

Which Comes First: Employee Attitudes or Organizational Financial and Market Performance?

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Employee attitude data from 35 companies over 8 years were analyzed at the organizational level of analysis against financial (return on assets; ROA) and market performance (earnings per share; EPS) data using lagged analyses permitting exploration of priority in likely causal ordering. Analyses revealed statistically significant and stable relationships across various time lags for 3 of 7 scales. Overall Job Satisfaction and Satisfaction With Security were predicted by ROA and EPS more strongly than the reverse (although some of the reverse relationships were also significant); Satisfaction With Pay suggested a more reciprocal relationship with ROA and EPS. The discussion of results provides a preliminary framework for understanding issues surrounding employee attitudes, high-performance work practices, and organizational financial and market performance.

We report on a study of the relationship between employee attitudes and performance with both variables indexed at the organizational level of analysis. The majority of the research on employee attitudes (e.g., job satisfaction, organizational commitment, and job involvement) has explored the attitude–performance relationship at the individual level of analysis. This is somewhat odd because the study of employee attitudes had much of its impetus in the 1960s when scholars such as Argyris (1957), Likert (1961), and McGregor (1960) proposed that the way employees experience their work world would be reflected in organizational effectiveness. Unfortunately, these hypotheses were typically studied by researchers taking an explicitly micro-orientation and they translated these hypotheses into studies of individual attitudes and individual performance without exploring the organizational consequences of those individual attitudes (Nord & Fox, 1996; Schneider, 1985). To demonstrate how ingrained this individually based research model is, consider the research reported by F. J. Smith (1977). Smith tested the hypothesis that attitudes are most reflected in behavior when a crisis or critical situation emerges. He tested this hypothesis on a day when there was a blizzard in Chicago but not in New York and examined the relationship between aggregated department level employee attitudes and ab-

senteeism rates for those departments. The results indicated a statistically stronger relationship in Chicago between aggregated department employee attitudes and department absenteeism rates than in New York, but Smith apologized for failure to test the hypothesis at the individual level of analysis.

Research conducted under the rubric of organizational climate represents an exception to this individual-level bias. In climate research, there has been some success in aggregating individual employee perceptions and exploring their relationship to meaningful organizational (or unit-level) criteria. For example, an early study by Zohar (1980) showed that aggregated employee perceptions of safety climate are reflected in safety records for Israeli firms, and Schneider, Parkington, and Buxton (1980) showed that aggregated employee perceptions of the climate for service are significantly related to customer experiences in banks. Recent replications of these results document the robustness of these effects (on safety, see Zohar, 2000; on service, see Schneider, White, & Paul, 1998).

There are, of course, other studies that have examined the relationship between aggregated employee attitudes and organizational performance. For example, Denison (1990) measured employee attitudes in 34 publicly held firms and correlated aggregated employee attitudes with organizational financial performance for 5 successive years after the attitude data were collected. He found that organizations in which employees reported that an emphasis was placed on human resources tended to have superior short-term financial performance. In addition, he reported that whereas organizations in which employees reported higher levels of participative decision-making practices showed small initial advantages, their financial performance relative to their competitors steadily increased over the 5 years.

Ostroff (1992), studying a sample of 364 schools, also investigated the relationship between employee attitudes and organizational performance. In this research, Ostroff found that aggregated teacher attitudes such as job satisfaction and organizational commitment were concurrently related to school performance, as measured by several criteria such as student academic achievement and teacher turnover. Finally, Ryan, Schmitt, and Johnson (1996)

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investigated the relationship between organizational attitudes, firm productivity, and customer satisfaction. These authors measured this relationship at two points in time (from 1992 to 1993) by using a cross-lagged panel design estimated by using structural equation modeling. Although the authors found some employee attitudinal correlates of organizational performance, these relationships were inconsistent across the two time periods and, subsequently, were excluded from cross-lagged analyses. Results of the cross-lagged analyses examining the relationship between attitudes and customer satisfaction and attitudes and turnover were inconclusive regarding the direction of causality (see also Schneider et al., 1998).

Studies like these provide preliminary evidence that aggregated employee attitudes are related to organizational performance. These studies suggest that although employee attitudes are at best only weakly correlated to performance at the individual level of analysis, employee attitudes may be related to organizational performance at the organizational or unit level of analysis. We deal with the issue of priority in causal ordering (whether x is the stronger cause of y than the reverse) in the data analyses part of the Method section of the article. Here we simply note that the issue of the level of analysis in research is, of course, not limited to studies involving employee attitudes. For example, Macy and Izumi (1993) provided an informative review of the literature on organizational change and organizational performance and showed that many of the studies in the literature fail to actually look at organizational performance as an outcome. These studies consisted of either single-organization case studies with no controls or individual employee attitude survey data as the dependent variable. As is noted numerous times in the excellent volume on levels of analysis by Klein and Kozlowski (2000), there is considerable ambiguity in the literature over levels of analysis in general and the use of aggregated individual-level data in particular.

The Present Study

In the present article, we report analyses of employee attitude survey data aggregated to the company level of analysis. The present study is in the same spirit as those by Denison (1990) and Ostroff (1992), with one major exception: Both employee attitude and organizational performance data were collected and analyzed over time, permitting some inferences regarding priority in causal ordering. Thus, in the present data set we are able to make inferences about whether employee attitudes are the stronger cause of organizational performance than the reverse. Such inferences, of course, only address which seems to be the stronger cause and do not address the issue of exclusivity with regard to cause, that is, that cause runs only in one direction.¹ For example, although Denison's data extended over time, his research does not constitute a true time-series design, in that he measured only organizational performance, not employee attitudes, over time. Ryan et al. (1996) did study this relationship at two points in time but, as in Schneider et al. (1998), two time periods provide a relatively weak basis for reaching conclusions about causal priority. In contrast, in the present article we report analyses of employee attitude survey data and organizational financial and market performance over a period of 8 years, with the organization as the unit of analysis.

The implicit hypothesis from which we proceeded was that there would be significant but modest relationships between aggregated

employee attitudes and organizational financial and market performance. Our belief that the attitude–organizational–performance relationships would be modest follows from the logic of March and Sutton (1997) and Siehl and Martin (1990). Specifically, March and Sutton noted that, in general, it is difficult to find correlates of any organizational performance measure. Further, focusing on the issue of financial performance, Siehl and Martin argued that there are so many causes of a firm's financial performance and so many intermediate linkages between employee attitudes and organizational performance that to expect employee attitudes to directly correlate with such outcomes may be quite unreasonable.

In the present study we explored the relationships of financial and market performance data to several facets of employee attitudes, all at the organizational level of analysis. We implicitly believed that employee attitudes would be related to the financial and market performance data but had difficulty generating specific hypotheses about which of the several facets of attitudes assessed would reveal the strongest and most consistent relationships. We deduced that if any of the satisfaction facets might reveal consistent relationships with the performance indices, it would be an overall index of job satisfaction. We made this prediction on the basis of several lines of thinking. First, overall job satisfaction has been the most consistent correlate at the individual level of analysis with regard to such outcomes as absenteeism and turnover (Cook, Hepworth, Wall, & Warr, 1981), and organizational citizenship behavior (Organ, 1988). Second, and perhaps more important, we adopted the logic of Roznowski and Hulin (1992), who proposed that if the outcome criterion to be predicted is a general and global one, then the predictor most likely to work with such a criterion is a general measure of job satisfaction. Obviously, organizational market and financial performance are global criteria, so a general measure of job satisfaction should be the single strongest correlate of them.

We also had no *a priori* hypotheses about the causal direction of the hypothesized relationship. The implicit direction of the causal arrow in the literature on this relationship is quite clearly from employee attitudes to organizational performance. Indeed, the implicit causal arrow runs from anything concerning people to organizational performance, with little consideration of either reciprocal effects or the possibility that performance is the cause of anything. March and Sutton (1997) did an excellent job of outlining alternative causal arrows in organizational research and noted that such alternative models “are sufficiently plausible to make simple causal models injudicious” (p. 700).

Recently, there has been growing empirical evidence for alternative causal models. For example, in their study of 134 bank branches, Schneider et al. (1998) showed that employee perceptions of organizational climate for service were reciprocally related with customer satisfaction. Additionally, Ryan et al. (1996), in their study of 142 branches of an auto finance company, found that customer satisfaction seemed to cause employee attitudes but the reverse was not true. Unfortunately, empirical tests of the causal priority in these alternative models are rare because they require access to data collected over multiple time periods and, at the

¹ The notion of causal priority emerged from discussions we had with Katherine Klein; we appreciate her insights on this issue.

organizational level of analysis, from multiple organizations. As March and Sutton (1997) noted, "a simple unidirectional causal interpretation of organizational performance is likely to fail" (p. 701). We did not have such an interpretation, and we were fortunate to have data for both elements of the prediction equation for multiple time periods and from multiple organizations for the analyses to be presented to test alternative models, including reciprocal ones.

The reciprocal model might be the most interesting one conceptually. This is because for the most part, organizational psychologists have not paid attention to the influence of organizational performance on employee attitudes, preferring to focus on the hypothesized directional relationship between attitudes and organizational performance. Logic, however, tells us that people are attracted to successful organizations and are likely to remain with such organizations, and there is some growing evidence for such reciprocal relationships between organizational performance and employee attitudes (Heskett, Sasser, & Schlesinger, 1997; Schneider et al., 1998), so we tested for them explicitly in our data.

Method

Sample

We received archival data from a consortium of U.S. corporations who agreed, as a condition of membership in the consortium, that they would administer a subset of common items from an attitude survey to their employees (more details regarding the items are presented in the Method section). The companies in the consortium are all large esteemed companies, with most of them being listed in *Fortune* magazine's list of most admired companies in America for the time frame used here (Jacob, 1995). At one level, the companies represent diverse industry groups (financial services, telecommunications, automobile manufacturing), yet they are simultaneously difficult to categorize because of their internal diversity. For example, suppose for a moment that General Electric was one of the members of the consortium—is it a manufacturing organization or a financial services organization? We show in the organizational financial and market performance indicators part of the Method section that this internal diversity combined with the small number of companies made analyses by industry difficult if not impossible.

