



# How organisational culture impacts on the implementation of ISO 14001:1996 – a UK multiple-case view

ISO 14001:1996

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## Abstract

**Purpose** – To investigate the influence of organisational culture on the implementation of ISO 14001:1996 environmental management system (EMS) standard in two manufacturing case study organisations (CSOs).

**Design/methodology/approach** – This research is a case study action research conducted in two manufacturing organisations in the UK.

**Findings** – The hassles authors identified a framework of four dimensions of organisational culture that play an important role during the ISO 14001:1996 implementation process of. These are recognised as people, process, structure and environment.

**Research limitation/implications** – The study is limited to two case organisations, which are based in the UK.

**Practical implications** – The four dimensions of organisational culture identified through this research can help practitioners to coordinate their ISO 14000:1996 implementation projects.

**Originality/value** – This paper fulfils the need to improve the understanding of the impact of the organisational culture on ISO 14001:1996 implementation projects within the manufacturing environment.

**Keywords** Quality standards, Organizational culture, Environmental management, Qualitative research, United Kingdom

**Paper type** Case study

## Introduction

ISO 14001:1996 and its implementation have been a topic of numerous academic debates and a challenge to an ever increasing number of organisations striving to successfully implement this standard. However, the term “successfully” is often (miss)interpreted as the conformity to the standard, as reported by ISO/TC 176 (Wade, 2002). Further to this, Boys *et al.* (2004) strongly argue that for the successful transition from a compliance with standard requirements towards business excellence, the understanding of sectors’ specifics is necessary.



Manufacturing sector represents a high value-added sector of British economy (EEF, 2001) even though the number of enterprises is decreasing in the UK. Despite its high-value to the economy, the manufacturing sector also brings concerns due to substantial environmental impact cause by the production. Hence, an increasing number of companies were involved in several environmental projects, such as ISO 14000:1996. In 2003, there were 5,460 of companies certified to ISO 14000:1996 in the UK; in Europe it was 31,997 (ISO, 2003).

Many authors also point out that it is organisational culture that plays the crucial role in the transition beyond the conformity paradigm of ISO 14001 requirements (Daily and Huang, 2001; Strachan, 1997; Raines, 2002). Similarly, Elkington (1997) argues that the emphasis is on changing the engineering within manufacturing but not the attitudes of people who produce the products. These arguments are also supported by empirical evidence, for instance the study conducted by Babakri *et al.* (2003) reports the key obstacles, which are predominantly related to human factors. Even though many authors argue that organisations should strive to change the organisational culture as a result of ISO 14001 implementation there is little research on “how the present organisational culture influences the ISO 14001 implementation process”, which is the aim and the research question posed by the authors of this paper. This research is conducted in two manufacturing case study organisations (CSOs) based in the UK.

### **ISO 14001:1996 implementation process**

There is a vast array of literature on the ISO 14001:1996 implementation process. Despite some differences in that literature, ISO 14001 implementation authors on the topic such as Cascio (1998), Jackson (1997) and Gilbert and Gould (1998) agree that the overall implementation process consists of the following steps:

- *Define scope of aspect analysis.* Create boundaries of all organisational activities, ideally formed from process-flow diagrams, without neglecting energy usage, transport and storage.
- *Define process of evaluation.* How the aspects and significant impacts are going to be evaluated, what methodology and tools are to be used in order to determine the significance of organisational activities, how this process is to be documented and measured and clarify its link to environmental policy and the entire environmental management system (EMS).
- *Gather data.* Alongside aspects evaluation collect data of the elementary activities within a process in order to obtain a benchmark covering information such as energy usage, cost, amount of raw materials, waste, production, etc.
- *Develop cross-functional team.* Formed from individuals representing different departments within the organisation in order to bring other perspectives, views, information and last but not least to put this burden only onto the environmental department.
- *Identify aspects.* Conduct a simple input-output analysis for each element of the business activities which will create a list of environmental inputs and outputs represented by energy usage, raw materials usage, amount of packaging, etc. and as the outputs produced, by-product, waste, and energy, both intended and unintended products. Aspect identification should consider both normal and

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abnormal operating condition as well as emergency situation which are a good start to fulfil requirements of clause 4.4.7. (Emergency preparedness and response). This results in the creation/maintenance of operational control through written operational instructions, procedures or setting up a preventive maintenance programme.

