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# THE SUCCESSFUL IMPLEMENTATION OF ISO9000 THROUGH WORK ENVIRONMENT ANALYSIS: A UK CASE STUDY PERSPECTIVE

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## ABSTRACT

Within advanced manufacturing enterprises, the development of an appropriate work environment can be seen to have key implications for the productivity of employees and also the performance of the organization. International quality standards and models have become recognized as important considerations for contemporary SMEs to maintain competitive advantage. In such a context, management teams within SMEs that plan to implement ISO 9000 standards and maintain certification should create an empowering work environment in which continuous improvement can succeed. The aim of this paper is to investigate the challenges and obstacles that face three UK SMEs and to investigate to what extent their operational work environments impact on the implementation and maintenance of their ISO 9000 certifications. The paper presents a detailed research methodology, case study protocol and results analysis, prior to the outline proposal of a new development framework.

**Keywords:** Work Environment, ISO 9000, SMEs

## 1 INTRODUCTION

According to Maslow's Hierarchy of Needs (1943), people's motivation results from satisfying needs and expectations of work. In addition, Herzberg in his Motivation-Hygiene Theory (1959) proposed that motivation factors such as achievement, recognition, responsibility and advancement are working towards increasing job satisfaction, whereas hygiene factors such as job security, working conditions, salary, and workplace relations are operating to decrease the job dissatisfaction. The ISO 9000 standard can be viewed as one of the most important management concepts that have emerged in the last 30 years; with Rodriguez-Escobar et al (2006) commenting that the first version of ISO 9000 was issued by International Organization for Standardization (ISO) in 1987 and it was concentrated on quality assurance concepts. Over recent years, ISO 9000 certification levels have steadily strengthened on the world and EU stages. Furthermore, the number of ISO 9000 certificates in the top 10 countries in the world is nearly 800,000 as shown in Table (1). Overarching this administrative certification, the term Quality Management System (QMS) was defined by ISO 8402 as „organizational structure, responsibilities, procedures, processes, and resources for implementing quality management“. The QMS should apply and interact with all processes in the organisation. It begins by identifying customer needs and ends with satisfaction.

<b>Top 10 Countries for ISO 9001 Certificates - 2010</b>		
1	China	297,037
2	Italy	138,892
3	Russian Federation	62,265
4	Spain	59,854
5	Japan	59,287
6	Germany	50,583
7	United Kingdom	44,849
8	India	33,250
9	United States of America	25,101
10	Korea, Republic of	24,778

Table 1: Top 10 Countries with ISO 9001 Certificates (ISO, 2010).

Figure (1) represents the quality management process model as described in ISO 9001:2008 and it is further considered that the successful implementation of ISO 9000 standards can deliver a high variety of external and internal benefits, such as: i) improved quality awareness (Levine and Toffel, 2010), (Paulo *et al*, 2008); ii) Enhanced documentation procedures (Prajogo, 2009); iii) Definition of staff responsibilities and duties (Paulo *et al*. (2008); iv) Reductions in the rate of product defects and inefficiency (Sampaio *et al*, 2009); v) Improved customer satisfaction (Paulo *et al*, 2008); and, vi) Increased market share (Sampaio *et al*, 2009), (Paulo *et al*, 2008).

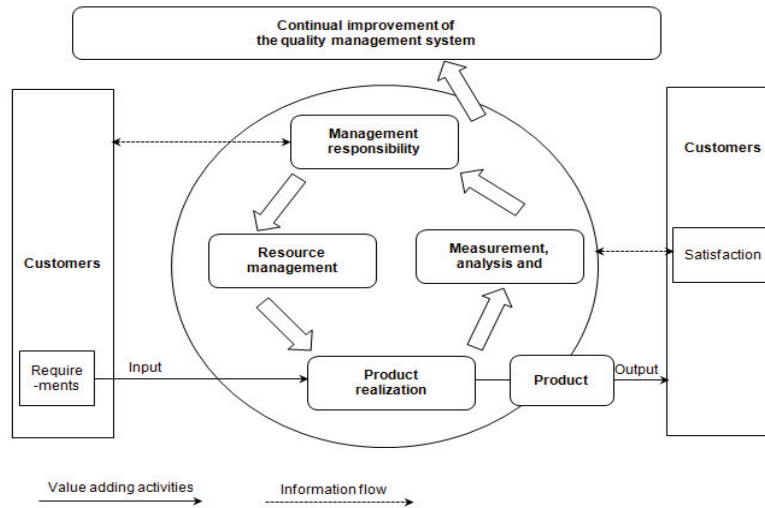


Figure 1: The ISO 9000 Process Model (ISO, 2009).

