GAINSHARING AND ORGANIZATIONAL LEARNING:
AN ANALYSIS OF EMPLOYEE SUGGESTIONS OVER TIME

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We propose a model of gainsharing as an organizational learning system. Analyzing employee suggestions submitted over the first four years of a gainsharing plan at one plant, we found that although conventional explanations of how gainsharing works predicted changes in the volume of total suggestions, changes in their content were consistent with an organizational learning process. Suggestions indicating “first-order learning” were initially high but declined over time as a percentage of total suggestions, and suggestions congruent with “second-order learning” became a larger portion of the total suggestions over time.

After more than 50 years of research and experience, gainsharing has been described as “a practice in search of profits and in need of theory” (Hammer, 1988: 339). The lack of theory-based empirical evidence on gainsharing’s effectiveness can be traced to its origins as a successful management practice rather than an academic study or theory. Fascination with the promise of gainsharing has existed in the U.S. business community since at least the 1930s. It was then that Joseph Scanlon, an ex-steelworker, a union official, and a lecturer at the Massachusetts Institute of Technology, advocated a plan whereby companies combined a plant-wide group incentive system with a comprehensive employee involvement program to encourage labor-management cooperation and the generation of employee cost-saving ideas. Early support for the plan came in the form of popular articles on successful Scanlon plans at the Adamson Company (Chamberlain, 1946) and the Lapoint Machine Tool Company (Davenport, 1950). Recent surveys indicate gainsharing is again experiencing increased popularity, estimating that over a third of large companies now rely on some form of gainsharing program (Alexander Consulting Group, 1992; Lawler & Cohen, 1992).

Despite the increasing popularity of these plans, evidence for their effectiveness has remained mixed. Although a number of qualitative studies and some more recent experimental quantitative studies have documented gainsharing successes (e.g., Hatcher & Ross, 1991; Schuster, 1984; Wagner, Rubin, & Callahan, 1988), it is clear that a large number of programs fail to achieve desired results. Some evidence indicates that more than half of the gainsharing plans instituted do not survive beyond five years (Goodman, 1980; Scanlon, 1948; White, 1979), and many appear to begin to lose effectiveness after the first two or three years (Gray, 1971; Kaufman, 1992; McKersie, 1963).

These mixed results from gainsharing plans have led to calls by researchers to develop a better understanding of how gainsharing programs work (Bullock & Lawler, 1984; Hammer, 1988; Lawler, 1988). The absence of a strong theory-based understanding of how these programs work is particularly problematic because gainsharing represents a complex organizational intervention that requires firms to make a large number of choices about their implementation and measurement. Decisions must be made regarding the degree and form of employee involvement, the composition of the incentive formula, and the percentage of employee compensation to put “at risk.” Decisions must also be made about how and when to adjust a gainsharing formula and payouts, and these decisions imply continuous monitoring of external changes and the performance of the gainsharing plan (e.g., Ross & Ross, 1984).

For firms making these decisions, we contend, it is a mistake to view gainsharing as simply a group incentive and suggestion program and hence to measure its success in terms of short-term financial performance or the number of suggestions submitted. We argue that such views and measures overlook the potential of gainsharing as an organizational learning system with the ability to generate “first- and second-order learning” over time. By analyzing the content of employee suggestions over time, this article addresses calls in the gainsharing
literature for a better theory-based understanding of how gainsharing works.

**PERSPECTIVES ON GAINSHARING EFFECTIVENESS**

A number of theoretical perspectives have been proposed to explain gainsharing effectiveness (e.g., Welborne & Gomez-Mejia, 1995). Most of these theoretical treatments focus on one of the two primary characteristics of gainsharing: employee participation and contingent, or performance-based, pay. Early gainsharing research tended to focus on the role of participative management and employee involvement in explaining the success of gainsharing plans. Both Katz and Kahn (1966) and McGregor (1960) devoted sections of their influential books to describing how the Scanlon plan was able to achieve success by embodying the concepts of systemwide participation and “theory Y management” (management emphasizing employees’ desire for personal growth and recognition at work). An underlying assumption in this participatory literature on gainsharing was that employees possessed an untapped reservoir of effort and knowledge that could improve organizational processes and effectiveness and that the Scanlon plan’s participation and communication mechanisms as well as an equitable reward structure would release this reservoir in the interest of their firm (Frost, Wakeley, & Ruh, 1974; Hammer, 1988; McGregor, 1960). Research by Hanlon and others (Hanlon & Taylor, 1991; Hanlon, Meyer, & Taylor, 1994) has supported the proposition that positive, work-related work group communication increases with the introduction of gainsharing. Other empirical evidence also supports the position that employee participation may drive performance outcomes in some gainsharing plans (Gowen & Jennings, 1990; Rosenberg & Rosenstein, 1980). Conclusions from the participative management studies of gainsharing must be tempered, however, by the fact that an independent effect of the gainsharing bonus generally has not been statistically separated out in these analyses. In addition, these studies do not explain the positive productivity results of gainsharing plans that deemphasize employee participation (Kaufman, 1992); Improshare, which uses a simplified productivity measure to calculate the gainsharing bonus and requires no formal employee involvement, is an example of such a plan.

Several theoretical perspectives suggest that incentive payments play a critical role in explaining how gainsharing works, within the broader context of contingent rewards (Gerhart & Milkovich, 1992; Welborne & Gomez-Mejia, 1995). Expectancy theory (Vroom, 1964), for example, implies that employee effort under gainsharing is determined by the degree to which there is a clearly perceived connection between effort and the desired bonus payoff (Goodman & Moore, 1976). Operant conditioning theory suggests that the size and timing of the gainsharing bonus payout are also critical factors in explaining employee reactions to these plans (e.g., Mawhinney & Gowen, 1990). In general, research on the incentive pay aspects of gainsharing effectiveness has been relatively sparse.

Finally, several recent studies have focused on the importance of gainsharing plans’ perceived fairness in explaining their effectiveness. Cooper, Dyck, and Frohlich (1992) argued that a distribution rule perceived to be fair is needed to resolve the social dilemma in which free riders can get the same gainsharing rewards as contributors. Using two lab experiments, they found that productivity under a group incentive plan increased when employees participatively developed a distribution rule including both a floor income and entitlement components and perceived it to be fair. Welborne, Balkin, and Gomez-Mejia (1995) also found that perceived distributational and procedural fairness was related to increased mutual monitoring by employees, an agency theory construct that might also explain the effectiveness of gainsharing programs. These findings reinforce statements by Schuster (1984, 1985) and others (e.g., Collins, 1995; Gray, 1971) that the success of gainsharing depends critically on employee perceptions of fairness regarding the development of the bonus formula and the distribution of rewards. In the absence of perceived fairness, employees withdraw effort and ideas that drive performance results.