- *Identify impacts.* Based on a previously identified list of organisational aspects a list of organisational impacts can be developed. For example, if an identified aspect is water consumption, then based on the nature of a process, the impact can be identified as water pollution with effluent entering sewage system, or even land contamination in case of process failure.
- *Evaluate impacts.* The process of impact evaluation is to be directed by methodology and evaluating tools that an organisation develops for itself. This methodology should not omit legal requirements that apply to organisational activities and processes. Results derived from impact evaluation will form an environmental management programme (EMP). EMP represents a plan addressing impacts through objective and targets consistent to environmental policy. An organisation needs to prioritise these impacts and address the “leftover” later on as a subject for continuous improvement. In order to reach identified objectives and targets, EMP has to clearly establish responsibilities for task delivery, estimate timing and provide a method that checks the progress against its completion. The impact evaluation will also disclose needs for training, awareness and competency in identified activities in order to obtain workforce competency to perform safely in EMS. For the wide acceptance of this system, the whole process needs to be communicated and backed up by effective methods of documentation.
- *Record results.* According to Jackson (1997) most businesses develop worksheets throughout the evaluation in order to both guide the process and record results.
- *Monitor and measure.* Based on the result of the impact evaluation, an organisation should determine what organisational activities should be carried out how they should be monitored and measured in order to gain control over them.
- *Periodically review and update.* The results of monitoring and measurement of the organisational activities shall be periodically evaluated and analysed through means such as EMS audits and new action striving for corrective and preventive actions should be identified as the outcome of this analysis.

Although this process may be generic in nature, problems arise whilst organisations have to apply the standard’s requirements to their specific conditions. The application varies due to numerous factors; from industry sectors to specific organisational cultures.

### **Organisational culture**

Numerous authors in the organisational management field have tried to determine how an organisational culture can be identified in order to serve as an element of observation (Peters and Waterman, 1982; Ouchi, 1981). An organisational culture is understood as a characteristic of the day-to-day environment as seen and felt by those

who work there (Wallace *et al.*, 1999; Choueke and Armstrong, 2000). The models of most referred organisational culture, are those by Hofstede (1980) and Schein (1997) that describe culture as a distinct set of levels: core values, norms, beliefs and values, behaviours and artefacts.

Wallace *et al.* (1999) furthermore assert that all organisations have more than one culture: formal culture (idealised statements what beliefs and behaviour should be; typically manifested through mission/vision statements, policies, procedures and rules) and informal culture (actual beliefs and behaviours) and that informal character or culture is the key to understanding organisations. Furthermore, Beer (1980) and Sadri and Lees (2001) emphasise the influence the external environment has on organisational culture. External environment influences an organisation directly (legislation, government regulations) and indirectly (expectations and values of employees). On top of that, the dynamics of the market dictates the pace of change in organisations and the frequency of the need for change influences organisational culture; organisations in fast changing environments have typically more loose structures whilst the organisations in slow changing environments have more bureaucratic structures. Beer (1980) concludes that; “successful organisations can be separated from unsuccessful ones by appropriateness of their structural form and management process to their environment.”

Organisational culture can also be looked at as a system (Beer, 1980; Johnson *et al.*, 1963). This system receives inputs such as customer orders, materials, equipment, and information and those are transformed into outputs such as products, services, waste, or information, which are returned to the environment. The process is based on organisational assumptions, values and norms. An organisational system has been defined by Bamber (2003) as a set of interrelated and interacting processes that drive the behaviour of individuals, teams and groups in an organisation toward a goal or set of objectives.

The concept of culture is particularly important when attempting to manage organisation-wide change (Senge, 1990; Clarke, 1994). Practitioners are coming to realise that, despite the best-laid plans, organisational change must include not only changing structures and processes, but also changing the organisational culture as well (Robbins and Smith, 2000; Castka *et al.*, 2003). This is also the case of ISO 14001:1996 implementation of the standard requirements, which demands a cross-functional teamwork, commitment, active participation and all these factors are inevitably influenced by current organisational culture. The authors further investigate what aspects of organisational culture are influential for the ISO 14001:1996.

### **Research process and methodology**

This research is an ethnographic research that derives its theoretical and practical insights from naturally occurring data and employs practitioner-led qualitative research approaches. The authors have actively participated on ISO 14001:1996 implementation and investigated the impact of organisational culture within two CSOs.

This type of research is typically referred to as action research. Action research is an approach that is based on a collaborative problem-solving relationship between researcher and client, which aims at both solving the problem and creating the

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knowledge (Coghlan and Brannick, 2001; Huxham, 2003; Bryman, 1989; Gummesson, 2000). The action research involves iterative cycles of identifying a problem, planning, acting and evaluating (Lewin, 1973). Coghlan and Brannick (2001) furthermore assert that apart from the cycle of identifying a problem, planning, acting and evaluating, there is yet another cycle operating in parallel: a reflection cycle, which is; “an action research cycle about the action research cycle” – metalearning. Coghlan and Brannick (2001) refer to Mezirow (1991) who identifies three forms of reflection:

- (1) content reflection: where you think about the issues, what is happening;
- (2) process reflection: where you think about strategies, procedures and how things are being done; and
- (3) premise reflection: where you critique underlying assumptions and perceptions.

