



Achieving sustainability through attention to human resource factors in environmental management

Sustainability
through human
resource factors

1539

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Abstract *Currently, many businesses are implementing a proactive, strategic tool known as an environmental management system (EMS) to gain a competitive advantage. Companies can no longer simply use compliance plans to deal with environmental concerns; consumer demands for greener products and services, and operational efficiencies require long term strategic and sustainable approaches for environmental management. An EMS includes documentation of: commitment and policy; planning; implementation; measurement and evaluation; and review and improvement. Establishment and maintenance of an EMS can be costly and time consuming, therefore implementation should be carefully structured to assure success. This paper identifies human resource (HR) factors such as top management support, environmental training, employee empowerment, teamwork, and rewards systems as key elements of the implementation process of an EMS. Furthermore, the interaction of these factors is examined in terms of the five categories of an EMS mentioned above. Finally, a conceptual model of the EMS-HR factors is proposed to assist in proper facilitation of the environmental management program.*

Introduction

Rapid industrial growth over the last two centuries has advanced mankind and the standard of living for many worldwide; however, this growth has often come at the cost of the natural environment. In response, many researchers have recently suggested an increasing need for management theory development in the area of ecological sustainability and the business system (Gladwin *et al.*, 1995; Jennings and Zandbergen, 1995; Shrivastava, 1995; Starik and Rands, 1995; Stuart, 1995).

In the environmental literature, the concept of ecologically sustainable development has varied definitions; all of which generally, seek to explain the need for balance between industrial growth and safeguarding the natural environment so that future generations may thrive (Jennings and Zandbergen, 1995; Shrivastava, 1995; Starik and Rand, 1995; World Commission on Environment and Development, 1987). Yet, the issue of how an individual organization or entire society achieves such sustainability is still unclear. Thus, research on how businesses may structure their facilities to enhance opportunities for sustainability seems paramount.

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In addition, growing global environmental concerns and the development of international environmental standards are creating the need for businesses to adopt formal environmental strategies and programs. Traditionally, a majority of US corporations have used the compliance approach in their environmental programs driven by laws and regulations. However, in the past several years, environmental forces such as consumer boycotts, dynamic preferences, and new customer requirements have affected basic business strategies as well as corporate core values (Bhushan and MacKenzie, 1994). It appears corporate strategies for environmental management are evolving from pollution control to pollution prevention (Brockhoff *et al.*, 1999).

Currently, many businesses are implementing a proactive, strategic tool known as an environmental management system (EMS) to gain a competitive advantage. An EMS provides a structure that allows management the ability to better control the company's environmental impacts (Barnes, 1996). An EMS includes commitment and policy, planning, implementation, measurement and evaluation, and review and improvement (Hersey, 1998).

Some researchers have suggested the development of an EMS may parallel the establishment of other well know management programs such as total quality management (TQM) (Alm, 1992; Corbett and Cutler, 2000; Curkovic, 1998). A review of the literature on TQM suggests strongly that successful implementation of TQM is dependent on several human resource (HR) factors such as top management support, training, rewards, employee empowerment, and teamwork (Mohrman *et al.*, 1996; Flynn *et al.*, 1994; Saraph *et al.*, 1989; Beyerlein *et al.*, 1991). Presently, little research exists in the literature examining the impact of such HR factors in the implementation of an EMS. Yet, one may surmise from the literature on TQM, these HR factors may hold the key to EMS success.

This paper examines, in-depth, various HR factors and their impact on implementation of an EMS. Based on the literature review, the primary objectives of this study are:

- describe the basic elements of an EMS;
- identify the organizational HR factors that affect the implementation and maintenance of an EMS; and
- establish a conceptual model of the relationship between elements of an EMS and HR factors.

Environmental management systems

Essentially, the ISO 14000 guidelines delineate the international standards for systems of environmental management (Begley, 1996). Similar to the ISO 9000 Quality Management Standards, the ISO 14000 series was created by a collaboration of 90 standard setting groups and over 100 countries involved in the International Organization for Standardization. The ISO 14000 series consists of 20 environmental standards that are voluntary and process-based

(Barnes, 1996; Hersey, 1998). According to Sroufe *et al.* (1998, p. 5), “to date, ISO 14000 standards may be the best example of a structured EMS”.

