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# Effects of Individual and Team Monitoring on Employee Performance: Differential Outcomes Under Gainsharing and Traditional Pay

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**EFFECTS OF INDIVIDUAL AND TEAM MONITORING ON EMPLOYEE PERFORMANCE:  
DIFFERENTIAL OUTCOMES UNDER  
GAINSHARING AND TRADITIONAL PAY**

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

ABSTRACT

EFFECTS OF INDIVIDUAL AND TEAM MONITORING ON EMPLOYEE  
PERFORMANCE: DIFFERENTIAL OUTCOMES UNDER  
GAINSHARING AND TRADITIONAL PAY

Agency and justice theories suggest that pay plans affect monitoring, but the effect of monitoring on job performance has not been studied. Using a new categorization of monitoring behavior (individual/team and observing/advising), this study shows that individual observational monitoring has a positive impact on performance appraisals under gainsharing and traditional pay situations. Team advisory monitoring, however, has a positive effect on performance, measured both by appraisals and suggestions submitted under gainsharing, but a negative effect on both behaviors under traditional pay.

Over the last ten years, gainsharing, and a number of variants based on gainsharing concepts, such as goal setting and customized group-based incentives, have become increasingly popular (Iberman, 1993; Markham, Scott, & Little, 1992). These programs, which develop incentives for a plant, division, or department, have been hailed for their ability to increase productivity, reduce costs, enhance morale, improve quality, and complement new forms of organization design (Lawler, Mohrman, & Ledford, 1995; Schuster, 1984a; Welbourne & Gomez-Mejia, 1995; White, 1979). Gainsharing plans were first developed to help a company take advantage of the "hidden knowledge" of its workforce. Joseph Scanlon, viewed as the founder of gainsharing, was convinced that workers held the key to increased productivity (Bullock & Lawler, 1984; Graham-Moore & Ross, 1990). Scanlon's early successes in using bonus plans and suggestion committees to turn around Empire Steel and Tin Plate Company in the 1930s led to the interest in gainsharing programs that continues today.

Although gainsharing plans have become increasingly popular, the theoretical work associated with gainsharing research is fairly limited (Gerhart & Milkovich, 1993; Milkovich, 1987). However, Scanlon's early ideas about hidden worker knowledge are actually consistent with agency theory concepts and assumptions. According to agency theory, companies incur costs because workers withhold information that could be used to improve organization performance, and incentive systems that encourage employees to share this knowledge can result in benefits to firms (Eisenhardt, 1989). Hanlon and Taylor (1991) conducted a quasi-experimental study with a *Fortune* 500 firm and found that after only six months' experience with a gainsharing plan, employee communication with peers, supervisors, and others significantly increased. They suggested that "gainsharing promotes high or at least increased levels of information sharing throughout the organization" (259).

In addition to gains made through information sharing, gainsharing can also positively impact firm performance by reducing agency costs through enhanced mutual monitoring.<sup>1</sup> Monitoring of employees by their peers is more efficient than supervisors' monitoring because peers have access to more and better information about work-related issues. Peer monitoring also reduces the need for expenses associated with supervisor monitoring. A study conducted by Welbourne, Balkin & Gomez-Mejia (1995) provided initial support for the proposition that mutual monitoring changes under gainsharing. The research results showed that mutual monitoring increased for groups that considered the gainsharing plan to be fair, however, when

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<sup>1</sup> Mutual monitoring is defined by Welbourne, Balkin, & Gomez-Mejia, (1995: 883) as "the reciprocal assessment of performance among individuals working on common tasks."

people perceived the program as unfair, mutual monitoring decreased after gainsharing implementation.

Although there is some preliminary evidence for agency theory predictions about mutual monitoring activity under gainsharing, mutual monitoring remains a variable that is not well understood and that has not received much attention. In fact, although by definition mutual monitoring is a group level variable (the level of monitoring one is exposed to within a team), it has been measured as an individual behavior. Such measurement acknowledges that it is also an individual phenomenon. In this article, I focus on both individual and team monitoring, where individual monitoring refers to an action performed by an employee, and team monitoring signifies the degree of monitoring an employee is exposed to within his or her team.

This study provides a replication and expansion of prior work on the determinants of individual monitoring. Hypotheses on the effect of four forms of monitoring (individual observational, team observational, individual advisory, and team advisory) on employee performance are developed and tested. I conducted the reported research in a firm with both gainsharing and traditional pay<sup>2</sup> in order to study the differential effects of monitoring on performance under different types of pay programs.

## MONITORING AND PERFORMANCE

Researchers have used agency theory to explain how various forms of organizational control can be implemented to improve firm performance. The theory deals with the general situation in which agents (employees) are hired by principals (owners), who devise a variety of methods (e.g., monitoring, incentive alignment) to control the behavior of the agents. Control is necessary to assure that agents do not pursue individual goals that might be inconsistent with the objectives of the owners. The effectiveness of these various control options has been examined primarily in the context of the CEO-owner relationship (Gomez-Mejia, 1994). However, the problems of delegation and the development of mechanisms to align the interests of agents with those of a principal are general concerns important for any employment relationship. Basic agency theory concepts have, therefore, been extended to other situations, such as sales (Eisenhardt, 1985), university teaching (Gomez-Mejia & Balkin, 1992), and working under gainsharing (Welbourne et al., 1995).

Welbourne and colleagues (1995) viewed multiple individuals as constituting one agent. The principal was considered to be top management, and the agent was all employees covered by a gainsharing program. This study suggested, drawing on the classical writings of agency

theory (e.g., Alchian & Demsetz, 1972; Jensen & Meckling, 1976; Fama, 1980; Fama & Jensen, 1983), that "mutual monitoring should result when agents pursue their self interest through the accomplishment of joint tasks with other agents and are evaluated and rewarded on the basis of the outcome of those collaborative efforts" (Welbourne, et al., 1995: 883). Mutual monitoring is expected to occur because gainsharing plans alter individual goals so they are similar to those of the organization.

Overall, agency theorists characterize mutual monitoring as something that should result in positive outcomes for an organization, however, they gloss over the process that takes place when monitoring changes. Mutual monitoring cannot occur until individual workers decide to engage in this activity. According to Welbourne and Gomez-Mejia (1995: 596-597), "This means that the individuals involved play a dual role: They act as principals in monitoring others, but also serve in the role of agent to the same people they are monitoring." Therefore, the enhancement of mutual monitoring is more complex than agency theory might suggest. In fact, prior research on agency theory and mutual monitoring has shown that agency theory alone is generally inadequate to explain behavioral processes.

