

# The Satisfaction of Industrial Workers as Predictors of Production, Turnover, and Absenteeism

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Results of a large scale reinvestigation of relationships between measures of worker satisfaction and measures of job performance are reported. The study involves a sample of approximately 4000 employees in both production and nonproduction departments of a large aerospace firm. Relationships between a multifactor model of worker satisfaction and both actual and surrogate performance measures, such as absenteeism and turnover, are examined. Results suggest complex relationships between factors in the satisfaction model and the actual as well as the surrogate performance measures.

## A. INTRODUCTION

The relationship between worker satisfaction and measures of productivity has been the subject of extensive research during the past 50 years. First suggested by the theories of Mayo, Roethlisberger, and other members of the human relations school of management, the intuitively pleasing proposition that satisfied or contented workers would achieve higher levels of productivity has not been well supported through empirical tests. Two broad reviews of the research in this area (4, 14) suggest the absence of any substantive satisfaction-performance linkage.

Partially as a result of these seemingly discouraging results and also of modified interpretations of expected relationships, a number of alternative propositions have been developed regarding the potential for relating satisfaction and performance. In examining these relationships, behavioralists have assumed a number of somewhat complimentary, yet significantly different positions; for example, March and Simon (10), Porter and Lawler (12), and Locke (8), all suggest that performance should be viewed as a cause rather than as a result of satisfaction. More specifically, Porter and Lawler's model indicates that worker performance leads to satisfaction when that performance is mediated by organizationally determined rewards which the recipient regards as equitable. Wanous (16), among others, advances the position that satisfaction should be divided into components which are extrinsic and intrinsic to the job. Performance will cause intrinsic satisfaction, while extrinsic satisfaction will cause performance. Baird (1) and Ivancevich (6) include the degree of task stimulation as a mediating variable between performance and satisfaction.

Other research has employed surrogate measures for job satisfaction. For instance, Lyons (9), Porter, and Steers (13), and Waters and Roach (17), have used absenteeism, turnover, or behavioral intention instead of specific performance measures. Contingency theorists, such as Lawrence and Lorsch (7) and Fiedler (5), suggest that workers with different life styles, work group structures, and task requirements, will have different relations between job satisfaction and job performance.

Each of these positions has detractors as well as supporters. What is evident from a review of the alternative positions and the recent organizational literature is that researchers have for the most part abandoned attempts at demonstrating a direct linkage between satisfaction and performance. In a detailed review of the satisfaction-performance research, Organ (11) criticized this abandonment and highlighted the need and the potential for further research regarding the satisfaction-causes-performance relationship. Perhaps more importantly, Organ has provided a new theoretical framework for study and explanation of this linkage.

According to Organ, the logic supporting the satisfaction-performance hypothesis is based on "the assumption that most people expect social justice or equity to prevail in interpersonal transactions" (11 p. 47). In an organizational setting, this assumption may be interpreted to mean that an individual who is

overrewarded through receiving a greater than expected return in his dealings with his employer may feel that an inequity exists. Organ accepts the assumption that this overreward leads to satisfaction, which appears plausible on the basis of accepted definitions of satisfaction. A frequently chosen strategy for eliminating inequity is through reciprocation, which may take the form of the overrewarded individual's offering his employer greater productivity or performance.

On the basis of this theoretical framework, Organ re-examines the results of the previously reported empirical research in the satisfaction-performance area. Rather than the negative conclusions of Brayfield and Crockett (4) and Vroom (15), Organ concludes that the results of these earlier studies suggest at least two areas of promise for further research: "a need to know what types of satisfiers evoke feelings of obligation and how these vary as a function of different kinds of organizational environments" (11 p.51), and the identification of those behaviors (such as regular attendance, loyalty to the job, cooperativeness, and adherence to rules) deemed appropriate as forms of reciprocation by the organization and/or the employee.