Data on all companies in the consortium were made available to us for the years 1987–1995. The maximum number of companies available for any one year was 35 (1992); the minimum was 12 (1989). Membership in the consortium fluctuated over time. Given the relatively small number of companies in the consortium, we could not randomly sample from consortium membership for the analyses conducted in this article. More critically, our analyses required the same companies to be represented in at least two time periods. Unfortunately, the majority of the companies that participated in 1987 had few later administrations of the survey. Thus, our repeated measurement requirement caused us to drop the 1987 survey data except for the analyses performed to establish the factor structure of the survey items.

The average sample size per company for any one year was 450 people; the smallest sample size for any one company in a given year was 259. Naturally, the number of respondents from the different companies varied in any given year and across years. We equalized the number of respondents from each organization for a particular year by identifying the organization with the smallest number of respondents for that year. We then used this minimum number of respondents as a baseline for randomly sampling observations from organizations with more respondents for that year. This sampling approach resulted in a data set containing organizations with the same number of respondents for a particular year. Although this sampling did have the negative consequence of eliminating data, it had

the positive benefit of equalizing the standard errors of the organizational means in any particular year.

We have no data on response rates, nor do we have information about how the surveys were administered. We do know that companies who participate in this consortium are required to use the items in the same format and with the same scale as shown in the Appendix. Because the last wave of data used in this article was the 1995 administration, none of the surveys were administered on-line.

The time frame for data collection, 1987–1995, was probably fairly typical in the United States in that it comprised a variety of events over an 8-year period: a stock market crash (1987), a recession (1992), a short war (the Gulf War), two different U.S. Presidents (George H. W. Bush and William J. Clinton), and arguably the beginning of the stock market boom of the 1990s. In the sections that follow, we detail how we handled the data in this likely typical time period with all of the possible warts the data may contain. To anticipate our results, perhaps one of the more interesting findings is how reliable over time both the employee attitude survey data and the market and financial performance data were.

Measures

Employee attitudes: Scale development. One of the difficulties with conducting the data analyses across time with the present data set was that each organization was required to use a subset of the survey items but not all of the total possible core survey items. The term *core survey item* is a phrase used by the research consortium and refers to questions on which the research consortium provides cross-organizational feedback, permitting an organization to compare itself with others in the consortium. A listing of the core survey items that survived the factor analyses to be described in the Results section is shown in the Appendix, with their corresponding scale for responding. The total set of core items is twice as long as shown in the Appendix, but those in the Appendix are primarily the oldest items used by the consortium and the items for which there is the largest number of organizations on whom data exist. Not only did companies not have to select all of the possible core items (companies must use 50% of the core items in a survey in order to receive feedback), but a given company could change the particular core items they included in their questionnaire from year to year, with an item used one year but not the next. Thus, the questions used in any year might vary across organizations and the same organization might have asked different questions over the years.

This data structure prevented us from analyzing separate survey items and instead required us to develop scales among the items so that we could identify similar themes in the questions being asked, even though the exact same questions were not asked. More specifically, we show in the Appendix the items by the scales we used for data analysis but do this with the understanding that in any one company and for any particular year, only one of the items for a multi-item factor might have been used.

We used the 1987 data set to identify common themes among all of the core survey items. We submitted the total set of core items on the total available sample to principal-components analysis with a varimax rotation. The correlation matrix was calculated by using pair-wise deletion at the individual level of analysis.² The sample size for the correlations in this matrix ranged from 7,703 to 7,925, with an average sample size per item of approximately 7,841. We used the Kaiser (1960) criterion to initially suggest the number of factors to extract for the 1987 data. However, the final number of factors was determined by extracting one or two fewer or

² Our decision to handle the inconsistency in survey question content over the years by averaging the subset of items for a scale is identical to the strategy used by most researchers when facing missing data in a survey. Assuming that the missing question responses occur at random, researchers typically average the responses for the scale questions that were actually answered and use this average score as an indicator of the construct of interest, as we did here.

Table 1
Average Scale Intercorrelations (and Cronbach's Alpha Coefficients)

Scale	1	2	3	4	5	6	7
1. Satisfaction With Empowerment	(.93)						
2. Satisfaction With Job Fulfillment	.56	(.86)					
3. Satisfaction With Pay	.15	.02	(.89)				
4. Satisfaction With Work Group	.42	.10	.20	(.72)			
5. Satisfaction With Security	.43	.03	.52	.17	(.53)		
6. Satisfaction With Work Fulfillment	.83	.57	.19	.43	.43	(.79)	
7. Overall Job Satisfaction	.71	.42	.59	.35	.74	.76	(.82)

Note. All coefficients are averaged across the eight time periods. Scale intercorrelations and Cronbach's alpha were calculated at the organizational level of analysis.

more factors than suggested by the Kaiser criterion and assessing the "interpretability" of these factors. We settled on extracting six specific factors. The Appendix shows the items composing each of the six specific job satisfaction facets. The Appendix also shows that we developed a seventh scale called *Overall Job Satisfaction* (OJS). OJS comprises three items that had strong loadings across the other six factors, so this factor can be interpreted as a summary or global job satisfaction indicator. This factor was formed to be consistent with the suggestion of Cook et al. (1981) to develop a separate global indicator (rather than simply summing the specific facets to obtain an overall measure) when conducting studies involving job satisfaction.

The measurement equivalence of the factor structure with six factors over the eight time periods was determined by performing a series of multisample (one for each year) confirmatory factor analyses. First, we calculated the variance-covariance matrix of the core survey items at the individual level of analysis by using pairwise deletion for each year of data.³ For each year, we used the total available sample for these confirmatory analyses so the sample sizes for these matrices ranged from 4,577 to 15,348, with an average sample size of 9,600. Next, we used EQS Version 5.7a (Multivariate Software) to perform a multisample confirmatory factor analysis with estimation based on maximum likelihood. The same factor structure was imposed within each year (although the exact factor loadings for the items were allowed to vary across years), and the six specific factors were allowed to covary. The goodness-of-fit indices indicated that the model fit the data quite well (comparative fit index [CFI] = .93, goodness-of-fit index [GFI] = .95, root-mean-square error of approximation [RMSEA] = .02). In other words, the factor structure extracted from the 1987 data set appeared to hold up well over time. Because of the large sample sizes and the dependence of chi-square on sample size, we do not report tests of significance for model fit.

A second multisample confirmatory factor analysis was performed to determine whether the magnitude of the factor loadings changed over time. This additional analysis is a more stringent test of the equivalence of the factor structure over time. Specifically, in this analysis we not only imposed the same factor structure over time but we also imposed constraints that the factor loadings for each item had to be equal across time. Once again, the goodness-of-fit indices indicated that this model fit the data quite well (CFI = .93, GFI = .95, RMSEA = .02). There was very little change in the fit indices even though this last analysis was more restrictive than the prior analysis. Overall, these multigroup analyses confirm the strict measurement equivalence of our factor model over time.

Once the stability of the factor structure was determined, the scale scores for a company were calculated by using unit weights for the available items, summing the available items and dividing by the number of items available. In other words, a scale score for one company might be based on a different number of items than a score on the same scale for another company and/or the scale score for a company in Year 1 could be based on a different item set than for Year 2 (see Footnote 2).

Table 1 presents the organizational-level internal consistency estimates

(Cronbach's alpha) and the organizational-level intercorrelation matrix for the scales. Both the internal consistency estimates and the intercorrelation matrix were obtained by calculating the sample-size weighted average (weighted by the number of companies involved for each year) over the eight time periods. Across time, the correlations and internal consistency estimates exhibited remarkable stability (i.e., the average standard deviation for the internal consistency estimates for a particular scale over time was .01; the average standard deviation of correlation between two particular scales over time was .02). Examining Table 1 reveals that the six factors (all but OJS) were relatively independent of one another (i.e., $\bar{r}_{xy} = .34$) and that these factors have good internal consistency reliability. Two points about Table 1 are worth noting here: (a) OJS is more strongly correlated with the other scales than any other factor because it was purposely developed as an inclusive index on the basis of the fact that the items composing that scale had strong factor loading across the true factors, and (b) the intercorrelations shown in Table 1 for the six factors at the organizational level of analysis are generally equivalent in magnitude to those shown for job satisfaction measures at the individual level of analysis (although the range of the intercorrelations is large—i.e., a range of .02–.83). For example, the five scales of the Job Descriptive Index (JDI; P. C. Smith, Kendall, & Hulin, 1969, pp. 77–78) have average scale intercorrelations of .37 for men and .30 for women.

We next explored evidence related to the aggregation of these data to the organizational level of analysis by examining several commonly used statistics for justifying aggregation, that is, $r_{wg(J)}$ and the following intra-class correlation coefficients (ICCs): ICC(1) and ICC(2). We first examined James, Demaree, and Wolf's (1984) $r_{wg(J)}$ to justify aggregation of our scales to the organizational level of analysis. Traditionally, an $r_{wg(J)}$ of .70 is considered sufficient evidence to justify aggregation. We computed separate $r_{wg(J)}$ values for each scale for each year of our data in each organization and then averaged each scale's $r_{wg(J)}$ over the years and organizations. These average $r_{wg(J)}$ values are shown in Table 2 and, as shown in this table, the average $r_{wg(J)}$ values suggest sufficient within-group agreement to aggregate the scales to the organizational level of analysis.

We next examined the ICC(1) for the scales. The average ICC(1) reported in the organizational literature is .12 (James, 1982).⁴ We per-

³ In general, pairwise deletion is a less desirable method for handling missing data because it tends to produce nonpositive definite variance-covariance matrices. However, the sample size for the present data minimizes this problem. All the matrices used in our analyses were positive definite and were actually quite remarkably stable over time.