For example, agency theory simply suggests that monitoring should increase as a result of gainsharing. This proposal seems unreasonable because gainsharing is not always successful, so there are conditions under which monitoring either does not change or does so but has negative outcomes. In an effort to elaborate upon how gainsharing affects monitoring, Welbourne and colleagues drew on earlier conceptual work in agency theory (Eccles, 1985) and merged agency theory with the distributive and procedural fairness literatures. They found that monitoring activity did not automatically increase after gainsharing implementation. Instead, the results indicate that monitoring is directly related to employee perceptions of both the distributive and procedural fairness of gainsharing. Although the determinants of monitoring are not the focus of the present study, I tested the relationship between fairness and monitoring in an effort to replicate earlier findings. Note that a direct effect of gainsharing on monitoring is not expected; instead, monitoring should be related to employee perceptions of plan fairness.<sup>3</sup>

Hypothesis 1: Employee perceptions of a gainsharing plan's fairness will be related to individual monitoring.

Although in agency theory monitoring is seen as occurring at the team level, this behavior must be enacted by individual employees. The Welbourne et al. (1995) research

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<sup>2</sup> Traditional pay refers to merit pay based on performance appraisal.

<sup>3</sup> Welbourne, et al. (1995) found that mutual monitoring increased in groups where the average scores on fairness were higher, and it decreased where the average scores were lower.

conceptualized monitoring as an individual behavior that consists of two factors: noticing and acting. The measure developed for their study captures a two-phase process, employees: (1) noticing the behavior of their peers, or doing observational monitoring, and (2) reacting to the noticed behavior by either encouraging positive behaviors or discouraging poor performance (doing advisory monitoring). These two components are consistent with agency theory concepts, because, as stated earlier, agency theory suggests that financial gains (or reduced agency costs) occur from both (1) information sharing, which decreases costs associated with information asymmetry, and (2) mutual monitoring, which reduces agency costs associated with supervisory and inefficient monitoring. In order to elaborate upon the effects of observational and advisory monitoring on individual performance, I focused on implications of both forms of monitoring at both the individual and team levels.

#### *Individual and Team Observational Monitoring Under Gainsharing and Traditional Pay*

In a gainsharing system, participants earn a bonus when the joint actions of all employees in the plant or division work together to attain the objectives specified in the gainsharing plan. This interdependence encourages information-gathering activity. Providing a strong example of the benefits of observational monitoring, Fama and Jensen (1983) described the advantages of monitoring in partnerships (like those in legal and accounting firms) in which all members share the risk as well as the gains of the business. When people work together, especially in formal teams, they share more fully than when they work alone. According to agency theory, employees often make poor decisions because they have incomplete information; this problem is referred to as information asymmetry, and it results in increased agency costs (Postlewaite, 1989). If lack of information increases agency costs, then enhancing the flow of information should reduce agency costs and subsequently improve firm performance.

Although agency theory does not elaborate upon this process in much detail, there is a long tradition of studying gainsharing's effects on employee participation and involvement (e.g., Hammer, 1988; Ruh, Johnson & Scontrino, 1973; Ruh, Wallace, & Frost, 1973; Schuster, 1984b). This work also sheds some light on how observational monitoring might affect individual behavior. The basic premise is that information sharing leads to involvement and participation, which improve individual performance and then group outcomes. Goodman and Moore (1976) and Moore and Goodman (1972) proposed learning models to predict the prevalence of suggestion activity under gainsharing, and they concluded that employee learning is enhanced when gainsharing participants obtain new information. Although their research was applied specifically to suggestion activity, if learning occurs, it should also transfer to individual

performance. In fact, Hatcher, Ross, and Collins (1991) found that employees who submitted suggestions reported that they did so in order to improve both the performance of the company and their own individual performance. Hanlon and Taylor (1991: 243) applied both motivation theory and research findings on participative management to gainsharing and stated that "increase [in the] level of job-related knowledge or information among group members should result in increased ability to perform the job successfully." Although they did not test the relationship between acquisition of information and individual performance, they did find that gainsharing resulted in increased communication. In summary, individual observational monitoring should lead to higher levels of employee performance.

Individual observational monitoring might be expected to occur in varying degrees in traditional pay environments and under gainsharing. In fact, if observational monitoring increases performance, more observational monitoring should be found among strong performers, regardless of pay condition. Thus, the relationship between individual observational monitoring and individual performance should be positive in a traditional pay environment as well as in a gainsharing environment.

Hypothesis 2: Individual observational monitoring will have a positive impact on employee performance in both gainsharing and traditional pay environments.

#### *Team Observational Monitoring under Gainsharing and Traditional Pay*

In this paper, monitoring is defined both as a behavior that an individual can engage in and an activity that can occur at a team level. If the overall level of team observational monitoring increases in a group of employees, will the individual performance of group members improve? That is, if an individual's level of monitoring remains constant, will being in a group in which the team level of observational monitoring is high affect individual worker's performance? Given that this form of monitoring, which consists of observing only, exerts no pressure on others in a work group, it seems unreasonable to anticipate that being monitored in an observational way will affect employee performance. As will be discussed in the next section, the benefit of team monitoring most often advanced by agency theory centers around peers actively encouraging others to perform. However, there is nothing in agency theory or in the gainsharing literature to suggest that merely being in a group with a high level of team observational monitoring should affect individual performance levels. In addition, there is no reason to expect this hypothesis to differ in gainsharing or traditional pay environments.

Hypothesis 3: Team observational monitoring will have no effect on individual performance.



Figure 1 summarizes the hypotheses for individual and team observational monitoring.

Figure 1: Effects of Individual and Team Observational Monitoring on Individual Performance

	TYPE OF SYSTEM	
	<i>Gainsharing</i>	<i>Traditional</i>
INDIVIDUAL MONITORING	Positive Effect	Positive Effect
TEAM MONITORING	No Effect	No Effect

#### *Advisory Team Monitoring under Gainsharing and Traditional Pay*

Fama and Jensen (1983) suggested that workers engage in monitoring to assure that everyone is attaining the goals of the organization, which implies that for workers to reach company goals (and obtain a bonus) individual performance must somehow improve, or at least not decrease. This concept has recently been applied to gainsharing. As Welbourne and Gomez-Mejia (1995: 582) noted, "Gainsharing plans substitute a different (and less costly) form of control for direct supervision. It is expected that within and between teams, gainsharing plans encourage stronger levels of peer group pressure to enforce work norms consistent with the business unit goals. Rather than expending resources to create surveillance systems that attempt to track employee performance and behavior, the firm encourages employees to monitor each other and to use this information to assure that all workers are attaining the goals of the work group." Thus, if monitoring by peers replaces supervisor control, it should positively impact employee behavior.

Hypothesis 4: Team advisory monitoring will have a positive impact on employee performance in a gainsharing environment.

However, in a traditional pay environment, in which no other group-based interventions are in place, team monitoring is not a replacement for supervisor monitoring. In such a case, both peers and supervisors are conducting monitoring. This situation can lead to negative results because an individual can receive mixed messages. Lacking an incentive system (whether financial or nonfinancial) that clearly communicates organizational goals (as does gainsharing), there is no guarantee that the peer monitoring being conducted in a work group is directed toward the needs of the organization or those of an employee's supervisor. In fact, agency theory assumptions regarding individual behavior suggest that, without adequate incentive alignment or monitoring, employees will be self-serving and work toward meeting their own personal needs rather than those of the owner. Therefore, team advisory monitoring in a traditional pay system is expected to have a negative effect on employee performance. This form of monitoring is driven by personal goals of team members, which are not necessarily consistent with those of the firm.

