This is the authors’ final peer reviewed version of the item published as:


Available from Deakin Research Online: http://hdl.handle.net/10536/DRO/DU:30002963

Published version available from publisher’s website: http://dx.doi.org/10.1108/14777830510614330

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A framework for environmental management system adoption and maintenance: an Australian perspective

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Abstract

Purpose – The purpose of this paper is to present a framework for environmental management system (EMS) adoption which can be used by managers to enable them to achieve a faster, smoother, effective and sustainable EMS implementation. This is termed by the authors as “successful” EMS implementation.

Design/methodology/approach – The framework presented is based on an extensive field study conducted in Australia that included a questionnaire survey and in-depth interviews conducted with practitioners, the results of which have been reported in this and other journals.

Findings – The framework presented covers three distinct phases, namely development, certification and maintenance and continuous improvement. Preliminary assessment of this framework by a group of Australian experts that included four senior managers, one academic and one consultant suggests that this framework is a useful tool for implementing an effective EMS.

Practical implications – Each of the three phases of the framework provides a step-by-step approach and a sequential map towards a successful EMS implementation.

Originality/value – The framework has been developed from extensive fieldwork and has been validated by a group of “experts” which comprised of four industry practitioners, one management academic, and one EMS consultant. The framework provides a detailed understanding of the steps involved in the implementation, certification, and maintenance of EMS.

Introduction and literature review

In a previous paper, Zutshi and Sohal (2004a) presented the critical success factors (CSFs) for successful implementation of an environmental management system (EMS). Successful implementation was defined as one being “smoother, faster, effective and sustainable” in nature. The CSFs were developed from the findings of a large research project that involved three phases of fieldwork: preliminary interviews, a questionnaire survey and in-depth
interviews. CSFs were broadly categorized under four main headings of: management leadership and support; learning and training; internal analysis; and sustainability. This paper provides a further contribution to this area of research and presents a framework that can be used by managers in making a variety of decisions relating to EMS development, EMS certification and EMS maintenance and continuous improvement. Owing to abundance of existing literature on EMS, a detailed literature review section has not been included in this paper. Nevertheless, relevant references where applicable have been incorporated.

A number of researchers have suggested and developed pathways that can assist managers in adopting management systems. As in other areas of management, this trend has also started in the EMS. For instance, Pun et al. (2002) present a five stage EMS planning framework in which they highlight the importance of incorporating strategy during the planning process. Santos-Reyes and Lawlor-Wright (2001) discuss ways in which organisations could address their environmental concerns when designing products. In views of Davis (2000), EMS should be implemented in three stages, each with its goals and characteristics. This would allow the organisation and personnel to get accustomed to the changes happening with the EMS implementation. Tinsley (2002), while discussing the main barriers encountered by organisations when adopting EMS, present four different types of models with their respective advantages and drawbacks based on organisational structure and cultures. Switzer and Ehrenfeld (1999) and McManus et al. (1996) discuss the importance of conducting regular audits to implement and maintain an EMS and also overview what the auditors look for especially in an external audit. On a different note, Holdsworth (2000) recommended a model for conducting business ethically, however, this model could also be used by organisations when implementing EMS.


The framework presented in this paper covers three major EMS implementation phases namely, development; certification; and maintenance and continuous improvements. In addition to taking consideration of the CSFs, the framework presented in this paper can further enhance the capacity of an organisation to achieve and maintain a successful EMS implementation.

The remainder of the paper is structured as follows: the next section briefly outlines the research methodology used to complete the project. Next, the EMS framework covering the three phases is discussed. Finally, the conclusion section presents a summary of the preliminary assessment of the framework conducted with six “experts” as well as identifying the need for future research.
Research methodology

Data for this paper was collected over a period of three years as part of a large research project identifying and exploring the role of organisational stakeholders (primarily the employees and suppliers) during the EMS adoption process. Triangulation method, a combination of a questionnaire survey mailed to Australasian organisations (certified with ISO 14001) and interviews (preliminary and in-depth) conducted with managers responsible for various management systems, primarily environmental, quality, and occupational health and safety, was used to collect the data. Refer to Zutshi and Sohal (2004a) for details of the project aims and Zutshi and Sohal (2004b, c, 2003) for key findings of the three stages of the project.

Framework for EMS adoption

Based on the understanding and knowledge gained from the research project and the relevant literature, the framework developed includes the following three phases:

1. EMS development;
2. EMS certification; and
3. EMS Maintenance and continuous improvement.

Before organisations decide to go ahead with any of the phases, it is imperative that there is two-way consultation and communication with all the internal and external stakeholders. Feedback from the top and bottom of the organisation, internal audits and management reviews is required to ensure that any gaps or improvements identified are promptly addressed. Completion of each phase will require adequate resources and top management commitment, as well as adequate training of the appropriate stakeholders. The three phases of EMS adoption are discussed in more details below. Each phase involves completion of a number of steps that are presented diagrammatically and discussed in some detail. The order in which these steps are to be completed is not set in concrete and may change depending on the experience and internal practices of the organisation with respect to adopting management systems.