The ISO 14000 series contains numerous guidelines pertaining to various environmental issues. The primary guideline, ISO 14001, *Environmental Management System: Specification with Guidance for Use*, contains EMS specification-certification standards (Hersey, 1998). This standard includes: policy, planning, implementation and operation, checking and corrective action, and management review (Barnes, 1996).

Certification for the ISO 14001 is time consuming and, depending on the company’s existing system, can take up to one to two years. The certification itself is quite costly as well; the estimation for certification ranges from \$40,000 and \$100,000 (Barnes, 1996). Since certification of ISO 14001 is time consuming and costly, it is important that an organization is committed to the process in order to get the most benefit out of implementing the EMS.

Some potential benefits of implementing the ISO 14000 standards include better customer relations, recognition from regulators, better control of environmental issues, and increased employee awareness of environmental concerns (Barnes, 1996). The potential benefits have attracted many companies to register for ISO 14001. As of June 1999, more than 7,800 sites have been registered for ISO 14001 certification. Countries such as Japan, Germany, and the UK have the highest number of registered sites. In the USA, there are more than 480 registered sites for ISO 14001 (Scott, 1999).

Key categories of an EMS – ISO 14001 guidelines

Policy

The policy aspect of an EMS refers to the guidelines that are defined by top management for the organization. According to ISO 14001, section 4.2, the environmental policy statement needs to include at a minimum the following requirements:

- commitment to continual improvement and prevention of pollution;
- commitment to comply with legislation and regulations;
- framework for setting and reviewing environmental goals; and
- commitment to documentation and implementation.

Furthermore, the policy must be communicated to all employees, and be available to the public (Woodside *et al.*, 1998).

Planning

The planning element includes several issues: legal and other requirements, objectives and targets, environmental aspects determination, and the structure of the environmental management program (Woodside *et al.*, 1998; Johnson, 1997; Jackson, 1997). The environmental aspect refers to establishing and maintaining procedures to identify controllable activities, products or services that could potentially have significant impact on the environment. The legal

element requires organizations to establish a method to ensure awareness of all applicable environmental regulations. Objectives and targets refer to the requirement for organizations to establish and maintain documented environmental goals at each relevant function within the organization as it relates to environmental performance. The environmental management program sets the groundwork to achieve these goals. The program should include details such as assigning individuals responsibility, time frame to accomplish a particular target, and the method to achieve specific environmental goals (Jackson, 1997; Woodside *et al.*, 1998; Johnson, 1997).

Implementation and operation

The organization needs to design a structure that provides available and qualified resources to facilitate effective environmental management. Training should be provided to employees of all levels so they may have the knowledge and skills to accomplish the objectives and targets of an EMS. There should be a process to promote internal and external communication on environmentally significant issues. Internal communication should flow both from the top and bottom so that all employees have the most up-to-date information regarding matters of environmental impact. Environmental management system documentation needs to be in place to describe the core elements of the EMS and their interaction, in addition to providing direction to associated reported materials. Document control is a set of procedures that deals with updating and locating documents, as well as discarding obsolete documents. Operational control refers to the need for organizations to have procedures to control and prevent conditions that would result in significant environmental impact. Companies need to have documentation and procedures to prevent negative environmental impact. Besides prevention, organizations also need to have response procedures after the occurrence of accidents or emergency situations (Woodside *et al.*, 1998; Jackson, 1997; Johnson, 1997).