Hypothesis 5: Team advisory monitoring will have a negative effect on employee performance in traditional pay environments.

*Individual Advisory Monitoring under Gainsharing and Traditional Pay*

Individual advisory monitoring is not usually a sanctioned activity in traditional pay environments. Supervisors are responsible for monitoring; however, gainsharing encourages individual advisory monitoring by peers. Therefore, it seems that engaging in advisory monitoring should have a positive impact on employee performance (for the employee doing the monitoring) in gainsharing environments but may have a negative effect on individual performance under traditional pay systems. Baker, Jensen, and Murphy (1988) supported this view, suggesting that enhanced monitoring might lead to employees' monitoring others rather than "working." In a traditional environment, monitoring would not be considered part of "work." As a result, there is a greater chance that monitoring will have negative consequences for individual workers. However, when gainsharing is in place, supervisors should consider monitoring to be a work-based activity because the new pay plan encourages this type of activity.

Hypothesis 6: Engaging in individual advisory monitoring has positive effects on an employee's performance when gainsharing is present but negative effects on an employee's performance under traditional pay.

Figure 2 summarizes the hypotheses for individual and team advisory monitoring. The hypotheses were tested in a company with both gainsharing and traditional pay systems for two groups of workers who did the same type of work but did it for different customers. Measures of individual performance (performance appraisal scores) and employee demographic data (used as control variables) were obtained from the firm. Employee perceptions of monitoring and reported suggestion activity were obtained from surveys distributed to employees working in both traditional and gainsharing environments.

**Figure 2: Effects of Individual and Team Advisory Monitoring on Individual Performance**

	TYPE OF SYSTEM	
	<i>Gainsharing</i>	<i>Traditional</i>
INDIVIDUAL MONITORING	Positive Effect	Negative Effect
TEAM MONITORING	Positive Effect	Negative Effect

## RESEARCH METHODS

At the time the survey was distributed, the company's gainsharing plan had been in effect for about 1.5 years. The program was a pilot plan; if gainsharing were successful, it would later be implemented for employees in the traditional pay group. The bonus formula included components based on net operating income, profitability, productivity, quality, and customer service. The firm paid the bonus out on an annual basis, and the total bonus pool was distributed as a percentage of each participant's income. The average bonus for the first year was reported by the company to be about \$100 per person. According to nonexempt employees completing the survey, the average bonus payment was \$79.16. The company had a formal suggestion system in place prior to gainsharing, which was retained. Upon gainsharing plan implementation, the company initiated weekly team meetings to discuss ideas for improving customer service and quality.

The company implemented the gainsharing plan for a group of service employees whose work involved administrative, control, and paperwork processing (routing) activities for a custom brokerage and freight forwarding division of the organization. The total number of employees surveyed was 884. Surveys were mailed to employees at the company, and they returned the surveys directly to me. A total of 99 employees from the traditional pay group and 104 employees from the gainsharing group (total respondents = 203) completed the survey, the overall response rate was 23 percent. Demographic data were obtained from the company's personnel files, and the results were used to analyze the differences between respondents and nonrespondents. No significant differences (at the .05 level) were found in age, exempt status, most recent salary increase, performance appraisal, salary, tenure, or gender. However, there was a significant difference in job grade level, with the respondents having a somewhat higher job grade; the mean was 11.75 for respondents and 10.50 for nonrespondents. Job grades ranged from 3 to 27.

In addition, an analysis of differences in demographic variables for respondents in the gainsharing and traditional pay groups was run. The results indicate no significant differences (at  $p \leq .05$ ) for age, exempt status, most recent salary increase (percentage), performance appraisal score, salary, tenure, and job grade. However, there was a significant difference for gender, with those in the gainsharing group more likely to be female (mean for gainsharing condition = .70 and mean for traditional pay group is .50; 1=female, and 0=male).

### *Independent Variables*

The items used to measure monitoring and fairness were obtained from the Welbourne, et al., (1995) gainsharing study. The appendix lists the items for all four independent variables.

The items for observational monitoring ask whether an employee is aware of performance of others and whether performance levels of peers are noticed. Items used for advisory monitoring focus on whether an employee responds to the level of performance observed. As in that study, team-level measures of monitoring were calculated by averaging the individual scores of everyone in a work group for both forms of monitoring (observational and advisory). The company provided group identification. These work groups were not formal work teams, but they did represent groups of employees who worked in a common area or who supported the same customers (based on region). A total of 17 different work groups were represented in the sample, and the membership per group ranged from 3 to 33.

### *Dependent Variables*

An employee's performance appraisal score is one measure of individual performance that was used in the same way for both the gainsharing and traditional pay groups. The performance appraisal process and forms were the same for both the gainsharing and traditional pay groups. The performance score, which was assigned by an employee's supervisor, was also used to conduct the annual performance review. In addition, this number, combined with data on the individual's seniority and current pay, was used to determine the employee's merit increase. According to human resource management and supervisory personnel in the company, the performance appraisal score was the best indicator of individual employee performance available at the company.

The second dependent variable was the total number of suggestions an employee had submitted. The survey asked respondents how many formal and informal suggestions they had submitted over the last year. Given that one of the goals of gainsharing (both at this site and in general) is to increase suggestion-making activity, this particular aspect of individual performance was chosen for investigation.

### *Control Variables*

Several control variables that have been linked to performance in prior compensation and gainsharing studies were included in the analysis (Hatcher, Ross, & Collins, 1989, Miceli & Lane, 1991). Demographic controls are important for studying gainsharing outcomes because prior research has suggested that demographic differences can impact gainsharing outcomes (Dreher, 1980; Goodman & Moore, 1976). The included variables are age, gender, tenure, and salary. All control variable data were obtained from the company's personnel system. In addition, a dichotomous variable indicating that an individual was either in the gainsharing (1) or traditional pay (0) was used for the analyses.

## RESULTS

The first section reviews the reliability of the measures and the descriptive statistics. Next, results of several standard regression analyses that test the hypotheses are reported.

### Reliability of Measures

The mean for the distributive fairness of gainsharing is 2.64 (s.d. = .93), and the Cronbach's alpha is .93. The mean for the procedural fairness of gainsharing is 2.86 (s.d. = .93), and the Cronbach's alpha is .94. The mean for individual observational monitoring is 3.77 (s.d. = .19), and the reliability coefficient is .72. The mean for individual advisory monitoring is 3.62 (s.d. = .23), and the reliability coefficient is .72.