⁴ It should be noted that this average ICC(1) value is inflated because of the inclusion of eta-square values when this average was computed. As pointed out by Bliese and Halverson (1998), however, eta-square values are upwardly biased estimates of ICC(1). Specifically, smaller groups

Table 2
Evidence for Aggregating Employee Attitude Scales to the Organizational Level of Analysis

Scale	$r_{wg(J)}$	ICC(1)	ICC(2)
Satisfaction With Empowerment	.86	.05	.96
Satisfaction With Job Fulfillment	.74	.03	.93
Satisfaction With Pay	.72	.15	.99
Satisfaction With Work Group	.83	.02	.91
Satisfaction With Security	.69	.19	.99
Satisfaction With Work Facilitation	.83	.06	.97
Overall Job Satisfaction	.76	.07	.97

Note. The data in each column are averages. For the " $r_{wg(J)}$ " column, $r_{wg(J)}$ was calculated for each organization for each year of the data base and then the results were averaged. For the "ICC(1)" and "ICC(2)" columns, ICC(1) and ICC(2) were calculated for each year in the database and the results were then averaged. ICC = intraclass correlation coefficient.

formed separate one-way analyses of variance (ANOVAs) for each employee attitude scale for each year of our data in order to determine whether the obtained ICC(1) for a particular scale in a particular year was significantly different from zero. All ICC(1) values were significantly different from zero because all of the ANOVAs had a significant between-organizations effect. We computed the average ICC(1) for these scales by averaging the between-organizations and within-organization variance components for a particular scale over the 8 years of data. The ICC(1) values reported in Table 2 were calculated by using these average variance values for each scale. As shown in Table 2, some of the ICC(1) values (i.e., Satisfaction With Security and Satisfaction With Pay) are substantially larger than the .12 average reported by James (1982) and others (i.e., Satisfaction With Security and Satisfaction With Pay) are substantially smaller than this standard. Collapsing across all attitude scales and time periods, the average ICC(1) for our data is .08. Given the average $r_{wg(J)}$ values and these ICC(1) results, we concluded that there was sufficient justification for aggregation.

We also calculated the reliability of these averages for our data by computing the ICC(2). The average number of respondents from a single organization in our data set for this analysis was 482. Using this average sample size, we calculated the ICC(2) for each scale and for each year and then averaged the coefficients, as is also shown in Table 2. ICC(2) indicates the reliability of the scales when the data from respondents from an organization are averaged. As can be seen in this table, the number of respondents in our data was large enough that all scales exhibited substantial reliability.

Organizational analysis of attitudes: Stability. Table 3 shows the test-retest stability of organizations for the six factors plus OJS. This stability analysis was conducted at the organizational level of analysis and is presented for four different time lags. We go into greater detail with regard to time lags in the Results section. For now, consider 1988–1989 and 1989–1990 and all subsequent 1-year lags as constituting the database for the stability of the scales for 1 year; consider 1988–1990 and 1989–1991 and all subsequent 2-year lags as the database for the stability of the scales over 2 years; and so forth for the 3- and 4-year lags. For each lag, the correlations were weighted by the sample size of companies available for that particular lag, making the averages comparable across time.

produce larger eta-square values regardless of actual agreement. We therefore expected a value lower than .12 to be consistent with the accepted criterion to demonstrate adequate agreement for aggregation because of the large sample sizes with which we worked.

Table 3 reveals quite remarkable stability over time for these data. The 1-year lags range from a low of .66 (for Satisfaction With Work Group) to a high of .89 (for Satisfaction With Security). Even the 4-year lags reveal substantial stability, ranging from a low of .40 (Satisfaction With Job Facilitation) to a high of .78 (Satisfaction With Empowerment). We label this degree of stability as quite remarkable for several reasons. First, the period 1988–1995 was a time of substantial turmoil in many companies, including those in our database. As prominently discussed in both the popular press (e.g., Uchitelle & Kleinfeld, 1996) and in research literatures (e.g., Cascio, Young, & Morris, 1997), many companies, including those in the database explored here, experienced layoffs, restructuring, reengineering, absorption of rapid changes due to information technology and pressures for globalization, as well as emergence from the stock market scare of 1987 and the 1992 recession during these time periods. Second, there is a lack of data on the stability of these kinds of employee attitude data. Schneider and Dachler (1978) reported on the stability of the JDI (P. C. Smith et al., 1969) for a lag of 16 months, and their results indicated stability coefficients of about .60 but their data were at the individual level of analysis, making their results not directly comparable to the present data. As is well known, aggregation of individual responses has a tendency to elevate relationships because of increases in the reliability of the data entered into such calculations, but we simply do not have good published data with which to compare the present findings.

Organizational Financial and Market Performance Indicators: Stability

We initially studied four financial indicators, return on investment (ROI), return on equity (ROE), return on assets (ROA), and earnings per share (EPS). The first three indices indicate the percentage of profits relative to a standard: investments (ROI), equity (ROE), and assets (ROA). EPS, on the other hand, reflects the net company income divided by outstanding common shares, an index of performance that is particularly useful for companies that have large service components with (usually) lower capital investments. These are classical indicators of financial performance in organizations, and they are typically used as a basis for making cross-organization comparisons. Sometimes the indicator(s) of choice are adjusted for such issues as industry (e.g., ROA compared with others in the same industry), market (e.g., ROA compared with others in the same market), and so forth. In the analyses to be presented we did not control for industry because there were no industry effects when we looked for them in the data. We think this is because each of the *Fortune 500* companies that we studied actually belongs to multiple industries, making the assignment of each company to a single industry not useful.

Table 3
Stability of the Scales Over Various Time Lags

Scale	1-year lag	2-year lag	3-year lag	4-year lag
Satisfaction With Empowerment	.84	.78	.65	.78
Satisfaction With Job Fulfillment	.68	.59	.71	.40
Satisfaction With Pay	.68	.59	.71	.40
Satisfaction With Work Group	.84	.81	.75	.70
Satisfaction With Security	.66	.50	.38	.45
Satisfaction With Work Fulfillment	.89	.71	.49	.53
Overall Job Satisfaction	.85	.71	.56	.72

ROI, ROE, ROA, and EPS are significantly correlated across time, as follows: ROI–ROE median $r = .57$; ROE–ROA median $r = .73$; ROI–ROA median $r = .94$; ROI–EPS median $r = .38$; ROE–EPS median $r = .48$; ROA–EPS median $r = .33$. However, these financial indicators are differentially stable over time with ROI being least stable (median 1-year lag $r = .47$) and ROA being most stable (median 1-year lag $r = .74$). Table 4 presents the stability correlation matrix for ROA across the eight time periods. This table shows that the stability indicators are somewhat consistent over time, even when the lag extends out 8 years (as in the case of 1988–1995). We decided that of the three indices regarding organizational financial returns, we would focus on ROA and not ROI or ROE in the present study. This decision was based on the following considerations: (a) The organizational financial returns are substantially intercorrelated; (b) ROA correlates with the others more than they correlate with each other; and (c) ROA revealed the greatest stability over time. Stability over time is important because if a variable is not stable over time, it cannot be predicted by another variable. That is, if a variable does not correlate with itself over time, then a predictor of that variable will also not correlate with it over time. Because lagged analyses over time are the major data to be presented, stability of that variable is important.

However, we also focused on EPS because of the unique information (i.e., market performance) provided by this index compared with the other financial indicators and its high salience to more service-oriented (i.e., lower capitalization) firms. We show the stability over time for this index in Table 5. Although not as stable as ROA, the stability for EPS is acceptable (median 1-year lag $r = .49$). Thus, ROA and EPS were the two performance indicators used as correlates of the employee attitude survey data.

Data Analyses

An attractive feature of the database is its multiyear nature. Because we had data over time from both the employee attitude surveys and the financial and market performance indicators, the stability over time of both sets of data was calculable and lagged analyses relating the data sets were feasible. As noted earlier in the stability analyses, the lagged data to be reported were calculated for four different lags: 1-year lags, 2-year lags, 3-year lags, and 4-year lags. Consider the extremes of 1988 and 1995, which provide for the calculation of seven 1-year lags beginning with 1988; six 2-year lags are possible beginning in 1988; there are five 3-year lags and four 4-year lags. Three 5-year and two 6-year lags are also possible, but from a stability standpoint, calculation of these lags is questionable. That is, the statistic of interest is the weighted average

Table 4
Intercorrelations of Return on Assets (ROA) over time

Year	1	2	3	4	5	6	7	8	9
1. 1987	—								
2. 1988	.78	—							
3. 1989	.66	.58	—						
4. 1990	.70	.62	.86	—					
5. 1991	.48	.46	.63	.88	—				
6. 1992	.59	.50	.67	.80	.73	—			
7. 1993	.39	.28	.34	.39	.36	.68	—		
8. 1994	.65	.56	.51	.67	.59	.74	.65	—	
9. 1995	.47	.47	.76	.62	.63	.46	.43	.75	—

Note. ROA calculations are based on application of the pairwise deletion procedure such that the sample for any one correlation ranges from 29 to 36 companies. The differential sample sizes for these correlations are primarily due to company mergers or company failures during the 1987–1995 time period. However, there were a few instances of ROA data simply being unavailable for 1 or 2 years.

Table 5
Intercorrelations of Earnings Per Share (EPS) Over Time

Year	1	2	3	4	5	6	7	8	9
1. 1987	—								
2. 1988	.40	—							
3. 1989	.51	.20	—						
4. 1990	.05	.00	.57	—					
5. 1991	-.08	-.24	.63	.63	—				
6. 1992	-.32	-.16	-.31	.31	-.14	—			
7. 1993	.15	.31	.25	.17	.11	-.06	—		
8. 1994	.32	.56	.52	.43	.06	.08	.61	—	
9. 1995	.04	.44	.64	.62	.41	.06	.31	.77	—

Note. EPS calculations are based on application of the pairwise deletion procedure such that the sample for any one correlation ranges from 27 to 32 companies. The differential sample sizes for these correlations are primarily due to company mergers or company failures during the 1987–1995 time period. However, there were a few instances of EPS data simply being unavailable for 1 or 2 years.

correlation for each time lag. By *weighted average*, we mean that each correlation for a given lag was weighted by the number of companies involved in the calculation of the correlation for that lag, thereby equating correlations over time for the sample size on which they were based (here, the number of companies).