The present study incorporates these high potential areas within a broad based examination of behavioral characteristics of employees of a large aerospace corporation. Specifically, it investigates components of satisfaction and the surrogate performance indicators of absenteeism and turnover.

## **B. METHODS**

Attitudinal data were collected from employees in a major aerospace corporation. Of approximately 16,000 employees, usable responses were obtained from 15,072. All employees completed the Industrial Worker Satisfaction Instrument [IWSI (3)], as well as a personal data section. In a previous paper from this data set (2) it has been reported that responses to the IWSI factored into nine interpretable oblique factors. Factor I dealt with quality of compensation; Factor II with quality of supervision; Factor III with generalized perceptions of other worker's commitment (labeled Worker Commitment); Factor IV with generalized attitudes toward other workers as responsible employees (Worker Responsibility); Factor V with work pace (and production); Factor VI with job stimulation; Factor VII, Opinion of Quality Control; Factor VIII, job security; and Factor IX, worker trust. Worker trust, on closer examination, is unique in that it is definable mainly in terms of specific relationships within the work group and department. Most of the other factors involve more generalized attitudinal concepts related to the overall organization.

Aside from these attitudinal data, the corporation provided departmental level behavioral data for a major division employing slightly more than 4,000 people in 62 departments. Behavioral data included divisionally developed production indexes (PI), as well as absenteeism and turnover rates for the year in which the attitude data were collected. These departmental level behavioral data are used here as dependent variables in correlation and stepwise linear regression analyses with the standardized departmental attitude scores on each factor of the IWSI.

Within the division under study, the departments have different functions. Twenty-six departments are production oriented; their work entail; producing physical goods on various production lines; Production Index data were only available for these departments. Other departments are involved in production support, engineering, administration and sales. For these latter departments, there are no clearly defined norms governing work output and the work situation is much more flexible than on production lines. To observe possible differences associated with the work situation, in subsequent analyses departments are heuristically divided into "production" and "nonproduction" categories.

The 4,069 responses to the IWSI, used to aggregate departmental averages, were obtained from the following: 8.8 percent from managers; 5.7 percent from clerical workers; 7.4 percent from technical workers; 7.3 percent from supervisors; 54.6 percent from production workers; and 16.7 percent from other support workers. Ages of respondents ranged from less than 20 to over 60 years with the mode in the category 20-29 years. About 87.8 percent of respondents were white, 7.8 percent black, 2.0 percent

Spanish surnamed, and 2.4 percent other (mainly Asian and Native American). Approximately 54.3 percent of respondents were male.

### C. RESULTS

Two behavioral measures were available for all levels of the organization: absenteeism and turnover. In Table 1 are reproduced the correlation coefficients obtained for relationships between attitude and behavioral variables. For all departments in the division, the most significant finding is the lack of any overall explainable relationship between compensation and either turnover or absenteeism. With regard to turnover rates, outcome appears to be a consequence of differences in perceptions between non-production and production departments. Examining production departments alone, a significant correlation was obtained for the relationship between perceived quality of compensation and turnover. However, the positive direction of that relationship was opposite to that which would have been anticipated on the basis of either intuition or most existing literature.

Other variables related to turnover for the division as a whole included Quality of Supervision (Factor II), Worker Commitment (Factor III), Worker Responsibility (Factor IV), Work Security (Factor VIII) and Worker Trust (Factor IX). All obtained *rs* were relatively low, and all but worker responsibility were in the direction expected on the basis of previous literature.

