AN ORGANIZATION-LEVEL ANALYSIS OF VOLUNTARY AND INVOLUNTARY TURNOVER

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Although there are many individual-level models of turnover, little research has examined the effects of human resource management practices on quit rates and discharge rates at the organizational level. This study used organization-level data from 227 organizations in the trucking industry to explore this issue. Results show that human resource management practices predict quit rates and discharge rates but that the determinants of each are quite different. Implications are derived and directions for future research suggested.

Turnover is the subject of much research in the organizational sciences and economics. It is critical from individual, organizational, and industry perspectives. Yet most of the over 1,500 studies in the organizational sciences (Muchinsky & Morrow, 1980) on this topic focus on individual-level predictors of turnover. In contrast, economists typically examine turnover from an industry perspective (Campbell, 1993), using predictors such as unemployment levels (Hulin, 1979) and labor force composition (Wachter & Kim, 1979). This research leaves a critical gap—the determinants of turnover at the organizational level. The importance of organization-level turnover studies has been implicitly or explicitly recognized in the organizational (e.g., Roberts, Hulin, & Rousseau, 1978) and strategic human resource management (e.g., Huselid, 1995) literatures but has rarely been addressed specifically. Also lacking in the literatures is differentiation between “voluntary” and “involuntary” turnover. Individual researchers have acknowledged this distinction, but the two types of turnover are collapsed in nearly all organizational studies (e.g., Alexander, Bloom, & Nuchols, 1994; Bennett, Blum, Long, & Roman, 1993). We examined the relationships of human resource management (HRM) practices to voluntary and involuntary turnover, focusing on a single industry, trucking, to control for external factors beyond an individual organization’s influence. Turnover is especially severe in the trucking industry, with rates ranging from 38 to 200 percent (Corsi & Fanara, 1988), making the industry particularly well suited for organization-level examinations of turnover.

GENERAL APPROACH

An instance of voluntary turnover, or a quit, reflects an employee’s decision to leave an organization, whereas an instance of involuntary turnover, or a discharge, reflects an employer’s decision to terminate the employment relationship. The causes and consequences of these distinct decisions are likely to be quite different. As noted above, this distinction is well established in the management literature on individuals (e.g., Gupta & Jenkins, 1991; Hulin, Roznowski, & Hachiya, 1985; Mobley, 1977, 1982); organizational researchers, in contrast, have elided the issue, lumping turnover from all causes together (e.g., Alexander et al., 1994; Bennett et al., 1993; Huselid, 1995). But to treat quits, discharges, and total turnover as synonymous ignores the markedly different etiologies and effects of these phenomena. In an organization with high quit rates, for various reasons employees

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G. Douglas Jenkins, Jr., is now deceased.

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1 Involuntary turnover due to retirement, death, and so forth is essentially uncontrollable and is therefore a less fertile topic for research.
find it more attractive to leave than to stay. In an organization with high discharge rates, however, presumably incorrect hiring decisions are remedied through termination. These phenomena are not just superficially, but fundamentally, different, and they must be treated differently. This is what we propose to do. In the following paragraphs, we outline a framework for understanding how HRM practices affect quits and discharges at the organizational level. In developing this framework, we chose not to identify and measure systems of practices predicting turnover, as Arthur (1994) and Huselid (1995) did. Rather, we focused on individual HRM practices and sets of HRM practices that have the greatest impact on voluntary and involuntary turnover. This focus enabled assessment of the differential and combined effects of specific HRM practices and the development of more precise practical guidelines.

**HRM PRACTICES ASSOCIATED WITH VOLUNTARY TURNOVER**

Researchers studying individuals consider voluntary turnover to be affected by two primary factors: the attractiveness of a current job and the availability of alternatives (e.g., Hulin et al., 1985). To follow this approach, a comprehensive organizational framework of voluntary turnover must also incorporate both attractions and alternatives. We focus primarily on attractions here for three reasons: the availability of alternatives is almost constant in our single-industry context; trucking companies typically recruit drivers nationally rather than locally; and the trucking industry experiences driver shortages regularly (Perser, 1994), a fact suggesting that alternative job opportunities are easily available to drivers regardless of their current employers. It is thus more useful to focus on the HRM factors that make drivers’ current jobs more or less appealing to them than alternatives.

Economics research indicates that investments such as pay and benefits in the human capital of an organization reduce voluntary turnover (Osterman, 1987). Strategic HRM research also suggests that commitment-enhancing HRM systems reduce turnover (Arthur, 1994). Common in this research is the notion that employees maximize their own interests and their own financial and psychological outcomes and that they remain with organizations when overall self-interest is maximized by staying. Thus, “Where the exchange is less favorable to the employee than to the employer, the employee is most likely to leave the firm as soon as alternative employment options are available” (Tsui, Pearce, Porter, & Tripoli, 1997: 1096).

Tsui and colleagues (1997) distinguished among HRM practices on the basis of “(1) employer-expected employee contributions and (2) inducements offered by the employer to the employees” (Tsui et al., 1997: 1101). Inducements and investments in employees increase employees’ expected outcomes, making a job more attractive. In contrast, employers’ expectations increase employees’ expected contributions, decreasing the attractiveness of a job. In other words, inducements and investments lower quit rates; expected contributions increase quit rates. In this discussion, following Tsui and colleagues we focus only on the employer aspect of employer-employee relationships, for two reasons: (1) because the micro literature examining the impact of employees’ perceptions on turnover is indeed massive already and (2) because an organization’s investments and expected contributions are under its direct control, making them more easily influenceable in the employer’s attempts to reduce turnover.