Data has been collected using various methods: participant observation, unstructured interviewing and archival sources of data (Bryman, 1989). The researchers did not aim to use any prescribed cultural framework (for instance, cultural framework by Hofstede (1980) or Schein (1997) as discussed in the previous section of the paper) for data collection. The rationale behind this approach is that any prescribed framework could limit the naturally occurring patterns and some of them might have been overlooked. The data has been regularly documented and coded from field note observations and interviews. Consequently, those notes were discussed and analysed by researchers using knowledge elicitation techniques (Firlej and Hellens, 1991). Techniques for data analysis were used during the research process; i.e. putting information to different arrays; tabulating frequency of different events, putting information in chronological order (Miles and Huberman, 1984).

The qualitative approach is often criticised for the lack of academic rigour. This is because of the qualitative nature of data, which are based on perceptions, and subjective interpretations of the researcher. The authors recognised this fact and designed the research in order to meet the aspects of the quality of research in terms of validity and reliability as advocated by Bryman (1989), Yin (1989) and De Poy and Gitlin (1998). Therefore, multiple sources of evidence (independent observer, participants) were used for evaluation of the findings and interpretations (to assure construct validity). Similarly, data analysis employed methods as already described, which support internal validity. The external validity of the study is ensured by a multiple case study approach and comparison of findings from multiple case studies. Reliability of the study is assured by the recording of the data. In addition, the case study reports and discussions presented in this paper have each been accepted by a senior member of the CSO's management team, thus providing validity to the case study analysis presented.

### **Case study organisation A**

The CSO A is based in the North West of England, UK and manufactures brass and steel fabricated components of high retail value. The company employs approximately 200 employees working on the manufacturing site, which have been selected for this research. The company serves its clients not only within the UK but also over at the European Union and USA markets. CSO A is in many ways a traditional manufacturing organisation, whose organisational structure can be described as hierarchical, with manufacturing manager, manager, cell leader and operator in

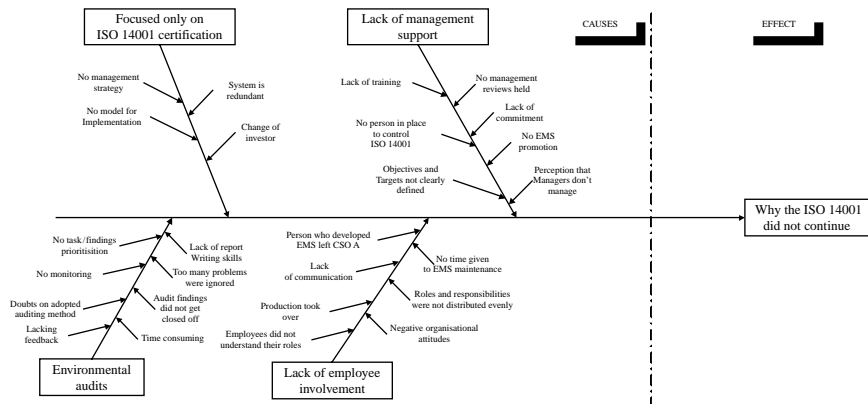
operation. There has been a reduction in profit margin over the last three years which has led to significant redundancy of operators on the shop floor. The organisation poses a great deal of potential, knowledge and know-how. The majority of the workforce has been engaged with the company for ten years (on average).

Owing to changing market margins and recent downsizing, the organisation has been forced to rethink the way that they had been operating so far. Their “end in mind” was to adapt the principles of world class manufacturing (WCM) and build on highly skilled work force. The major barrier, clearly, was the value system that was created in the company over the past three decades. The WCM project, facilitated by external consultants, aimed to improve the process-flow structure, quality of the processes and the organisational culture. Twenty months ago five major programmes were presented to the workforce and five small in-house project teams were created. One part of the WCM programme was the ISO 14001:1996 rejuvenation and re-implementation. The ISO 14001:1996 project was taken on board due to the new investor’s decision. The company had previously successfully passed the certification for ISO 14001:1996 standard, but lost it due to insufficient maintenance and a lack of commitment.

Before the whole process “re-started” again, all of the participants from the previous project team gathered together in order to formulate the rejuvenation plan and learn from previous failure. The participants tried to identify why the former system failed and carried out a cause-effect analysis on this topic. The results are shown in Figure 1 that depicts the main identified barriers that needed to be addressed in order to successfully rejuvenate and re-implement a EMS in line with ISO 14001:1996.

The four areas in Figure 1 represent common failures to maintain EMS in CSO A:

- (1) Predominant focus on ISO 14001:1996 certification: there was a strong focus at ISO 14001:1996 certification rather than its ongoing improvement and system maintenance. Simply, CSO A had no strategy in place for further EMS maintenance. Moreover, a change of the investor caused that other organisational issues than EMS maintenance became a priority for the CSO A. Thus, the EMS was perceived as a burden to the business, became redundant and ceased away.