More specifically, before averaging the correlations for a particular time lag, we first tested whether these correlations were from the same population. We performed the test of homogeneity of correlations (Hedges & Olkin, 1985) and averaged only the correlations from the same time lag when this test indicated homogeneity:

$$Q = \sum_{i=1}^k (n_i - 3)(Z_i - \bar{Z}_{wt})^2. \quad (1)$$

In this equation, n_i represents the sample size used to estimate a particular correlation, Z_i represents the Fisher Z_i -transformed correlation and Z_{wt} represents the weighted average correlation, which was calculated in the following manner:

$$\bar{Z}_{wt} = \frac{(n_1 - 3)z_1 + (n_2 - 3)z_2 + \dots + (n_k - 3)z_k}{\sum_{j=1}^k (n_j - 3)}. \quad (2)$$

The Q statistic in Equation 1 has $k - 1$ degrees of freedom and is distributed as a chi-square distribution. If Q is nonsignificant, then averaging the correlations for a particular time lag is justified because one cannot reject the possibility that the correlations from that lag are from the same population.

After computing the average correlation for a given lag, we then tested whether this average correlation was significantly different from zero by using the test for the significance of an average correlation (Hedges & Olkin, 1985):

$$\bar{Z}_{wt} \sqrt{(N - 3k)}. \quad (3)$$

In Equation 3, N represents the sum of the sample sizes across all correlations. If this Z test exceeds 1.96, then we rejected the null hypothesis that the average correlation for a particular lag is zero.

These lags can be calculated going in two directions. For example, for the seven 1-year lags, the weighted average correlation can be calculated by going forward with the 1988 data for employee surveys and the 1989 data for financial performance; that is, the employee data are the earlier year and the financial or market performance are the later year. In this

model, one tests the relationships assuming the employee survey data are the cause of financial performance. The second model tests the reverse causal direction: Financial or market performance causes employee attitudes. For this model, one begins with the earlier year representing financial or market performance and the later year being the employee attitude data. We ran all of the lags using both models.

The correlations from the different models were compared by using the homogeneity of correlations test (i.e., Equation 1). Specifically, all the correlations for one model for a given time lag were pooled with all the correlations from the other model for the same time lag. If the Q value of Equation 1 was statistically significant, then it can be concluded that the correlations from the two models came from different populations (i.e., causal direction moderates the relationship between the two variables for a given time lag). The contrast of the results for both models provides the database for examining possible causal priority.

Parenthetically, it is worth noting that all analyses involving ROA and EPS were calculated by using individual years, rather than rolling averages as are sometimes used in such research (e.g., Buzzell & Gayle, 1987). In addition to using individual years, we ran the analyses by using 3-year rolling averages as well, and although this led to some smoothing of the relationships to be presented, this procedure produces contaminated data for every 3-year period of time and, had it been the only analysis we used, would have biased the presentation of the data by time lags for the relationships between the performance indices and the employee attitude survey data. Further, because each lag presented has a number of correlations entering into it (e.g., seven correlations for the 1-year lags and four correlations for the 4-year lags), this averaging tends to smooth out the relationships.

Results

Overview

In what follows, we present the results of the analysis of the relationships between the employee attitude survey data and the performance indicators. Three of the employee attitude survey scales revealed an interpretable significant pattern of relationships with ROA and EPS: Satisfaction With Pay, Satisfaction With Security, and OJS. It is interesting to note that these are the same scales that exhibited the largest between-organizations variation; see ICC(1) in Table 2. This is interesting because between-organizations variation on the attitude survey data is required if those data are to correlate with between-organizations variation on the financial and market performance indicators. As we show shortly, the other dimensions of the employee survey reveal sporadic significant correlations with ROA or EPS at different points in time, but the meta-analytic procedures used here failed to indicate stable lagged patterns for those results. The results for the relationships between all of the facets of the employee data and the two performance indices are condensed and presented in Table 6, to be described next.

Understanding Table 6

The columns in Table 6 represent lags for ROA and EPS. The centered headings in each section of the table each represent one employee attitude survey scale, and for each employee survey scale we show the data for attitudes as the predictor (the average correlation and a test of homogeneity) and performance as the predictor (the average correlation and a test of homogeneity). Finally, for each lag we indicate whether the difference between the attitude-as-predictor and the performance-as-predictor average

correlations is significant. Thus, the first row in Table 6 shows the average correlation (for a given time lag) of employee attitudes predicting subsequent performance (ROA and EPS). The average correlation shown for a particular time lag was derived by weighting each of the correlations for a time lag by sample size as indicated in Equation 2, and we tested whether the resultant average correlation was significantly different from zero by using Equation 3. The second row shows the test of homogeneity (Q value from Equation 1) for the time-lag correlations combined to create these average attitude-as-predictor correlations. If these Q values are nonsignificant, the homogeneity of the correlations for a particular time lag cannot be rejected and, thus, the average attitude-as-predictor correlations appearing in the first row are meaningful. The third row shows the average correlations (for a given time lag) of performance (ROA and EPS) predicting subsequent attitudes. The average correlations for a particular time lag were also weighted by sample size as indicated in Equation 2, and we tested whether these average correlations were significantly different from zero by using Equation 3. The fourth row shows the test of homogeneity (Q value from Equation 1) for the time-lag correlations that make up these performance-as-predictor average correlations. If these Q values are nonsignificant, the homogeneity of the correlations for a particular time lag cannot be rejected and, thus, the average performance-as-predictor correlations appearing in the first row are meaningful. The last row for each section in the table is a test of whether the attitude-as-predictor and performance-as-predictor correlations, for a particular time lag, were statistically different from each other. If this last test was statistically significant, then the attitude-as-predictor average correlation for a given time lag can be interpreted as being significantly different from the performance-as-predictor average correlation for the same time lag.

For example, if one looks at the results for Satisfaction With Security in Table 6, the first row within this section shows the averaged correlations for the Satisfaction-With-Security as predictor of subsequent ROA and EPS financial performance relationships for each time lag. The first column of this table shows the results for the 1-year time lag for ROA ($r = .16$). Across the columns, all of the data in the first row have attitude-as-predictor correlations such that the attitude data are the earlier year. Now, examine the results for the homogeneity of correlations (second row, first column within this section of Table 6). As shown in this table, the value of 7.35 is nonsignificant. In other words, all the 1-year lag attitude-as-predictor correlations appear to come from the same population and, thus, it makes sense to average these correlations. The sample-size weighted average attitude-as-predictor correlation for the 1-year lag was calculated and shown in the first row within this section ($r = .16$). This correlation was not significantly different from zero.

The next two rows in Table 6 for Satisfaction With Security show the correlations in which performance was used as the predictor of attitudes. In other words, for these correlations, the base year for the performance data was 1988 and all lags have ROA or EPS performance data as the earlier year (e.g., for the 1-year lags, ROA-1988–Satisfaction-With-Security-1989; ROA-1989–Satisfaction-With-Security-1990). Now, examine the results for the homogeneity of correlations (fourth row, first column of Table 6, under “Satisfaction With Security”). As shown in this table, the value of 9.76 is nonsignificant. In other words, all the

1-year lag performance-as-predictor correlations appear to come from the same population, and thus, it makes sense to average these correlations. The sample-size weighted average performance-as-predictor correlation for the 1-year lag was calculated and shown in the first row ($r = .40, p < .001$). This correlation was significantly different from zero. The information in the fifth row within this section compares the attitude-as-predictor and performance-as-predictor correlations. As shown in the table, the nonsignificant Q value of 21.43 indicates that it cannot be ruled out that the 1-year lag attitude-as-predictor correlations and the 1-year lag performance-as-predictor correlations came from a single population. In other words, the average 1-year lag correlations shown in row 1 and row 3 within this section are not statistically different. By using this meta-analytic protocol, one gains an appreciation of the likely causal priority of the relationship. As noted earlier, we ran the weighted average lags for 1-year, 2-year, 3-year, and 4-year lags, and these are shown in Table 6.

The degrees of freedom in the Table 6 note deserve attention. Readers will note that the degrees of freedom for attitude as predictor are one fewer for each lag than for performance as predictor. The reason for this is that we included in the analyses ROA and EPS for 1987 but, as we explained earlier, did not include the 1987 employee attitude data. So, each time lag within performance as predictor has one more correlation than when the lags involved attitudes as predictor.

OJS Relationships With ROA and EPS

The data regarding OJS are shown in the last section of Table 6. There in the various time lags in the columns for ROA, one sees the quite stark differences in correlations between the row representing OJS as a cause of ROA (attitude as predictor) and the row representing ROA as a cause of OJS (performance as predictor). More specifically, the weighted average correlation, regardless of time lag, is .17 for OJS–ROA and .46 for ROA–OJS and the 2-year lag and 3-year lag average correlations for the ROA–OJS relationship were significantly stronger than the OJS–ROA 2-year lag and 3-year lag correlations ($Q = 24.78, p < .05$, and $Q = 23.41, p < .01$, respectively).

Consistent with the results for ROA, a review of Table 6 suggests that EPS is the more likely cause of OJS than the reverse. The 2-year lag and 4-year lag correlations are not homogeneous, so only the 1-year and 3-year lags were averaged. At a surface level, the differences between the “Attitude as predictor” row and the “Performance as predictor” row were still substantial, although not as dramatic as the differences when considering OJS and ROA. More specifically, the average 3-year lag performance-as-predictor correlation for EPS was not only significantly different from zero ($r = .26, p < .05$) but significantly greater ($Q = 32.41, p < .01$) than the average 3-year lag correlation with OJS as the predictor ($r = .15, ns$).

In sum, with regard to OJS, there are significant relationships between it and both ROA and EPS and both indices provided consistent evidence regarding the possible directional flow of the relationship. Specifically, it appears that the causal priority flows from financial and market performance to overall job satisfaction. This, of course, does not deny the fact that for both ROA and EPS, there are significant correlations going from attitudes to those

performance indices, just that the reverse direction relationships tend to be stronger, and in some cases significantly so.

Satisfaction With Security Relationships With ROA and EPS

As with OJS, Table 6 reveals that ROA is more likely the cause of Satisfaction With Security than the reverse. As shown in Table 6, with regard to attitudes as predictor for Satisfaction With Security, none of the averaged correlations revealed a significant relationship. In contrast, all of the lags revealed averaged correlations that were significantly different from zero for the performance-as-predictor relationships involving Satisfaction With Security. For tests of the significance of the difference between the attitude-as-predictor values and performance-as-predictor values, Table 6 shows the average 2-year lag correlation is significantly different in the direction that suggests that ROA causes Satisfaction With Security.

