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Original Citation

Maatgi, Musbah and Denton, Paul (2010) Achieving ISO 9000 Success in SMEs: The Development of a Work Environment Framework. In: Future Technologies in Computing and Engineering: Proceedings of Computing and Engineering Annual Researchers' Conference 2010: CEARC'10. University of Huddersfield, Huddersfield, pp. 37-42. ISBN 9781862180932

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Achieving ISO 9000 Success in SMEs: The Development of a Work Environment Framework

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ABSTRACT

The aim of this paper is to present initial findings with respect to the development of a novel research framework to evaluate the influence of work environment on the implementation of ISO 9000 standards within SMEs. The term 'work environment' relates to those conditions under which work is performed including physical, environmental and other factors (such as noise, temperature, humidity, lightning, or weather). The paper begins with a comprehensive research introduction focused on enterprise strategy, ISO 9000 standards and SMEs. The introduction is followed by the proposal of a research methodology, which illustrates the approach that will be used to collect data pertinent to this study and further inform the development of the framework for further investigation. The targeted collation of industrial survey and case study data is advocated, prior to structuring in appropriate statistical form for detailed analysis and evaluation. The results and initial findings will be discussed prior to the presentation of recommendations to further the suggested approach.

Keywords ISO 9000 Standard, Work Environment, SME

1 INTRODUCTION

Success within any manufacturing enterprise can be influenced by its management and administrative leadership, together with the work environment under which it operates. Higher degrees of success in applying modern administrative systems, can relate to improved production efficiency and the greater achievement of quality. At the beginning of the twentieth century and thanks to the contributions of recognized quality pioneers: Crosby, Ishikawa, Feigenbaum, Juran and Deming, the modern concept of 'quality management' was developed. They then laid the base of comprehensive Quality Management Systems (QMS), which were characterized by the following key principles (adopted from Oakland, 2000):

- Giving customers the priority.
- The quality system integrates all activities.
- Training motivates and encourages personal.
- Continuous development of the administration system.

The efforts of these early pioneers were followed by the appearance of the ISO 9000 series for the first time in 1987. It represents an International Standard aimed at institutional administrative systems and is widely recognized as a commercial requirement for successful global trade. Contemporary enterprises can now be seen to operate in diverse and complex global environments. These environments can be characterized by intensified competition, time dependence and are increasingly driven by demand for bespoke customer-focused products. Business process and technological innovations, both in design and manufacturing systems, have had a significant influence upon the competitive environment, with the notion of 'quality' as an important key.

Briscoe et al (2005) propose that 'quality can be viewed as being essential to customer satisfaction and competitive success, especially within Small-to-Medium sized Enterprises (SMEs)'. In current marketplaces, enterprises now strive to integrate quality within world class manufacturing principles. Through recent years, there has emerged little consensus on a range of different definitions of SMEs, but, these are typically based upon turnover size or the number of employees (Yusof and Aspinwall, 2000). Levy (1993) applies the designation to 'small and medium sized manufacturing enterprises which have 500 employees or less'. This primary classification can be further sub-divided into: (a) micro-enterprises, 0-9 employees; (b) small enterprises, 10-99 employees; and, (c) medium enterprises 100-499 employees (Ghobadian and Gallea, 1997). These important classifications represents a diverse, but highly important group of manufacturing enterprises and are of particular interest because this group have had to cultivate their own unique blend of capabilities in their struggle for survival and ultimate success.

The ISO 9000 standard can be viewed as one of the most important management concepts that have emerged in the last 30 years. Rodriguez-Escobar et al (2006) previously commented that since the first version of ISO 9000 was issued by International Organization for Standardization (ISO) in 1987, its popularity has markedly increased. The first version of this standard was concentrated on quality assurance concepts, with later versions of ISO 9000:1994 forming a wider family of standards (ISO 9001, ISO 9002, and ISO 9003). This emphasized quality assurance via preventive actions and continues to require proof of compliance with documented procedures. The ISO 9000 family of standards was revised in 2000; the three previous parts of the ISO 9000:1994 version were integrated into a single standard called ISO 9001:2000 and the latest version of standards was issued on 2008. QMS has been 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 organization. It begins by identifying customer needs and ends with satisfaction. Figure (1) represents the quality management process model as described in ISO 9001:2000. The implementation of ISO 9000 within enterprises requires the creation and maintenance of a good work environment. In Hoyle (2009), it is stated that ISO 9000:2008 defines the work environment as: 'the conditions under which work is performed, including physical, environmental, and other factors (such as noise, temperature, humidity, lighting, or weather). In addition to this classification, a range of other impacts are often additionally considered; e.g. for lighting, other types of radiation across the whole spectrum which impact the physical environment. Furthermore, supplementary social and psychological factors of work environment, such as motivation, interpersonal relationships, recognition, and job security, may also be considered within the ISO accreditation process as all of them can present impact upon an enterprise's competitiveness.