Checking and corrective action

Areas covered under the checking and corrective action section include: monitoring and measurement, nonconformance and corrective and preventive action, records, and environmental management system audit. The section of monitoring and measurement concerns procedures that determine how well the organization is achieving stated environmental goals by examining various performance indicators. Nonconformance and corrective preventive action deals with procedures that define responsibility for recognizing and correcting nonconformity, and taking actions to alleviate negative environmental impacts. The records section demonstrates that environmental records are comprehensible, specialized, and traceable to the activity involved, and retrievable and protected from damage. The organization also needs to establish and maintain programs to carry out periodic audits to determine whether the EMS conforms to requirements of the standards, and if proper implementation and maintenance are occurring on a routine basis. Information

gathered from audits are provided to management so that they are aware of the status of the EMS (Woodside *et al.*, 1998; Jackson, 1997; Johnson, 1997).

Management review

Senior management in an organization should periodically review the progress of their environmental management system. The purpose of periodical reviews is to ascertain the effectiveness and adequacy of the environmental management system. This systematic process of reviews contributes to the element of continuous improvement that is essential to the success of maintaining an effective EMS (Johnson, 1997). Upon reviewing the results from environmental audits, managers may change the policy, objectives and targets, and other elements of the EMS to continually improving the EMS to improve environmental performance (Woodside *et al.*, 1998).

Human resource factors affecting an EMS

Top management support

According to Argyris (1998, p. 99):

Commitment is about generating human energy and activating the human mind. Without it, the implementation of any new initiative or idea would be seriously compromised.

Top management support can affect the success of an EMS by: promoting employee empowerment to affect changes, affecting organizational culture to support changes, instituting systems to promote desired behaviors such as rewards or incentive programs, provide training, and increase communication throughout the organization (Gupta and Sharma, 1996; Leitch *et al.*, 1995).

For an organization considering implementing ISO 14001, top management should consider its organizational culture to increase the chances of success. Organizational culture is composed of a set of assumptions and values that guide individuals' daily work behaviors (Cai *et al.*, 1999; Wilms *et al.*, 1994). Several researchers have noted that one of the reasons for the failure of an organizational change effort is that the management ignored the strength of cultures (Harris and Ogbonna, 1998). It is important to consider the organizational culture because companies with rigid, top heavy, and bureaucratic structures have a more difficult time implementing changes than a company that has a flexible and lean organizational structure (Janson and Gunderson, 1994).

Top management needs to understand its own organizational culture in order to implement the EMS effectively. Once the organizational culture is understood, then top management can take measures to alter the culture of the organization so it can be more flexible and responsive to changes. Cultural change does not occur overnight and often happens over a relatively long period of time. However, as authors Wilms *et al.* (1994, p. 108) stated:

People will follow management's direction. Whatever management does, and in what direction they push, and how hard they push dictates where this company eventually goes.

Top management can also serve as champion of change to help the organization transition more smoothly and completely.

According to Kitazawa and Sarkis (2000) cultural change is necessary to support the implementation of environmental source reduction. Top management within an environmentally conscious organization should strive for a strong culture that allows its employees the freedom to make environmental improvements. An environmentally conscious organization should have open and participative management and empower its employees (Mallak and Kurstedt, 1996). Employees should be allowed inputs for improvement and time for experimentation (Woods, 1993). Employees should be able to make changes to improve the environment without excessive management intervention.

Although commitment from top management is important, it is not sufficient by itself. There should be a constant flow of information between management and the work force. According to Gupta and Sharma (1996, p. 45):

The environmental goals of the company should be communicated to the workers. Standards of performance, especially with respect to environmental concerns, must be subject to continuous improvement over time to reach the goal of zero emission and zero waste.

Environmental programs, initiatives, and goals of an organization should be communicated frequently so the employees know what is expected to accomplish the goals. In a survey done by two Danish researchers, Madsen and Ulhoi (1996, p. 21), found that “employees generally indicate that they do not feel sufficiently informed about environmental matters”.

Therefore, from the literature we may surmise that top management support will impact the stages of ISO 14001 implementation. In particular, top management support will need to:

- communicate the policy, plan, and other pertinent information to workers;
- support cultural change for implementation and operations;
- reward and empower workers for corrective action and improvement; and
- review the EMS for progress.

