, Alaska, received a bachelor of arts degree in economics from The University of the South. In 1992 he received the degree of Master of Business Administration from Louisiana State University. He is a candidate for the degree of Doctor of Philosophy which will be conferred at the December 2000 commencement. The author plans to pursue a career in university teaching and research.
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Candidate: Mark P. Brown

Major Field: Business Administration (Management)


Approved:

[Signature]
Major Professor and Chairman

[Signature]
Dean of the Graduate School

EXAMINING COMMITTEE:

[Signatures]

Date of Examination:

26 October 2000