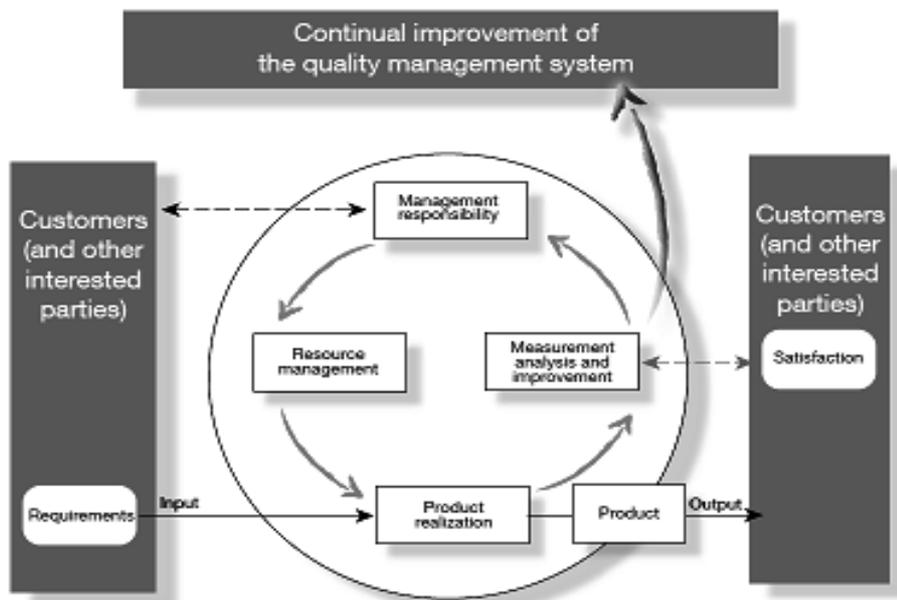


Figure 1: The ISO 9000 Process (ISO, 2009)

To implement ISO 9000 standards within an enterprise, its management should follow all requirements of the standard and demonstrate their leadership commitment. Ching and Woan (2008) comment that, 'the top management must always provide evidence of its commitment and ensure the quality system includes a commitment to continual improvement. The workforce is may be seen an important player, and their cooperation and personal commitment to ISO 9000 systems are essential'. It is further recognized that each and every employee in an enterprise must be fully committed to the actual ISO 9000 implementation process. The collective, integrated and coordinated efforts of all fully involved staff members make for a world-class organization. Both vision and quality policies need to be effectively communicated by management to every staff member in the organization. For this reason, it is considered by this paper's authors that the concept of work environment may be regarded as an underestimated and integral part of any successful ISO 9000 adoption process.

2 METHODOLOGY

This research work aims to build upon existing literature, to evaluate the effect of work environment on the successful implementation of ISO 9000. It will further investigate potential solutions for the problems that may face SMEs when they implementing ISO 9000 by developing a novel framework and integrated classification for work environment. Work environment is defined at a high-level within ISO 9000:2008 and deeper definitions are commonly centered upon three primary factors: Physical factors, which include temperature, noise, light, vibration, cleanliness, physical stress; Social factors, that resulted from interactions between people and include religion, education, peer pressure, culture; and, lastly Psychological factors, that have resulted from an individual's inner needs and external influences and include recognition, responsibility, achievement, advancement, reward, job security, interpersonal relations, leadership, affiliation, self-esteem and occupational stress (Hoyle, 2009).