Overall, the results of these analyses indicate that, regardless of time lag, the ROA–Satisfaction-With-Security relationship is stronger in magnitude than the Satisfaction-With-Security–ROA relationship and for the 2-year lag it was significantly stronger than the Satisfaction-With-Security–ROA relationship at that time lag. Finally, the ROA–Satisfaction-With-Security relationship appears to reveal little decline over time; the averaged 4-year lag relationship (.32) is essentially the same as the 2-year lag relationship (.33).

Regarding the relationships between Satisfaction With Security and EPS, we encountered several problems in aggregating the correlations for these relationships. Specifically, the 1-year lag, 3-year lag, and 4-year lag correlations for the attitude-as-predictor relationship and the 1-year lag performance-as-predictor relationship lacked homogeneity. Thus, the meaningfulness of the average correlations for these time lags is somewhat suspect. However, we did find homogeneity in the 2-year lag time period for attitudes as predictor and homogeneity for the 2-year lag, 3-year lag, and 4-year lag for the performance-as-predictor relationships. Examining the 2-year lag correlations, the average 2-year lag correlation for the relationship between Satisfaction With Security and EPS (average $r = .24, p < .05$) was significant as was the average 2-year lag correlation (average $r = .26, p < .01$) for EPS predicting Satisfaction With Security. Given the magnitude of these two correlations, it is not surprising that these average correlations were not significantly different from each other. Finally, although the average 3-year lag correlation for Satisfaction With Security predicting EPS was not significant, the average 3-year lag correlation for EPS predicting Satisfaction With Security was significant (average $r = .22, p < .05$).

Comparing these results with the Satisfaction-With-Security–ROA results, we note that the magnitude of the Satisfaction-With-Security–EPS correlations were smaller and the causal direction of the 2-year lag correlations is not clear. However, the pattern of significant average 2-year lag and 3-year lag correlations for EPS predicting Satisfaction With Security is similar to the pattern that we obtained with the ROA financial measure. Thus, in summary, we found a relationship between Satisfaction With Security and ROA and EPS, and the causal analyses suggest that the causal direction goes more strongly from organizational financial and market performance to Satisfaction With Security.

Table 6
Relationships of ROA and EPS With Employee Attitudes

Predictor	Return on assets				Earnings per share			
	1-year lag	2-year lag	3-year lag	4-year lag	1-year lag	2-year lag	3-year lag	4-year lag
Satisfaction With Empowerment								
Attitude as predictor								
Average r	.05	.14	.04	.04	.01	.03	.08	.13
Q	1.93	8.02	7.84	4.61	5.31	4.44	10.78*	3.20
Performance as predictor								
Average r	.10	.07	.08	.18	.23**	.01	.01	.12
Q	6.51	4.13	7.73	0.89	7.40	12.19	10.55	4.06
χ^2	11.76	14.76	16.65	6.21	20.48	16.64		7.28
Satisfaction With Job Fulfillment								
Attitude as predictor								
Average r	.00	-.02	.00	-.11	.06	.02	.02	.01
Q	12.88*	5.41	3.64	2.57	9.55	1.24	2.74	0.23
Performance as predictor								
Average r	.05	.04	.06	.05	.14	.09	.07	.14
Q	8.50	6.93	7.75	4.28	4.28	2.78	5.14	5.03
χ^2	21.95	12.54	13.47	7.99	16.42	4.56	7.98	5.74
Satisfaction With Security								
Attitude as predictor								
Average r	.16	.04	.04	.16	.01	.24*	.11	.10
Q	7.35	9.97	8.67	7.23	15.59*	10.48	11.07*	13.14**
Performance as predictor								
Average r	.40***	.33***	.27**	.32**	.22**	.26**	.22**	.00
Q	9.76	10.14	5.48	3.13	19.37**	8.64	4.79	1.31
χ^2	21.43	25.15*	16.74	11.15		18.79		
Satisfaction With Pay								
Attitude as predictor								
Average r	.37**	.30**	.39***	.49***	.09	.20*	.31**	.13
Q	2.19	8.71	3.48	1.29	6.65	3.62	4.80	1.24
Performance as predictor								
Average r	.51***	.47***	.44***	.53***	.28**	.38***	.24*	.21
Q	7.34	3.00	1.76	2.44	11.15	2.38	3.19	2.23
χ^2	11.42	12.95	5.28	3.76	11.42	12.65	5.28	3.76
Satisfaction With Work Group								
Attitude as predictor								
Average r	.06	-.03	-.11	-.12	.02	.08	.21	.07
Q	3.57	6.52	3.27	3.36	0.09	9.68	4.28	0.40
Performance as predictor								
Average r	.03	.01	.02	.14	-.01	.02	.01	.23*
Q	3.16	11.23	15.15**	4.47	8.22	5.39	5.32	3.76
χ^2	9.25	17.90		10.09	13.28	15.31	11.18	4.91
Satisfaction With Work Facilitation								
Attitude as predictor								
Average r	.04	-.02	.08	.12	.11	.07	.20*	.23*
Test of homogeneity	5.10	5.35	3.97	3.32	8.79	4.03	7.72	8.69*
Performance as predictor								
Average r	.13	.03	.02	.17	.33***	.07	.04	.02
Q	4.42	4.14	6.09	2.85	4.45	12.15	6.08	7.08
χ^2	12.22	9.62	10.82	6.24	21.57	16.18	17.35	
Overall Job Satisfaction								
Attitude as predictor								
Average r	.22*	.07	.12	.26*	.19*	.27**	.15	.05
Q	6.01	10.36	6.75	2.46	12.32	10.07	9.42	4.05

Table 6 (continued)

Predictor	Return on assets				Earnings per share			
	1-year lag	2-year lag	3-year lag	4-year lag	1-year lag	2-year lag	3-year lag	4-year lag
Overall Job Satisfaction (continued)								
Performance as predictor								
Average <i>r</i>	.50***	.41***	.42***	.50***	.41***	.26**	.26*	.17
<i>Q</i>	8.32	7.08	10.84	0.73	13.97	14.51*	6.16	11.05*
χ^2	21.06	24.78*	23.41**	5.33	21.06		23.41**	

Note. *Q* values were derived from Equation 1 and represent tests of homogeneity. Degrees of freedom for the tests of homogeneity for values in the "Attitudes as predictor" column are 6 for the 1-year lags and are 5, 4, and 3 for the 2-, 3-, and 4-year lags, respectively. Degrees of freedom for the tests of homogeneity for values in the "Performance as predictor" column are 7 for the 1-year lags and are 6, 5, and 4 for the 2-, 3-, and 4-year lags, respectively. Degrees of freedom for tests of the significance of the differences between the average correlations are 14, 12, 10, and 8 for the 1-, 2-, 3-, and 4-year lags, respectively. See text for an explanation of the degrees of freedom for the tests of homogeneity.

p* < .05 *p* < .01 ****p* < .001.

Satisfaction With Pay Relationships With ROA and EPS

The data in Table 6 are less clear with regard to the causal priority issue of Satisfaction With Pay and ROA than was true for OJS and Satisfaction With Security. For both causal directions, the correlations for all time lags for Satisfaction With Pay and ROA were homogeneous. Further, the lagged weighted average correlations are always somewhat stronger for ROA predicting Satisfaction With Pay compared with Satisfaction With Pay predicting ROA. However for the analyses involving ROA and Satisfaction With Pay, the differences between the average correlations regardless of causal direction are small and not significantly different. More specifically, the weighted average correlation regardless of time lag for Satisfaction With Pay predicting ROA is .39 whereas the weighted average correlation regardless of time lag for ROA predicting Satisfaction With Pay is .49. Our conclusion here is that Satisfaction With Pay and ROA have more of a reciprocal relationship over time, with Satisfaction With Pay leading ROA and ROA leading Satisfaction With Pay.

Consistent with the ROA data, a specific one-way causal direction of the relationship between Satisfaction With Pay and EPS is not clear. For both causal directions, the correlations for a particular time lag were homogeneous. However, although the lagged weighted average correlations are somewhat stronger for the EPS predicting Satisfaction With Pay versus Satisfaction With Pay predicting EPS for the 1-year lag and 2-year lag periods, the magnitude of the correlations reversed for the average 3-year lag correlations. Finally, the differences between these average correlations were not significantly different. In summary, it appears that Satisfaction With Pay and the organizational financial and market performance indices have a reciprocal relationship over time.

Relationships for the Other Employee Survey Facets and ROA and EPS

Table 6 reveals that the relationships between the other 4 employee survey facets of satisfaction and ROA as well as EPS reveal no consistent patterns and are consistently weak.

Discussion

In the present study, we explored the relationship between employee attitudes and performance. Although the overwhelming majority of the prior research on this relationship has explored it at the individual level of analysis, the present study is consistent with a small but growing literature that examines this relationship at the organizational level of analysis. In general, people in both the business community and the academic world appear to believe that there is a positive relationship between morale (i.e., aggregated levels of satisfaction) and organizational performance. For example, in the service quality literature, Heskett et al. (1997) have discussed the "satisfaction mirror" phenomenon—the belief that employee satisfaction and customer satisfaction (i.e., an important performance criterion for the service industry) are positively correlated. And in a recent article, Harter, Schmidt, and Hayes (2002) presented compelling meta-analytic evidence for the relationship under the implicit presumption, later explicitly qualified (Harter et al., 2002, p. 272), that the relationship runs from attitudes to organizational performance. The present study adds to the growing empirical literature by exploring the relationship between aggregated employee attitudes and organizational financial and market performance over multiple time periods, as recommended by Harter et al., who proposed that the finding of reciprocal relationships should be expected.

Consistent with earlier studies, we found some support for the belief that aggregated attitudes were related to organizational performance. Specifically, we found consistent and significant positive relationships over various time lags between attitudes concerning Satisfaction With Security, Satisfaction With Pay, and OJS with financial performance (ROA) and market performance (EPS). Although these results support our original expectations, there were clearly some surprises.

