APPLICATION OF THE SCANLON PLAN AS A CATALYST TO IMPROVE ENVIRONMENTAL PERFORMANCE

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ABSTRACT

Offered here is a conceptual model that theoretically links the Scanlon Plan to environmental management. Our main purpose is to integrate the principles of environmental management and the Scanlon Plan in order to resolve a shared problem. Institutionalizing a reward system based on measurable performance and incentives for environmental improvements serves as a potential mechanism to enhance a firm’s environmental performance. Specifically, our paper advocates the utilization of the Scanlon Plan by manufacturing firms to enhance their environmental performance based on the following Scanlon Plan features: 1) collectiveness and cooperation, 2) employee participation, 3) quantifiable performance and bonus measures, and 4) an equitable reward system.

Introduction

Environmental performance holds importance for businesses, because of its connection to long-term sustainability and profitability (Hart, 1997; Manning, 2004; Porter & Van der Linde 1995). Rewarding for environmental performance should be a priority for businesses as a means to enhance their environmental performance and lower long-term costs. However, the complex nature of environmental problems makes rewarding environmental performance at the individual level difficult for firms. Other factors confounding this dilemma pertain to certain ambiguous qualities associated with individual reward systems and the common reliance on teams in both manufacturing and environmental management. Given these issues, we reason that a group reward and performance measurement strategy is more appropriate in a manufacturing environment. At the same time, the Scanlon Plan rewards efforts for cost savings and productivity on a collective basis. Thus, our purpose is to apply the Scanlon Plan principles to reward for environmental performance in addition to cost savings. Accordingly, this paper will contribute to both theory and praxis by illuminating the underlying conceptual relation and providing a guide for practitioners.
Research suggests a key to successful implementation of an Environmental Management System (EMS) includes the consideration of human resource factors. Authors have espoused the need for examination of issues such as training, empowerment, management support and rewards within the context of environmental management (Beard 1996; Daily, Bishop & Steiner, 2003; Daily, Bishop & Steiner, 2006; Daily & Huang, 2001; Fernandez, Junquera & Ordiz, 2003; Govindarajulu & Daily, 2004; Hart, 1995; Kitazawa & Sarkis, 2000; Laabs, 1992; Ramus, 2001; Sarkis, 2001). Specifically, environmental training and management support have received the greatest attention in the literature while issues of rewards have received less. Therefore, an examination of incentives and rewards in environmental management is needed.

Specifically, this paper demonstrates how the Scanlon Plan’s principles could be applied to enhance environmental performance. Gainsharing plans typically involve all or most employees in the resolution of problems in costs, quality, and productivity. The organization then shares a portion of the realized gains that result from this process with its employees (Bullock & Lawler, 1984; Recardo & Pricone, 1996). The Scanlon Plan represents a particular gainsharing plan with a long tenure of use and abundant application in industry (Recardo & Pricone, 1996; Schuster, 1984a; Welbourne & Gomez-Mejia, 1988; Welbourne & Gomez-Mejia, 1995). The literature on environmental management consistently emphasizes the importance of employee involvement and empowerment in achieving environmental improvement (Daily & Huang, 2001; Ramus, 1997; Rothenberg, 2003). Of the three primary gainsharing plans, the Scanlon Plan places the greatest emphasis on employee involvement (Geare, 1976; Miller & Schuster, 1987a, Miller & Schuster, 1987b). Due to the philosophies of involvement and teamwork underlying the Scanlon Plan, we argue that it is an appropriate model for environmental enhancement. Additionally, we believe that the Scanlon Plan could be well adapted to environmental management due to the cross-boundary nature of environmental problems (Daily, Bishop & Govindarajulu, 2006; Rothenberg, 2003). The structure of the problem shares similarity, therefore it is reasonable to conclude that the structure of the solution would be similar.

Adapting the Scanlon Plan to environmental management

Conceptual discussions about the role of rewards in environmental management indicate a positive effect on environmental performance (e.g. Chinander, 2001; Daily et al., 2003; Daily et al., 2006; Epstein & Roy, 1998; Fernandez et al., 2003; Forman & Jorgensen, 2001; Laabs, 1992; Ramus, 2001; Ramus, 2002). However, empirical studies have been rather limited. Daily et al. (2003, 2006) analyzed the role of rewards in an EMS. In their study, the authors determined that rewards for environmental efforts were positively related to employee perceptions of environmental performance. In another empirical study, Ramus & Steger (2000) found that supervisor support behaviors that advocate rewards and recognition have a positive effect on employee motivation to put forward novel environmental initiatives. Despite these select examples researchers have suggested that overall, most organizations do not formally reward for environmental improvements (Chinander, 2001; Daily et al., 2006; Denton 1999; Kitazawa & Sarkis, 2000). This not only raises the question of why rewards are not more common in environmental management, but also suggests that there is a need for an environmental reward strategy.