**Organizational Learning Perspective**

Organizational learning is a fundamental concept in organizational theory (Cyert & March, 1963; March & Simon, 1958) that has experienced a resurgence of interest among researchers and practitioners in recent years and has found a prominent place in the manufacturing and strategy literatures (e.g., Hayes, Wheelwright, & Clark, 1988). Although much of the professional literature in this area has emphasized the value of becoming a “learning organization” (e.g., Garvin, 1993; Senge, 1990), academic researchers have focused on issues such as defining the construct of organizational (as opposed to individual) learning, identifying the barriers to learning and adaptation by organizations, and determining when different types of learning may be functional or dysfunctional for firm effectiveness and survival (Duncan & Weiss, 1979;
Easterby-Smith, 1997; Fiol & Lyles, 1985; Huber, 1991; Levitt & March, 1981; Miner & Mezias, 1996.

Although scholars differ in their beliefs about the viability and efficacy of organizational learning, there appears to be fairly broad agreement concerning the organizational learning process and the types of learning that can result from this process (Lant & Mezias, 1992). In perhaps the most widely used model, Argyris and Schön (1978, 1996: 16) described organizational learning as an organizational change process that begins with organization members perceiving a gap between what they expect concerning organizational performance (or aspiration level) and what exists (cf. Cyert & March, 1963; March & Simon, 1958). This perceived performance gap stimulates a search process on the part of organization members that takes one of two forms. The first form, labeled first-order (Hedberg, Nystrom, & Starbuck, 1976), or single-loop (Argyris & Schön, 1978), learning, consists of "a routine, incremental, conservative process that serves to maintain stable relations and sustain existing rules" (Lant & Mezias, 1992: 48–49). The outcome of first-order learning is expected to be incremental change or adaptation carried out to further exploit existing technologies, routines, and processes in ways that don't alter underlying assumptions or values (Argyris & Schön, 1996; Cyert & March, 1963; March, 1991).

Alternatively, this inquiry can result in a second type of learning, called double-loop (Argyris & Schön, 1978; Ashby, 1960), higher-level (Hedberg, 1981; Fiol & Lyles, 1985), or second-order learning (Hedberg et al., 1976; Lant & Mezias, 1992). In contrast to first-order learning, second-order learning has been described behaviorally as "the search for and exploration of alternative routines, rules, technologies, goals, and purposes" (Lant & Mezias, 1992: 49). From a more cognitive perspective, Argyris and Schön (1996: 24) defined this type of learning as "those sorts of organizational inquiry which resolve incompatible organizational norms by setting new priorities and weighting of norms, or by restructuring norms themselves together with associated strategies and assumptions" (1996: 24). In essence, second-order learning allows organizations to break out of existing patterns of thoughts or behaviors by exploring qualitatively different ways of thinking and doing things.

A perceived performance gap is a necessary, but not a sufficient, condition for first- and second-order organizational learning. Researchers have identified two additional necessary conditions. First, organization members must have the motivation, ability, and opportunity to inquire into resolving the perceived gap on behalf of the organization (as opposed the motivation to choose other alternatives, such as withdrawal of effort or exit from the organization [Argyris & Schön, 1996]). In addition, first- and second-order learning by individual organization members must be translated or externalized from the tacit knowledge of individuals into a form that the organization can use (Duncan & Weiss, 1979; Huber, 1991).

Empirical Organizational Learning Research

Despite the seemingly strong agreement concerning the basic organizational learning process and outcomes, operationally defining and measuring organizational learning in empirical research has proven to be "excruciatingly hard to do" (Miner & Mezias, 1996: 95; Tsang, 1997). A basic conceptual and empirical problem in this research is how to identify incidents of first- or second-order organizational learning in field settings. The literature on organizational learning appears to be somewhat divided on this point (Kim, 1993; Leroy & Ramansoa, 1997; Lundberg, 1995; Miner & Mezias, 1996). Studies representing a behavioral perspective (Cyert & March, 1963; Levitt & Marsh, 1988; March & Simon, 1958) tend to focus on "antecedents and changes in organizational structures, technologies, routines, and systems" (Lundberg, 1995: 15) as manifestations of organizational learning resulting from target-oriented, trial-and-error search processes. This perspective is embodied in simulation-based studies that focus attention on environmental conditions associated with periods of radical change versus periods of incremental change in organizational structures, processes, and strategies (e.g., Lant & Mezias, 1992; Mezias & Glynn, 1993).

In contrast, a more cognitively oriented perspective focuses attention on changes in the values and the belief systems underlying individual and collective action. From this perspective, it is the degree of change in the cognitive maps, or the "theories of action," of organization members that distinguishes first- from second-order organizational learning (Argyris & Schön 1978, 1996). Identifying incidents of this type of learning requires looking more deeply into the (often symbolic) meaning that is embedded in an organizational activity or event. Barley's (1986) study of organization and role changes following the introduction of CT scanners in two organizations provides a powerful example of this perspective.

Viewing organizational learning from a more cognitive perspective, Argyris and Schön noted that the distinction between first- and second-order learning "may be a less binary one than might first
appear” (1978: 25). If one focuses on the degree to which problem-solving inquiry leads to solutions that challenge fundamental, organization-wide norms (theories of action), “It is possible to speak of organizational learning which is more or less double-loop. In place of the binary distinction we have a more continuous concept of learning” (Argyris & Schön, 1978: 26; emphasis in the original).

Organizational Learning and Gainsharing

Although it is beyond the scope of this work to attempt to resolve these conceptual and empirical issues in the organizational learning literature, we argue that both a behavioral and a cognitive organizational learning perspective can be used to understand how gainsharing works. From a behavioral perspective, a gainsharing program can itself be seen as a manifestation of organizational learning. In other words, a gainsharing program is often established in traditionally organized production firms as the result of a search process motivated by a performance crisis (that is, a gap between aspired to and actual performance). In these cases, the introduction of gainsharing could be classified as a second-order organizational learning event in that it represents a significant change in the routine or system used to reward individual contributions. Specifically, it shifts the basis of rewards from an individual to a group level and makes the distribution of these rewards contingent on improved organizational performance. Since introducing gainsharing includes embracing a more participative management philosophy and structure, one could also identify such an introduction as a second-order-learning event on the basis of a shift in values and theories of action.¹

In addition, it is possible to view gainsharing as an organizational learning system that helps to generate first- and second-order learning at the individual and group level. Argyris and Schön (1996) identified certain organizational structures, behaviors, and cognitive maps as learning systems because they provide a framework for further problem-solving inquiry and learning. Examples of these learning systems include “channels of communication (forums for discussion and debate, formal and informal patterns of interaction) . . . procedures and routines that guide individual and interactive inquiry; and systems of incentives that influence the will to inquire” (Argyris & Schön, 1996: 28; emphasis added).