In addition, there are a range of common barriers faced by enterprises implementing ISO 9000:

- Lack of the participation of management during the process of implementation (Brown *et al*, 1998), (Douglas *et al*. 2003).
- Lack of auditor knowledge in specific industries, excessive auditor help, different interpretations of standard among auditors and ethical issues related to certification bodies (Brown *et al*, 1998).
- High implementation and maintenance costs, despite its decline over time (Casadesus *et al*, 2005).

## 2 METHODOLOGY

The research methodology used in this paper is case-orientated. Gillham (2000) comments, “The case is one which investigates to answer specific research questions and which seeks a range of different kinds of evidence. Evidence which is there in the case setting and which has to be abstracted and collated to get the best possible answers to the research questions. A case can be an individual; it can be a group, such as a family or a class”. As such, this case study-orientated paper is focused on manufacturing SMEs operating in West Yorkshire, UK, which hold the certified ISO 9001 standard. The researcher initially completed a wider industrial SME survey, prior to conducting detailed investigative case studies with a sub-group of three local enterprises. These three enterprises were chosen for comprehensive study based on access, willingness to participate, and resource availability. Table (2) summarises their line of business, strategy, employee number, ISO rationale, approach, and implementation period.

Case A	Case B	Case C
Process plant manufacture	Precision tooling engineers	Equine transportation manufacture
Differentiation	Cost leadership	Differentiation focus
38 employees	43 employees	152 employees
Product quality	Service quality	Market prowess
External consultant	External consultant	Engineering manager
8 months	10 months	12 months

Table 2: SME Case Study Perspectives.

The researcher used the structured case methodology provided by Yin (1994) to collect necessary data by arranging two visits to each one of the selected enterprises and conducting the face-to-face interviews with managers, supervisors, and individuals to answer the questions of the case studies. Magd (2008) stated that the implementation of ISO 9001 standard vary from one enterprise to another. These variations are the result of different levels of enterprise awareness of quality management, its commitment in assist enterprise in implementing quality management tools and techniques, organizational structure and infrastructure. The researcher conducted the case studies to:

1. To investigate the ISO 9001 and work environment implementation for each study enterprise.
2. To evaluate to what extent these enterprises motivate their employees.
3. To verify to what level the workers understand the management policy of ISO 9001 implementation.

### 3 CASE STUDY PROTOCOL

This overall case study approach aims to investigate the issues that may face SMEs which have implemented ISO 9001 standards and to what extent they understand the concept of work environment? To facilitate data collection it was important to build a case study protocol this is supported by Yin (4991), the instrument for conducting the case study includes all the pertinent questions to ask when investigating the ISO 9001 implementation and assessment of the work environment. Figure (2) represents schematic diagram of proposed developed protocol of the case study which describes the steps that should be followed to complete the case study. Firstly, the researcher had identified the case study enterprises and then contacted their management. The researcher sent groups of questions to the management of the enterprises. Then the researcher arranged an appointment with the management to visit the enterprise. The case study required conducting interviews with equal cross sections such as directors, managers, team supervisors and workers, asking those questions about ISO 9001 implementation and work environment. Beside these interviews, further data was collected from direct observation during tours inside the workplaces and from relevant documents in the form of letters, guidelines, regulations and policy statements provided by the case study enterprises. The researcher then collated all the answers of the questions from participants and undertook statistical analyses of the data. The expected outcomes from this research study are that SMEs may face difficulties in covering the expenses of implementation and maintaining the ISO 9000 certificate. Finally, to evaluate the validity of data collected the researcher aimed to send the final report to the management of the enterprise for summative review.