The Scanlon Plan embodies an established reward system that could offer a solution to this dilemma. Joseph Scanlon’s innovations date back to the 1930s (Cotton, 1993, Frost, Wakeley &
Ruh, 1974; Owens, 1988). His initial work led to improved productivity, efficiency, and quality, as well as a reduction of waste and costs. The company derived this success by utilizing an employee suggestion system centered on production and screening committees, and ultimately shared the cost savings by increasing worker wages. The plan itself not only represents a set of management principles, but also a philosophy (Frost et al., 1974). Two main principles embrace the Scanlon philosophy: 1) employee involvement, and 2) an equity system for distributing group incentive-based rewards (Cotton, 1993; Frost et al., 1974; Geare, 1976; Miller & Schuster, 1987a; Schuster, 1984b; Welbourne & Gomez-Mejia, 1995). In addition to these two main principles, organization and individual identity serve as important preconditions for the successful institution and sustenance of Scanlon Plan programs (Frost et al., 1974).

Several traits of environmental management make the Scanlon Plan a strong candidate as a reward system to improve environmental performance. First, effective environmental management, particularly in the manufacturing industry, possesses certain characteristics that favor the usage of teams. Additionally, the complex nature of environmental problems and the types of metrics employed to measure environmental performance indicate a need for a more overarching approach to managing environmental performance. The cross-boundary nature of environmental issues poses a problem for implementing structured rewards. The complexity of environmental issues often demands knowledge and skill sets from diverse backgrounds (Rothenberg, 2003). Because a variety of disciplines and departments frequently become involved in solving and mitigating environmental problems, it is often difficult to identify the individuals responsible for environmental performance improvements. To confound this matter further, firms often calculate environmental performance metrics looking at the whole organization or major functional areas (Rhikardsson, 1998; Young & Welford, 1998). Each of these factors has produced an ambiguous and complex situation regarding managing and rewarding for environmental performance.

Institutionalizing a reward system based on measurable performance and incentives for environmental improvements serves as a potential mechanism to enhance a firm’s environmental performance. Because of certain ambiguities associated with rewarding environmental performance at the individual level, it is therefore more appropriate to reward at the group, department, or organizational level. The Scanlon Plan offers such a group-based mechanism by collectively rewarding for quantifiable improvements. Finally, the participative approach akin to the Scanlon Plan conveys a good fit with proactive environmental management strategies.

Our review of the literature on environmental management revealed clear linkages to the Scanlon Plan’s principles. The most prominent feature of environmental management that is shared with the Scanlon Plan is a participative philosophy. Authors most frequently cited this feature. This strongly supports a theoretical connection with the Scanlon Plan, whose philosophy of participation underscores the program. Other similarities were cited less frequently (e.g. formal suggestion systems, committee structures). We recognize the limitation that a perfect fit is unlikely. In addition to these shared characteristics, we assert that the quantifiable approach to rewards inherent in the Scanlon Plan’s formula is appropriate for manufacturing based environmental management. The rationale for the corresponding adaptation of the Scanlon Plan for environmental management is discussed below.
Collectiveness, commitment, and cooperation. Teamwork in environmental management extends the cooperative approach found in the Scanlon Plan. Teams have a prominent function in environmental performance and they effectively promote cooperation and problem solving (Coyle-Shapiro, 1995; Daily & Huang, 2001). For example, teams have been shown to be innovative at implementing environmental initiatives that improve company environmental performance (Ramus, 2001). More specifically, cross-functional teams that utilize employees with different knowledge backgrounds are frequently used to solve complex problems and develop creative ideas and innovations (Denison & Hart, 1996). Other researchers maintain that employee involvement teams, particularly cross-functional teams, typify the most effective means to minimize waste in organizations (May & Flannery, 1995). This collaborative mentality corresponds well with the Scanlon Plan, which rewards on collective performance and emphasizes organization-wide cooperation (Cotton, 1993; Frost, Wakely & Rue, 1974). Like environmental management, employees from different departments and functional areas often work together to achieve a common solution.