**Figure 1.**  
The cause and effect analysis – failure to maintain the EMS in CSO A

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- (2) Lack of management support: it became apparent that there was no person appointed to manage, improve and maintain the ISO 14001:1996 on site. Further to this, objectives and targets of the EMS project were not clear and did not promise any tangible outcomes, regular management reviews were not held and there was no promotion of the EMS at CSO A. In addition, there was identified a serious need for environmental training, which had not been carried out for financial constrains. This, in turn, created perception amongst the environmental team (ET) that managers put a low priority to tasks related to ISO 14001:1996 on site.
  - (3) Inefficient environmental audit system: the audit reports demonstrated that internal auditors had significant problems with audit skills. Audit reports were poorly presented and were not based on facts that would objectively inform about the EMS's performance. Consequently, findings from internal audits highlighted insignificant issues, which generated unmanageable number of (often insignificant) tasks to address. Therefore, the audit system did not provide relevant feedback about the entire EMS and became a time consuming activity, which did not add any value to the business.
  - (4) Lack of employee involvement: initially, the ISO 14001:1996 implementation was led by an external who created CSO A's EMS and left afterwards. The EMS's responsibilities were not distributed across the company evenly; in fact only one person with no environmental expertise was appointed to maintain the EMS and left as well. Owing to the insufficient communication and without any knowledge transfer across the company, the ET did not understand their roles within the EMS. Furthermore, due to a low priority given to EMS, there was insufficient time allowed to maintain the system.

This has lead to many frustrations and political games, particularly with labour union, that seems to represent their own value system rather than a value based on shared vision. This in turn led to negative attitudes of workforce and managers as well. Furthermore, detailed job descriptions that do not allow flexibility on site created strong departmental and functional barriers and a lack of a process based management way of operation.

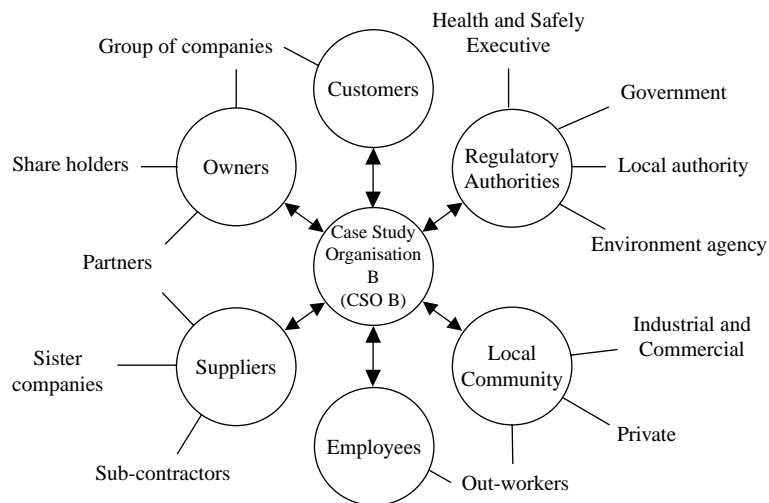
For the rejuvenation purposes, the team followed, a detailed plan that clearly promoted the project's mission, objectives and tasks including deadlines and individual responsibilities. Project information and progress was disclosed on a board accessible to anybody providing information on the state of the project. The team gathered weekly to create, develop and maintain the EMS. Each meeting (workshop) has been carefully documented in the observation notes to monitor progress and individuals' involvement. After 10 months of the implementation, the company obtained ISO 14001:1996 certification. Nevertheless, even though the company has achieved certification again, there are clear signs that the role of the "old" culture still plays an important part in the EMS maintenance. There are still problems to close the gap between present ("old") and desired culture. Yet this time, this cultural change is seen as vitally important and is a part of the WCM project. Hence, a relevant attention is given to "organisation-wide" cultural change, not only to EMS separately. This strategy seems to be working at the moment.

### Case study organisation B

The CSO B is also based in the North West of England, UK and retails and manufactures components related to cable management and fixing products. The company employs less than 200 employees working on the site, which have been selected for this research. The company is a part of a Pan-European group of companies, owned by a Swedish parent company, while the ultimate holding company is Finnish. CSO B, unlike CSO A, has embraced many aspects of continual improvement and project work and operated profitably in the UK. Various improvement initiatives and changes in operating methods have left their mark on the company, to such an extent that change is seen as way of working life by the employees. A quality management system and now a fully integrated EMS are both certified to ISO. Unlike CSO A this CSO has operated an EMS certified to ISO 14001 since 1998 and prior to that operated a quality system certified to ISO 9002: 1994 version since the mid 1980s. Hence, the operation of a certified system is well embedded in the day-to-day running of the organisation and documentation is well established providing evidence of a very mature management system practice.