**Inducements and Investments**

An investment-focused HRM strategy subsumes HRM practices that ensure a high-quality human capital pool. Primary and certainly the most visible among an organization’s investments is its compensation and benefits package. High pay promotes retention since employees’ self-interest is maximized through staying, and it promotes organizational self-interest through attraction and retention of a superior workforce (Williams & Dreher, 1989). The relationship between pay and voluntary turnover has been empirically supported at the individual (Gupta & Jenkins, 1980; Park, Ofori-Dankwa, & Bishop, 1994), organizational (Leonard, 1987; Powell, Montgomery, & Cosgrove, 1994; Wilson & Peel, 1991), and industry (Parsons, 1977) levels.

The current economic climate highlights the importance of benefits, particularly health care benefits. Investment in a good benefits package should achieve the same ends as does high pay—that is, it should reduce voluntary turnover. This statement is particularly true given that many benefits improve with organizational tenure. The relationship between benefits and voluntary turnover has been empirically supported at both the individual level (Buchko, 1992; Gupta & Jenkins, 1980; Tsai, Bernardi, & Lucas, 1989) and the organizational level (Bennett et al., 1993; Powell et al., 1994).

Compensation and benefits are tangible inducements—the rewards against which alternative employment opportunities are directly assessed. But organizations also make indirect investments in employees that affect employee attitudes.
on arguments made by Fishbein and Ajzen (1975) and others, psychological and micro-organizational researchers have posited that individual attitudes lead to behavioral intentions, which in turn lead to behaviors. Factors affecting attitudes are the more indirect manifestations of an organization’s investment in human resources.

In an era of corporate downsizing, mergers, and acquisitions, job stability is a critical manifestation of an investment strategy. The salience of tenure among faculty has risen dramatically in recent years, for instance. Lack of stability would imply the abrogation of a significant, albeit informal, contract by an organization and would diminish employees’ sense of attachment and responsibility to the organization (Ashford, Lee, & Bobko, 1989). As a critical investment, stability should enhance retention of employees. An investment strategy is also reflected in the training opportunities for employees an organization offers. U.S. companies have regularly spent billions of dollars on employee training, investing an average of 1.4 percent of payroll (Carnevale & Johnston, 1989) or $300 per employee (Gordon, 1991). These investments should predict voluntary turnover. Procedural justice is critical for many employee outcomes (Greenberg, 1990; Thibaut & Walker, 1975). It is seldom addressed in the economics or macro-organizational literature, although Freeman and Medoff (1984) posited voice to be a critical factor in unionization. Micro-organizational research has indicated the centrality of procedural, and not just distributive, fairness. When HRM systems ensure procedural justice (for example, through grievance or appeal procedures), the relative attractiveness of a workplace is enhanced and employees’ propensity to leave is diminished.

**Expected Contributions**

HRM practices can also increase the expected contributions of employees. Such employer expectations and the HRM practices that promote them increase what employees must give to an organization. The higher the expectations, the lower the likelihood that employees’ self-interest will be maximized by their staying with the organization (particularly when it is compared to alternatives), and the higher the quit rate. Expectations-enhancing HRM practices can also influence quit rates by affecting employees’ psychological attachment to an organization.

*Employee monitoring* is an expectations-enhancing HRM practice. It can take different forms; close supervision, low span of supervisory control, and electronic monitoring are a few. Close monitoring of employees reduces job control and increases job demands (Carayon, 1993; Smith, Cohen, & Stammerjohn, 1981), and low job control and high demand in turn influence withdrawal cognitions and resignations (Fisher & Gitelson, 1983; Jackson & Schuler, 1985).

Characteristics of jobs influence employees’ expectations of necessary inputs. Micro research has focused on working conditions that strengthen or weaken employee-organization links (Mowday, Porter, & Steers, 1982) and the higher propensity of employees to quit when working conditions are noxious (Gupta & Jenkins, 1991; Locke, 1976; Quinn & Mangione, 1973). In the trucking industry, a critical factor affecting expected contributions is how often drivers are on the road, or *time on the road*. A company that enables drivers to be home more often is placing lower demands on drivers than one that enables their being home less often. The frequency with which drivers are home thus constitutes another significant expectation.

Thus, we propose the following hypothesis:

**Hypothesis 1.** Direct HRM investment strategies (pay and benefits) and indirect HRM investment strategies (job stability, training, and procedural justice) will be negatively related to voluntary turnover at the organizational level, and employer expectations (electronic monitoring and time on the road) will be positively related to voluntary turnover at the organizational level.

We have discussed a handful of HRM practices as representing investment strategies and employer expectations. These practices do not capture the entire construct domain, instead constituting a sample of the domain. We expected HRM practices to affect voluntary turnover additively: the more numerous the inducements and investments and the fewer the employer expectations, the lower the turnover.

**HRM PRACTICES ASSOCIATED WITH INVOLUNTARY TURNOVER**

Involuntary turnover (termination or discharge) has etiological dynamics, consequences, and costs that are completely different from those of voluntary turnover. A termination reflects a bad hiring decision that must be corrected; a quit reflects the lower attractiveness of a current job relative to alternatives. Unfortunately, discharges have been discussed only briefly in the literatures on micro HRM, strategic HRM, and economics, despite the fact that in utility research (e.g., Cascio, 1991; Schmidt, Hunter, Outerbridge, & Trattmer, 1986),...
the costs of incorrect hiring decisions have been estimated to be high. The antecedents of discharges reside in the hiring and firing systems of an organization. An organization that selects employees carefully need not discharge as many employees; when selection errors do occur, an organization with effective systems for identifying and correcting errors should have higher discharge rates than one that does not.