Given the limited research using the monitoring measures, I conducted a confirmatory factor analysis based on Jöreskog and Sörbom's (1988) Lisrel 7 program. The results show that the two-factor model suggested by earlier research provides the best fit for the data ( $\chi^2 = 186.49$ , 26 df,  $p = .000$ ; goodness of fit index = .82; adjusted goodness of fit index = .69; root-mean-square residual = .076). All items load on the hypothesized constructs and are significant at the  $p \leq 0.01$  level; the average loading is .83. A single-factor model with all 9 items constrained to one factor provides a poor fit ( $\chi^2 = 236.21$ , 27 df,  $p = .000$ ) is significantly worse than that of the two-factor model.

Performance appraisal scores ranged from 1 to 5, with a mean of 3.44 and a standard deviation of .56. For the second performance measure, the total numbers of suggestions submitted were obtained from the employee survey. The average number of formal suggestions (those submitted through the company's formal process) was .41 (s.d. = 1.16), and the mean number of informal suggestions was 3.01 (s.d. = 7.27). The average number of total suggestions submitted is 3.42, with a standard deviation of 7.54. I converted this variable to a logarithm to correct for skewness. Table 1 gives descriptive statistics along with the correlation matrix for all variables used in the study (the correlation table reports the logged suggestion variable).

TABLE 1  
MEANS, STANDARD DEVIATIONS, AND CORRELATIONS

Variable Name	Mean	St. Dev.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. GS (0/1)	.51	.50	1.00												
2. Age	37.44	9.64	-.16*	1.00											
3. Salary	34454	20341	-.13	.31***	1.00										
4. Tenure	8.20	7.36	.23**	.43***	.23**	1.00									
5. Sex	.60	.49	.20**	-.11	-.32***	-.05	1.00								
6. Ind. Advisory monitoring	3.62	.61	-.04	.18*	.24***	.15*	-.06	1.00							
7 Ind. Observational monitoring	3.78	.55	.18**	.06	.16*	.06	-.05	.44***	1.00						
8. Team advisory monitoring	3.62	.23	-.15*	.18**	.35***	.18**	-.11	.37***	.25***	1.00					
9. Team observational Monitoring	3.77	.19	-.54***	.02	.18**	-.03	.17*	.21	.37***	.56***	1.00				
10. Perform. appraisal	3.44	.56	.03	-.07	.19**	.12	.05	.00	.20**	.14	.09	1.00			
11. PF - GS	2.86	.99	----	.24*	.28**	.20	-.14	.20*	.23**	.21	.24*	.11	1.00		
12. DF - GS	2.64	.93	----	.17	.13	.18	-.10	.16	.28**	.14	.20	.12	.81***	1.00	
13.#Sugg.(ln		1.03	-.14	-.11	.18*	-.05	-.11	-.02	.16*	.00	.11	.19**	-.10	-.08	1.00

Note: For distributive and procedural fairness of gainsharing, the data are derived from only those in the gainsharing condition (n=100).

\* p ≤ .05 \*\* p ≤ .01 \*\*\* p ≤ .001

The correlation matrix shows that performance appraisal is significantly related to only two variables, salary and observational monitoring. Suggestion activity is significantly correlated with salary, observational monitoring, and performance appraisal. In addition, procedural fairness is significantly correlated with all four types of monitoring. Distributive fairness, however, is only significantly correlated with observational monitoring.

#### *Multivariate Analysis of Variance Test for Monitoring*

Although there is not a direct hypothesis relating to absolute levels of monitoring in the gainsharing and traditional pay conditions, it seemed worthwhile to determine whether mean levels of monitoring were different for the two groups. Therefore, I conducted a multivariate analysis of variance for advisory and observational monitoring. The analysis was not conducted for team monitoring because this variable was the result of aggregated individual level data. The results show that there are significant differences between the two groups for advisory and observational monitoring. The Pillais, Hotellings, and Wilks tests all indicate differences at the .01 significance level. The follow-up univariate tests show that significant differences he in observational monitoring, with the means in the traditional pay group of 3.89 and 3.67 in the gainsharing group. The means for advisory monitoring, although not significant, follow the same pattern with the average values being 3.64 for the traditional pay group and 3.58 for the gainsharing group.

#### *Regression Analyses for Hypothesis 1: Fairness and Monitoring*

Table 2 shows the results of the regression analyses with both individual observational and advisory monitoring as the dependent variables. In addition to assessing direct effects of both procedural and distributive fairness, I included an item for the interaction of the two types of fairness. Although the hypothesis does not specifically address the interaction effect, it states that both types of fairness will affect monitoring. According to Brockner and Wiesenfeld (1996: 5), "while the fairness of the outcome of a decision differs from the procedural fairness of the decision, their impact cannot be studied in isolation from one another."

As can be seen from Table 2, the equation for individual observational monitoring was not significant, but the regression equation for individual advisory monitoring was significant at the .05 level ( $R^2=.16$ ). The interaction term was significant, and Figure 2 shows the graphed results of the interaction. I plotted the interaction by splitting the sample into high and low groups and plotting means for both observational and advisory monitoring for low and high procedural and distributive fairness groups.

Table 2: Standard Regression Analyses for Individual Monitoring (n=100)

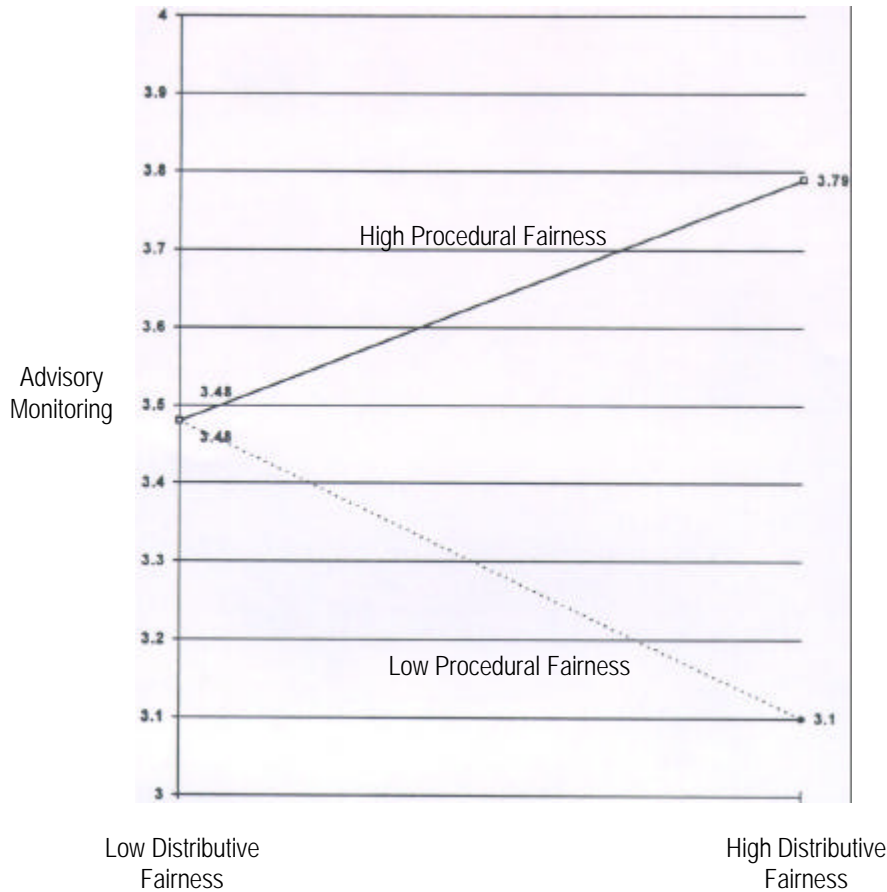
VARIABLE NAMES	Equation 1 - Observational Monitoring Beta Coefficient	Equation 2 - Advisory Monitoring Beta Coefficients
Salary	0.09	0.1
Tenure	0.12	0.02
Sex	0.07	-0.05
Age	-0.03	0.12
Distributive Fairness of Gainsharing	-0.2	-0.77*
Procedural Fairness of Gainsharing	-0.39	-0.51
Interaction (distributive and procedural fairness of gainsharing)	0.82	1.37*
Total R <sup>2</sup>	0.12	0.16
F for Equation	1.62	2.06*