There were many reasons why an EMS was embraced at CSO B, however, the senior management team have considered that the main reason(s) was (were) the pressure associated with the many stakeholders of the business, (see Figure 2 and also Bamber *et al.*, 2000). Not least was the need for compliance to environmental legislation on certain production processes within the factory, although the company owners were keen to see financial benefit from the introduction of any initiative, never mind an environmental initiative such as introducing ISO 14001: 1996. Furthermore, the CSO B mission statement made a commitment to continuous improvement and re-organization with a focus on reducing operational costs. Consequently, third party certification to ISO 14001 was seen as a way to support the corporate mission statement and provide the framework for the EMS.

For the CSO B management team, valuable lessons had been learned from the way the ISO 9002 quality system was imposed and consequently how, in the early days of



**Figure 2.** Stakeholder pressures for CSO B (adopted from Bamber *et al.*, 2000)

implementation, became a burden on the company. Similarly, lessons had been learned from other improvement programmes where managers gained positive experience incorporating change through successful goal oriented team involvement. The example of the quality system being imposed and not integrated demonstrates that lack of integration with other related systems leads to failure and that people object to change being imposed on them. Additionally, the success of various change programmes at CSO B has shown that communication, involvement and integration of sub-systems with new systems of operation reduces the chance of failure. From these and similar experiences the CSO B management team concluded that for the successful implementation of ISO14001 certain factors had to be taken into consideration:

- the system must be fully integrated to existing processes and practice and other developing initiatives;
- the implementation must be supported through the involvement of all employees who will be affected by the changes; and
- communication of progress and goals is a key initiative. A steering group uses set up to coordinate activities.

### **Discussion and findings**

The previous section of this paper described the contextual background of both CSO including specific market position, size and cultural background. During the fieldwork, the authors (researchers) collected data to assess the organisational culture employed at CSOs. The authors were rather focused on capturing “everything” and tried to cluster this information afterwards through knowledge elicitation techniques. The aim was to derive a simple framework that would be a generic description of what aspects of organisational culture are important to consider before and during ISO 14001:1996.

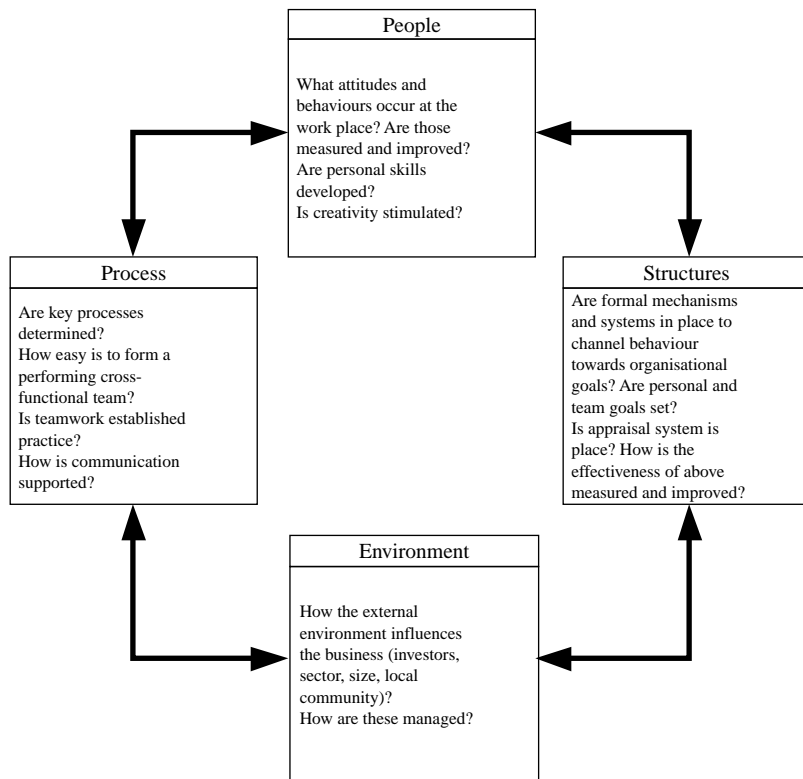
Based on the data collected through the action research at two CSOs, it was found that the data naturally cluster in four major factors related to people, processes, organisational structures and external environment. After some additional literature review, the authors found a similar cultural framework proposed by Beer (1980). Beer (1980) argues that four components determine organisational culture:

- (1) *People*. Abilities, needs, values, and expectations of employees.
- (2) *Process*. The behaviours, attitudes, and interactions that occur within the organisation at the individual, group, and intergroup level.
- (3) *Structures*. The formal mechanisms and systems of the organisation that are designed to channel behaviour toward organisational goals and fulfil member needs (examples of these include job description, job evaluation system, organisation structure; policies; selection systems; control systems; and reward systems);
- (4) *Environment*. The external conditions with which the organisation must deal including its market, customers, technology, stockholders, government regulations, and the social culture and values in which it operates.