**Staffing Systems**

The attention an organization devotes to its employee selection (staffing) systems affects the quality of its hires (Schmidt & Hunter, 1983). Two elements of staffing systems are particularly important: how selective the organization can be, or the selection ratio (Taylor & Russell, 1939), and the validity of the organization’s selection process (Hunter & Hunter, 1984).

The selection ratio addresses how choosy an organization is in hiring employees. Choosy organizations presumably select the best of the crop. In contrast, the more an organization is compelled to hire all who apply, the more bad hires it is likely to have and the higher the subsequent discharge rate is likely to be. The use of valid selection procedures should lead to fewer bad hires (Hunter & Schmidt, 1983: 473). Huselid (1995) showed that selective staffing practices, used as part of a system of HRM practices, are related to total turnover. Thus, organizations using valid selection procedures should have lower discharge rates than others.

The interaction between the selection ratio and the use of valid selection procedures is likely to have an even more potent impact. When the selection ratio is high, the use of valid selection techniques is probably not fruitful—it doesn’t matter how good they are if most, if not all, applicants are hired. But when an organization can be choosy, and it chooses carefully, utility is enhanced. The presence of both a low selection ratio and valid selection procedures would be effective, but the presence of only one or the other brings costs that are not necessarily counterbalanced by benefits. For this reason, the developers of most utility models (e.g., Cascio, 1989; Naylor & Shine, 1965; Schmidt & Hunter, 1983; Taylor & Russell, 1939) have incorporated both the validity coefficient and the selection ratio in their calculations, and their interaction should have greater predictive power than either in isolation. The third element in utility calculations is the base rate (Taylor & Russell, 1939), a measure of the proportion of applicants who are likely to succeed on the job. Unfortunately, we could not assess its impact because of data constraints.

An organization may be able to correct selection problems by training employees in requisite skills (e.g., Goldstein, 1991; Wexley & Latham, 1991). Training can also define roles more clearly to employees (Naylor, Pritchard, & Ilgen, 1980). Organizations with substantial training opportunities should thus have lower discharge rates.

**Monitoring Systems**

To the extent that a bad hiring decision is made in the first place, how does an organization identify and correct it? Presumably, the better the organization is able to monitor its employees, the more likely it is to have information about the quality of its hiring decisions.

Performance appraisals are ways for organizations to keep track of the value provided by each employee (e.g., Murphy & Cleveland, 1991). An organization should terminate an employee when its investments in that employee (pay, benefits, training, etc.) exceed the contributions made by him or her. Especially when the cost of turnover is high and human capital is crucial to organizational success, the organization is likely to focus attention on terminating employees who lack the necessary capital or the motivation to use that capital to promote organizational objectives. Consequently, performance appraisals should be positively related to involuntary turnover. Employee monitoring provides organizations with better information about employees. Poor employee behaviors should be more obvious to management, increasing the likelihood of termination. Thus, we propose the following:

*Hypothesis 2. Organizational staffing systems (a low selection ratio, valid selection procedures, and training) will be negatively related to voluntary turnover at the organizational level, and organizational monitoring systems (performance appraisal and electronic monitoring) will be positively related to involuntary turnover at the organizational level.*

*Hypothesis 3. The interaction of selection ratio and valid selection techniques is a stronger predictor of involuntary turnover than the “main effects” of each.*

In the foregoing discussion, we did not address the issue of arbitrary employee termination. Williamson (1981) argued that when turnover costs are high, organizations implement practices that minimize arbitrary discharge. Such practices may reduce arbitrary discharges, but they do not necessarily raise or lower the involuntary turnover rate per
se. Although certainly a fruitful area of inquiry, investigating these practices was beyond the scope of this research.

To summarize, our primary interest was threefold: we sought (1) to assess the extent to which specific HRM practices predict turnover at the organizational level, (2) to examine the relationship between these practices and quit and discharge rates separately, and (3) to conduct this examination in a multivariate rather than a bivariate fashion.

METHODS

Sample

The original population for this study consisted of 3,104 trucking organizations that reported information to the Interstate Commerce Commission (ICC) and were included in the 1993–94 TTS Blue Book of Trucking Companies (henceforth, the Blue Book). Since very small companies are unlikely to have systematic HRM practices, only companies with at least 30 employees were included. Some companies listed in the Blue Book had gone out of business in the interval between the book’s publication and our data collection, and some had no company drivers but only “owner-operators.” Exclusion of these companies resulted in a sample of 1,072 companies. We mailed a 24-page questionnaire to the highest-ranked HRM manager in each company and received completed responses from 379 of the companies. This level of response represented a 36 percent (379/1,072) response rate. Our questions focused on the characteristics and effects of the HRM systems for the firms’ driver workforces. Turnover rates were provided in 227 completed questionnaires; the analyses are based on these data.