Standardized betas reported. \*  $p \leq .05$  \*\*  $p \leq .01$  \*\*\*  $p \leq .001$

Figure 3 shows that procedural fairness has a strong impact on advisory monitoring only when distributive fairness is high. The mean level of advisory monitoring is 3.79 for individuals who think that the gainsharing plan is both distributively and procedurally fair. When employees report the plan to be distributively fair, it seems that procedural fairness is important (advisory monitoring for high procedural fairness is 3.79, and it is 3.10 for low procedural fairness). When distributive fairness is low, procedural fairness does not have an impact on advisory monitoring (advisory monitoring is 3.48 for both low and high procedural fairness conditions).



FIGURE 3: Interaction Distributive and Procedural Fairness



*Regression Analyses for Individual Performance*

The first analysis is reported as equation 1 in Table 3. This equation shows the direct effects of individual and team observational monitoring in addition to the interaction effects for the pay condition. The equation is significant at the .01 probability level (with an R<sup>2</sup> of .12), and results indicate that the interaction term for individual observational monitoring and the pay condition is significant at the .01 probability level.

**Table 3: Standard Regression Analyses for Individual Performance**

VARIABLE NAMES	Equation 1 DV = Performance Appraisal Scores	Equation 2 DV = Performance Appraisal Scores	Equation 3 DV = Total Number of Suggestions Submitted
	Beta Coefficient	Beta Coefficients	Beta Coefficients
Group (GS or control)	1.50**	-0.19	-0.09
Salary	0.15	0.1	.24*
Tenure	0.1	0.06	0.11
Sex	0.07	0.04	0.06
Age	-0.16	-0.16	-0.11
Ind. Observational Monitoring	.44***	---	---
Ind. Observational Monitoring * Gainsharing	1.44**	---	---
Team Observational Monitoring	0.14	---	---
Team Observational Monitoring * Gainsharing	-0.14	---	---
Ind. Advisory Monitoring	---	-0.02	-0.01
Ind. Advisory Monitoring * Gainsharing	---	0.13	0.12
Team Advisory Monitoring	---	.45*	-.60**
Team Advisory Monitoring * Gainsharing	---	-.51*	.62**
Total R <sup>2</sup>	0.12	0.09	0.11
F for equation	2.50**	1.87*	2.22*

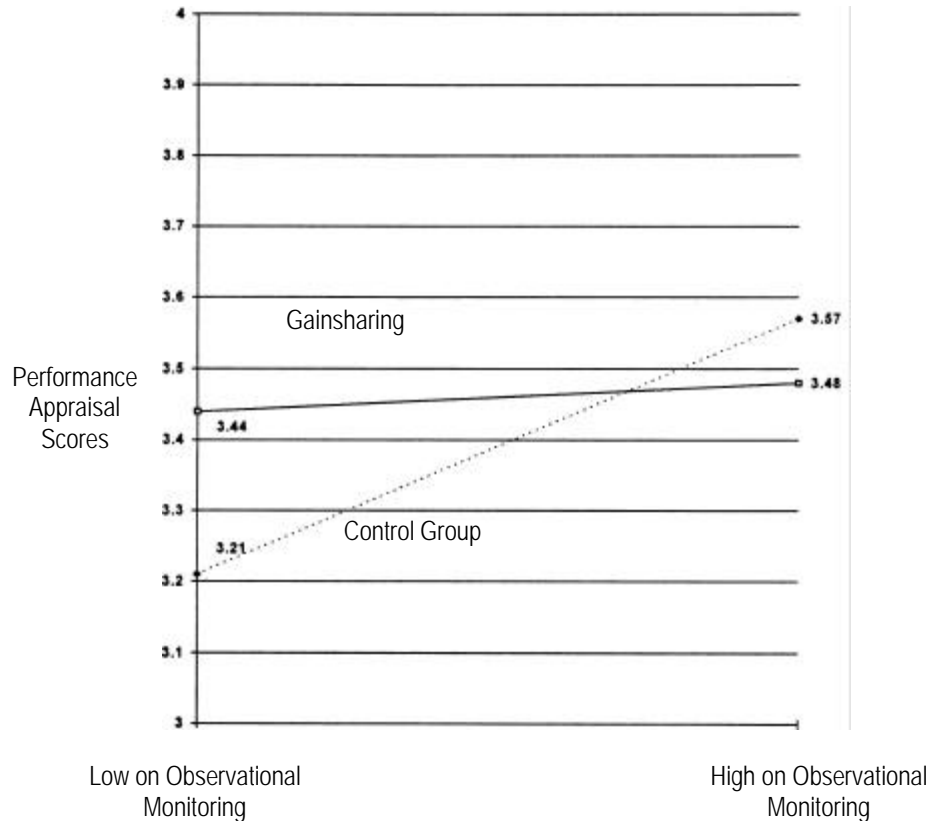
Standardized betas reported. \*  $p \leq .05$  \*\*  $p \leq .01$  \*\*\*  $p \leq .001$

In order to interpret the meaning of the interaction, I conducted and plotted an analysis of the means for individuals in four categories. The results are in Figure 4. Consistent with the hypotheses, the plot shows that individual observational monitoring has a positive effect on performance for individuals in both the gainsharing and traditional pay plans. However, the effect is greater for those with traditional pay, with a mean of 3.57 for people high on individual observational monitoring and a mean of 3.21 for employees low on individual observational monitoring. The advantage for people in the gainsharing environment is lower, with the mean being 3.48 for those high on observational monitoring and 3.44 for those low on observational monitoring.