TABLE I  
CORRELATION OF ATTITUDE AND BEHAVIORAL VARIABLES

Measure	Division		PI	Production		Nonproduction	
	Turn	Absent		Turn	Absent	Turn	Absent
	(N = 62)			(N = 26)		(N = 36)	
I. Quality of compensation	.04	-.19	-.33*	.37*	.28	.04	-.16
II. Quality of supervision	-.23*	-.48*	-.33*	.21	-.18	-.26	-.24
III. Worker commitment	-.25*	-.42*	.04	.05	.20	-.29*	-.46*
IV. Worker responsibility	.21*	.02	-.61*	.36*	-.26	.14	.07
V. Work pace	-.13	-.18	-.23	-.03	-.08	.14	-.13
VI. Degree of job simulation	-.28*	-.56*	-.15	.20	-.30	-.28	-.32*
VII. Quality control	-.06	-.23*	-.53*	.15	.00	-.07	-.16
VIII. Work security	-.21*	-.24*	-.14	.07	-.26	-.19	.07
IX. Worker trust	-.30*	-.49*	.01	.12	-.39*	-.41*	-.35*
PI				-.64*	-.05	-	-
Turnover			-.64*	-	.25	-	.65*
Absenteeism			-.05	-.25	-	.65*	-

Worker Responsibility's relationship to turnover remained significant for production departments; however, all other correlations (with the exception of the aforementioned Quality of Compensation) were not significant. For nonproduction departments, the relationship between turnover and Worker Commitment as well as Worker Trust remained significant, and the magnitude of *rs* obtained for Quality of Supervision and Degree of Job Stimulation, while not significant, remained approximately the same as they had been for the division as a whole.

Similar results were found for relationships between absenteeism and the attitude variables. For the division as a whole, Factor II (Quality of Supervision), Factor III (Worker Commitment), Factor IV (Degree of Job Stimulation), Factor VII (Opinion of Quality Control), Factor VIII (Work Security), and Factor IX (Worker Trust) were all significantly correlated with absenteeism, with relationships in the expected

directions. For production departments, only Worker Trust remained significant, while Worker Commitment and Degree of Job Stimulation were significant for nonproduction departments.

Several of the factors were significantly correlated with the Production Index (PI) in production departments. These were as follows: Quality of Compensation, Quality of Supervision, Worker Responsibility, and Opinion of Quality Control. Two of the factors (Worker Responsibility and Opinion of Quality Control) were related to the production index inversely to the expected direction.

Calculation of the zero order correlations among the three behavioral measures revealed, again, some difference between production and nonproduction departments (see bottom of Table 1). Turnover and absenteeism were highly correlated in nonproduction departments, and much less so in production. Additionally turnover rates were much more closely associated with productivity than was absenteeism.

Regression analysis of the attitude variables (factors) on the behavioral indexes revealed a great deal of multicollinearity among the various measures. Again, the patterns of obtained relationships differed significantly between production and nonproduction departments. Regarding turnover, for the division as a whole, Worker Trust ( $\beta = -.41$ ) and Worker Responsibility ( $\beta = .35$ ) were the only significant predictors ( $R^2 = .20$ ). For production departments, only one factor, Quality of Compensation, predicted turnover ( $\beta = .37$ ,  $R^2 = .14$ ). For nonproduction departments two factors -- Worker Trust ( $\beta = .54$ ) and Worker Responsibility ( $\beta = .34$ ) -- were significant predictors of turnover ( $R^2 = .27$ ). Regarding absenteeism, the only significant predictor for the division as a whole was Degree of Job Stimulation ( $\beta = .56$ ,  $R^2 = .31$ ). When production and nonproduction departments are considered separately, however, this attitude variable did not obtain significant loadings. Instead, in production departments, Worker Trust ( $\beta = .47$ ) and Quality of Compensation ( $\beta = .38$ ) were the best absenteeism predictors ( $R^2 = .20$ ). In nonproduction departments, Worker Commitment was the only significant predictor ( $\beta = .46$ ,  $R^2 = .21$ ).

Regression of the attitude variables on the PI revealed that Worker Responsibility ( $\beta = .55$ ) and Perceptions of Quality Control ( $\beta = .46$ ) were both relatively strong predictors. Together they accounted for 58 percent of the variance in the PI. Regressing absenteeism and turnover on the PI showed that neither independent behavioral variable was as closely associated with it as were the attitude variables and that only turnover was a significant predictor ( $\beta = -.35$ ,  $R^2 = .12$ ).