The biggest surprise concerned the direction of the relationship for OJS and Satisfaction With Security, with these appearing to be more strongly caused by market and financial performance than the reverse. Relatedly, the findings for Satisfaction With Pay and the two performance indicators appear to be more reciprocal, a

finding that we suspected might be true (although we did not specifically expect to find this with Satisfaction With Pay).

Thus, although the implicit belief both in practice and academe is that the relationship runs from employee satisfaction to organizational performance, our data reveal some support for reciprocal relationships (for Satisfaction With Pay) and good support for the causal priority of organizational financial and market performance appearing to cause employee attitudes (OJS and Satisfaction With Security). This is in stark contrast to the presumption in the literature (e.g., Denison, 1990) that employee attitudes in the aggregate lead to organizational performance. Our results, in keeping with March and Sutton (1997), suggest that models that draw the causal arrows from employee attitudes to performance at the organizational level of analysis are at best too simplistic and at worst wrong, and in the last part of the correlates of organizational performance discussion, we elaborate on a preliminary research framework that helps us understand the directionality of the findings.

The consistent results concerning the causal priority for organizational financial and market performance on OJS and Satisfaction With Security deserve special mention on several grounds. First, our present sample consisted of multiple measurements over time of ROA, EPS, and employee attitudes. It was the multiple measurements over time of employee attitudes as well as EPS and ROA that allowed us to begin to disentangle the likely direction of the organizational-performance-employee-attitude relationship. Unfortunately, the sparse amount of research that has been conducted to date on these relationships has the attitude and performance data for only one time period or has attitude data collected at one time period (e.g., aggregate employee attitudes at Time 1) and then multiple measurement of organizational financial performance for subsequent time periods (e.g., ROA for the next 5 years). Examining the results of the present study shows that collecting data in this fashion will give the mistaken impression that the causal priority is for employee attitudes to cause ROA. Researchers collecting their data in this manner would reach this inappropriate conclusion because their data prevent them from discovering the sometimes significantly stronger relationships for performance causing attitudes. For example, consider the results for OJS and ROA in Table 6. Here, the data going forward from Time 1 collection of the OJS data reveal some significant relationships with ROA, yet a conclusion that OJS is the cause of ROA would be erroneous in the light of the significantly stronger relationships shown going forward from Time 1 collection of data for ROA. Our conclusion is that future research on this issue must collect both kinds of data—employee attitude data and organizational performance data—at multiple points in time if inferences of likely causal priority are to be made.

On Correlates of Organizational Performance

As we tried to interpret and make sense of our results, it became clear that in addition to the employee attitude correlates of organizational performance we studied here, there are other studies that, on the surface, might seem similar but have reported results that are inconsistent with those presented here. The prime example is the literature on high-performance work practices (employee involvement, pay for performance and skill acquisition; cf. Lawler, Mohrman, & Ledford, 1998). In this literature, the causal arrow

seems to flow only from those practices to organizational financial performance (Lawler et al., 1998). As another example, consider the research on strategic human resources management (Huselid, 1995). In this work, the human resources practices used by organizations (training, performance management, pay for performance programs) are examined over time against organizational performance, including financial performance, and the causal arrow appears to again go only from organizational practices to organizational financial performance. Finally, consider the research on organizational climate, in which employee data in the aggregate are also studied and reveal at least reciprocal relationships with organizational effectiveness, especially customer experiences of the same organization (Schneider et al., 1998). Given these multiple research topics that appear to be addressing issues in similar conceptual spaces but yielding somewhat different results, we believe it necessary to try to untangle several issues in the theoretical and research literature regarding human correlates of organizational performance. In the following subsections, we explore and attempt to integrate these different streams of research to assist future researchers in conceptualizing likely causal priorities depending upon the variables of interest.

If we were to conclude, as we must on the basis of the present results, that organizational financial and market performance cause at least some facets of employee attitudes, how does this fit with recent results that reveal the causal arrow running from high-performance work practices to organizational effectiveness—including such findings in longitudinal studies and against organizational financial performance outcomes too? How can it be that in some studies the results run predominantly in one causal direction whereas in other studies the results appear to run in the other direction? The answer seems to be that different variables are being studied in the different projects.

High-performance work practices. Over the past decade, there have been several investigations of the relationship between high-performance work practices (Becker & Gerhart, 1996) and indicators of organizational effectiveness, including financial indicators. Huselid and Becker (1996), for example, following up on earlier work by Huselid (1995), revealed a significant relationship between human resources practices and organizational performance by using a panel design for data collected over time. Perhaps more relevant to the present research, in an extensive study of *Fortune 1000* companies, Lawler et al. (1998) showed consistently stronger lagged relationships running from high-performance work practices (employee involvement, total quality management, and reengineering programs) to later (3 years later) organizational financial performance (and other indicators of effectiveness) than the reverse. The Lawler et al. project is the closest one to the present effort because of the collection of both high-performance-work-practices data and financial indicators at multiple points in time and in their study the causal arrow runs from the high-performance work practices to financial performance.

Wright and Gardner (2000) noted that implicit in much of this research is the presumption that human resources practices and high-performance work practices have a direct effect on employee attitudes that, in turn, yields improved individual and organizational performance. But if the high-performance-work-practices literature reveals a direct relationship to organizational performance and the present results suggest a direct relationship between

organizational performance and employee attitudes, what is going on here?

When performance predicts satisfaction. One solution to these seemingly inconsistent findings is suggested by the early work on the relationship between individual-level job satisfaction and individual-level performance. When it was discovered that the relationship between the two was weak at best (e.g., Brayfield & Crockett, 1955; Vroom, 1964), various models emerged to explain these results. One model, the one by Porter and Lawler (1968), proposed that individual employee satisfaction was an outcome of individual performance as mediated by rewards; their proposal was that when good performance is followed by equitable rewards, then satisfaction is the result. So, the idea that satisfaction might follow from performance is not new. Indeed there are modern variations on this theme, with perhaps the most inclusive and best-known such model being the high-performance cycle of Locke and Latham (1990). Both the Porter and Lawler and the Locke and Latham models have performance preceding satisfaction because it is the outcomes of performance (rewards) that yield satisfaction.

Suppose we changed the level of analysis in these models and suggested that organizational financial and market performance yields positive aggregate employee attitudes as a consequence of rewards, both financial and nonfinancial. A conceptualization suggested by this logic would propose that financially and market successful organizations (a) provide superior benefits to employees, yielding improved levels of Satisfaction With Security; (b) become more attractive organizations to work for, yielding improved levels of OJS (and increased relative numbers of applicants and decreased relative numbers of attritions); and (c) pay their

employees more, yielding increased levels of Satisfaction With Pay. With regard to the fact that the relationships appear more reciprocal for Satisfaction With Pay, note that in Table 6 the correlations reported for ROA and EPS predicting Satisfaction With Pay are stronger than the reverse (although not significantly stronger) in all cases but one. Nevertheless, these relationships concerning Satisfaction With Pay are the most reciprocal of all those explored here and they merit specific attention.

A preliminary framework for future research. Figure 1 summarizes a preliminary proposed framework for integrating the literature on high-performance work practices and the results obtained in the present study. The proposed framework shows that high-performance work practices yield production efficiencies resulting in improved ROA and EPS. These improvements in ROA and EPS yield increased levels of Satisfaction With Security (perhaps as a result of improved benefits) and OJS (perhaps as a result of the organization being a more attractive place to work because of positive reputation) with these not having subsequent strong reciprocal causal relationships with ROA and EPS. Of course, they may get reflected in ROA and EPS indirectly, for example through reducing relative rates of employee turnover and/or decreased accidents, stress, or absences, and this may account for the significant relationships between employee attitudes as the predictor and ROA or EPS for OJS. Such plausible extended mediated relationships were not studied here, so these are only speculations on our part, but we feel such long-linked mediated models require further conceptualization and research.

Perhaps of special interest here is the apparently reciprocal relationship between Satisfaction With Pay and ROA and EPS. We propose this linkage likely is mediated by (a) the OCB stimulated

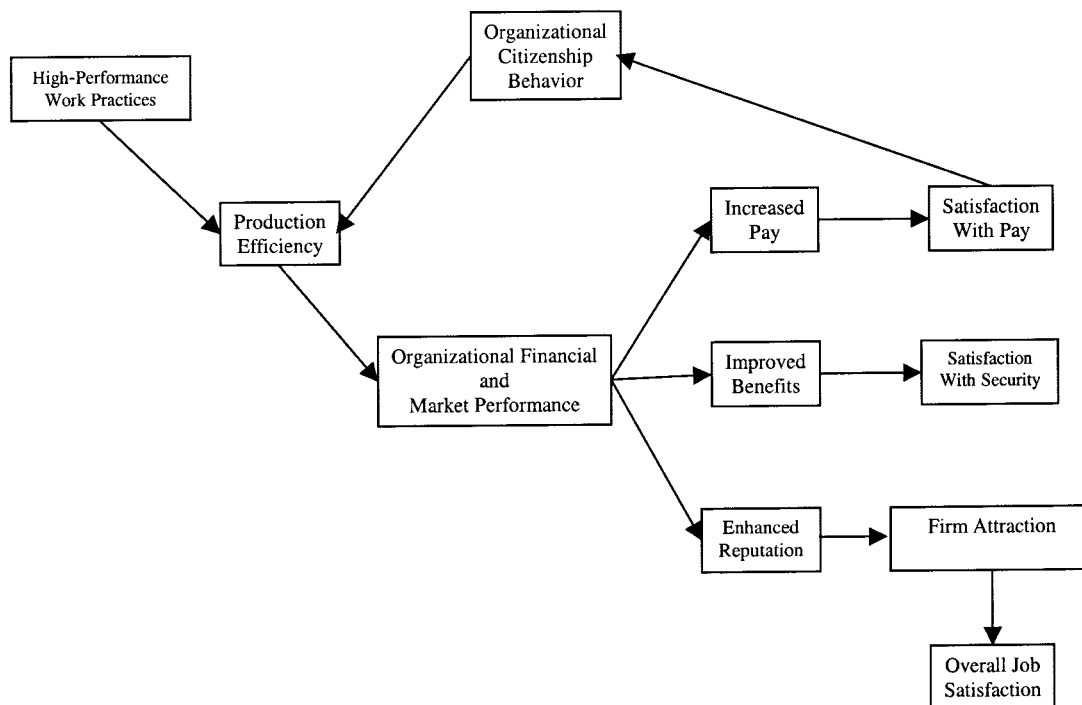


Figure 1. Proposed framework for integrating the literature on high-performance work practices with the present results.

by Satisfaction With Pay and (b) the production efficiencies those OCB engender. With regard to OCB, there is growing evidence that relationships uncovered by Organ (1988, 1997) and by others (Borman & Motowidlo, 1997) at the individual level of analysis now exist at the group and organizational levels of analysis and, in addition, that OCB in turn are reflected in production efficiencies (Koys, 2001; Podsakoff & McKenzie, 1994). Organ specifically hypothesized that satisfaction links to OCB through fairness, especially through outcome (compared with procedural) fairness. Pay has to do with outcome or distributive fairness (Organ, 1988, p. 64), so the conceptual logic is clear on the relationship between Satisfaction With Pay and OCB. The operational logic is also clear in the present case because one of the two items used to index Satisfaction With Pay clearly has equity associated with it in that it began with the phrase "In comparison with people in other companies, my pay is . . ."