Viewing gainsharing as a learning system allows us to reinterpret the functions of various structural characteristics of gainsharing plans. For example, a gainsharing incentive formula can be seen as initiating an employee search process by making monetary rewards contingent on improving the existing level of organizational performance as measured by the formula.

In addition, we can view an employee suggestion system as a critical mechanism for transforming the content of individual-level search and knowledge into organizational knowledge. Duncan and Weiss defined organizational knowledge “as that knowledge which is available to organizational decision makers and which is relevant to organizational activities” (1979: 85). To satisfy this definition, they noted that organizational knowledge must be communicable (able to be articulated by individuals) and consensual (accepted by other organization members). In the Scanlon plan, employees communicate their ideas in the form of written suggestions that they then make public by submitting them to a joint employee-management department team to be evaluated and implemented.

Argyris and Schön (1996: 25–28) posited that the extent of individual inquiry into problem solving in organizational learning is affected by various behavioral norms and organizational constraints. Similarly, proponents of Scanlon-type gainsharing plans have argued that the introduction of more democratic norms and the use of labor-management review committees transform behavioral norms and overcome organizational constraints by increasing employee identification with organization-wide goals as opposed to individual or subgroup (division, union and so forth) goals (Katz & Kahn, 1966; Frost et al., 1974).

In the last stages of the organizational learning model, individual learning becomes institutionalized and embedded in new actions (policies, programs and structures) and behaviors (assumptions, routines, and modes of interaction) that impact organizational performance. This performance impact provides important feedback to individual members whose search process may be altered by changes in the perceived performance gap. The gainsharing bonus thus provides employees with explicit feedback on the organizational effects of changes in routines and employee behaviors.

HYPOTHESES

As can be seen from the above discussion, employee suggestions generated by a gainsharing program play a critical role in explaining how gainsharing works, both from a traditional perspective

¹ We gratefully acknowledge an anonymous reviewer for pointing this out to us.
on gainsharing’s effectiveness and from the perspective of an organizational learning system. Although the ultimate goal of gainsharing is to enhance organizational effectiveness, the creation of employee suggestions for performance improvement can be seen as an important intermediate goal of these programs. Given the central role of employee suggestions in explaining gainsharing effectiveness, the lack of empirical research on changes in the volume of suggestion activity associated with gainsharing is somewhat surprising. In this study, we used traditional explanations of gainsharing effectiveness as well as an organizational learning perspective to predict changes in the volume and content of employee suggestions over time. The purpose of these analyses was to gain a more complete understanding of how gainsharing works.

Changes in the Volume of Total Suggestions

Based on the view of Scanlon plan effectiveness as a function of increased employee participation, we would expect the volume of gainsharing employee suggestions to increase rapidly in the period immediately following the introduction of a Scanlon-type plan, then rise at a decreasing rate, and eventually begin to decline. There are two main reasons to expect this curvilinear pattern in the volume of total suggestions over time. First, the attention paid to employees during the early part of the gainsharing program may lead employees to submit an inordinately high number of suggestions. As this attention is redirected over time, suggestion volume would be expected to decline. This is the famous “Hawthorne effect” explanation based on the findings from the classic studies at the Hawthorne Works of the Western Electric Company in the 1920s and ’30s. This explanation is consistent with Griffin’s (1988) finding that there was a cycle for quality circle effectiveness, with peak effectiveness occurring in the third year and then declining. Bowie-McCoy, Wendt, and Chope (1993) also found a pattern of suggestions consistent with a Hawthorne effect in the public accounting firm they studied, with the number of suggestions peaking in the second year of the program and then declining. This same life cycle observation has been made by a number of researchers regarding the effectiveness of employee participation and incentive programs (Cooke, 1989; Gray, 1971; McKersie, 1963).

A second reason to expect a curvilinear pattern for the total number of suggestions submitted over time is that there exists a finite number of cost-saving improvements that can be made within a given production system. As Hammer (1988) noted, a key assumption of the participation view of gainsharing is that employees have pent-up ideas that are released in the form of suggestions once gainsharing is introduced. If this assumption is correct, it follows that after these pent-up ideas have been submitted, a decline in the number of suggestions over time may occur.

Hypothesis 1. The volume of gainsharing suggestions submitted by employees will increase rapidly after the implementation of gainsharing, then level off and begin to decline.

In addition, we expect the level of bonus payments to be positively related to the variation in the number of suggestions submitted. Gainsharing payouts are expected to impact the number of suggestions in at least two ways. First, they provide a reinforcement or reward for previous suggestion making by employees. According to expectancy theory (Vroom, 1964), employee effort to make suggestions depends on both the degree to which that effort translates into an actual suggestion and the degree to which making the suggestion pays off with some desired outcome (Goodman & Moore, 1976). To the extent that money is motivating employee suggestion-making behavior, employees will continue to engage in this behavior only as long as the behavior is reinforced by a bonus (Geare, 1976). This expected relationship is supported by Gray’s (1971) conclusion that the level of gainsharing payout provided the best explanation for changes in suggestion making over time at a steel-processing company. In addition, Hammer (1988) posited that bonus payments indirectly reinforce employees’ trust in management and commitment to a gainsharing plan. In effect, the bonus payment represents management’s keeping a promise to reward employee effort.

Hypothesis 2. The volume of employee suggestions over time will be positively related to the amount of payout received from a gainsharing plan.

Note that Hypotheses 1 and 2 are expected to operate simultaneously. In other words, initial suggestions are expected to improve firm efficiency dramatically and result in relatively large initial gainsharing bonuses that then reinforce additional suggestion making. However, as additional improvements become more difficult to achieve, we would expect to see both fewer suggestions and lower bonus payments. A multivariate statistical model is therefore required to test for the independent effects of these variables.
Organizational Learning and Suggestions

In this article, we argue that, from an organizational learning perspective, employee gainsharing suggestions result from employee searches that lead to first- and second-order organizational learning. If this argument is correct, then the content of employee suggestions over time should follow a pattern consistent with the search pattern described in the organizational learning perspective. Using this logic, we propose that the gainsharing suggestions made in the period immediately following the introduction of gainsharing will primarily be first-order learning suggestions.

There are a number of reasons for this expectation. First, by definition, first-order learning suggestions do not challenge the status quo in terms of the underlying values of an organization and the nature of the employee-management relationship. Thus, the learning model would suggest that these types of suggestions would dominate the early problem-solving searches of employees. In other words, employees will be more likely to seek familiar solutions that do not disrupt basic values in their relationship with management (Argyris & Schön, 1978; Cyert & March, 1963). To the extent that these types of suggestions “work” to improve plant effectiveness, employees will continue to engage in the same search processes and apply the same structures and behavioral norms (Levitt & March, 1988).