Phase 1: EMS development

This phase is relevant to those organisations that are either planning to implement an internal EMS for the first time or already have a very basic internal EMS in place and need to develop it further to, for instance, comply with the ISO 14001 standard.

The first step in this phase is the development of an appropriate environmental policy (Figure 1). This should be done with the involvement and contribution of relevant stakeholders. If an organisation already has an environmental policy in place, it is recommended that it is reviewed and revised, as required, keeping in view the changing business environment and pressures and demands of various stakeholders. Depending on the size of the organisation and the resources available, top management may decide to establish a steering group/committee whose primary responsibility would be to prepare the organisation/respective departments for effective adoption of EMS/ISO 14001, including the formulation and development of the environmental policy. Once the environmental policy
has been finalised, it then needs to be communicated to all the internal and external stakeholders using appropriate means of communication that may include newsletters, internet, intranet, annual reports, and personalised communication.

The next step is to identify various activities being undertaken within the scope of the EMS and the aspects and impacts from these activities. Both positive and negative impacts should be identified and widely discussed, involving as many of the stakeholders as possible. This involvement of the stakeholders, especially the employees, in this step will serve two main purposes. Firstly, it will increase the awareness and understanding of the EMS within the employees and secondly, due to the knowledge of the system, will reduce their resistance towards the changes required as part of the EMS adoption.

Once the company’s aspects and impacts have been identified, the next step is to prioritise the aspects and impacts in order to identify the most significant ones. For instance, organisations can classify aspects and impacts based on the frequency of occurrence of the impacts and/or the severity of occurrence. Any impact leading to severe injury, possible death or having legal impact should be classified as significant. To avoid duplication and easier interpretation and understanding of the impacts, organisations may decide to use their existing impact and severity scales in quality or occupational health and safety area, for EMS too.

The next step is to set appropriate objectives and targets, which the company wishes to achieve as part of the EMS implementation and also to improve its overall performance. Caution should be taken that these objectives are realistic and achievable keeping in mind the pressures of time and resources. In addition to the steering group/committee, it is also important to consult with the employees and suppliers when these objectives are being set as they can provide valuable input concerning the details of the company’s procedures and operations. The finalised objectives and targets should then be widely communicated across the organisation.

Many organisations may, as the next step, be required to conduct general awareness and skills training for their employees in the new procedures and system, which will be implemented as part of the EMS adoption. Needless to say the content, duration and frequency of this training should be based on a detailed analysis of the needs of various employee groups. The training will not only increase the understanding and knowledge of the system, moreover, will also enhance the implementation process as employees will be better able to acknowledge and accept the changes taking place across the organisation and the reasons behind the changes.

Organisations may also need to conduct training for their external stakeholders, primarily their suppliers. This training will serve a number of purposes. Firstly, the training will communicate the intentions of the company to implement an EMS. Secondly, it will increase the awareness and understanding within the suppliers of the significance of the EMS, especially for those suppliers who are not in a position to do this themselves. Thirdly, the training will also enhance the involvement of the suppliers within their organisation’ EMS adoption process, further strengthening the relationship between the two parties.
Once the training has been conducted for all the employees and external stakeholders, including the suppliers and the new procedures and systems have been implemented, it is essential that as the next stage, internal audits be regularly conducted. These internal audits will serve a number of purposes for the organisation including:

- assist in the identification of gaps and/or weaknesses in the new procedures and system;
- keep track of the improvements made by the company towards achieving of their objectives and targets; and
- satisfy requirements towards adoption of a formal standard.

If the results obtained from the internal audits are not satisfactory, organisations then need to review, and as required, revise their new procedures and systems. It is also possible that due to lack of knowledge or resources available internally and/or training of its employees, the results of the audits are not positive. In such instances, organisations should seek external assistance and also conduct further training, whilst simultaneously motivating its employees to make further improvements. On the other hand, if the results of the internal audits are satisfactory, these results should then be communicated widely to ensure that all internal and external stakeholders are aware of the results of their efforts.

Only when the internal audit results are consistently affirmative and the set objectives and targets have been achieved should the organisation go for third-party certification to a formal standard such as ISO 14001. Certification and maintenance of the formal system will also require communication, involvement and commitment from top management and the stakeholders. This step is discussed in more details below as part of phase 2 of the framework.