Main Measures

**Dependent variables.** Key respondent reports are typically used in organizational turnover research (Alexander et al., 1994; Bennett et al., 1993; Huselid, 1995). We did the same. The respondents reported measures of driver turnover expressed as percentages of total firm employment. These reports focused on drivers only, excluding other permanent or temporary employees. Two rates were reported: driver quit rates, or voluntary turnover, and driver discharge rates, or involuntary turnover. Reports were for the previous calendar year (1994). All analyses were conducted separately for the two variables.

**HRM practices.** Measures of all HRM practices were obtained through the questionnaire. Average pay was measured as the dollar amount specified in response to the question “On average, how much does a typical driver earn per year?” The attractiveness of the benefits plan was assessed through three Likert-type agree/disagree items with seven response options. Items included in this and other multi-item scales are shown in Table 1. Job stability was measured with two Likert-type agree/disagree items with seven response options. Training was measured with one item: “How many hours of formal training does a typical driver receive in a year?” Responses were transformed into logarithms for analysis. Procedural justice included three Likert-type agree/disagree items with seven response options. Electronic monitoring consisted of three items asking respondents the percentage of trucks in their fleets with “on-board computers,” “satellite tracking,” and “on-board systems to communicate with dispatchers.” The mean of these percentages served as the measure. Performance appraisal was measured as the number of times per year the company conducted formal performance appraisals for drivers. Time on the road was measured as the reverse of the number of times drivers were typically routed home each month. The selection ratio was the number of drivers hired during the past year divided by the number of individuals who had applied for driving jobs in the past year.

We used a validity generalization approach in deriving our measure of selection procedures. A procedure was included in this measure if it had a validity coefficient of at least .25 in a meta-analytic or validity generalization study. This resulted in the inclusion of eight valid selection procedures: structured interviews, mental ability tests, physical ability tests, technical knowledge tests, performance or job sample tests, personality tests, honesty or integrity tests, and biographical information questionnaires. For each procedure, respondent companies were given a rating of 1 if they placed at least some weight on the procedure in the selection process and rating of 0 if the procedure was not used. The number of valid selection techniques used by the company was then counted. This index represented the general validity of an organization’s selection procedures rather than validity with respect to driving jobs specifically and is an approximation of how careful a trucking company was in driver selection.

**Control Variables**

To enhance generalizability of the results, we included several control variables based on the re-
TABLE 1
Factor Analysis Results for Multi-item Subjective Scalesa

<table>
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<tr>
<th>Scale and Item</th>
<th>Factor Loading</th>
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<tr>
<td>Benefits</td>
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<tr>
<td>Our drivers have a better benefits package than other drivers in the industry.</td>
<td>.85</td>
</tr>
<tr>
<td>Our drivers could get a better benefits package in another trucking company.</td>
<td>.83</td>
</tr>
<tr>
<td>Our benefits package helps us attract good drivers.</td>
<td>.79</td>
</tr>
<tr>
<td>Procedural justice</td>
<td></td>
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<tr>
<td>We rule on disputes only after we investigate all sides of the issue thoroughly.</td>
<td>.06</td>
</tr>
<tr>
<td>Drivers have a chance to answer any complaints made against them.</td>
<td>.04</td>
</tr>
<tr>
<td>Our company has formal procedures to ensure that drivers are treated fairly.</td>
<td>.24</td>
</tr>
<tr>
<td>Job stability</td>
<td></td>
</tr>
<tr>
<td>We guarantee drivers a certain amount of pay every pay period.</td>
<td>.04</td>
</tr>
<tr>
<td>We guarantee drivers a certain amount of work every pay period.</td>
<td>.00</td>
</tr>
<tr>
<td>Applicant pool</td>
<td></td>
</tr>
<tr>
<td>We have many people to choose from when hiring drivers.</td>
<td>.08</td>
</tr>
<tr>
<td>We have so many applicants that we don't have to recruit actively.</td>
<td>.04</td>
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</table>

<table>
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<tr>
<th>Eigenvalue</th>
<th>Percentage of variance explained</th>
<th>Alpha</th>
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<tr>
<td></td>
<td>2.70</td>
<td>20.95</td>
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<td></td>
<td>1.73</td>
<td>19.31</td>
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<td>1.49</td>
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<td>1.34</td>
<td>15.33</td>
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<tr>
<td>.78</td>
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<td>.83</td>
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<tr>
<td>.68</td>
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</table>

a Factor loadings for the correct scale are shown in bold type.

Results of other organization-level studies of turnover, macro research in general, or the results of motor carrier studies in the transportation literature. Control variables included both general organizational factors and a factor specific to the motor carrier industry.

Organizational controls. The general organizational variables were organizational size and age, union status, and the applicant pool. Organizational size was the logarithm of the total number of employees in a company, as reported by the respondent. Organizational age was the logarithm of 1994 minus the founding year. Information on founding years was obtained from the Blue Book. Union status was the percentage of drivers covered under a collective bargaining agreement. This information was reported by respondents. Finally, we used a perceptual measure of the available applicant pool, with two Likert-type agree/disagree items that had seven response options. We used this perceptual measure because trucking companies often recruit and hire nationally, not regionally, and because they hire only commercially licensed drivers; thus, we considered local unemployment rates inappropriate measures of the available labor supply.