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**FIGURE 4: Interaction-Gainsharing Condition and Individual Observational Monitoring**


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Equation 2 (in Table 3) reports the results for the analysis of individual and team advisory monitoring in predicting performance appraisal scores. The total  $R^2$  for this equation is .09 and significant. Individual advisory monitoring is not significant, however, the interaction term for team advisory monitoring and the pay condition is significant. Figure 5 shows the plot for the means, and the results indicate that individuals who are in the gainsharing environment and high on team advisory monitoring receive higher performance appraisal scores (3.59). Those under gainsharing but low on team advisory monitoring have a mean of 3.38. The effect is different for employees working under traditional pay. The plot indicates that being high on team advisory monitoring reduces an individual's performance appraisal scores. The mean for those high on team advisory monitoring is 3.40, and for those low on team advisory monitoring it is 3.47.

The same analyses (for observational and advisory forms of individual and team monitoring and the interaction terms) were conducted with total number of suggestions as the dependent variable. The equation for individual and team observational monitoring was insignificant ( $R^2 = .06$ ,  $F = 1.27$ , significance of  $p = .25$ ), therefore, it is not reported. However,

the results for individual and team advisory monitoring are significant, with the interaction effect for team advisory monitoring and pay condition significant at the .01 probability level. Figure 6 shows the results of the plot for this interaction. The plot reflects the same pattern of results obtained for the analysis with performance appraisal. There is a gain in number of suggestions for those working with gainsharing, but there is a decrease in number of suggestions for those under the traditional pay system. The average number of suggestions for high team advisory monitoring and gainsharing is 3.63, and it is 1.52 for low team advisory monitoring. However, under traditional pay, low team advisory monitoring results in an average number of suggestions of 5.46, with an average number of 0 for those high on team advisory monitoring.

**FIGURE 5: Interaction-Gainsharing Condition and Team Advisory Monitoring**

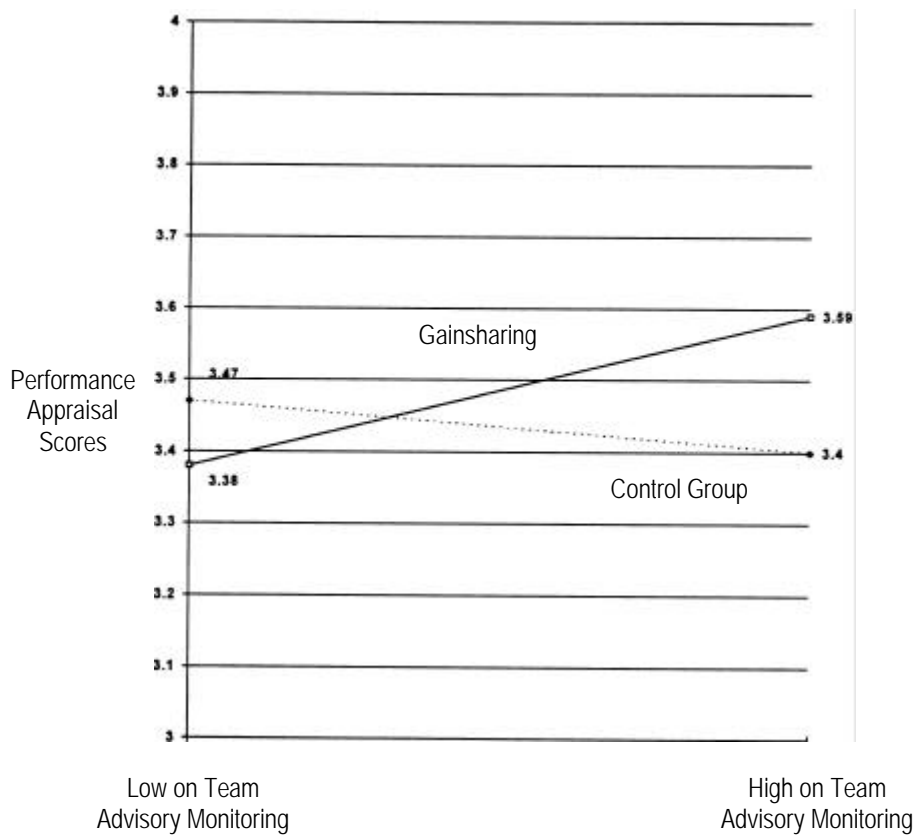


FIGURE 6: Interaction-Gainsharing Condition and Team Advisory Monitoring

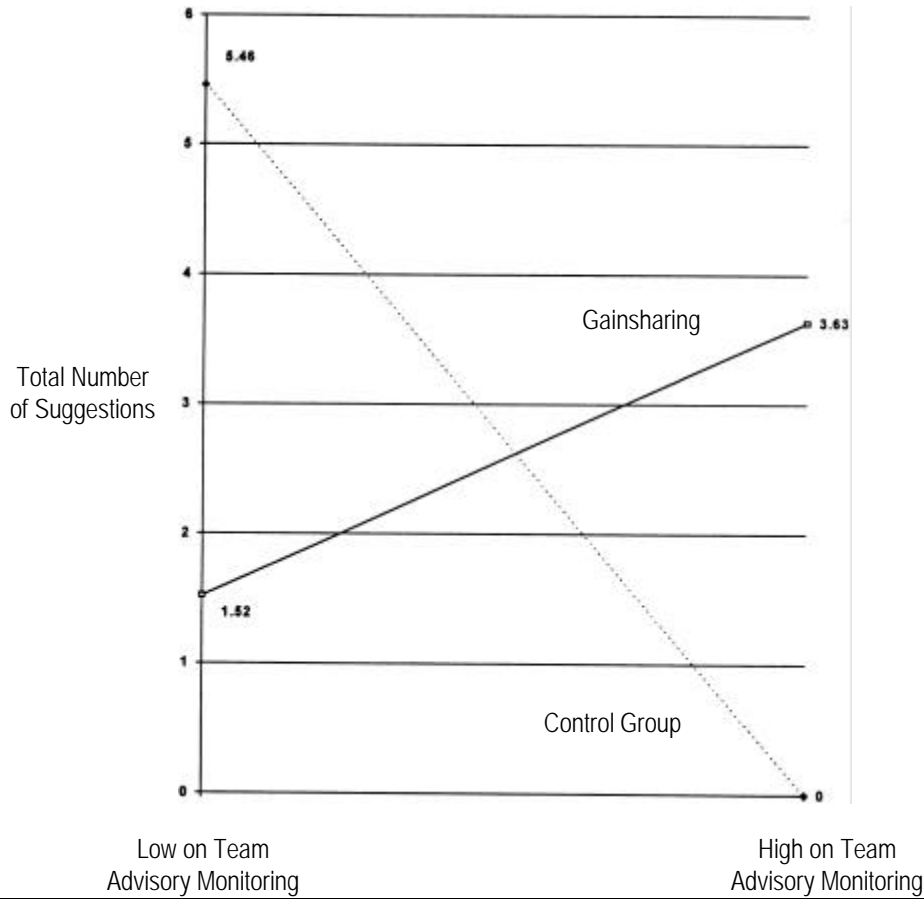


Figure 7 summarizes the results of the hypotheses tests. As can be seen, the predictions for individual and team observational monitoring are supported. However, for individual observational monitoring, the predictions are only supported for performance appraisal, not for suggestion making activity. Predictions for individual advisory monitoring are not supported, however, those for team advisory monitoring are supported for both performance appraisal and number of suggestions.