**Phase 2: EMS certification**

Many organisations are under considerable pressure to obtain third-party certification for their internal EMS. In situations where this is not required, organisations should continually review and revise their objectives and targets and make the necessary improvements to the internal EMS. Training, communication and consultation with all stakeholders should continue to be a major role for management. On the other hand, if the organisation decides to obtain certification to a formal standard, such as ISO 14001, the steps to followed are shown in Figure 2 and discussed in more details below.

A key requirement to obtaining certification to ISO 14001 is for managers to gain comprehensive information and understanding of the ISO requirements and the various elements of the standard. Many managers fail to do this, which results in the subsequent stages being implemented poorly. Only when management have understood the elements of the standard and recognized the significance of certification for the organisation should a decision be made to proceed. Another important decision to be taken is whether specific areas/business units or the whole organisation would be certified. The drivers, benefits and the process involved in obtaining certification should then be evaluated and the final decision communicated across the organisation. Two-way communication is necessary to
increase awareness amongst all stakeholders, reduce potential resistance and receive feedback on various aspects of the certification process.

The next step is to conduct an initial environmental review (IER) and/or gap analysis against the standard requirements and elements. This will identify the areas where the organisation needs to make improvements, in other words, fill the gaps to address the ISO 14001 standard’s requirements. At this point manages should make the effort to learn from the experience of other organisations that have successfully gone through a similar process. This exercise will assist in benchmarking their own processes and procedures. Furthermore, this analysis will also highlight to the management whether or not they have adequate resources to implement, certify and maintain a formal system/standard.

The next step is the identification of the potential need for seeking external assistance to complete implementation of the EMS/ISO 14001 standard and obtain certification. Appointment of an external consultant, however, should be carefully discussed across the organisation. The need to develop and maintain internal expertise is crucial and the problems and issues relating to using external consultants needs to be discussed openly. It is likely that the objectives and targets established earlier may require revision following feedback received from the consultant’s study of the company documentation and site-visit. Alternatively, the organisation can proceed towards the aim of certifying its internal EMS without any external assistance. In this case additional training may be necessary so that employees are better able to address the issues identified in the IER and the original objectives and targets.

Whichever approach is taken towards obtaining formal certification, as the next step, it is imperative that any changes being made in the procedures and system are properly documented and regular audits are undertaken. Documentation of all the steps and objectives and targets will serve two main purposes. Firstly, it will act as a tracking method to determine the extent of progress made towards the achievement of the set objectives and targets and secondly, it will also satisfy the elements of the ISO 14001 standard implementation. Internal audits, without saying, need to be conducted regularly, whether or not the organisation is moving towards the certification stage.

When management is satisfied that all the standard requirements have been met and that they are ready for certification, they then, need to proceed and contact a registrar and conduct the pre-audit/assessment. The gaps identified during this assessment should be addressed by the organisation before it proceeds towards a full external audit which will decide whether or not its internal EMS fulfils the ISO 14001 standard requirements and can be certified. Once all the requirements have been fulfilled and the external audit has been completed, the organisation is then granted the certificate for a period of three years, following which a re-certification audit will be conducted if the organisation wishes to maintain its certificate. The day the certificate is granted, the organisation then has the added responsibility of maintaining (Figure 3) its certification by making and demonstrating continuous improvements within its operations and procedures and by conducting regular internal, surveillance and external audits.
**Phase 3: EMS maintenance and continuous improvement**

Simply obtaining certification is not sufficient. The real challenge for many organisations is to make continuous improvements and maintain the certification over a long period of time. Maintaining certification (Figure 3) requires conducting regular internal audits and the two mandatory surveillance audits annually as a minimal. Setting new, more stringent objectives and targets to make improvements within the systems is also necessary. Continuous improvements in all aspects of the standard may also require regular re-training of the employees. It is essential that resources required to maintain the certification are appropriately budgeted, including the costs associated with training.

Another major decision for top management at this point is whether or not to integrate all their existing management systems such as the quality management systems (QMS), the occupational health and safety systems (OHS) and the EMS into a single integrated system. A number of benefits have been identified both within the literature and during the third phase of the research project (in-depth interviews) of integrating the management systems, the most prominent and significant being saving of valuable organisational resources (Zutshi and Sohal, 2005).

As the need is identified by the organisation to integrate its management systems, this should be communicated to employees and other stakeholders effected by this decision and feedback received accordingly. Once again, adequate resources including the top management’s commitment, time and dollars will be required if this integration is to be achieved successfully. The various people involved in the integration of the system, such as departmental representatives, need to meet regularly to discuss the individual systems in details and the extent of integration possible and practicable between the different systems and the potential challenges associated with the integration process.