Industry controls. Organization-level variables specific to the trucking industry also affect turnover and other organizational outcomes (Corsi & Stowers, 1987; Lemay, Taylor, & Turner, 1993). Trucking firms can be categorized into two carrier types, truckload organizations and less-than-truckload organizations. In addition, some companies handle special commodities, such as hazardous materials. Truckload organizations serve customers having sufficient volume to load an entire trailer, whereas less-than-truckload (LTL) organizations serve customers with smaller shipments. Because of differences in the demands placed on these two groups, their turnover rates are quite different (Gilroy, 1992; Lemay et al., 1993; Murphy, 1992; Perser, 1994). The variable carrier type was defined as the primary business of a company reported by the respondent. Because LTL carriers show turnover patterns that are remarkably different from other carriers', they were placed in one category (coded 0), and specialized commodity and truckload organizations were placed in the other (coded 1).

Analyses

Exploratory factor analysis. To assess the extent to which the a priori multi-item scales held together, we conducted an exploratory factor analysis. This analysis included the items in the multi-item scales measuring benefits, procedural justice, job stability, and the applicant pool; the electronic monitoring items were excluded from this analysis since they pertained to factual information that was not predicted to be internally consistent. The results of this principal components analysis with "varimax" rotation, shown in Table 1, suggest that
the scales held together quite well. Table 1 also shows the coefficient alpha reliability estimates for the scales.

Analytic strategy. Zero-order correlations between each predictor and the turnover variables were computed. Of greater interest were multiple regression analyses that allowed us to look at the predictors simultaneously. Hierarchical regressions (Cohen & Cohen, 1983) enabled us to enter the variables as blocks and to assess the incremental explanatory power of each block. The first block contained the control variables; the second block, the HRM practices; and the third, the interaction of the selection ratio and selection procedures. We used all the HRM variables to predict both quit rates and discharge rates and to thus assess the discriminant validity of the theoretical framework, since HRM practices predicted to relate to quits should be unrelated to discharges, and vice versa.

RESULTS

Response Bias and Measurement Checks

Response bias check. Following the work of Osterman (1994), we ran a logistic regression analysis to test for differences between respondent and non-respondent companies. The dependent variable was dummy-coded 1 if a usable questionnaire had been returned and 0 otherwise. The independent variables for this bias check were obtained from the 1994 Blue Book and included number of drivers, total fringe benefits cost, total highway miles driven, total wages paid, average haul (in miles), total insurance costs, current assets, company age, tons per mile, and average load (in tons). None of these variables was significant in the equation, indicating that response bias should not have affected our results. A comparison of respondents who provided turnover data with those who did not revealed only one significant difference: the latter group came from older companies.

Measurement checks. Most of our measures were based on respondent reports, and the validity of such reports is open to question. Information on three control variables—size, carrier type, and average haul—was available both in the questionnaire and in the Blue Book for 1993–95. The correlations between the questionnaire and Blue Book measures ranged from .84 to .91 for size, from .72 to .87 for carrier type, and from .41 to .66 for average haul. The Blue Book also contained potential proxies for two HRM practices, pay and benefits. It reported total wage costs for drivers and helpers, whereas we measured average driver pay. We constructed a total pay measure from the questionnaire (average pay multiplied by the number of drivers) to parallel the Blue Book measure; we also constructed an average pay measure from the Blue Book (total wage cost divided by the number of drivers and helpers) to parallel the questionnaire measure. For the year 1994 (the focus of the questionnaire), the correlation between the two average pay measures was .33, and the correlation between the two total pay measures was .88. The average pay measure from the Blue Book had a correlation of −.16 with quit rates, and the average pay measure from the questionnaire had a correlation of −.19 with quit rates. The alternative measures were thus significantly and moderately related and showed a similar pattern of relationships with turnover. We considered our average pay measure to be superior to the Blue Book measure for several reasons: (1) our measure focused only on drivers, (2) the Blue Book mean pay measure did not necessarily reflect what an average driver made, and (3) the latter measure contained some obvious errors (for instance, one firm’s total annual wage cost was listed as less than $5,000).

The Blue Book also contains information on the total costs of fringe benefits for entire organizations, a measure that included benefits costs for executives, office staff, and other employee groups. This measure was substantively different from our variable assessing the attractiveness of fringe benefits for drivers. We nonetheless correlated our measure with the Blue Book measure, which was calculated as total benefits divided by total employees, after eliminating obvious errors in the book’s data (e.g., negative benefits costs). This correlation was .26 for 1994. Again, the questionnaire measure provided a better estimate of the inducement quality of benefits than did the Blue Book measure.

These measurement checks indicated that the respondent reports used in this research had reasonable convergence with information from published sources and that the more similar the wording and focus of the two measures, the higher the correlations. To preserve sample size (1994 Blue Book information was available for only a subset of respondents), and because the questionnaire provided better information on the variables of interest, we used only the questionnaire measures of HRM practices in our further analyses.

Predictors of Voluntary and Involuntary Turnover

Table 2 contains the means and standard deviations for, and the correlations among, all the variables in the study. We generated the correlation matrix using a "pairwise" deletion procedure. The
positive correlation \( r = .38, p < .01 \) between the quit rate and the discharge rate suggests that the two, although correlated, are distinct phenomena, validating our decision to examine them separately.

Table 3 contains the results of the hierarchical regression analyses for both dependent variables. The columns headed \( \Delta R^2 \) show the incremental explanatory power of each step, and the beta columns show the unique explanatory power of each variable in the final equation. The table shows that the significant predictors of the discharge and quit rates were quite different.