We posit, however, that improvements within an existing production process and wage-effort bargain can generate a finite amount of labor cost savings. As a firm approaches the limits of first-order learning’s potential to generate savings, we expect to see a change in the content of the suggestions submitted. Specifically, first-order-learning suggestions are expected to decline, as additional labor cost savings will need to come from alterations in or challenges to existing practices and the implicit wage-effort bargain.

Since we expect the absolute number of suggestions to decline over time, we also expect a decline in the absolute number of second-order-learning suggestions. However, the proportion of these suggestions will increase over time relative to the proportion of first-order-learning suggestions. The proportion of second-order suggestions is expected to be relatively low in the period immediately following the introduction of a gainsharing plan as trust is built up within the system and employees learn to think about work in new ways. Growth in the proportion of second-order learning suggestions over time can be seen as the result of an increase in individual knowledge based on communication and trust in the system as well as on a desire to maintain gainsharing payouts once the gains from first-order-learning suggestions have declined.

Hypothesis 3. The proportion of employee suggestions representing first-order learning will decline over time.

In focusing attention on the changing content of employee suggestions over time, we are using the cognition-oriented organizational learning perspective discussed in the previous section. Although suggestion making is a behavior, the content of the suggestion made indicates the knowledge of the individual suggestion maker, which, once it is written down and submitted to a gainsharing plan suggestion committee, becomes organization-level knowledge. Changes in organizational knowledge, as measured by changes in the content of employee suggestions over time, can be seen as an important intermediate mechanism in an organizational learning process (Pentland, 1992; Snyder & Cummings, 1998).

METHODS

Research Site

The research site for this study was a large manufacturing plant in an industrial midwestern metropolitan area. The plant manufactures heating and cooling systems for the auto industry and employs approximately 1,500 workers. All of the direct hourly workers are unionized, and all are members of work teams. A modified Scanlon-type gainsharing program was negotiated in 1988 as part of a cooperative joint union-management effort at the plant to respond to economic downturns and competitive changes in the auto parts industry during the 1970s and 1980s (e.g., Cutcher-Gershenfeld & McHugh, 1994). Interviews with labor and management representatives indicated that industrial relations prior to 1988 followed a pattern typical of the traditional industrial relations system described by Kochan, Katz, and McKersie (1986). This system was characterized by a low-trust union-management relationship in which management retained the right to make unilateral decisions regarding market strategy and investments; employee participation was limited to unilateral bargaining over wages, benefits, and working conditions; and work organization was characterized by narrowly defined, highly structured jobs. One indication of this “Tayloristic” job design approach at the plant was the fact that prior to 1988, the plant had 56 job classifications for production workers and 23 classifications for maintenance and skilled workers.
Both union and management saw gainsharing as a key to breaking away from this pattern and saving the plant from being shut down or sold, and both parties were extensively involved in the development and implementation of the plan. For example, the plant put together a joint union-management study team. Using plans at other plants as benchmarks, this team proposed a customized gainsharing formula (or “family of measures”) that consisted of ten performance measures. Each of these performance measures was relevant to plant costs, could be assessed with historical data to form a baseline, and could be controlled by the workforce. Included in the formula were measures of the direct and indirect labor costs (including overtime) attributable to bargaining unit members, maintenance materials, perishable tools, scrap, rework, and supplies. The bonus pool was determined by subtracting the actual expenses (labor and other costs) from a baseline of allowable expenses (based on a two-year rolling average of earned labor dollars and historical costs). This bonus pool was split equally between the company and all bargaining unit employees. Employee payouts were distributed twice a year, in June and January. Each work group in the plant was kept apprised of its performance on the family of measurements as well as the plant’s year-to-date performance through charts posted throughout the plant and updated monthly.

In analyzing the impact of this plan, we chose to use the 48-month period from the introduction of the gainsharing plan, in January 1989, through December 1992. We limited our study to this period because a number of contextual changes at the plant at the end of 1992 could have confounded the analysis. First, a new collective bargaining agreement that made several modifications to the original gainsharing agreement came into effect at the end of 1992. In addition, at the end of 1992 a program that replaced supervisors with bargaining unit “team leaders” was fully implemented. Finally, the work at the plant changed dramatically with the 1992–93 model changeover in the auto company they supplied. Coinciding with this changeover was the start-up of a new facility at the plant that began production of three new product lines in mid 1992, the callback of 104 laid-off employees and creation of 32 new jobs in January 1993, and large increases in employment in 1993 and 1994. In contrast, 1989 through 1992 was a relatively stable period in which there were no significant interventions. The choice of this period thus allowed us to focus on the hypothesized gainsharing dynamics while minimizing the problems involved in trying to make inferences in the context of multiple “treatments.” In duration, this study (four years, with a two-year average baseline for performance measures) compares favorably to other longitudinal studies of gainsharing and incentive pay plans (e.g., Bowie-McCoy et al., 1993; Gowen & Jennings, 1990; Schuster, 1983).

Categorizing Employee Suggestions

Consistent with a Scanlon plan format, the plant introduced a formal procedure for soliciting and processing employee suggestions as part of the gainsharing plan. An individual employee would submit a suggestion on a standard form to a joint union-management review team. The review team could accept, decline, or ask to investigate further. There was also a provision for a review board, consisting of union and management leaders, that met quarterly and made decisions on suggestions whose implementation costs exceeded $1,000 and on suggestions whose implementation could not be agreed upon by the review team.

Plant employees made a total of 495 suggestions during the four-year period of our study. The average of approximately 10 suggestions per 100 employees per year is comparable to averages in other U.S. firms. For example, a 1990 survey of 336 U.S. firms with suggestion programs by the National Association of Suggestion Systems found an average of 11 suggestions per 100 employees per year (Robinson & Schroeder, 1993). The number of suggestions made at the plant we studied is, however, significantly below that reported in other gainsharing cases found in the literature (e.g., Hatcher, Ross, & Collins, 1991). When queried about the relatively low number of suggestions at the plant, both union and management representatives indicated that they did not believe that it reflected a low level of employee support for the plan. Instead, they reported that many plant improvements were being made outside of the formal suggestion system. Hatcher and colleagues (1991) found a similar phenomenon; 36 percent of the employees in the gainsharing plans that they studied who did not make formal suggestions indicated that they decided to circumvent the gainsharing suggestion system. Another reason for the relatively low number of formal suggestions at this plant was that no additional individual rewards or formal recognition were given to suggestion makers during the period under study. Because, however, we chose to study a period in which we were able to determine that no significant new products or processes were introduced in the plant, we can be reasonably certain that our suggestion data do not exclude significant plant-level changes implemented during this period.
We obtained the written copies of 436 of the 495 suggestions reported in the plant suggestion log. The missing suggestions had been lost or discarded. Using the plant's suggestion log, we coded the date each suggestion was submitted, the department of origin, and the action taken (accept, decline, or investigate further). We found no statistically significant difference on acceptance rate between the suggestions that we obtained and the total number of suggestions submitted at the plant. Approximately two-thirds of the suggestions were accepted—a figure that remained constant throughout the four-year period under study.