Caution is, of course, required in accepting the proposed model. First, it is only with regard to Satisfaction With Pay that strong evidence for direct reciprocal relationships was found. Second, the role of Satisfaction With Security might seem to be conceptually similar to the issue of Satisfaction With Pay (researchers often think of "pay-and-compensation" as one construct), yet it behaves in ways that more clearly lag ROA and EPS. We think a reason for the differences in the ways they behave might be attributable to the way pay and benefits function vis-à-vis the psychological contract employees have with their employing organizations. As Rousseau and Ho (2000) pointed out, security issues are conceptualized less by people in terms of the need for reciprocity than is pay; employees are less likely to feel they must repay benefits than to feel they must repay pay perhaps because benefits are seen more as a right and pay more as a reward. Thus benefits are fixed rather than variable across people, are long-term rather than short-term in status, and are nonmonetizable and nonnegotiable (Rousseau & Ho, 2000).

The Other Employee Attitudes

Why do the other facets of satisfaction not reveal consistent patterns with ROA and EPS? Issues such as Satisfaction With Empowerment or Satisfaction With Job Fulfillment may be too far removed from the impact of financial performance or market effectiveness to demonstrate a direct relationship with ROA and/or EPS, the only organizational effectiveness outcomes studied here. That is, these other employee attitudes might be more likely to be directly reflected in correlates of well-being in organizations, like absenteeism or turnover, than in the financial and market performance indicators used here. As noted earlier, long-linked mediated models connecting these other employee attitudes to ROA and/or EPS might prove conceptually and practically useful.

Lawler et al. (1998) would not be surprised by the fact that pay and security issues are correlated with the financial measures used here whereas other issues assessed are not. They put it this way:

Our findings . . . certainly suggest that knowledge or skill-based pay and employment security do not depend for their success on other employee involvement practices being present. In essence, their success is relatively independent of the use of other employee involvement practices. (p. 100)

Methodological Issues

OJS, Satisfaction With Security, and Satisfaction With Pay: Why these? Recall the data in Table 2 in which Satisfaction With Pay, Satisfaction With Security, and (to a somewhat lesser degree) OJS had stronger ICC(1) values than did the other scales. It may not be unreasonable to conclude that these facets of the employee attitude survey were the consistent and significant correlates of ROA and EPS because they were the scales that most reliably differentiated among the organizations studied. The quite strong ICC(1) values for Satisfaction With Pay and Satisfaction With Security do not appear to be attributable to higher within-organization agreement, as the $r_{wg(I)}$ values are the weakest for these scales. This means that between-organizations differences account for the high ICC(1) values, and this provides a note of caution to future researchers: Focus on variables that can be measured such that they reveal maximal between-organizations differences.

On different data collection methods for indexing human issues. It is important to note that the data used in studies of high-performance work practices are typically collected from a single high-level informant within each organization. These informants, usually human resource managers, are asked to describe how their organization works, especially how it works with regard to human resource practices broadly conceptualized. For example, in the Lawler et al. (1998) project, a key informant in each organization provided information on such practices as information sharing, training, pay and/or reward systems, involvement practices, and so forth. And in Huselid's (1995) work, the human resources informant reported on work and human resources practices.

This mode of data collection and the response set with which the key informants approach the survey stands in stark contrast to the typical employee attitude survey procedure. In this latter procedure, a sample (or the entire population) of employees is surveyed and the survey response set is for employees to report their opinions about their experiences in dealing with the organization and its practices. Thus, the implicit, if not explicit, response set of the typical employee attitude survey is meant to be evaluative, not descriptive. Perhaps the key indicant to employees that this is the response set desired is the usual use of the agree-disagree scale, clearly an opinion scale and one that respondents have encountered in countless opinion surveys before. In fact, we could find little evidence in the research literature regarding the relationship between employee attitudes assessed via individually administered attitude surveys and the results obtained when human resources managers report on organizational high-performance and human resources practices.

Such a finding of relative isolation of researchers from each other would not come as a surprise to Bolman and Deal (1997). Bolman and Deal noted that most researchers approach the study of organizations from a particular mind-set (what they call a "frame") and the interpretation of the way organizations work is determined by the frame adopted by the researcher. That is, the frame determines the conceptual model adopted, the data collection methods, the targets of data collection, and the subsequent interpretation of results. The way organizations are described to be functioning by human resources managers or other key informants may be a very different world from the attitudes employees in those organizations have with regard to such issues as job satisfaction, satisfaction with security, and satisfaction with pay—we

simply do not know. It now seems clear to us that these are very different kinds of data and they are likely related to organizational performance in different ways—as preliminarily summarized in Figure 1.

On indices of organizational performance. A final methodological note is critical: We studied only ROA and EPS as the outcomes of interest here, so studies against other indices of organizational performance might result in different findings. Some of these have been hinted at already. For example, it is reasonable to propose that turnover will be related to Satisfaction With Empowerment whereas ROA and EPS were not. It would also be reasonable to simultaneously study turnover rates in organizations as a direct correlate simultaneously of ROA and EPS as well as Satisfaction With Empowerment; perhaps both affect turnover, further complicating the frameworks that are required for understanding important organizational and human outcomes (March & Sutton, 1997).

Strengths, Limitations, and Conclusions

Examinations of the relationship between attitudes and performance have a long history in organizational studies, mostly at the individual level of analysis and mostly in cross-sectional studies, yet the debate concerning the happy, productive worker continues to this day. It is interesting to note that when we move from the individual to the organizational level of analysis, the same questions arise: Are companies with happy workers more productive companies? Our results suggest that, as the results from March and Sutton (1997) predict, the relationship between employee attitudes and organizational performance is complex, and it is too simplistic to assume that satisfaction attitudes lead to organizational financial or market performance—some do and some do not, and some employee attitudes apparently are the result of financial and market performance. Obviously, we believe that a strength of the research reported here is the longitudinal nature of both the employee attitude data and the organizational financial and market performance data. Such longitudinal data on both sides of the causal arrow allowed us to develop and then examine over various time lags relationships among these diverse organizational phenomena. Additionally, the meta-analytic procedure, aggregating over multiple instances of the same time lags, allowed us to begin to disentangle and simplify the presentation of very complex relationships.

However, our results should be interpreted in light of several limitations. First, we have no information regarding the procedures used during the administration of the surveys. Second, because all organizations did not use the same set of items nor did an organization necessarily use the same set of items over time, our measurement of employee attitudes is not ideal. However, internal consistency and stability indicators of the data revealed acceptable measurement properties, and remaining deficiencies in the data yield the conclusion that our results provide conservative estimates of the relationships between employee attitudes and organizational financial and market performance. Third, we were unable (because of the small sample of organizations and the diverse nature of the organizations studied) to statistically control for potential industry effects in our analyses. But three considerations make this issue less problematic in the present study: (a) ROA is a useful between-

industries as well as between-companies indicator of relative effectiveness; (b) data from the companies studied here revealed good stability in the ROA data over time; and (c) for industries (e.g., service industries) in which ROA may be a bit less relevant, the fact that the findings for EPS were similar to those for ROA lends credence to the robustness of the findings reported.

It is very important for us to note that the conclusions we reached with regard to what correlates with ROA and EPS, as well as the likely causal priority of those correlations, cannot be generalized to (a) other than very large diverse companies, (b) other outcomes of interest (safety, turnover rates, workers' compensation claims, customer satisfaction), (c) other employee experiences (organizational climate) or other attitude survey items, and (d) other eras. Caution is always a useful guide when generalizing from one study to other situations and variables. For example, one of the anonymous reviewers noted that two of our scales clearly frame the survey items with respect to other companies (Satisfaction With Pay and OJS; see the Appendix) and one scale suggests such a comparison base (Satisfaction With Security), and these are precisely the scales that relate to ROA and EPS. Providing a company comparison base as a response set for respondents may be an interesting idea to pursue further in such research, although it does not account for the fact that the causal directions are not equivalent in our data. In any case, the reviewer's observation may mean that other surveys with noncomparative items used to assess pay satisfaction and/or security satisfaction and/or global job satisfaction may yield different results against the same criteria. Fourth, one might raise a question about the chance nature of the relationships reported. After all, we began with four indicators of organizational financial (ROI, ROE, ROA) and market (EPS) performance and seven facets of satisfaction attitudes, but we revealed relationships for "only" two of the organizational performance indicators and three of the attitude scales. In fact, the relationships of the attitude scales with ROI and ROE parallel those for ROA and EPS, so that argument is not relevant. As regards the attitude scales, it must be recalled that we revealed the relationships reported for multiple time lags, with each lag having many replications entering the data analyses, suggesting that the results we reported are quite robust.