The control variables accounted for about 27 percent of the variance in quit rates. Of greater interest were the variables measuring inducements and investments and employer expectations. The results generally confirmed our expectations. Average pay and time on the road had strong relationships with quit rates \( (\beta = -.31, p < .01, \text{ and } \beta = .25, p < .01, \text{ respectively}) \), and benefits and electronic monitoring had moderate relationships with quit rates \( (\beta = -.16, p < .05, \text{ and } \beta = .16, p < .05, \text{ respectively}) \). The hypothesized predictors of discharge rates only (selection ratio, selection procedures, and performance appraisal) were unrelated to quit rates. The step 3 interaction was neither hypothesized nor empirically found to be related to quit rates. In all, these results provide partial support for Hypothesis 1.

The control variables accounted for 26 percent of the variance in discharge rates. In the HRM practices block, training and the selection ratio were significant predictors of discharges \( (\beta = .15, p < .05, \text{ and } \beta = .26, p < .01, \text{ respectively}) \). Contrary to Hypothesis 2, training was positively related to discharge rates. Hypothesis 2 was supported for the selection ratio only. The results also confirmed our prediction of an interaction between the selection ratio and selection procedures \( (\beta = .32, p < .01) \), supporting Hypothesis 3. Figure 1 shows a plot of this interaction. The figure was plotted using values one standard deviation above and one standard deviation below the mean for the selection ratio and selection procedures. The figure shows that when the selection ratio was low and the use of valid selection procedures was high, discharge rates were low. When valid selection procedures were not used, however, the selection ratio was irrelevant to discharge rates. It is noteworthy that discharge rates were highest when valid selection procedures were used, even when the selection ratio was high.

To assess the extent to which the models for the quit and the discharge rates were different, we constructed 95 percent confidence intervals around the

**TABLE 2**

Descriptive Statistics and Correlations for All Variables*  

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>s.d.</th>
<th>1</th>
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<th>14</th>
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<th>16</th>
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<tbody>
<tr>
<td>Turnover</td>
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</tr>
<tr>
<td>1. Quit rates</td>
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<tr>
<td>2. Discharge rates</td>
<td>5.96</td>
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<td>.35**</td>
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<td>-.24**</td>
<td>-.26*</td>
<td>-.04</td>
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<td>-.19*</td>
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<td>7. Carrier type</td>
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<td>0.36</td>
<td>.23**</td>
<td>.04</td>
<td>-.27**</td>
<td>-.13*</td>
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<td>15. Time on the road</td>
<td>16.70</td>
<td>11.35</td>
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<td>.11</td>
<td>.24**</td>
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<td>-.26**</td>
<td>-.15**</td>
<td>.25**</td>
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<td>-.05</td>
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<td>.05</td>
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<td>16. Selection ratio</td>
<td>0.31</td>
<td>0.20</td>
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<td>.36**</td>
<td>.10</td>
<td>-.01</td>
<td>-.09</td>
<td>-.21**</td>
<td>.04</td>
<td>-.02</td>
<td>-.22**</td>
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<td>-.11</td>
<td>-.14*</td>
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<td>2.42</td>
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<td>.08</td>
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<td>.23**</td>
<td>.10</td>
<td>.00</td>
<td>.19**</td>
<td>.04</td>
<td>-.03</td>
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* Range of N is 148–311.

* \( p < .05 \)

** \( p < .01 \)
### TABLE 3
Results of Hierarchical Regression Analysis for Quit Rates and Discharge Rates

| Step | Independent Variable | Hypotheses Tested | Quit Rates | | | | Discharge Rates | | | |
|------|---------------------|------------------|------------|---|---|-------------|---|---|-------------|---|---|-------------|
|      |                     |                  | Adjusted $R^2$ | $\Delta R^2$ | $\beta$ | Adjusted $R^2$ | $\Delta R^2$ | $\beta$ |
| 1    | Controls            |                  | .24**       | .27**       |         | .23**       | .26**       |         |
| 2    | Human resource practices |                | .41**       | .20**       | -1.6*   | .28**       | .10*        |         |
|      | Average pay         | 1                | -31**       | .06        |         |            |             |         |
|      | Benefits            | 1                | -16*        | .05        |         |            |             |         |
|      | Job stability       | 1                | -09         | .00        |         |            |             |         |
|      | Training            | 1, 2             | -04         | .15*       |         |            |             |         |
|      | Procedural justice  | 1                | -02         | .07        |         |            |             |         |
|      | Electronic monitoring| 1, 2             | -11         | .11        |         |            |             |         |
|      | Performance appraisal| 2                | .16*        | .02        |         |            |             |         |
|      | Time on the road    | 1                | .25**       | .01        |         |            |             |         |
|      | Selection ratio     | 2                | .02         | .26**      |         |            |             |         |
|      | Selection procedures| 2                | .01         | .08        |         |            |             |         |
| 3    | Interaction         | 3                | .40**       | .00        | -.03    | .38**       | .09**       | .32**    |
|      | Selection ratio by selection procedures | |             | |         | |             | |

* Adjusted $R^2$ values are reported for each step. Beta values are reported for the final step.

$N = 141$ for quit rates and $N = 148$ for discharge rates.

* $p < .05$

** $p < .01$

---

**FIGURE 1**

Interaction of Selection Procedures and the Selection Ratio in Predicting Discharge Rates

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regression coefficient for each predictor and examined the overlap between the confidence intervals. There was no overlap for average pay and the interaction between the selection ratio and selection procedures, and there was an extremely small overlap for benefits, electronic monitoring, training, time on the road, and the selection ratio (these constituted the significant predictors in the two
models). In all but one case (electronic monitoring), the significant coefficients for quit rates were outside the confidence intervals for discharge rates and vice versa. It was reasonable to conclude that the two models were indeed different and that the predictors of quit rates were different from those of discharge rates.