To distinguish between their different types, we content-analyzed all the suggestions. Definitions and examples of these different suggestion types are listed in Table 1. As shown in this table, we categorized a suggestion under first-order learning if it consisted of ideas for: (1) saving on the costs of materials for existing operations or (2) doing currently contracted work more cheaply in-house. We reasoned that these two types of suggestions were consistent with the concept of first-order learning in that they did not challenge the status quo thinking in the plant or change the basic way in which work was performed. For example, suggestions for saving by changing suppliers to obtain lower-cost materials or by using materials that were previously scrapped typically were not attempts to alter the plant’s wage-effort bargain. Employees were not offering to work harder or even more effectively to increase output. Rather, they were suggesting changes outside of the wage-effort bargain that involved primarily one-time savings on the costs of materials. In effect, these suggestions reinforced (“enacted”) existing routines and behavioral norms in the plant.

In contrast, we categorized suggestions as representing second-order learning if they contained ideas for increasing productivity (output per unit of labor) by changing the way in which employees performed their tasks and/or by redesigning a product or manufacturing process. We reasoned that these types of suggestions were qualitatively different from the first-order-learning suggestions in that alteration in the wage-effort bargain between labor and management was proposed. This is not to say these suggestions directly proposed production speed-ups or wage reductions. Under the collective bargaining agreement, the gainsharing committees

TABLE 1

Categories of Gainsharing Suggestions

<table>
<thead>
<tr>
<th>Suggestion Type</th>
<th>Description</th>
<th>Examples from Actual Suggestions</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-order</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material savings</td>
<td>Savings come primarily from saving on the cost of materials at the plant.</td>
<td>Purchase tires for our internal carts from [specified] dealer. We are currently paying $130/tire, and [another specified dealer] will sell them for $84.00.</td>
</tr>
<tr>
<td>Second-order</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process changesb</td>
<td>Suggestions for changing the process sequence, including scheduling changes, set-up changes, improved material handling, and changes to the content of production tasks. Savings identified as coming primarily from improved labor efficiency (reduced labor costs).</td>
<td>The plates are stacked one on top of each other in wire baskets in the press area. After plates are degreased and sent to the [next assembly] area, an assembler removes them two at a time and flips one so that the plate tabs face each other in pairs...my suggestion is to have the press punch operator load the parts in the basket the way they will be used in the [next assembly area]. Use the Burr Oak machine in [area] 9215 to produce the header for the new heater core rather than use the cutoff Vail machine and new tube cutter in [area] 9227. This process can be done on one machine and save 24 or more hours per shift.</td>
</tr>
<tr>
<td>Design changesc</td>
<td>Suggestions that would change the design of the product or the materials used to manufacture the product. Savings expected to come from improved labor efficiency or improved product performance (less returns and rework).</td>
<td>Replace screw used on housing to plastic linkage with a solder screw. Presently operator drives the screw with a hand tool and then backs it off...This operation is very time consuming...and could affect quality.</td>
</tr>
</tbody>
</table>

* Used in conjunction with the material savings category.
* Suggestions that identified both process and material savings were included in this group.
* Used in conjunction with both the material savings and process change suggestion categories.
were prohibited from accepting suggestions that would alter the terms of the negotiated agreement. But the process and design change suggestions did require that employees change their job tasks in ways that increased plant efficiency. This can be seen in the process change examples in Table 1, in which employees identified alterations in production steps and flow that, if implemented, would decrease the labor required to produce a given output.

It should be noted that many of these process and design change suggestions identified relatively minor physical alterations to existing operations. Under a traditional behavioral approach to organization-level learning, one would not be likely to classify these as second-order learning because they don’t require radical changes in existing organizational structures or routines. From a cognitive organizational learning perspective, however, the underlying values represented by process and design change suggestions depart significantly from the traditional labor-management relationship that existed at the plant. In a political environment in which labor and management see each other as potential enemies, the idea that a union member would identify and communicate to management ways in which labor content could be minimized (however minor the actual change might be) can be seen as a radical in terms of the thinking and values its represents.

In addition, many of the process change (second-order-learning) suggestions, including the examples shown in Table 1, indicate that employees were thinking outside of their current jobs to consider ways in which improvements to the entire process (including those outside of their immediate area) might be achieved. The assumptions and cognitive maps associated with this type of suggestion differ significantly from traditional Tayloristic assumptions accepted by both labor and management and embedded in detailed union contracts. These traditional values prescribed narrowly defined tasks and roles for production employees who were not paid to think—especially not beyond their immediate tasks.

We argue, then, that the degree to which the aggregated content of suggestions identified either material savings and new work or process and design changes provides us with a good approximation of the level of change in employee mind-set and organizational values. This change is from a more traditional, adversarial labor-management relationship to a more integrative relationship based on trust and mutual gain. This is precisely the kind of transformation in thinking hypothesized by the early gainsharing proponents (e.g., Frost et al., 1974; Katz & Kahn, 1966). Using a cognitive organizational learning perspective, we have identified these different types of suggestions as manifestations of first- and second-order learning.

**Measurement**

A number of steps were taken to insure that the categories of suggestions we derived were psychologically reliable and valid. First, each of us independently rated two random samples of 50 suggestions using the categories listed above. The measures of agreement (kappas; Cohen, 1960) between use were statistically significant at .90 and .93 (p < .01). Discrepancies were discussed and resolved. We were unable to clearly decipher the meaning of 18 of the suggestions and therefore did not include them in the analysis relating to suggestion type. We found no significant differences between the excluded suggestions and the total population of suggestions in terms of date submitted, the department of origin of the suggestion, or the action taken on the suggestion (accept, decline, or investigate further).

As an additional check of both the reliability and validity of our suggestion categories, we asked a supervisor from the plant who was familiar with both plant operations and the suggestion program to rate a stratified sample of 52 suggestions. These suggestions reflected the range and frequency of categories listed in Table 1. The supervisor was presented with the text of the actual suggestion and was asked to indicate whether it could be described as a material or a process suggestion (or as both), as defined in Table 1, and whether it could also be rated as “new work” or “design change.” We considered there to be agreement between the supervisor’s and our ratings if both sets of ratings would result in the suggestion’s being classified as either first-order learning or second-order learning, as described in Table 1. The kappa for this comparison was statistically significant (.68, p < .01). For the purpose of hypothesis testing, we summed the total number of suggestions as well as the number of first- and second-order suggestions for each month.