Figure 7: Results of Tests of the Hypotheses Predicting Individual Performance

		MONITORING FORM			
		OBSERVATIONAL		ADVISORY	
		PAY CONDITION		PAY CONDITION	
		Gainsharing	Traditional	Gainsharing	Traditional
INDIVIDUAL MONITORING	Positive Effect	Positive Effect	Positive Effect	Positive Effect	Negative Effect
	Supported for PA	Supported for PA	Supported for PA	Not Supported	Not Supported
TEAM MONITORING	No Effect	No Effect	No Effect	Positive Effect	Negative Effect
	Supported	Supported	Supported	Supported for PA and Sugg.	Supported for PA and Sugg.

## DISCUSSION

The first hypothesis served to provide replication of prior work that found a link between employees' perceptions of gainsharing fairness and their monitoring activity. The results support the findings from earlier research and offer additional evidence on the interaction between procedural and distributive fairness. It seems that, at least in this particular gainsharing sample, when people viewed distributive fairness as low, the degree of procedural fairness did not matter. However, when employees saw distributive fairness as high, procedural fairness had a strong impact on individual levels of advisory monitoring. Thus, at least under gainsharing, it seems that concern over procedures becomes important when there is enough money (or bonus) to cause employees to pay attention.

This is somewhat different from what other research in fairness has uncovered. For example, Brockner and Wiesenfeld (1996: 7), in an extensive study of over 40 studies that explored procedural and distributive fairness, concluded that "it is when outcomes are unfair that the level of procedural fairness is more likely to be positively related to the favorability of individuals' reactions." The results from this study seem contrary to their conclusions in that only when outcomes are fair do procedures seem to matter. This contrary finding may be due to the fact that I studied only the fairness of gainsharing, or it may be a function of the nature of the outcome variable monitoring, which is a behavior that has received little attention. These are questions that need additional research.

Perceptions of gainsharing plan fairness affected only advisory monitoring behaviors, not observational monitoring behaviors. This finding suggests that employees who consider a gainsharing plan fair are likely to engage in advisory monitoring. In addition, an increase in the level of team advisory monitoring under gainsharing has a positive effect on both individual's

performance appraisal results and suggestion making. These observations indicate that firms interested in improving worker performance and suggestion activity would be wise to take both distributive and procedural fairness into consideration when designing gainsharing plans. When perceptions of both forms of fairness are high, firms are more likely to raise the level of individual advisory monitoring, which ultimately affects team advisory monitoring, which then leads to improved individual performance. Gainsharing advocates claim that these plans result in employees "working smarter" (not harder) and implementing ideas or suggestions. If performance appraisal somehow captures working smarter, then this study could be seen as providing support for those claims.

However, the reasons for the lack of results for fairness and individual observational monitoring are unclear. Since individual observational monitoring has a positive effect on individual performance appraisal scores, regardless of type of pay (gainsharing or traditional), perhaps perceptions of gainsharing fairness do not affect levels of observational monitoring. Employees who want to excel in their jobs will engage in observational monitoring, regardless of the pay system being used.

The results for team advisory monitoring suggest that this form of group activity has a negative effect on performance for employees in traditional pay situations. This observation seems to provide some evidence for agency theory assumptions that peer monitoring, when not formally influenced by a firm, can result in outcomes that are inconsistent with the needs of owners or management. Under gainsharing, a high level of team advisory monitoring has a significant and positive effect on individual performance. Therefore, it appears that even though the gainsharing plan resulted in a relatively low payout, something interacted with team advisory monitoring to raise the level of individual performance.

These results suggest that additional research on the effects of individual and team monitoring in both gainsharing and traditional pay environments is warranted. It would also be useful to understand the effects on individual behavior when other work group interventions (e.g., quality initiatives, skill-based pay, self managed work teams, etc.) are implemented. Unfortunately, this study could not ascertain how much of the performance effect was the result of the financial and how much was the result of the nonfinancial components of gainsharing.

#### *Limitations of the Study*

Measurement continues to be a problem because individual and team monitoring are variables that have received limited attention in the context of nonmanagement employees, and the measures need further validation and research. Of particular concern are the measures of team monitoring. Given that the company studied did not use formal teams and that I assigned

mean values to individuals in work groups, it is quite possible that this study did not adequately capture team monitoring. In addition, although I measured individual and team monitoring, another form of monitoring was not included. Gainsharing plans, which are plant-wide incentives, also encourage between team monitoring, a form that has yet to be studied.

Given the high degree of pay plan customization that is currently being practiced, a more complete understanding of the behavioral processes enacted when these innovative compensation programs are implemented is critical for understanding plan success and failure. Merging agency theory, the fairness literature, and research from education (learning theory) and communications might also promote a more thorough explanation of the behavioral processes affected by monitoring.

Also important in interpreting these results is the fact that performance appraisal has potential for bias (Murphy & Cleveland, 1995). Although managerial ratings of performance are an important performance indicator, and one that companies rely on for promotion, discipline, and termination decisions, additional measures of performance would be useful in understanding how monitoring affects performance. For example, it is quite possible that monitoring has a positive impact on extra role behavior such as citizenship behaviors or suggestion making, but a negative effect on job-related or task performance. In addition, the second dependent variable (suggestion activity) was obtained from the employee survey. Thus, self-report bias may be a problem for the analyses using number of suggestions.

In addition, the rate of response to this survey was fairly low (23%), and although the analysis contrasting respondents and nonrespondents indicated a representative sample, the results must still be considered in light of possible sampling bias. The respondents did have a slightly higher job grade than the nonrespondents, so it is possible that the research results represent people who naturally care more about their individual job performance than the average worker.

### *Conclusion*

Prior theoretical and empirical work on gainsharing suggested that under conditions of gainsharing fairness, mutual monitoring increases. The results of this study indicate that benefit to firms might occur because monitoring is redirected rather than increased. The negative relationships between team advisory monitoring and individual performance in a traditional pay environment suggest that, when employees are monitoring without a formal or at least incentive-based group goal, they are doing so in a way that results in lower individual performance. Thus, gainsharing does not necessarily alter behavior from a "no-monitoring" base; instead, it redirects monitoring in a way that results in even greater improvements in individual performance.