Environmental training

In both the ISO 9000 Quality Management Standards and ISO 14000 Environmental Management Standards, documentation of training of employees is required. Moreover, researchers have determined TQM efforts demand extensive on-the-job training and continual educational efforts to achieve continual improvement (Cook and Seith, 1992; Curkovic, 1998). In the same fashion, successful EMS development mandates employees receive thorough environmental training.

Both TQM and EMS require culture transformation for successful implementation. One of the ways that companies can work through this

transformation is to utilize education and training for its employees. Through education and training, employees become more aware of the need for quality and environmental control, increase adaptability to change, and change to a proactive attitude (Wong, 1998).

Also, companies may need to conduct environmental training programs for several other reasons including: a change in the corporate environmental philosophy, heightened liability concerns, and a complex regulatory climate (Cook and Seith, 1992). Establishing specific training efforts regarding environmental issues may lead to the following benefits: compliance with regulatory requirements, organizational definitions of employee responsibility and liability, a positive public image, employee encouragement to become stewards of the environment, and employee motivation to participate in proactive environmental management (Cook and Seith, 1992).

Once a company is committed to environmental excellence, there should be adequate resources to support the training effort, whether it is financially or organizationally (Cook and Seith, 1992). A company can deviate its efforts to become environmentally responsible if there is little or no support to train and encourage its employees to “do the right thing”. Other than specific environmental training programs, additional types of training such as interactive skills, team building, benchmarking, brainstorming, and consensus building will help promote a culture where employees feel empowered to participate in environmental improvement (Bhushan and MacKenzie, 1994; Woods, 1993).

Obviously, appropriate environmental training is necessary to build an environmentally conscious culture and implement ISO 14001. What types of training employees receive will affect the planning stages. In addition, training may prepare employees for potentially new environmental operations and assist in corrective action endeavors. Moreover, documentation of training is mandated for 14001 certification.

Employee empowerment

Leitch *et al.* (1995, p. 72) described employee empowerment as “the importance of giving employees both the ability and the responsibility to take active steps to identify problems in the working environment that affect quality or customer service and to deal effectively with them”. According to Argyris (1998, p. 98), a CEO once said, “No vision, no strategy can be achieved without able and empowered employees”. Moreover, empowered employees are not only preferable but also essential to implement the organization’s goal to be fiscally sound and environmentally responsible (Enander and Pannullo, 1990).

The introduction of a new program will yield optimal results when employees are treated as major stakeholders in an organization (Mohrman *et al.*, 1996). Empowered employees are motivated and committed to participate and engage in good environmental practices. Employees who are not empowered have less commitment for improvement than the empowered employees (Argyris, 1998). Management can encourage employee

empowerment by changing the organizational structures that support empowerment (Leitch *et al.*, 1995). One way that management can encourage employee empowerment is by changing the form of the organization. The traditional top down organization inhibits employee empowerment; instead, a flatter, horizontal organization should be in place to encourage employee empowerment. Companies need to shift to a more open form of participative management in order to empower their employees (Mallak and Kurstedt, 1996). Workers can contribute more effectively when management moves the decision power down to the employees, allowing them the freedom and power to make suggestions and implement good environmental practices (Wever and Vorhauer, 1993).

Empowered employees who have autonomy and decision-making power are also more likely to be more involved in the improvement of the environment. Employee involvement (EI) can be described as “a participative process to use the entire capacity of workers, designed to encourage employee commitment to organizational success” (Cotton, 1993, p. 3). In addition Enander and Pannullo (1990), believe employee involvement may affect cultural change and significantly reduce pollutants at their starting place. Since many of the efforts in pollution prevention rely on employees working and interacting with other departments, employee involvement becomes a necessity to improve chances for success.

According to Denton (1999, p. 111):

Good EI planning and activities are the key to pollution management. A management initiative without employee involvement is useless.

Furthermore, in a study by Hanna *et al.* (2000, p. 160) data from 349 EI projects were analyzed to determine the relationship between operational and environmental performance:

... results support the concept of a positive relationship between operational performance and environmental performance ... and that the key to this positive relationship may be employee involvement itself.