Once the potential challenges have been identified and the solutions are in place, the next step is to educate and train the users in the integrated system, both to increase their awareness and understanding in the integrated system and also to reduce the possible resistance. Once the systems are integrated into one, internal audits covering all the systems are required to be conducted by the organisation to track progress and make changes as required. Documentation also needs to be integrated and updated regularly. As with the integration of various elements of the management systems, where possible, organisations should also attempt to integrate its external audits to save both time and resources, whilst making the process more comprehensive.

**Conclusion**

A framework for EMS adoption involving three phases (EMS development; EMS certification; and EMS maintenance and continuous improvement) is presented in this paper. It is based on extensive fieldwork conducted in Australia that involved a questionnaire survey and interviews with practitioners. The utilization of the framework, along with the CSFs (Zutshi and Sohal, 2004a), can assist managers in a number of ways, thus enhancing the EMS implementation process by making it faster, smoother, effective and sustainable.
Validation of the framework

Owing to time limitations it was not possible to implement the framework developed in this paper in an organisation. However, the authors contacted four senior practitioners; one environmental industry consultant and one management academic inviting them to comment on the practicability, adaptability, and usefulness of the framework for industry. All six individuals provided written feedback that is presented here.

Overall, the opinion of the six “experts“ was that the framework was of value to managers in assisting them to implement EMS. The academic expert said that the framework would be of benefit to practitioners “who are searching for a detailed step-by-step approach … and the framework is a detailed and sequential map of how to be successful” in EMS implementation. Commenting of the framework, one of the practitioners noted that “I have watched/assisted/developed EMS for over 10 years and what is described in the paper is a general approach taken in many cases”. He further noted that “the paper describes the framework with which a manager could consider the implications and resources required to develop an EMS”. The second practitioner indicted that the use of charts to illustrate the various steps involved in implementation are useful and can be used by an environmental officer to explain to others the benefits of the approach suggested in the framework.

On reviewing the framework, the third practitioner commented that although he agreed that strong stakeholder engagement particularly at the management level will lead to a more effective EMS, his suggestion was to “just do it” which was the approach significantly present in his organization and their suppliers. He further viewed that “perhaps less engagement at senior level and more doing at the working level is involved”. The authors agree to this to some extent, however, from their perspective it is absolutely essential that senior management is involved all stages of adopting an EMS within their respective organizations. The fourth practitioner agreed with the activities presented under each of the three stages of the framework but suggested using different “labels” for these stages highlighting that some activities could overlap between stages one and two.

Finally, the consultant agreed that the framework “highlights the importance of several factors that are essential to a successful EMS implementation – management commitment, consultation with staff, a mutually agreed environmental policy, training, audit, and review”. However, he pointed out that “no matter how much management commitment an EMS has, it will be ineffective if the structure (i.e. system procedures, work instructions, registers, schedules, etc.) is not well designed and well written. This, in my experience, is why most EMSs fail (and much of our consulting work is replacing ineffective EMSs that are unusable for exactly this reason). Designing good documentation is a specialized job and few consultants do it well, let alone company environmental officers who usually have no training in this area. The implementation strategy is equally critical, and this likewise is done poorly in most organizations (at great cost in time too)”. The consultant also made a number of other suggestions including the following:

- attention to the legal obligations of the business within the framework;
- the need for more comprehensive understanding of the ISO 14001 by environmental specialists; and
considering integration of different systems as early as possible in the planning process.

We believe that the feedback we have received from the experts provides sufficient justification for the framework presented in this paper as a tool that can be used by managers and environmental specialists in the implementation of EMS in their organization. The authors recommend that the framework need to be further validated and tested in actual EMS implementation.

It needs to be re-emphasised that communication between all stakeholders is essential for EMS to be implemented and maintained over a period of time. The framework presented will obviously need to be adapted by organizations depending on its culture, nature of business and extent of internal EMS maturity.
Figure 1: Phase 1 – EMS development
**Figure 2** Phase 2 – EMS maintenance and certification

Need to Certify Internal EMS?

- **No**
  - Make continuous improvements in the existing system
- **Yes**
  - Gain detailed understanding of the ISO 14001/industry requirements
  - Identify areas to be certified
  - Conduct comprehensive IER/gap analysis against standard requirements
  - Have resources internally to address identified gaps?
    - **No**
      - Contact external consultants for assistance and make changes as required
    - **Yes**
      - Fill gaps from available resources and conduct additional training as required
      - Conduct internal audits to ensure gaps being addressed and progress on track
      - Contact external agency for certification, if not already done so
      - Conduct pre-audit/assessment
        - Pre-audit results satisfactory?
          - **No**
            - Make necessary improvements as required to satisfy standard requirements
          - **Yes**
            - Undergo external audit
              - Granted Certification. Comply with requirements to Maintain the certification. Go to Phase 3
Figure 3 Phase 3 – EMS continuous improvement

References


**Further Reading**