Finally, we attempted to provide some preliminary guidance to future researchers regarding a mix of potentially confounded conceptual and methodological issues related to employee satisfaction and high-performance work practices. Here we proposed that a likely framework in which future such research might be conceptualized is one in which (a) high-performance work practices are seen as leading to organizational financial and market performance through improvements in production efficiency; (b) financial and market performance yields increased levels of Satisfaction With Security (through improved benefits) and OJS (through improved reputation); and (c) financial and market performance also yields increased pay levels, resulting in increased Satisfaction With Pay, which gets reflected in improved production efficiency through the display of OCB. We also noted that research is required on the relationship between the reports of key informants on organizational practices and employee attitudes to discover whether the presumed effects of high performance and human resources practices as reported by managers are reflected in employee attitudes.

References

- Argyris, C. (1957). *Personality and organization*. New York: HarperCollins.
- Becker, B., & Gerhart, B. (1996). The impact of human resource management on organizational performance: Progress and prospects. *Academy of Management Journal*, 39, 779–801.
- Bliese, P. D., & Halverson, R. R. (1998). Group size and measures of group-level properties: An examination of eta-squared and ICC values. *Journal of Management*, 24, 157–172.
- Bolman, L. G., & Deal, T. E. (1997). *Reframing organizations* (2nd ed.). San Francisco: Jossey-Bass.
- Borman, W. C., & Motowidlo, S. J. (1997). Task performance and contextual performance: The meaning for personnel selection research. *Human Performance*, 10, 99–110.
- Brayfield, A. H., & Crockett, W. H. (1955). Employee attitudes and performance. *Psychological Bulletin*, 52, 396–428.
- Buzzell, R. D., & Gayle, B. T. (1987). *The PIMS principles: Linking strategy to performance*. New York: Free Press.
- Cascio, W. F., Young, C. E., & Morris, J. R. (1997). Financial consequences of employment change decisions in major U.S. corporations. *Academy of Management Journal*, 40, 1175–1189.
- Cook, J. D., Hepworth, S. J., Wall, T. D., & Warr, P. B. (1981). *The experience of work*. London: Academic Press.
- Denison, D. R. (1990). *Corporate culture and organizational effectiveness*. New York: Wiley.
- Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology*, 87, 268–279.
- Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. New York: Academic Press.
- Heskett, J. L., Sasser, W. E., & Schlesinger, L. A. (1997). *The service profit chain: How leading companies link profit and growth to loyalty, satisfaction, and value*. New York: Free Press.
- Huselid, M. A. (1995). The impact of human resource management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal*, 38, 635–672.
- Huselid, M. A., & Becker, B. E. (1996). Methodological issues in cross-sectional and panel estimates of the human resource–firm performance link. *Industrial Relations*, 35, 400–422.
- Jacob, R. (1995, March 6). Corporate reputations. *Fortune*, 54–94.
- James, L. R. (1982). Aggregation bias in estimates of perceptual agreement. *Journal of Applied Psychology*, 67, 219–229.
- James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology*, 69, 85–98.
- Kaiser, F. H. (1960). Varimax solution for primary mental abilities. *Psychometrika*, 25, 153–158.
- Klein, K. J., & Kozlowski, S. W. J. (Eds.). (2000). *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions*. San Francisco: Jossey-Bass.
- Koys, D. J. (2001). The effects of employee satisfaction, organizational citizenship behavior, and turnover on organizational effectiveness: A unit-level longitudinal study. *Personnel Psychology*, 54, 101–114.
- Lawler, E. E., III, Mohrman, S. A., & Ledford, G. E., Jr. (1998). *Strategies for high-performance organizations: Employee involvement, TQM, and reengineering programs in Fortune 500 corporations*. San Francisco: Jossey-Bass.
- Likert, R. (1961). *New patterns of management*. New York: McGraw-Hill.
- Locke, E. A., & Latham, G. P. (1990). *A theory of goal setting and task performance*. Englewood Cliffs, NJ: Prentice-Hall.
- Macy, B. A., & Izumi, H. (1993). Organizational change, design, and work innovation: A meta-analysis of 131 north American field studies, 1961–1991. *Research in Organizational Change and Development*, 7, 235–313.
- March, J. G., & Sutton, R. I. (1997). Organizational performance as a dependent variable. *Organization Science*, 8, 698–706.
- McGregor, D. M. (1960). *The human side of enterprise*. New York: McGraw-Hill.
- Nord, W. F., & Fox, S. (1996). The individual in organizational studies: The great disappearing act? In S. R. Clegg, C. Hardy, & W. F. Nord (Eds.), *Handbook of organizational studies* (pp. 148–174). London: Sage.
- Organ, D. W. (1988). *Organizational citizenship behavior: The good soldier syndrome*. Lexington, MA: Lexington Books.
- Organ, D. W. (1997). Organizational citizenship behavior: It's construct clean-up time. *Human Performance*, 10, 85–98.
- Ostroff, C. (1992). The relationship between satisfaction, attitudes, and performance: An organizational level analysis. *Journal of Applied Psychology*, 77, 963–974.
- Podsakoff, P. M., & McKenzie, S. B. (1994). Organizational citizenship behavior and sales unit effectiveness. *Journal of Marketing Research*, 31, 351–363.
- Porter, L. W., & Lawler, E. E., III (1968). *Managerial attitudes and performance*. Homewood, IL: Irwin.
- Rousseau, D., & Ho, V. T. (2000). Psychological contract issues in compensation. In S. L. Rynes & B. Gerhart (Eds.), *Compensation in organizations: Current research and practice* (pp. 273–310). San Francisco: Jossey-Bass.
- Roznowski, M., & Hulin, C. L. (1992). The scientific merit of valid measures of general constructs with special reference to job satisfaction and job withdrawal. In C. J. Cranny, P. C. Smith, & E. F. Stone (Eds.), *Job satisfaction: How people feel about their jobs and how it affects their performance* (pp. 123–163). Lexington, MA: Lexington Books.
- Ryan, A. M., Schmitt, M. J., & Johnson, R. (1996). Attitudes and effectiveness: Examining relations at an organizational level. *Personnel Psychology*, 49, 853–882.
- Schneider, B. (1985). Organizational behavior. *Annual Review of Psychology*, 36, 573–611.
- Schneider, B., & Dachler, H. P. (1978). A note on the stability of the job descriptive index. *Journal of Applied Psychology*, 63, 650–653.
- Schneider, B., Parkington, J. P., & Buxton, V. M. (1980). Employee and customer perceptions of service in banks. *Administrative Science Quarterly*, 25, 252–267.
- Schneider, B., White, S. S., & Paul, M. C. (1998). Linking service climate and customer perceptions of service quality: Test of a causal model. *Journal of Applied Psychology*, 83, 150–163.
- Siehl, C., & Martin, J. (1990). Organizational culture: A key to financial performance? In B. Schneider (Ed.), *Organizational climate and culture* (pp. 241–281). San Francisco: Jossey-Bass.
- Smith, F. J. (1977). Work attitudes as predictors of attendance on a specific day. *Journal of Applied Psychology*, 62, 16–19.
- Smith, P. C., Kendall, L. W., & Hulin, C. L. (1969). *The measurement of satisfaction in work and retirement*. Chicago: Rand McNally.
- Uchitelle, L., & Kleinfeld, N. R. (1996, March 3). On the battlefields of business, millions of casualties. *New York Times*, p. A1ff.
- Vroom, V. R. (1964). *Work and motivation*. New York: Wiley.
- Wright, P. M., & Gardner, T. M. (2000). *Theoretical and empirical challenges in studying the HR practice–firm performance relationship*. Center for Advanced Human Resource Studies Working Paper 00–04. Ithaca, NY: Cornell University.
- Zohar, D. (1980). Safety climate in industrial organizations: Theoretical and applied implications. *Journal of Applied Psychology*, 65, 96–102.
- Zohar, D. (2000). A group-level model of safety climate: Testing the effect of group climate on micro-accidents in manufacturing jobs. *Journal of Applied Psychology*, 85, 587–596.

Appendix

Items and Factors for the Employee Attitude Survey (With Scale for Responding)

Satisfaction With Empowerment

1. How satisfied are you with your involvement in the decisions that affect your work? (*VS–VD*)
2. Sufficient effort is made to get the opinions and thinking of people who work here. (*SA–SD*)
3. How satisfied are you with the information you receive from management regarding what's going on in this company? (*VS–VD*)
4. How satisfied are you with the opportunity to get a better job at this company? (*VS–VD*)
5. I am given a real opportunity to improve my skills in this company. (*SA–SD*)
6. I feel encouraged to come up with new and better ways of doing things. (*SA–SD*)
7. Overall, how good a job do you feel is being done by your immediate supervisor/manager? (*VG–VP*)

Satisfaction With Job Fulfillment

1. I like the kind of work I do. (*SA–SD*)
2. My work gives me a feeling of personal accomplishment. (*SA–SD*)
3. My job makes good use of my skills and abilities. (*SA–SD*)

Satisfaction With Pay

1. In comparison with people in similar jobs in other companies my pay is . . . (*MH–ML*)
2. How do you rate the amount of pay you get on your job? (*VG–VP*)

Satisfaction With Work Group

1. How would you rate the overall quality of work done in your work group? (*VG–VP*)
2. The people I work with cooperate to get the job done. (*SA–SD*)

Satisfaction With Security

1. How do you rate this company in providing job security for people like yourself? (*VG–VP*)
2. How do you rate your total benefits program? (*VG–VP*)

Satisfaction With Work Facilitation

1. My company is making the changes necessary to compete effectively. (*SA–SD*)
2. How satisfied are you with the training you received for your present job? (*VS–VD*)
3. I have enough information to do my job well. (*SA–SD*)
4. Conditions at my job allow me to be about as productive as I could be. (*SA–SD*)
5. How satisfied are you with your physical working conditions? (*VS–VD*)

Overall Job Satisfaction

1. Considering everything, how satisfied are you with your job? (*VS–VD*)
2. How would you rate this company as a company to work for compared to other companies? (*VG–VP*)
3. Considering everything, how would you rate your overall satisfaction with your company at the present time? (*VS–VD*)

Note. The endpoints for these 5-point scales, ranging from 1 to 5, were as follows: *VS–VD* = *very satisfied–very dissatisfied*; *SA–SD* = *strongly agree–strongly disagree*; *VG–VP* = *very good–very poor*; *MH–ML* = *much higher–much lower*.

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