There are many benefits that can result from introducing employee empowerment and employee involvement to an organization. Some of the benefits include:

- improvements in environmental health, worker health, and safety;
- improvements in economic, liability and public image; and
- development of more knowledgeable supervisors and employees (Enander and Pannullo, 1990).

Therefore, it is clear that employee empowerment may increase the chances of successful implementation of ISO 14001. In particular, empowerment may play a key part in the operational and corrective action categories of 14001. Specifically, empowered and involved employees are necessary for communication, control, and emergency preparedness and response. In

addition, empowerment should allow for continual improvement efforts by employees in the areas of non-conformance and preventive action.

Teamwork

An individual's contribution and improvement to a company's environmental wellness is important. However, teamwork is a necessity of a successful environmental management system. In TQM, teamwork places overall accountability for quality on the team, enhancing information sharing and cooperation within the work group for improvement (Coyle-Shapiro, 1995). Thus, it can be inferred that an EMS uses teamwork to place overall responsibility for environmental improvement on the team.

For example, Beard and Rees (2000) describe "green teams" used in a UK local authority, Kent County Council. They state that the teams were used to:

... generate ideas, enhance learning experiences, explore issues, identify conflict and focus action to enhance understanding about why, what, how, where, and when to pursue the best practicable environmental options (Beard and Rees, 2000, p. 27).

Similar to uses in TQM, cross-functional teams may be particularly helpful in achieving environmental improvement across departments. Although, cross-functional teams may have certain challenges that traditional teams generally do not face. These challenges may include: that members of cross-functional teams are obliged to other sub-units of the organization; they are often temporary task teams and experience enormous pressure and conflict; and they typically confront different performance expectations than traditional groups (Denison and Hart, 1996). Yet, the use of cross-functional teams can have many benefits in an environmental management system.

Eliminating pollution from the source requires changes and improvements from the manufacturing, planning, and purchasing areas (Kitazawa and Sarkis, 2000; Lent and Wells, 1994). Cross-functional teams may help achieve this need coordination across departments. Benefits of such teams include: collective knowledge to develop comprehensive solutions, avoiding duplication of efforts, accomplishing many tasks simultaneously, and empowering employees (Cai *et al.*, 1999; Leitch *et al.*, 1995).

Clearly, implementation of ISO 14001 will require communication and coordination from many departments across an organization. Thus, teamwork should be an essential part of the implementation, and checking and corrective action stages of an EMS.

Rewards

A well-designed reward system can be helpful in promoting employees to perform sound environmental practices. According to Herzberg (1966), work rewards refer to the intrinsic and extrinsic benefits that workers receive from their jobs. Rewards can be a reinforcement to continuously motivate and increase commitment from workers to be environmentally responsible. Companies that value environmental performance need to make parallel the

performance evaluation system with the managerial system in their corporate environmental objectives (Epstein and Roy, 1997). Reward systems and incentives need to reflect corporate commitment to the importance of environmental performance (Lent and Wells, 1994). Rewards can be implemented in several forms such as financial rewards and recognition awards. Award and recognition programs, profit-sharing programs, increase in pay, benefits and incentives, and suggestion programs are some of the systems that can be used to reward employees for good environmental practices (Atwater and Bass, 1994; Leitch *et al.*, 1995; Laabs, 1992; Patton and Daley, 1998). Regardless of the type of rewards used; the benefits should fit the needs of the employees.

There has been some literature that has shown that reward systems can motivate and reinforce employees to be environmentally responsible (Laabs, 1992; Patton and Daley, 1998). Reward systems can be used systematically to motivate employees to perform desired behaviors so that both the company and its workers can benefit from the program.

Companies that include rewards for environmental improvement in their performance evaluation systems should achieve a greater level of 14001 implementation. Rewarding employees for desired behavior would be especially important in both implementation, and checking and corrective action elements. Rewards also reinforce empowerment and good decision-making, improving corrective and preventive measures employees initiate. And rewards can motivate employees to continue good environmental practices.

EMS-HR model

Figure 1 presents the EMS-HR factors model. This model represent the significant interaction of HR factors such as top management support, training, employee empowerment, teamwork, and rewards within the five basic elements of an EMS: policy, planning, implementation and operation, checking and corrective action, and management review.