**DISCUSSION**

The results of this study are encouraging with respect to the relationship between organizationally controllable human resource management factors and turnover. They show that (1) it is important to examine organization-level quit rates and discharge rates separately, (2) the specific HRM practices that predict quit rates are quite different from those that predict discharge rates, and (3) the interaction of selection procedures and the selection ratio is a potent predictor of discharge rates.

**Differentiating between Voluntary and Involuntary Turnover**

The data confirm the usefulness of differentiating types of turnover in organization-level research. We analyzed (but did not report) the predictors of voluntary, involuntary, and total turnover. The three sets of analyses, taken together, indicate not only that voluntary and involuntary turnover have different etiological dynamics, but that examination of total turnover may be misleading. With rare exceptions (e.g., Powell et al., 1994), researchers conducting strategic HRM and economics studies have tended to treat these constructs as synonymous. Since total turnover incorporates elements of both quits and discharges, however, any observed predictive effects may be contaminated. Quit dynamics may cloud discharge dynamics.

The levels and predictors of voluntary and involuntary turnover were quite different. The quit rates observed were much higher (\( \bar{x} = 25.55\% \)) than the discharge rates (\( \bar{x} = 5.98\% \)). This finding is consistent with industry reports that driver quit rates, not discharge rates, are a significant problem (Lemay et al., 1993). Control variables explained about 27 percent of the variance in both the quit and discharge rates, but HRM practices explained more variance in quit rates (20%) than in discharge rates (10%), and the selection procedures/selection ratio interaction was significant only for discharge rates (9 percent of the variance).

In terms of the distinctions between voluntary and involuntary turnover, then, our results indicate that (1) the two phenomena are related but are not synonymous, (2) the two phenomena have different levels, (3) investments and inducements and employer expectations predict quit rates but not discharge rates, and (4) staffing practices predict discharge rates but not quit rates. We included all predictors in equations predicting both quits and discharges to assess the validity of our arguments that different HRM practices would be predictive of different types of turnover. Essentially, we were “stacking the deck” against chance findings. The results demonstrate convincingly the merit of examining voluntary and involuntary turnover separately at the organizational level, just as these phenomena have been treated separately at the individual level (e.g., Mobley, 1982; Price, 1977). Our measures of quit and discharge rates were based on respondent reports and were probably affected by difficulties and interorganizational differences in classification schemes, yet the differences in results were marked. If organizational turnover data more precise than the data we employed could be obtained, the observed differences might be magnified.

**Predictors of Voluntary Turnover**

The proposed framework for examining voluntary turnover was substantively validated. Two of the five measures of inducements and investments (pay and benefits) and both measures of employer expectations (electronic monitoring and time on the road) were related to quit rates in the predicted direction. When Tables 2 and 3 are compared, further insights are obtained. Job stability and procedural justice had significant zero-order relationships with the quit rate (Table 2), but these correlations faded when other predictors were introduced (Table 3). The distributive justice measures, the expectation of monitoring, and a high level of time on the road apparently absorbed much unique variance, leaving little explanatory power for procedural justice and job stability. The existence of bivariate relationships, combined with the absence of multivariate relationships, highlights the value of multivariate examinations of turnover.

In our framework, we posited that inducements and investments and employer expectations were related to voluntary turnover (quits). Overall, this was the case. Pay was clearly the strongest correlate. That pay and quits are related has been substantiated in micro HRM, macro HRM, and economics research (e.g., Gupta & Jenkins, 1980; Parsons, 1977; Powell et al., 1994). What our results add to this literature is a framework within which pay dynamics can be seen to emerge. We argued that employees will remain with an organization as long as it serves their self-interest to do so better.
than the alternatives available to them. Pay clearly offers one such inducement, but it is not the only one. Other HRM practices, particularly benefits, also induce employees, bonding them to their employing organization. Much time away from home and electronic monitoring, on the other hand, weaken this bond. The emergence of strong predictors within both the inducements and investments and employer expectations groups validates our proposed framework.

The variables in our model explained only 47 percent of the variance in voluntary turnover ($R^2 = .47$, adjusted $R^2 = .41$). Forty-seven percent is a substantial figure, but there is room for improvement. The sampling of variables we picked is just that, a sampling. All inducements in our study concerned HRM practices designed to enhance extrinsic inducements. But many studies have also stressed the relevance of intrinsic rewards to employee attitudes and behaviors (e.g., Hackman & Lawler, 1971; Hackman & Oldham, 1980). Our data precluded an empirical examination of intrinsic rewards as inducements, but the issue holds potential.

Two variables in the employer expectations group (electronic monitoring and time on the road) received validation as predictors of quit rates, but a host of other HRM practices can be subsumed within this group. For example, Arthur's (1994) commitment system includes supervision, participation, decentralization, and social relationships. Other HRM systems (Huselid, 1995; MacDuffie, 1995) are similar. A more comprehensive enunciation of intrinsic rewards as inducements, but the issue holds potential.