The importance of organizational identity and development in the Scanlon Plan has a key link to environmental management. Identity engenders commitment to a cause on behalf of the organization as well as responsibility for individual employees (Frost et al., 1974). A strong commitment by an organization and its employees has been linked to sustainability in organizations (Manning, 2004; Topf, 2000a; Topf, 2000b; Zutshi & Sohal, 2003). Additionally, several authors contend that commitment to environmental performance should be a component of the organizational culture, employee culture, and identity (Azone & Noci, 1998b, Fernandez et al., 2003; Klassen & McLaughlin, 1993; Manning 2004; Russo & Fouts, 1997). A recent review also suggests that organizational culture is a basic element of corporate identity that contributes to improved environmental performance (Fernandez et al., 2003). By strongly embracing the environment as a cause, organizations can boost their reputation which helps attract and retain the best employees (Manning, 2004). Similarly, by establishing an organizational identity the Scanlon Plan generates employee commitment and cooperation. For these reasons, the organizational identity facet of the Scanlon Plan is an attribute also reflective of environmental performance principles.

Employee participation. Environmental management shares a philosophical resemblance with the Scanlon Plan. Both pragmatically emphasize employee participation and involvement. The Scanlon Plan specifically calls for employee participation as one of its philosophical underpinnings (Cotton, 1993; Frost et al., 1974; Geare, 1976; Miller & Schuster, 1987a; Schuster, 1984b; Welbourne & Gomez-Mejia, 1995). Proponents of empowerment and participation abound in the literature on environmental management (Cramer & Roes, 1993; Daily & Huang, 2001; Denton, 1999; Fernandez et al., 2003; Forman & Jorgensen, 2001; Govindarajulu & Daily, 2004; Kitazawa & Sarkis, 2000; Ramus, 1997; Zutshi & Sohal, 2003). In each article, employee participation is cited as an important ingredient for successful environmental management.

Several case studies illustrate the benefits of empowering employees to make environmental improvements. For example, GE Plastics empowered employees through a flatter organizational structure and encouragement to develop environmental solutions. Some improvements evident during the study consisted of a 70% reduction in hydrocarbons and 30% reduction in waste
(Ramus, 1997). Additionally, Zutshi & Sohal (2003) found that employee involvement and commitment enhanced the process of establishing an EMS at several companies. In one empirical study, empowerment was shown to have a significant positive influence on perceived environmental performance (Daily et al., 2003, Daily et al., 2006). These studies lend support to the effects of employee involvement on environmental performance and corroborate an alignment with the Scanlon Plan’s fundamental use of employee participation.

**Quantifiable approach to performance and rewards.** The Scanlon Plan is attractive for environmental performance management, because its formulas provide tangible computations of productivity, cost savings, and bonuses. Azzone & Noci (1998a) assert that “green” manufacturing strategies call for quantifiable output. Doing so enables manufacturing firms to evaluate their eco-efficiency and reward employees for effective performance. The Scanlon Plan accomplishes both. Under the Scanlon Plan, the formulas are customizable. Thus, a variety of manufacturing industries can participate in this program. The adaptability of the formula allows firms to translate environmental improvements into additional cost savings or improved productivity.

One possible option involves the development of productivity measures related to the sale of green products. According to Azzone & Noci (1998a), economic value creation in a proactive “green” manufacturing strategy results from the following four factors:

1. Incremental revenues, indicating increase in market share;
2. Incremental contribution margin due to sales of products made from regenerated materials. This measure identifies whether, in addition to the environmental considerations, the take-back and regeneration of end-of-life products can also be justified from an economic viewpoint;
3. Internal efficiency costs; this item describes the production costs of "green" products;
4. Operating costs/investments needed for the implementation of the intended program.

These four considerations represent a good starting point for firms attempting to develop productivity measurements linked to firm environmental performance.

A second approach for firms concerns cost savings. The formula can be easily adjusted to measure cost savings for improvements in environmental performance. Some examples of potential cost savings for firms include: reducing energy consumption, waste reduction, improvements in eco-efficiency, lower pollution emissions, smaller environmental fines, and decreased environmental cleanup costs. Characklis & Richards (1999) convey this idea: “In manufacturing, measures of packaging efficiency and percent recycled material can address consumer concerns, while simultaneously identifying cost savings in product transport and raw materials” (p. 389).