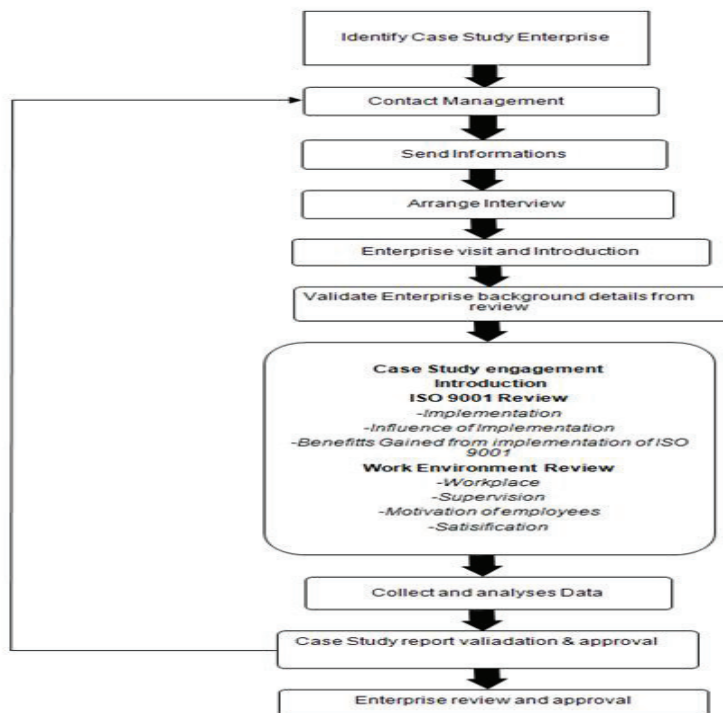


Figure 2: Schematic Diagram of Case Study Protocol.

## 4 DATA COLLECTIONS TECHNIQUES

To collect the necessary data, the researcher used interviews, observations, and available archive records and enterprise documentation. Dawson (2009) pointed out that there are three types of interview, unstructured interviews, semi-structured interviews and interviews. The researcher used the structured interview type. The researcher conducted face-to-face interviews with the person who was responsible for the ISO 9001 implementation within the case study enterprises, and the length of interview was 30 minutes. The interview question sets were divided into three sections, section one general background, section two ISO 9000 implementation and section three, was work environment awareness. The questions of interview had been formulated in the form of closed and open-ended questions. Beside the interview, the researcher undertook tours within each of the enterprises under study for about 30 minutes and during these tours the researcher recorded observations concerned with the implementation of ISO 9000 and work environment. The answers of case study questions were collected and recorded it in appropriate tables, thereby illustrating the contemporary situation of the study enterprises in relation to their ISO 9001 implementation and work environment awareness.

## 5 ANALYSIS OF THE CASE STUDIES

### 5.1 The Enterprise's Backgrounds

**Enterprise A** was established in 1960 and commenced manufacturing in West Yorkshire, UK. It is a small enterprise and employs about 38 employees. It has pioneered the use of thermoplastics in the process industries sector and is one of the largest design, manufacturing and installation specialists in corrosion resistant thermoplastics in Europe. The enterprise management has developed its policies to improve product quality by implemented ISO 9001 standard and it attained its ISO 9001 certificate in 1992. The enterprise depended on an external consultant to implement its ISO 9001 standard.

**Enterprise B** was founded as a private limited enterprise in 1979 and it is located in West Yorkshire, in the UK. It is small enterprise and currently employs 43 employees. The enterprise is currently introducing new services; such as reclamation of tooling, the reconditioning of work holding, CNC regrind and coating of solid carbides drills, end mills, ball nose cutters and new tooling, to a growing group of private enterprises in different areas, inside and outside of the UK. The management of the enterprise aims to improve its services through the implemented ISO 9001 standard, using an external consultant to do so. It was awarded its ISO 9001 certificate in 1988 and this has been maintained through continuous improvements in its performance.