The critical part of this simple framework is the requirement of “congruency”. The CSOs under focus of this study demonstrated that finding the balance between four dimensions is critical. The issue is not necessarily whether the organisations have shown high maturity in all dimensions, it is rather whether the organisation is able to

identify the weaknesses and address them significantly. Moreover, organisations have to plan the transition from the old value system to a new set of values (in the case of ISO 14001:1996, value based on standard requirements and implications). The authors of this paper argue that, if organisations try to implement ISO 14001:1996 into their “desired” culture or existing paradigm, the implementation is likely to fail and a part of any change project is the fact that organisations have to manage the process of organisational change, as Lyon (2003) and Thornbury (2003) assert. Figure 3 shows this discussion and presents the findings of this study, which provide a new framework for the assessment of the influence of organisational culture on ISO 14001:1996 implementation. The authors propose that this framework describes the generic cultural influence impacting on an ISO 14001:1996 implementation effort.

Finally, Table I shows some examples observed at CSOs. This tabular method provides a comparison of findings from each case study by using the framework from Figure 3 as a method of categorising those findings into components. Table I immediately shows the reader that there are many differing reasons why implementation efforts of ISO 14001 may or may not fail. In addition to that, Table I also shows, or identifies weaknesses or opportunities for each of the case studies to take note of, and consequent by manage, those areas through some form of interaction and conscious effort to influence successful implementation.



**Figure 3.**  
The framework for the assessment of the influence of organisational culture on ISO 14001:1996 implementation

Four components of organisational culture (Beer, 1980)	Description of components	Case study organisation A	Case study organisation B
People	Attitudes, needs, values and expectations	Technically highly skilled staff; limited people skills; low environmental awareness; poor housekeeping	Customer focused staff, quality awareness high; team work present; continuous improvement culture evident
Process	Behaviours, attitudes and interactions that occur within the organisation at the individual, group and inter-group level	Limited team work; poor cooperation between cross-functional teams; process bottle-necks in between departments (silo effect); hindered communication	Team work present focused on cost reduction and customer values; value engineering evident, cross-functional team work in place; systems integration seen as important
Structures	The formal mechanisms and systems of the organisation that are designed to channel behaviour toward organisational goals and fulfil member needs (examples of these include job description, job evaluation system, organisation structure, policies, selection systems, control systems; and reward systems)	Detailed job description limiting flexibility; hierarchical organisational structure; weak control system; strong functional orientation; strong power of labour union	Strong influence from the group; project lead operation; ISO 9001: 1994 procedure based quality system in place and effective; willingness to change the status quo through defined projects; day-to-day focus is on hitting customer scheduled requirements; project communication well established
Environment	The external conditions with which the organisation must deal including its market, customers, technology, stockholders, government regulations, and the social culture and values in which it operates	Strong influence of the investor; strong regulatory requirements to comply with	Customer driven organisation; group led initiatives highly visible; local authority concerns on environmental impact of operations

**Table I.**  
Comparison of findings  
from two case studies

### **Managerial implications**

This research has determined four dimensions of organisational culture that play a vital role in ISO 14001:1996 implementation and maintenance. Managers are advised to:

- identify present organisational culture using people, process, structures and environment for this assessment (Figure 3);
- prioritise the key areas and conduct force-field analysis in order to anticipate the strengths and weaknesses of organisational culture on implementation;
- plan the transition towards “desired” culture;
- align the ISO 14001:1996 programme with the prevailing organisational culture; and
- build the EMS around the environmental aspect/impact assessment as described in the section on ISO 14001:1996 implementation.

Furthermore, the previous research of the authors (Balzarova *et al.*, 2003) suggests that in order to secure the workforce and leading managers’ acceptance, the following stipulated enablers are suggested to be considered for effective ISO 14001:1996 implementation:

- Form a team from proactive environmentalists, individuals with positive attitudes towards environmental issues who can accept establishing of an EMS as a new value-added mission to their job-description.
- Adopt the general understanding of ISO 14001:1996 covering three different levels: a thorough clear understanding should be obtained by the ET, general understanding by managers and a basic appreciation of environmental needs by the entire organisation. The last one should be achieved, in part, by the training requirements outlined within the standards.
- Support recognition of the ISO 14001:1996 relevance to the overall organisational prosperity; the EMS importance can be communicated with different messages to different departments. For example, EMS terminology can be converted into figures and financial benefits to the purchasing department, effective use of resources to the operational management, marketing strategy to sales without “upsetting” someone with the word environment or confusing anyone unfamiliar with “ISO 14001:1996”.
- Development of organisational culture that is open to change and able to manage change and, therefore, used to change.
- Support teamwork and initiative taking in order to foster widespread people “buy in” and foster communication channels, both formal and informal.
- Continuously communicate the EMS progress to the employees through bulletins, visual management, newsletters and team briefings.