The primary investigative methodology for this work is based upon the wider hypothesis that '*the successful adoption of the ISO 9000 standard can be directly influenced by organizational structure, culture and work environment*'. This research aims to link together the ISO 9000 work environment definition and its existing documented limitations, together with renowned and established organizational theories provided by Herzberg (1959) and Maslow (1943). This is further based upon three assumptions (below) which have been recorded, because if the management of an enterprise cannot create a proactive climate within it, this may be reflected in efficiency reductions of their employees and hence further reductions in productivity and the quality of their products.

- Most enterprises can implement the ISO 9000 standard successfully if they manage their financial and human resources in an appropriate way and have established quality practices.
- Creating a supportive work environment can play a large role in the success of implementing the ISO 9000 standard.
- Suitable motivation systems adopted by enterprises can help them to encourage their employees to increase productivity and improve quality. But, this requires effective and successful management to response to their employee's requirements.

Herzberg (1959) presented his research as the Motivation-Hygiene Theory, which is often also regarded as the Two Factor Theory of Job Satisfaction. According to his theory, people are influenced by two sets of factors (Table 1). Herzberg's research proved that employees will struggle to achieve 'hygiene' needs (or maintenance factors) such as policy; relationship with supervisor, work conditions, salary, status, security, personal life, and relationship with subordinates because they are sad without them, but once satisfied the effect soon wears off, hence satisfaction may be seen as being temporary. Then as now, weakly managed enterprises fail to understand that employees are not always 'motivated' by addressing 'hygiene' needs. Employees are only truly motivated by enabling them to reach for and satisfy the factors that Herzberg found; that the key determinants of job satisfaction, such as achievement, advancement, development, recognition, work itself, and responsibility, represent a far deeper level of meaning and fulfillment.

Motivation Factors	Hygiene Factors
• Achievement	• Pay and Benefits
• Recognition	• Company Policy and Administration
• Work Itself	• Relationships with co-workers
• Responsibility	• Supervision
• Promotion	• Status
• Growth	• Job Security
	• Working Conditions
	• Personal life

Table 1: Motivation-Hygiene Theory (Herzberg, 1959)

In Hoyle (2009), it is commented that motivation is an intrinsic part of work environment and therefore a key to successful adoption of ISO 9000. From this recognition it may be considered that, deeper investigations need to be undertaken to ascertain employee levels of motivation in the workplace. Abraham Maslow's is widely recognized as a pre-eminent expert within this field and his Theory of Human Motivation (Maslow, 1949) provides that, 'motivations result from satisfying personal needs and expectations of work, therefore the motivation to accomplish quality objectives must be triggered by the expectation that achievement of objectives will lead to a reward that satisfies a need of some sort'. Developing improved understanding of the benefits and limitations of Maslow's work and its implications for successful work environments is considered by the paper's authors to be an important key. The hierarchical nature of these needs was identified by Maslow as shown in Figure (2).



Figure 2: Maslow's Hierarchy of Needs (Maslow, 1943)

From the surveyed literature it is recognized that the development of an integrated framework, based upon the existing ISO 9000 definition and appropriate factors or hierarchy, would comprise an academically rigorous foundation from which to develop an improved work environment framework, capable of delivering higher levels of SME ISO 9000 success. The main objectives of this proposed research should therefore comprise:

1. The development of a richer definition and classification of 'work environment', with respect to ISO 9000.
2. An assessment, analysis and prioritization of critical success factors and barriers facing enterprises implementing the ISO 9000 standard.
3. The provision of a revised framework and recommendations for the implementation of ISO 9000 standard.
4. Evaluation of the benefits to be gains from an increased focus on work environment when implementing ISO 9000 within contemporary SMEs.

3 FRAMEWORK DEVELOPMENT AND EVALUATION

To achieve the primary research objectives, a more extensive literature survey would be undertaken, prior to an industrial survey work and detailed case study development. This approach would be based on a combination model of descriptive and experimental research and would examine the extent of the problematic situation. This dual approach is considered to be one with a higher degree of validity because a clear statement of 'what is' is an essential prerequisite to understanding 'why it is so' and 'what it might be'. The key development stages of the new framework would comprise:

- a. *Literature Survey:* This will continue to concentrate on high quality academic publications relating to strategic management, the ISO 9000 standard and manufacturing organization development. Further research will be undertaken to review appropriate professional, trade and industrial conference proceedings.