**Enterprise C** is a local manufacturer of equine transportation, trailers and boxes of different sizes, types, and capacities. It was established in 2002 and employs more than 152 employees. The enterprise has implemented the ISO 9001 standard and it received ISO 9001 certification in 2009, but it still faces issues in its maintenance such as lack of records, documentation and the quality policy is not commonly known across all employees.

### 5.2 ISO 9001 Implementation in the Case Study Enterprises

The main reason that made **Enterprise A** implement the ISO 9001 standard came from the pressure of customers. The enterprise was depended on external consultant to implement ISO 9001 standard and in the beginning it had faced a slight internal resistance from employees, the written quality policy was not available in the enterprise.

The main reason that pushed **Enterprise B** to adopt the ISO 9001 standard was pressures from customers and its implemented ISO 9001 standard under supervision of external consultant. The enterprise had faced internal resistance from employees and suffered from high costs of registration. The enterprise had a clearly written and good quality policy and this was visible in the offices and work stations.

**Enterprise C** adopted ISO 9001 standard as a result of market pressure. The ISO 9001 implementation process was managed by an internal team. The employees of enterprise, at first, were not happy to implement ISO 9001 standard because they felt the process to be bureaucratic and too complex. The employees understand the quality policy followed by the enterprise management.

### 5.3 Work Environment in the Case Study Enterprises

From the interview, which was conducted in *Enterprise A* with production manager, the researcher found that the top management of the enterprise have no written quality policy and job descriptions for their employees, but it is interested in training programs. The employees are provided with clear instructions and all the necessary information to do their tasks by their supervisors. Moreover, the employees are encouraged by supervisors through inviting them to attend meetings and receive their opinions.

*Enterprise B* has a good quality policy and this is suspended in all locations inside the enterprise. Within the enterprise, there exist adequate job descriptions for all the employees, but they have not received any dedicated training programs on the implementation of ISO 9001. The enterprise did though; face a range of financial issues in the beginning of registration and during the implementation of the ISO 9001 standard. Managers and supervisors in this enterprise encourage their employees, through holding regular meetings, taking their opinions when there are issues relating to work tasks, and providing employees with necessary instructions and information.

The management of *Enterprise C* have a written quality policy and detailed job descriptions for all its employees as requirements to implement ISO 9001 standard, but the employees have not received any formal training about the concept and purpose of ISO 9001 standard. The managers and supervisors provide their employees with necessary information; listen to their opinions, and hold meetings with all employees, to discuss and solve any issues that may face them during work.

## 6 FRAMEWORK DEVELOPMENT

To improve the attainment of ISO 9000 certification and its maintenance, a continuous assessment and improvement model, based upon Figure (3), is proposed. This could then be integrated into existing enterprise quality procedures to improve productivity levels. Efforts to further develop this classification and framework approach are current.

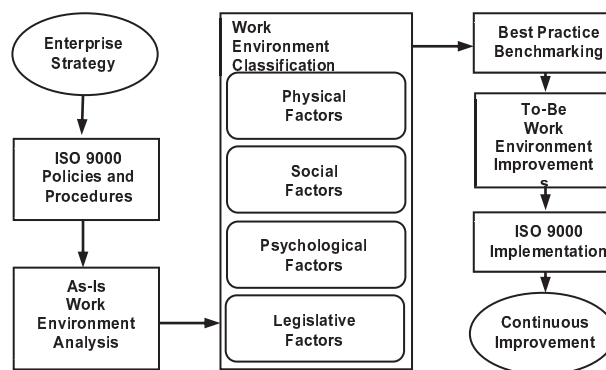


Figure 3: High-level Work Environment Framework

## 7 CONCLUSIONS

From this research study, it is concluded:

1. The concept of work environment is not well understood in respect of ISO 9000 quality standards.
2. The safety rules in enterprises need more care and awareness to protect their employees from expected accidents.
3. To reduce the accidents that may happen as a result of scrap pieces which fall on the floor, the area of workstations should be always clean.
4. Two enterprises of case study had appropriate quality policies and job descriptions, but one of them does not.
5. Incomplete inspection and testing for incoming materials and final products were seen in two enterprises, with non-availability of required instrumentation.
6. Documentation does not always conform to ISO 9001 standard requirements in two enterprises of the research study.

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