### **Conclusions and further research recommendations**

The dimensions developed from the action research may be artefacts of the period and context in which the research was conducted. It is generally recognized that the case study action research process lacks external validity (Yin, 1989; Bryman, 1989; Robson, 1994). Therefore, the authors recommend that further research should be carried out as

an empirical study to confirm the generalisability of the study. The output of this research cannot be considered as generalisable and the intention is, as Yin (1989) puts it, to provide a theoretical vehicle for the examination of other cases. Nevertheless, the research has resulted in providing a framework (Figure 3 and Table I) and a proposed methodology for organisations, in particular top management teams, to assess their implementation needs while taking into consideration cultural aspects and needs of the organisational system.

There are many areas surrounding ISO 14001:1996 implementation that the authors wish to recommend for academic researchers. Firstly, there is a strong call from industry to look at ISO 14001:1996 as an integral part of the business system. Studies conducted by Karapetrovic and Willborn (1998), Bamber *et al.* (2000), Pun *et al.* (1999) and Wilkinson and Dale (1999) demonstrate how this can be achieved nevertheless more research is needed to investigate the role of ISO 14001:1996 and organisational culture as a part of integrated management systems. Secondly, the authors also recommend that further study should be carried out to understand if ISO 14001:1996 has got an impact on change in individual's environmental attitudes and behaviour. Finally, the Corporate Social Responsibility agenda (DTI, 2002; Castka *et al.*, 2004) and triple bottom line (Elkington, 1997) are both based on economic, social and environmental aspects of organisational performance. Further research needs to be done in order to investigate how ISO 14001:1996 can contribute towards environmental bottom line of these agendas.

## References

- Babakri, K.A., Bennett, R.A. and Franchetti, M. (2003), "Critical factors for implementing ISO 14001 standard in United States industrial companies", *Journal of Cleaner Production*, Vol. 11, pp. 749-52.
- Balzarova, M., Sharp, J. and Castka, P. (2003), "Systems based ISO 14001:1996 implementation – beyond the conformity paradigm and towards company wide acceptance", in Ho, S. (Ed.), *Proceedings of 8th International Conference on ISO 9000 and TQM*, Montreal, April, pp. 88-93.
- Bamber, C.J. (2003), "Agile manufacturing in UK aerospace small to medium size enterprises", PhD thesis, The University of Salford, Salford.
- Bamber, C.J., Sharp, J.M. and Hides, M.T. (2000), "Developing management systems towards integrated manufacturing: a case study perspective", *Integrated Manufacturing Systems*, Vol. 11 No. 7, pp. 454-61.
- Beer, M. (1980), *Organization Change and Development. A Systems View*, Scott, Foresman and Company, Glenview, IL.
- Boys, K., Karapetrovic, S. and Wilcock, A. (2004), "Is ISO 9004 a path to business excellence? Opinion of Canadian standards experts", *International Journal of Quality and Reliability Management*, Vol. 21 No. 8, pp. 841-60.
- Bryman, A. (1989), *Research Methods and Organisational Studies*, Routledge, London.
- Cascio, J. (1998), *The ISO 14000 Handbook*, The American Society for Quality, Milwaukee, WI.
- Castka, P., Bamber, C. and Sharp, J. (2003), "Measuring teamwork culture: the use of a modified EFQM model", *The Journal of Management Development*, Vol. 22 No. 2, pp. 149-70.
- Castka, P., Bamber, C., Bamber, D. and Sharp, J. (2004), "Integrating corporate social responsibility (CSR) into ISO management systems – in search of a feasible CSR management system framework", *The TQM Magazine*, Vol. 16 No. 3, pp. 216-24.