Additionally, a cost savings/green productivity strategy could also be implemented by including relevant measures in the formula. Any of these suggested approaches represents a viable opportunity for manufacturing firms. The flexibility of the formula creates a helpful advantage by permitting firms to choose appropriate environmental measures to be included in the formula as well as the amount of the incentive payout.
The bonus formula denotes the final quantifiable component of the Scanlon Plan, which imparts the equitable system for distributing rewards to employees. Typically, a firm predetermines with its employees an allocation ratio for gains in productivity or cost savings (Cotton, 1993). Employee participation plays a pivotal role in gauging the fairness of the ratio, and the ratio remains open to adjustments as a result (Frost et al., 1974). Distribution of any realized gains often occurs as monthly bonuses to individual employees (Frost et al., 1974; Cotton, 1993). Firms should also maintain a reserve using money from their gains in order to offset any cost or productivity deficits (Frost et al., 1974). One should not overlook the relevance of this in terms of environmental management. A reserve would prove extremely beneficial in events of environmental negligence, such as unforeseen costs associated with contamination.

A guide for practitioners

It is beyond the scope of this paper to provide a blueprint of how a manufacturing firm should implement the Scanlon Plan to improve environmental performance. A variety of factors will influence the appropriateness of the Scanlon Plan for a specific firm. However, it is important to mention some of the features, which a firm should consider when implementing a Scanlon Program in order to enhance environmental performance. To be precise the program needs to:

- contain a committee structure with an environmental committee and screening committee.
- provide an open suggestion system that encourages employee ideas to solve environmental problems.
- incorporate a participative management style.
- espouse a strong commitment to the environmental cause.
- develop an organizational identify that reflects this commitment.

Each of these features is critical to the success of a Scanlon Plan adapted to improve environmental performance. Instead of using a productivity committee, an environmental committee explicitly charged to evaluate suggestions regarding environmental issues is needed. This will stress the importance of the company’s position to protect the environment. The open suggestion system provides a forum to offer ideas. Such an approach empowers employees when their ideas are implemented. The Scanlon Plan’s fundamental philosophy requires a participative management style. Finally, an organizational identity and commitment that show strong support for the environmental cause will go a long way with employees and enhance the firm’s reputation in the public eye.

The Scanlon Plan represents a customizable collective reward program. Given its customizability, several options exist to tailor the program to firm-specific needs. First, the customizability affords firms the flexibility to apply the program at various organizational levels. For example, in some manufacturing firms it might be warranted to implement the Scanlon Plan throughout the entire organization, whereas at others it might be more suitable to do so at the plant or even departmental level. Second, the adaptability of the formula allows firms to choose the relevant metrics. Depending on a firm’s strategic orientation, it could develop a cost savings, productivity, or combined metric with regards to environmental performance. The formula could
also be adjusted to include additional measures of productivity or cost savings at organizations that already carry out the Scanlon Plan.

**Limitations and future research**

As with any reward system, situational factors, such as firm size, industry type, and company age, play a significant role in determining its appropriateness. The Scanlon Plan might not be for everyone. It requires a significant commitment of resources and in many cases a shift in the organization’s philosophy and culture. Consultants are often needed to assist in the planning and transition. Problems are also likely to arise during the early phases because of an increase in tension from the change (Frost et al., 1974).

It might also be difficult for firms to determine an adequate measure for productivity or cost savings associated with environmental performance. Environmental performance metrics are complex and often multidimensional (Rikhardsson, 1998; Young & Welford, 1998). Currently, there is no agreement on what the best measures are (Illinitch, Soderstrom & Thomas, 1998). In addition, developing such measures requires the service of accounting and finance experts.

Despite these limitations, the prospect of solving two organizational issues at once is appealing. It seems theoretically possible, to use the Scanlon Plan to collectively reward as a means to improve environmental performance while simultaneously making improvements in productivity and/or cost savings. However, this theoretical linkage has not been tested empirically or investigated in a case study. Further research is needed to determine if this approach would succeed in accomplishing the objectives set forth in this paper.

**Conclusion**

As evidenced by the problems of assessing environmental performance at the individual level, a group-based strategy seems more relevant regarding environment management. We have argued that gainsharing, particularly the Scanlon Plan, presents an opportunity to improve firm environmental performance through collective rewards. The premise behind the conceptual linking of environmental management and the Scanlon Plan lies in the philosophical nature of the Scanlon Plan, which espouses employee participation and equitable rewards to solve complex organizational problems. Similar to the Scanlon Plan, scholars indicate that environmental problems are complex and require cooperation to achieve resolution. Thus, a merger of the two presents an opportunity for manufacturing firms to improve their environmental performance, reduce costs, and increase productivity.

**REFERENCES**