**RESULTS**

Comparing the average level of performance for the two years prior to gainsharing with the average for the first four years of the plan suggests the plan was successful. Labor costs (which represent over 70 percent of total costs) declined by 8.5 percent. Substantial declines were also achieved in the use of overtime, perishable tools, rework, and supplies. The net savings attributable to the gainsharing plan
during this period totaled over $9 million. Each eligible employee received a total of $4,442 in gain-sharing payouts over the period, which represented a 4.5 percent bonus for an employee earning the average rate in the plant. The number of grievances per employee and the rate of absenteeism at the plant declined by over 50 and 20 percent, respectively.

Closer examination of these performance results, however, indicates that the bulk of these gains occurred in the first two years of the plan. The net savings from the plan actually peaked at the end of the second year, declined sharply at the end of the third year (with a $4 million loss), and finally recovered somewhat in the fourth year. Corresponding payouts to employees followed a similar pattern, with over 80 percent of the total payouts to employees coming in the first two years of the plan. Overall, the plant recorded profits of $38.5 and $14.8 million in 1989 and 1990 but experienced losses of $7.9 and $4.9 million in 1991 and 1992. Only grievances and absenteeism appeared to decline steadily over the four-year period.

Explaining Trends in Total Suggestions

The pattern of financial results from the plant is reflected in the total number of employee suggestions submitted. Figure 1 presents changes in the average number of suggestions per month for the four years under study. The data shown in this chart are consistent with the prediction in Hypothesis 1 regarding the trend over time for total suggestions. The number of suggestions increased rapidly during the first six months of the gainsharing program and, after a short dip, at the end of the second year peaked at about 16 suggestions per month at the beginning of the third year. The average number of monthly suggestions then declined steadily through the third and fourth years, to reach only about 5 suggestions per month in 1992. In addition, the chart indicates that the number of suggestions appears to be positively associated with the amount of payout from the gainsharing plan.

To test whether the observed trends and effects were statistically significant, we used monthly data to analyze the following regression equation: $Suggestion_t = a + b_1 \cdot (time) - b_2 \cdot (time squared) + b_3 \cdot (payout_t) + b_4 \cdot (employment_t) + e_t$. In this equation, $Suggestion_t$ is the total number of employee suggestions each month. $Time$ is a trend variable indicating the number of months since the beginning of the plan. $Payout_t$ equals the amount of gainsharing bonus payout to employees for that six-month period, and $Employment_t$ is the number of employees on the payroll each month at the plant. The mean, standard deviation, and correlations for all variables are presented in Table 2.

Because these are time series data and thus potentially unsuitable for use with ordinary least squares (OLS) regression, a Box-Jenkins time-series modeling procedure (Box & Jenkins, 1976) was used to model the error (or noise structure) in the

![FIGURE 1](https://example.com/figure1.png)

**Figure 1**

**Number of Suggestions by Month**

TABLE 2
Descriptive Statistics and Correlations*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total</th>
<th>Average per Month</th>
<th>s.d.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Payout per employeeb</td>
<td>$4,038.00</td>
<td>$511.00</td>
<td>491.00</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Employment level</td>
<td>1,484.40</td>
<td>206.40</td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Number of months</td>
<td>48.00</td>
<td>14.00</td>
<td>-.26</td>
<td>-.90*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Total suggestions</td>
<td>436.00</td>
<td>9.08</td>
<td>6.22</td>
<td>.58*</td>
<td>.01</td>
<td>-.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. First-order-learning</td>
<td>204.00</td>
<td>4.25</td>
<td>3.67</td>
<td>.53*</td>
<td>.08</td>
<td>-.18</td>
<td>.85*</td>
<td></td>
</tr>
<tr>
<td>suggestions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Second-order-learning</td>
<td>214.00</td>
<td>4.45</td>
<td>3.56</td>
<td>.59*</td>
<td>-.10</td>
<td>.02</td>
<td>.86*</td>
<td>.49*</td>
</tr>
<tr>
<td>suggestions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*a n = 48 months.
*b Paid every six months.
*p < .01.

regression equation using ETS version 6.0 (SAS Institute, 1993). Specifically, we examined the autocorrelation and partial autocorrelation residual plots to determine the existence of nonstationarity, seasonality, autocorrelation, and moving average processes in the time series data that would violate the assumptions of OLS regression analysis (McCleary & Hay, 1980; Ostrom, 1990; SAS Institute, 1993). Examination of these plots indicated a stationary noise structure and no significant seasonal, autocorrelation, or moving average processes. In addition, the nonsignificant Durbin-Watson statistic (1.85) confirmed an absence of autocorrelation and the appropriateness of using OLS regression with these data. As Ostrom stated, “If there is no indication of significant serial correlation, we can accept OLS estimates without fearing a loss of efficiency or bias in the estimated variances” (1990: 28).

The OLS regression results in Table 3 show that the time and time-squared variables are both statistically significant, but with opposite signs. This finding supports the hypothesized curvilinear trend for total suggestions based on the Hawthorne effect and pent-up ideas arguments. In addition, the significant, positive relationship for the payout variable, when the independent effect of time is controlled for, supports Hypothesis 2. According to these data, a $100 increase (or decrease) in semiannual employee payout was associated with an increase (or decrease) of six suggestions per month. Given that the average number of suggestions was just over nine per month, the effect of payout size can be seen as fairly large in practical terms. The overall model was significant ($R^2 = .41, p < .001$).

First- and Second-Order-Learning Suggestions

Hypothesis 3 states there will be a decrease in the percentage of first-order suggestions (and a corresponding increase in the percentage of second-order suggestions) over time. The trend in the percentage of first-order suggestions is graphically displayed in Figure 2. This graph shows that as a proportion of the total, first-order suggestions decreased over time from over 60 percent of the total number of suggestions in the first months to less than 40 percent of the total by the end of the period. It should be noted that because all suggestions used in the analysis were categorized as either first- or second-order, the results for the proportion of second-order suggestions are simply the inverse of the ones shown in Figure 2. To avoid redundancy, only the results for one type of suggestion (first-order) are presented here.