#### **D. DISCUSSION**

These data reveal complex relationships between attitudes of workers and behavioral outcomes at the departmental level. The most basic observation is that position within the organization (i.e., "production" versus "nonproduction") was significantly associated with the nature of relationships encountered. Both patterns of correlation at the zero order and significant predictors in regression analysis varied by type of department. This suggests that worker attitudes and their behavioral outcomes may not be expected to occur unitarily among all kinds of workers.

Within the production departments, it is interesting to note that the significant relationships between the attitudinal factors and the PI are all negative. Although this is the reverse of what might have been expected, it confirms earlier findings reported by Sasser and Leonard (14) that "employees in high productivity groups liked their work less than their counterparts in the low productivity groups" (14, p. 117).

Examining the attitudinal measures individually, the significant negative correlation between Quality of Compensation and the PI may result from several conditions. In this data set the distribution of scores on the Quality of Compensation factor is skewed high<sup>2</sup>: nearly all employees expressed relative dissatisfaction with compensation. Additionally, this corporation compensates its employees largely on a sliding pay scale based on job classification and seniority. Since all production departments involve similar kinds of skills, compensation for work is roughly consistent across all departments. These two condition-general dissatisfaction with compensation, and lack of differentiation among departments by quantity of production-seem to have led to compensation being interpreted by employees as a "dissatisfier" rather

than "satisfier." Thus, it was in the departments in which people were achieving in accordance with organizational expectations that dissatisfaction was greatest.

The last conclusion is also supported by other aspects of the data. Regression analysis demonstrated that the best predictors of the PI were the factors representing perceptions of other workers taking responsibility for their own jobs and generalized opinion of quality control. Neither of these variables appears to be logically linked in a causal relationship with production. Instead, they would most likely be the consequence of workers' perceptions of others around them. Those departments producing the greatest volume (compared to company expectations) appear to have felt that others were not "pulling their weight" (and vice versa.). Also turnover rates were highest for those departments with fewer complaints about compensation (as are absenteeism rates), and *esprit de corps* was lower in departments with lower absenteeism rates. These trends suggest that the organization of production and compensation in the corporation led to increased dissatisfaction among those production workers most committed to their jobs.

In terms of probable "causal relationships," it appears that turnover rates had the greatest direct effect on production in this company. Attitudinal variables appear more as consequences of organizational behavioral patterns than as direct "causes" of production.

Lastly, the data show major differences between types of departments and attitude/behavioral relationships. For both department categories used here, forms of social psychological commitment are associated with behaviors measured at the group level, but not manifested in the same way. For nonproduction departments, significant predictors of turnover and absenteeism involved the individual's perceptions of other workers within her or his own department, the individual's commitment to the job, and perceived generalized responsibility of other workers. For production departments, relative compensation (again as a dissatisfier) and intradepartmental relationships are significant predictors. Thus, in both instances relationships within the group were important but for nonproduction workers a system of dissatisfiers was not so clearly apparent.

The results of the present study provide support for Organ's (11) arguments on the efficacy of continued study of attitudinal/behavioral relationships in work settings. Social psychological orientations toward work have been shown here to be of sufficient complexity to warrant further research. Also, these data do not suggest any unitary causal linkages between attitudes and behaviors, but instead both attitudes and behaviors appear to be intertwined with organizational situation, characteristics, and structure.

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<sup>2</sup>For comparative purposes, unit weighted indexes were created for each factor by utilizing all variables with loadings of .40 or greater. For all divisions in the original survey (N = 15,072) the mean (on a five-point scale) for Factor I = 2.50, Factor II = 2.88, Factor III = 3.92, Factor IV = 2.95, Factor V = 2.87, Factor VI = 3.18, Factor VII = 2.85, Factor VIII = 2.777, Factor IX = 3.71. This division did not differ significantly from the others on any mean.

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