- Choueke, R. and Armstrong, R. (2000), "Culture: a missing perspective on small- and medium-sized enterprise development?", *International Journal of Entrepreneurial Behaviour & Research*, Vol. 6 No. 4, pp. 227-38.
- Clarke, L. (1994), *The Essence of Managing Change*, Prentice-Hall, Englewood Cliffs, NJ.
- Coghlan, D. and Brannick, T. (2001), *Doing Action Research in your Organization*, Sage, Thousand Oaks, CA.
- Daily, B.F. and Huang, S. (2001), "Achieving sustainability through attention to human resource factors in environmental management", *International Journal of Operations & Production Management*, Vol. 21 No. 13, pp. 1539-52.
- De Poy, E. and Gitlin, L. (1998), *Introduction to Research. Understanding and Applying Multiple Strategies*, Mosby, Sydney.
- DTI (2002) *Business and Society. Corporate Social Responsibility Report 2002*, Department of Trade and Industry, London.
- EEF (2001), "Manufacturing on the crossroads: neglect of nurture?, EEF the voice of engineering", available at: [www.eefsouth.org](http://www.eefsouth.org) (accessed 13 May 2004).
- Elkington, J. (1997), *Cannibals with Forks. The Triple Bottom Line of 21st Century Business*, 21, Capstone, Oxford.
- Firlej, M. and Hellens, D. (1991), *Knowledge Elicitation: A Practical Handbook*, Prentice-Hall, Englewood Cliffs, NJ.
- Gilbert, M. and Gould, R. (1998), *Achieving Environmental Standards*, Financial Times Professional Limited, London.
- Gummesson, E. (2000), *Qualitative Methods in Management Research*, Sage, Thousand Oaks, CA.
- Hofstede, G. (1980), *Culture's Consequences*, Sage, Beverly Hills, CA.
- Huxham, C. (2003), "Action research for management research", paper presented at Doctoral workshop, British Academy of Management, 25 March.
- ISO (2003), *The ISO Survey on ISO 9001:2000 and ISO 14001*, International Organisation for Standardization.
- Jackson, S.L. (1997), *ISO 14001:1996 Implementation Guide: Creating an Integrated Management System*, Wiley, New York, NY.
- Johnson, R., Kast, F. and Rosenzweig, J. (1963), *The Theory and Management Systems*, McGraw-Hill, London.
- Karapetrovic, S. and Willborn, W. (1998), "Integration of quality and environmental management systems", *The TQM Magazine*, Vol. 10 No. 3, pp. 204-13.
- Lewin, K. (1973), "Action research and minority problems", in Lewin, K. (Ed.), *Resolving Social Conflicts: Selected Papers on Group Dynamics*, Souvenir Press, London.
- Lyon, D. (2003), "How can you help organisations change to meet the CSR agenda", paper presented at the 2003 Corporate Social Responsibility and Environmental Management Conference, University of Leeds, Leeds.
- Mezirow, J. (1991), *Transformative Dimensions of Adult Learning*, Jossey-Bass, San Francisco, CA.
- Miles, M. and Huberman, M. (1984), *Qualitative Data Analysis. A Sourcebook of New Methods*, Sage, Thousand Oaks, CA.
- Ouchi, W.G. (1981), *Theory Z*, Addison-Wesley, London.
- Peters, T. and Waterman, R. (1982), *In Search of Excellence: Lessons from America's Best-Run Companies*, Harper and Row, New York, NY.

- 
- Pun, K.F., Chin, K.S. and Lau, H. (1999), "A self-assessed quality management system based on integration of MBNQA/ISO9000/ISO 14000", *International Journal of Quality & Reliability Management*, Vol. 16 No. 6, pp. 606-29.
- Raines, S. (2002), "Implementing ISO 14001 – an international survey assessing the benefits of certification", *Corporate Environmental Strategy*, Vol. 9 No. 4, pp. 418-26.
- Robbins, M. and Smith, D. (2000), *Managing Risk for Corporate Governance*, PD 6668: 2000, British Standards Institution, London.
- Robson, C. (1994), *Real World Research. A Resource for Social Scientists and Practitioner Researchers*, Blackwell Publishers, Oxford.
- Sadri, G. and Lees, B. (2001), "Developing corporate culture as a competitive advantage", *The Journal of Management Development*, Vol. 20 No. 10, pp. 853-9.
- Schein, E.H. (1997), *Organisational Culture and Leadership*, 2nd ed., Jossey-Bass, San Francisco, CA.
- Senge, P. (1990), *The Fifth Discipline. The Art and Practice of The Learning Organization*, Random House, London.
- Strachan, P. (1997), "Should environment management standards be a mechanistic control system or a framework for learning?", *The Learning Organisation*, Vol. 4 No. 1, pp. 10-17.
- Thornbury, J. (2003), "Creating a living culture: the challenges for business leaders", *Corporate Governance: The International Journal of Business in Society*, Vol. 3 No. 2, pp. 68-79.
- Wade, J. (2002), "Is ISO 9000 really a standard?", *ISO Management Systems*, Vol. 2 No. 3.
- Wallace, J., Hunt, J. and Richards, C. (1999), "The relationship between organisational culture, organisational climate and managerial values", *The International Journal of Public Sector Management*, Vol. 12 No. 7, pp. 548-64.
- Wilkinson, G. and Dale, B.G. (1999), "Integrated management systems: an examination of the concept and theory", *The TQM Magazine*, Vol. 11 No. 2, pp. 95-104.
- Yin, R. (1989), *Case Study Research. Design and Methods*, Sage, London.

### Further reading

- Hui, I.K., Chan, A.H.S. and Pun, K.F. (2001), "A study of the environmental management system implementation practices", *Journal of Cleaner Production*, Vol. 9, pp. 269-76.
- Likert, R. (1994), *New Patterns of Management*, McGraw-Hill, New York, NY.
- Razae, Z. and Elam, R. (2000), "Emerging ISO 14000 environmental standards: a step-by-step implementation guide", *Managerial Auditing Journal*, Vol. 15 Nos 1/2, pp. 60-7.
- Tell, J. and Halila, F. (2001), "A learning network as a development method – an example of small enterprises and university working together", *The Journal of Workplace Learning*, Vol. 13 No. 1, pp. 14-23.
- Wever, G. (1996), *Strategic Environmental Management – Using TQEM and ISO 14000 for Competitive Advantage*, Wiley, New York, NY.

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