To test for the statistical significance of this observed downward linear trend for the number of first-order suggestions submitted per month (and corresponding increasing linear trend for second-order suggestions), we again used the trend variable, time, defined as the number of months since the beginning of the gainsharing plan (1–48

**p . .05
**p . .01
Two-tailed tests.

TABLE 3
Results of Regression Analyses for the Total Number of Employee Suggestions over Time

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>s.e.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-37.15</td>
<td>19.89</td>
</tr>
<tr>
<td>Time</td>
<td>0.90*</td>
<td>0.37</td>
</tr>
<tr>
<td>Time squared</td>
<td>-0.12*</td>
<td>0.06</td>
</tr>
<tr>
<td>Payout</td>
<td>0.06**</td>
<td>0.02</td>
</tr>
<tr>
<td>Employment</td>
<td>0.02*</td>
<td>0.01</td>
</tr>
<tr>
<td>$R^2</td>
<td>.41**</td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson statistic</td>
<td>1.85</td>
<td></td>
</tr>
</tbody>
</table>

* p . .05
**p . .01
Two-tailed tests.
FIGURE 2
Percentage of First-Order-Learning Suggestions by Month*


As in the previous analysis, we began by modeling the noise structure of the regression model (Box & Jenkins, 1976; SAS Institute, 1993). In this case, however, examination of the autocorrelation and partial autocorrelation residual plots indicated the presence of significant serial correlation and seasonality in the time series. Additional analysis revealed that a noise model consisting of autoregressive lags at two and nine months was the most effective model in controlling for serial correlation and seasonality in the data. Given this noise structure, we used a method known as the Yule-Walker or the two-step full transform method (Harvey, 1981; SAS Institute, 1993: 213–217) to estimate a regression model that included the two autoregressive parameters identified above. This method employs generalized least squares using OLS residuals to estimate covariances across observations. These estimates are then used to transform the data into a form that is suitable for use with OLS analysis.2

The results of this new analysis in Table 4 show a significant, negative coefficient for the time variable (p < .05), indicating first-order suggestions are becoming a relatively smaller portion of the total number of suggestions over time, as hypothesized on the basis of the organizational learning model. The size of the effect of time appears small (only about a one-third of a suggestion decrease per year). Given the small number of suggestions each month, however, this represents about an 8 percent decline in the monthly average of first-order suggestions made in this organization each year. The overall regression model is also statistically significant (R² = .81, p < .01), and the Durbin-Watson statistic (1.90, n.s.) indicates the absence of significant autocorrelation in the transformed regression model.

<table>
<thead>
<tr>
<th>Variables</th>
<th>b</th>
<th>s.e.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>.38</td>
<td>.50</td>
</tr>
<tr>
<td>Time</td>
<td>−.03*</td>
<td>.01</td>
</tr>
<tr>
<td>Total suggestions</td>
<td>.52**</td>
<td>.03</td>
</tr>
<tr>
<td>R²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson statistic</td>
<td>.81**</td>
<td></td>
</tr>
</tbody>
</table>

* Transformed using Yule-Walker method to control for second- and ninth-order autoregressive errors.

2 The results using this method are essentially identical to the results of the conditional least squares estimates produced using the ARIMA procedure (SAS Institute, 1993). Details of these analyses are available upon request from the first author.
DISCUSSION

An important implication of these findings is that various criteria can be used to judge the effectiveness of a gainsharing program (cf. Leana & Florkowski, 1992). In the case of the organization studied here, the number of employee suggestions first increased, then decreased rapidly over time. From these data, one might conclude that the gainsharing program had "failed" in that it had not been able to sustain a high level of employee involvement over time. The correlation between the volume of suggestions and payouts from the plan (a proxy for increased productivity and cost savings) is consistent with the position that gainsharing produces a Hawthorne effect and that gains are unlikely to be sustainable over a longer term. One explanation of this effect is that gainsharing provides a means and an incentive for employees to express pent-up cost-saving ideas on how to improve existing operations (Hammer, 1988). Once these ideas have been expressed and implemented, however, these programs tend to lose effectiveness as performance, payouts, and suggestions all begin to decline (e.g., Goodman, 1980; Kaufman, 1992; McKersie, 1963).

An organizational learning perspective suggests a very different interpretation of the results. Instead of viewing declining gainsharing payouts and suggestions as evidence of a failed short-term program, this perspective suggests that these are precisely the conditions that will lead to the generation of second-order organizational learning and change in the organization. These data also support this interpretation. By disaggregating the pattern of overall suggestion making into first- and second-order-learning suggestions, we found that the type of suggestions shifted over time, from being predominantly first-order material savings and new work suggestions in the earlier period to predominantly second-order learning production process changes by the end of four years. Organizational learning scholars (e.g., Lant & Mezias, 1992; March, 1991) have noted the importance of managing both types of learning. Thus, using an organizational learning system perspective, we could judge this program a success.

The fact that the plant in this case experienced financial losses in the third and fourth years of the gainsharing plan appears to be incongruous with the observation that changes in the proportion of second-order-learning suggestions are associated with improved organizational performance over time. One possible explanation for this incongruity is that a longer time frame than was available for this study is needed to assess the impact of changes in patterns of first- and second-order learning on long-term organizational performance and survival. In the case of this plant, it was able to regain profitability in the fifth and sixth years following the introduction of gainsharing. Although an analysis of this period is beyond the scope of this study, the return to profitability appeared to be a function of the plant's ability to successfully implement the model changeover in 1993 and to attract a significant amount of new production work to the plant. Plant personnel attributed much of their success in both of these activities to their improved work methods and to the cooperative labor-management climate they had developed. Patterns of organizational learning associated with the introduction of gainsharing at the plant appear to be at least indirectly related to both of these outcomes and suggest at least part of the explanation for the plant's longer-term success.

Any conclusions from this study must be tempered by the fact that the data come from a single gainsharing plan in one organization. Although the basic structural features of this plan are typical of those of other Scanlon-type gainsharing plans, the extent to which the results found in this study generalize to other organizational contexts as well as to other types of gainsharing programs (such as "Ruckers" or "Improshare" programs) cannot be assessed directly. As Lawler (1988) noted, gainsharing can be seen as part of a larger, multiphase organizational change effort toward a more participative ("high-involvement") system of management. We know very little about how variations in gainsharing formulas, participation structures, and processes impact organizational outcomes over time. It may be that the specific features of this gainsharing plan made it especially likely we would observe a transition from first- to second-order learning. Kim's (1999) study of 211 organizations with gainsharing plans showed that a number of characteristics were positively correlated with program survival. Of these, four characteristics were present at this plant: low reliance on consultants, high union participation, strong employee approval of the plan, and high labor intensity.