Predictors of Involuntary Turnover

Involuntary turnover was hypothesized to relate to staffing and monitoring practices, and the empirical results partly supported this hypothesis. Staffing practices predicted discharge rates. We also posited that monitoring would give employers better information on which to base discharges, but this effect was not observed. Perhaps monitoring provides valid employee information, raising not discharge rates per se, but rather, the proportion of right discharges. That is, monitoring may increase the validity, not the absolute level, of discharge decisions.

By far the most interesting finding with respect to discharge rates concerns the interaction of selection procedures and the selection ratio. This effect, although long recognized (Taylor & Russell, 1939), has seldom been empirically demonstrated. The results suggest that the use of valid selection tech-
lent and substitutable—an organization is considered better if it has either more of one HRM practice or more HRM practices overall. Some researchers have considered it valuable to sum scores on specific HRM practices to develop a system measure (e.g., Becker & Huselid, 1998), but this procedure does not dovetail with the dominant conceptual approach in strategic HRM. Additive empirical tests are not appropriate for assessing theorized multiplicative effects. Becker and Gerhart (1996) recommended the use of cluster analysis as an alternative. Arthur (1994) used cluster analysis to classify organizations into one of two types of HRM systems on the basis of their use of various HRM practices. Cluster analysis is popular in the configurational literature also. The assumptions here are that only a finite number of coherent groups are viable in the real world and that cluster analysis is uniquely suited to detect these groups: “Just a fraction of the theoretically conceivable configurations are viable and apt to be observed empirically” (Meyer et al., 1993:1176). But cluster analysis overlooks the magnitude of within-cluster variations, particularly in cross-sectional examinations of organizations that may be in transition. There are also other concerns about the use of cluster analysis in this context (Delery, in press). Moreover, although both Arthur (1994) and Huselid (1995) uncovered significant relationships between HRM practices bundles and different measures of effectiveness, their studies shed little light on the specific HRM practices that are most effective. Perhaps only one HRM practice explains all the effects found in their research, or perhaps several effects are interdependent or synergistic. The actual effects of HRM practices may also be over- or underestimated using these approaches.

For these reasons, we did not use a typical bundles approach; rather, we focused on specific HRM practices and specific additive or interactive effects. We hypothesized and tested additive effects with respect to voluntary turnover and also hypothesized and tested interactive effects with respect to involuntary turnover. The interaction essentially reflects the bundling of specific HRM practices (valid selection procedures and the selection ratio). Our analytic approach was thus consistent with our theoretical approach. This analytic strategy not only enabled us to verify the existence of predicted additive and multiplicative effects, but also enabled us to determine specific HRM practices that held explanatory power. Superior theoretical and practical clarity were the result. Parenthetically, given our markedly different results for quit and discharge rates, the study also suggests that researchers making predictions based on bundles should address specific outcomes differently as well, rather than considering all outcomes (financial performance, turnover, etc.) as predictively interchangeable.

Limitations

Our results should be viewed in the light of the data’s limitations. Turnover measures were obtained from key respondent reports. Of course, all turnover data are reported by individuals. Archival turnover sources are compiled from company reports of turnover levels, and the turnover calculations used by some researchers are based on company reports of employment levels. The respondents in our study were generally high-ranking members of the organizations’ HRM personnel staffs or members of top management and should have been quite familiar with the turnover rates of their organizations; thus, response error should have been low. Differences in calculations of quit and discharge rates or in company policies (for example, is a driver who does not show up for work for a week considered as having quit or as having been discharged?) may also introduce error into the measures. Also, a substantial number of the returned questionnaires did not contain turnover rates. Perhaps those who were unsure of their turnover rates simply chose not to report them, suggesting that when the information was provided, it was valid. Nonresponse may also have been random. Certainly, it is important to design ways to ensure that this information is obtained from all respondents.

The study was conducted in one industry, an industry in which employees are often away from home for weeks at a time. This fact may raise questions about the applicability of our results to other industries. Controlling for strong industry-specific factors should have reduced this problem, so that the results regarding HRM practices can be generalized across industries.

The impact of all our predictors over time cannot be addressed because the study was cross-sectional, and we cannot confirm the causal nature of the hypothesized relationships. A challenge for future research is to determine the influence of HRM practices on organizational outcomes over time.

Practical Implications

What do our results say to HRM managers? Within the trucking industry, of course, they emphasize the importance of good pay, good benefits, low use of electronic monitoring, and low time on the road if the objective is to reduce quit rates. They
also suggest the importance of bundling valid selection techniques with a favorable (low) selection ratio for controlling discharge rates. Beyond the trucking industry, our results underscore the need for careful examination of the investments made in, and the expectations held of, an organization’s human capital pool. These HRM systems are within an organization’s control, and a manager who wants to reduce turnover should carefully attend to maximizing employees’ financial and psychological interests. In contrast, when an organization has an unacceptably high discharge rate, corrective action should be directed toward its staffing systems. Employees should be selected carefully when, and only when, the selection ratio is low. The problem of bad hires and the need for termination is then reduced.

We did not address the practical utility of human resource management practices. Practices such as high pay and good staffing systems may reduce turnover, but they may not necessarily be cost-effective. An HRM practice that reduces turnover may simultaneously reduce financial performance, an issue we did not address in this study. Future research must examine these differential effects of HRM practices on organizational outcomes.

Conclusion

This study highlights the value of differentiating HRM practices that may influence quits from those that influence discharges. Although limited to one industry, the study nevertheless provides generalizable insights about the role of HRM practices in affecting voluntary and involuntary turnover.

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