Clearly, an HR factor can fall within more than one of the five basic elements of an EMS. For example, top management support may affect the policy and management review element but it may also affect the elements of planning, implementation, and checking and corrective action. Similar overlapping effects would also exist with training, empowerment, teams, and reward systems. Furthermore, like TQM, it is expected that the implementation and maintenance of an EMS would occur in a continuous improvement mode. Therefore, we would expect that for an EMS to succeed all HR factors should be occurring in a somewhat simultaneous and cyclic fashion.

Conclusions and implications

It is apparent that ecological sustainability is essential as businesses progress through the twenty-first century. Industrial organizations must find a balance

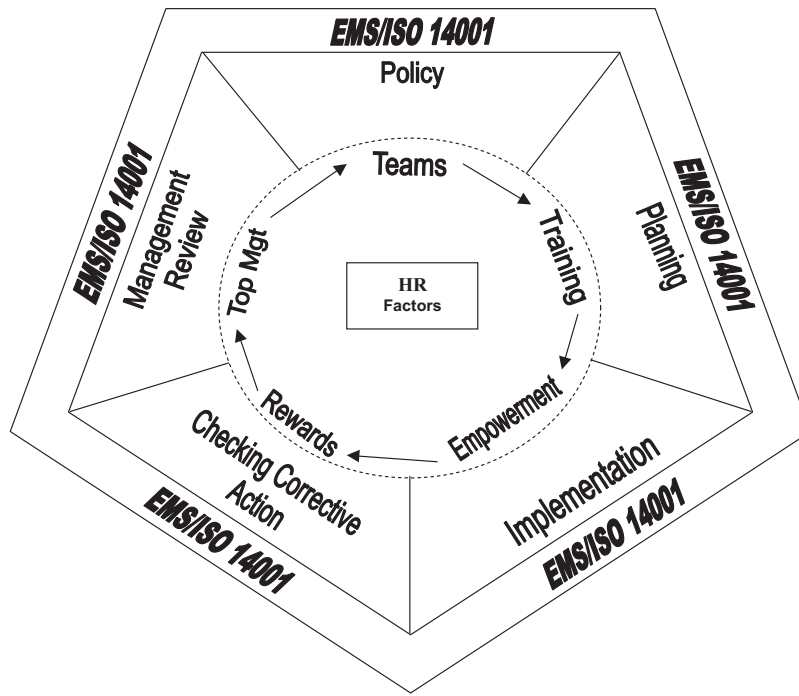


Figure 1.
The EMS-HR
factors model

between technological and economic development, and protection of the natural environment.

In response, many organizations are embracing the idea of developing environmental management systems that provide structure and basis for continual environmental improvement. Establishment of an EMS or certification for ISO 14001 can enhance a business' ability to control and prevent environmental problems. Reduction of environmental issues generally, increases efficiencies and productivity for a business while improving the opportunities for sustainability within a society. However, implementation of these systems requires considerable investments of time, energy and finances. Therefore, foundation of an EMS or certification for ISO 14001 should be conducted in a thoughtful, structured manner.

Besides the technical details and documentation required from an EMS, several HR factors should be addressed. Literature on TQM, a similar management endeavor, mandates significant interaction from human resources in the development and institutional stages of quality management programs. In the same way, EMS programs may be less than completely successful, if HR factors such as top management support, environmental training, empowerment, teamwork, and rewards are not addressed. The ability to execute the categories of ISO 14001 – management review, policy, planning implementation, and corrective action – necessitate interface with the factors above.

Our model provides an understanding of how HR factors may affect EMS initiatives. However, further research is required in order to develop an instrument to test the model and quantify the impact of HR factors on the deployment of an environmental management program.

Achieving sustainability will require not only attention to the technical details and scientific enhancement of systems but also the human element. Managers must remember that beyond paperwork, documentation, and procedures; organizational HR conditions may be significant predictors of success or failure in environmental improvement efforts.

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