On the other hand, it is possible that the average bonus level of 4.5 percent in this study was not sufficient to motivate more active participation and suggestion making on the part of employees. Although very few data exist on the impact of the size of gainsharing payouts, reports of some successful plans indicate their payouts represented higher percentages of base pay than the payouts in this plant (e.g., Gross & Duncan, 1998). There was, however, considerable variation in the amounts of bonuses; these ranged from 11.1 percent of base pay at
the beginning of the second year to 0 percent at the end of the third year. Both labor and management representatives indicated that they recognized the importance of providing a "reasonable" bonus—especially at the beginning of the plan, when trust was being established. They also strongly felt, however, that any adjustments to the payout formula should be made jointly, as part of the negotiated labor agreement, and not be made by management alone in a way that might appear arbitrary. Thus, no adjustments to the bonus formula were made during the period of this study. Finally, the average bonus of 4.5 percent paid in this plan appears consistent with that of other gainsharing plans. A recent survey by William M. Mercer, Inc., reported that firms with gainsharing plans were paying bonuses of about 5 percent of base pay to their "nonexempt" employees in 1997 (Gross & Duncan, 1998: 49).

An obvious extension of this line of research would be to compare data from this study with data from other gainsharing plans and organizational contexts. For example, we would hypothesize that larger rewards would increase the volume of suggestions and thus decrease the time required before second-order-learning suggestions become a majority of the total suggestions. The logic is that a finite amount of savings can be gained from first-order-learning suggestions. The higher the payout, the more incentive there is for employees to find cost savings, and the more quickly the savings from first-order learning will be used up. In contrast, we would expect, all else being equal, that more frequent introductions of new production processes into a plant would increase the amount of time that would pass before second-order suggestions became the dominant type of suggestion. The reasoning is that each new production process creates a certain amount of excess material and product defects that provide additional opportunities for cost savings to be achieved through first-order-learning suggestions.

Finally, the impact of variations in employee and union involvement on the volume and types of employee suggestions is of particular interest to both researchers and practitioners. As noted above, the union in this case was significantly involved in both the development and implementation of the gainsharing program. A number of studies have shown the level of union support and involvement to be a significant factor in determining the success of employee involvement programs in general (Cooke, 1992; McMahan & Lawler, 1995) and of gainsharing plans in particular (Cooper, Dyck, & Frolich, 1992; Kim & Voos, 1997). It is possible that this involvement is also a key to explaining the patterns of suggestion making found in this case. It may be that employees’ willingness to submit second-order-learning suggestions is conditional on their perceptions of gainsharing fairness, which is affected by union involvement.

An additional limitation is that we have no direct measure of organizational changes that resulted from suggestions over time. As noted above, our evidence relates more directly to changes in knowledge and values rather than to changes in routines and structures. Indirect evidence, however, about the source of gains from mature gainsharing plans comes from a recent study by Kim (1996). Kim surveyed 269 establishments with gainsharing and found that program age was negatively associated with perceived annual improvements in cost reduction and labor productivity, but positively associated with perceived improvements in a firm’s production process. Interestingly, Kim also found that use of employee involvement and Scanlon plans was significantly associated with improved quality and production processes but unrelated to annual improvements in labor productivity and cost reduction. These results, combined with the results from this study, suggest that exclusive reliance on measures of operational efficiency associated more with first-order learning may lead to underestimates of the impact and potential contribution of gainsharing programs that focus on employee involvement and organizational transformation.

Despite the limitations indicated above, the pattern of results found in this case point to a number of implications and insights for both gainsharing and organizational learning research and practice. A central question in gainsharing research is how these programs impact performance (Bullock & Lawler, 1984; Hammer, 1988; Lawler, 1988). Results from this study suggest that the answer to this question may change over the life of a program—gains stemming from the elimination of waste in its early stages appear to give way to process and design improvements as a program matures. In addition, the finding that second-order-learning suggestions become dominant as a gainsharing program matures may help to explain the long-term success of a number of well-known gainsharing plans that have been cited in the gainsharing literature (e.g., Davenport, 1950; Graham-Moore, 1983).

Another implication of this analysis concerns the role that power and interest group (coalitional) politics play in the organizational learning process. Although integral to some of the early discussions of organizational search processes and learning (Cyert & March, 1963: 120–125; March, 1962), the effect of organizational power and interest group
politics has generally not been developed in more recent organizational learning literature. Yet, as Miner and Mezias (1996: 97) pointed out, the process and outcomes of organizational learning are rarely politically neutral. In this study, we observed that the shift from first- to second-order learning implied a renegotiation of the wage and effort bargain between employees and employer. This renegotiation is embedded in the power dynamics between labor and management stakeholders (Collins, 1995). Thus, in addition to grappling with cognitive and social barriers to engaging in second-order learning, employees and organizations must also grapple with the political ramifications of engaging in these activities (Argyris & Schön, 1996; Levitt & March, 1988).

The recognition of the importance of these power and interest group issues in the organizational learning process calls attention to the impact of perceptions of procedural and distributive justice. These topics have recently emerged in the gainsharing literature as important determinants of gainsharing success (Cooper et al., 1992; Welborne, 1998; Welborne et al., 1995). From an organizational learning perspective, it may be that the willingness of organization members to translate individual learning into a form that will become the property of the organization (such as employee suggestions) is conditioned in part on members’ justice perceptions. This may be particularly true in the case of second-order learning, which may destabilize the power balance between interest groups.

CONCLUSIONS

This study addresses the call for theory-based studies of how gainsharing works (Hammer, 1988; Lawler, 1988). It has been shown that it is possible to distinguish between two types of employee suggestions resulting from a gainsharing program that represent two different types of learning in organizations. The data from this organization suggest that, consistent with the pent-up ideas explanation for gainsharing effectiveness, first-order-learning suggestions increase initially after gainsharing is implemented. However, there appears to be a limit to the ability of such suggestions to generate continued gainsharing payouts and, as a proportion of total suggestions, these suggestions decline over time. In contrast, the proportion of second-order-learning suggestions is lower at first, then becomes a larger proportion of total employee suggestions over time. These findings are seen as consistent with findings in the organizational learning literature suggesting that, although more difficult to achieve, second-order learning is a means for organizations to sustain superior performance over time.

The observed transition in the proportion of first- and second-order-learning suggestions in this case may help to explain the longevity and sustained performance of some well-known gainsharing programs, such as those at Adamson, Lincoln Electric, DeSoto, and Nucor Steel. This transition is also consistent with the position of early proponents of the Scanlon plan, who viewed the plan’s main contributions as its helping to transform the way employees perceived their work and their role in their organization. As Frost and coauthors (1974: 91–92) observed: “In the application of the Scanlon Plan, the job situation would be opened up so that the worker would be stimulated to learn by asking why, how, when, what, and who. The procedure invites the employee . . . to be open in exploring and experimenting, to risk and fail and not be punished. The Scanlon Plan philosophy and format provide one method of initiating, developing, and reinforcing learning throughout the employee’s vocational career.”

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