## REFERENCES

- Alchian, A. A. & Demsetz, H., 1972. Production, information costs, and economic organization. American Economic Review, 62, 777-795.
- Baker, G. P., Jensen, M. C. & Murphy, D. J. 1988. Compensation and incentives: Practice vs. theory. The Journal of Finance, 18(3), 593-616.
- Brockner, J. & Wiesenfeld, B. M. (1996). The interactive impact of procedural and distributive justice: The effects of what you do depend on how you do it. Working Paper, Columbia University.
- Bullock, R. J. & Lawler, E. E. 1984. Gainsharing: A few questions and fewer answers, Human Resource Management, 23(1), 23-40.
- Dreher, G. F. 1980. Individual needs as correlates of satisfaction and involvement with a modified Scanlon Plan company. Journal of Vocational Behavior, 17(1), 89-94.
- Eccles, R. 1985. Transfer pricing as a problem of agency. In: J. W. Pratt & R. J. Zeckhauser (Eds.), Principals and agents: The structure of business. Boston, MA: Harvard Business School Press.
- Eisenhardt, K. M. 1985. Control: Organizational and economic approaches. Management Science, 31, 134-149.
- Eisenhardt, K. M. 1989. Agency theory: An assessment and review. Academy of Management Review, 14, 57-74.
- Fama, E. F. 1980. Agency problems and the theory of the firm. Journal of Political Economy, 88(2), 288-307.
- Fama, E. F. & Jensen, M. L. 1983. Separation of ownership and control. Journal of Law and Economics 26, 301-325.
- Gerhart, B. & Milkovich, G. T. 1992. Employee compensation: Research and practice. In M. D. Dunnette & L. M. Hough (Eds.), Handbook of Industrial and Organizational Psychology, 3, 481-569. Palo Alto, CA: Consulting Psychologists Press.
- Goodman, P. & Moore, B. E. 1976. Factors affecting acquisition of beliefs about a reward system. Human Relations, 29(6), 571-588.
- Gomez-Mejia, L. R. 1994. Executive compensation: A reassessment and a future research agenda. In K. Rowland & G. Ferris (Eds.), Research in Personnel and Human Resource Management, 12, 161-222. Greenwich, CT: JAI Press.
- Gomez-Mejia, L. R. & Balkin, D. B. 1992. Compensation, organizational strategy, and firm performance. Cincinnati, Ohio: South-Western Publishing Company.
- Graham-Moore, B. E. & Ross, T. L. 1990. Gainsharing: Plans for improving performance. Washington, DC: The Bureau of National Affairs.

- Hammer, T. 1988. New developments in profit sharing. In J. Campbell, R. Campbell & Associates (Eds.), Productivity in organizations, San Francisco, CA: Jossey-Bass.
- Hanlon, S. C. & Taylor, R. R. 1991. An examination of changes in work group communication behaviors following installation of a gainsharing plan. Group and Organization Studies, 16, 238-267.
- Hatcher, L., Ross, T.L. & Collins, B. 1989. Prosocial behavior, job complexity, and suggestion contribution under gainsharing plans. Journal of Applied Behavioral Science, 25(3), 231-248.
- Iberman, W. 1993. Gaining performance, sharing productivity. Manufacturing System, H (4), 54-56.
- Jensen, M. C. & Meckling, W. H. 1976. Theory of the firm: Managerial behavior, agency costs, and ownership structure. Journal of Financial Economics, 3, 305-360.
- Jöreskog, K. G. & Sörbom, D. 1988. Lisrel 7: A guide to the program and applications. 2nd edition, Chicago, IL: SPSS, Inc.
- Lawler, E. E., III, Mohrman, S. A. & Ledford, G. E., Jr. 1995. Creating high performance organizations. San Francisco, CA: Jossey-Bass Publishers.
- Markhan, S. E., Scott, D. D. & Little, B. L. 1992. National gainsharing study: The importance of industry differences. Compensation and Benefits Review, 24(1), 34-35.
- Miceli, M. P. & Lane, M. C. 1991. Antecedents of pay satisfaction: A review and extension. Research in Personnel and Human Resource Management, 9, 235-309.
- Milkovich, G. T. 1987. Gainsharing in managing and compensating human resources. Working paper #87-03. Center for Advanced Human Resource Studies, Cornell University, Ithaca, New York.
- Mohrman, S. A., Cohen, S. G. & Mohrman, A. M., Jr. 1995. Designing team-based organizations. San Francisco, CA: Jossey-Bass Publishers.
- Moore, B. E. & Goodman, P. S. 1972. Organizational learning: The relation of antecedent variables to job expectancies. In: Proceedings of the 80th annual convention, American Psychological Association.
- Murphy, K. R. & Cleveland, J. N. 1995. Understanding performance appraisal: Social, organizational, and goal-based perspectives. Thousand Oaks, CA: Sage Publications.
- Postlewaite, A. (1989). Asymmetric information. In: J. Eatwell, M. Milgate, & P. Newman (Eds.), The new palgrave: Allocation, information, and markets.
- Ruh, R. A., Johnson, R. H. & Scontrino, M. P. 1973. The Scanlon plan - Participation in decision making and job attitudes. Journal of Industrial and Organizational Psychology. 1, 36-45.

- Ruh, R. A., Wallace, R., & Frost, C. 1973. Management attitudes and the Scanlon plan. Industrial Relations, 12, 282-288.
- Ruh, R. A., White, J. & Wood, R. R. 1975. Job involvement, values, personal background, participation in decision making, and job attitudes. Academy of Management Journal, 18(2), 300-312.
- Schuster, M. 1984a. Union-management cooperation: Structure, process, and impact. Kalamazoo, MI: The W.F. Upjohn Institute.
- Schuster, M. 1984b. The Scanlon plan: A longitudinal analysis. Journal of Applied Behavioral Science, 20(1), 23-38.
- Welbourne, T.M., Balkin, D. B. & Gomez-Mejia, L. R. 1995. Gainsharing and mutual monitoring: A combined agency-organizational justice perspective. Academy of Management Journal, 38(3), 881-899.
- Welbourne, T. M. & Gomez-Mejia, L. R. 1995. Gainsharing: A critical review and a future research agenda. Journal of Management, 21(3), 559-609.
- White, J. K. 1979. The Scanlon plan: Causes and correlates of success. Academy of Management Journal, 22(2), 292-312.

## APPENDIX

All items used a 1 to 5 response scale, strongly disagree to strongly agree,

### DISTRIBUTIVE FAIRNESS OF GAINSHARING

1. All in all, the gainsharing payment is what it ought to be.
2. The gainsharing bonus we receive is fair.
3. The extent to which the gainsharing bonus gives us the full amount we deserve is fair.
4. The size of our gainsharing bonus is fair.

### PROCEDURAL FAIRNESS OF GAINSHARING

1. The design of the gainsharing plan seems fair.
2. The gainsharing plan is fair for all employees.
3. The gainsharing plan is administered fairly.
4. The rules used for sharing the gainsharing bonus with all employees is fair.

### OBSERVATIONAL MONITORING

1. I am aware of the overall performance of others in my work group.
2. It is easy to notice an employee in my work group whose work is outstanding.
3. I notice when someone in my work group does an extremely good job.
4. Within my work group, it is obvious when someone does a below average job.

### ADVISORY MONITORING

1. If I notice someone doing a poor job, I let that person know.
2. When I notice someone in my work group doing an outstanding job, I make sure that I mention it to the person.
3. When someone is working at an acceptable level, I somehow communicate that to the individual.
4. When someone does good work, I let that person know.
5. If someone in my work group is performing poorly, I do something about it.