b. *Industrial Questionnaire*: The questionnaire would be designed to cover all aspects that concern organizational structure, culture, and work environment, which have been mentioned in the hypothesis of this research work. The researchers would use closed question types that will allow a respondents to select answers from a numbers of predetermined alternatives. The developed questionnaire would be distributed to about 250 companies and the anticipated response rate is in the order of 40-60%.

c. *Case Study Surveys*: The researchers will conduct a minimum of three detailed industrial surveys through visits to appropriate SMEs, operating in the engineering and manufacturing industrial sector.

d. *Work Environment Classification Development*: From the basic ISO 9000 definition, a richer statement of work environment will be formulated, together with a deeper classification and prioritization of success factors, which will be founded upon the established hygiene and motivation factors provided by Herzberg and Maslow.

e. *Pilot Evaluation Study*: Existing research studies currently, only deal with the influence of a limited range of factors on the implementation of ISO 9000 such as commitment of management or customer's pressure, etc. No study that has been reviewed by the researchers targeted directly the influence of work environment on the implementation of ISO 9000. A key element of this work will be to test the developed research recommendations from this study.

It is anticipated that through wider and more extensive investigative work for similar sector SMEs, the researchers will be able to identify further limitations resulting from non-awareness or ignorance of the concept of work environment. If this is so, then additional investigations will be undertaken to combat any perceived limitations in the newly developed model and to carry out subsequent remedial work, in term of revised improvement recommendations. Figure (3) describes the holistic framework approach.

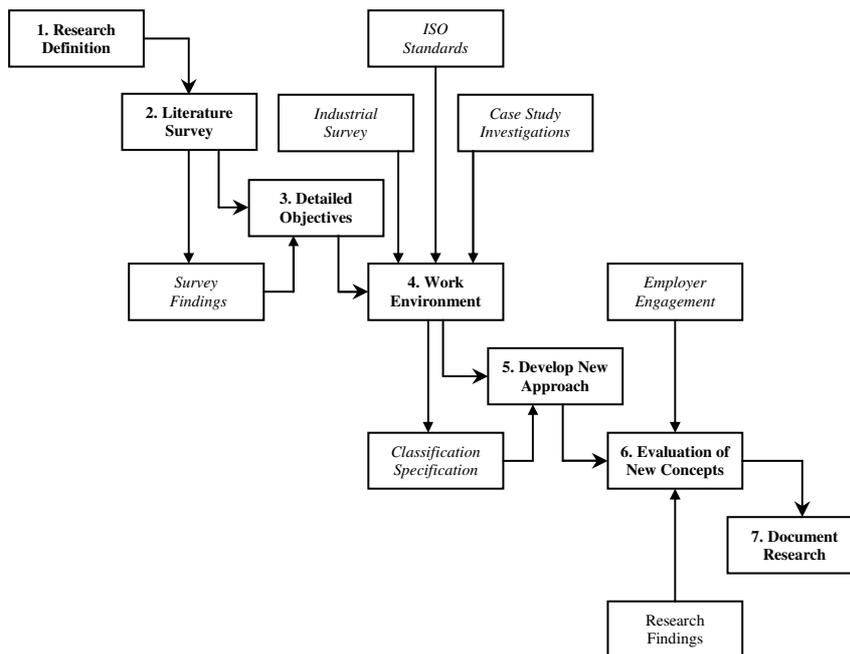


Figure 3: Holistic Framework Analysis

5 CONCLUSIONS AND FUTURE WORK

From this initial study, we can conclude the following points:

- Enterprises that have obtain ISO 9000 certification motivated by internal reasons obtain better results than those pressured by external reasons such as customer pressures, marketing issues (Martínez-Costa et al, 2007).

- One of the most prominent challenges to ISO 9000 implementation comes from employees who resist change (Briscoe et al, 2005).
- In the UK, 94% of manufacturing enterprises employ less than one hundred employees (Levy, 1994).
- Organizational development will aid enterprises to change themselves and rebuild their strategies, structures, and processes. Additionally, it will also help enterprise employees to pass beyond surface change to transform the underlying assumptions and values governing their behaviors (Cummings and Worley, 2009).

This work provides a structured review of enterprise strategy, ISO 9000 standards, and SMEs. It also provides the research methodology which will be used to design an appropriate work environment framework for this research, through visits to select SMEs and the analysis of questionnaire data relating to the effect of work environment on implementation of ISO 9000 standards.

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