

## **FACTORS INFLUENCES ISO 9000 IMPLEMENTATION IN SAUDI MANUFACTURING INDUSTRY**

Abdullah Albadran  
Department of Mechanical and Construction  
Engineering  
University of Northumbria  
Newcastle Upon Tyne  
NE18ST, UK  
Abdullah.albadran@northumbria.ac.uk

John Kian Tan  
Department of Mechanical and Construction  
Engineering  
University of Northumbria  
Newcastle Upon Tyne  
NE18ST, UK  
k.tan@northumbria.ac.uk

Wai M. Cheung  
Department of Mechanical and Construction Engineering  
University of Northumbria  
Newcastle Upon Tyne  
NE18ST, UK  
wai.m.cheung@northumbria.ac.uk

### **ABSTRACT**

This paper reports the preliminary findings for a PhD study. A review of literature found a lack of empirical research on factors that affect the implementation of ISO 9000 (a family of quality management standards) in Saudi Arabia. This research attempts to fill the gaps in existing literature. The main purpose of this work is to provide empirical data on the most common factors that influence the implementation of ISO 9000 in the manufacturing sector in Saudi Arabia. In order to achieve this aim, a three-stage industrial survey has been carried out using an adequate sample of data to investigate potential factors. The result of the findings from this survey revealed that ISO 9000 is more popular in medium and large organisations in Saudi Arabia. In light of this finding, top management support may be one of the most important factors influencing the implementation of ISO900 in the manufacturing industry. This is followed by the adequacy of human resources and rigour of internal audit.

**Keywords:** ISO 9000, Manufacturing, Saudi Arabia, Influences factors.

### **1 INTRODUCTION**

The ISO 9000 standards are related to management quality systems and are meant to assist businesses to meet the desires of consumers and stakeholders. (Poksinska, et al, 2002). The standards are published by the International Organisation for Standardization (ISO), and support organisations to follow specific and well-documented techniques in production or services. These techniques explain how functions should be performed (Singels et al., 2001). ISO 9000 has been applied throughout the United States of America (USA), Europe, and in other parts of the world. It has become a subject of interest in various developing nations, such as Saudi Arabia. Saudi Arabia is one of the three nations in the Middle East that hold ISO certification alongside the United Arab Emirates (UAE) and Egypt, (ISO survey, 2008). The number of organisations that adopted ISO 9000 in Saudi Arabia was 876 compared with 3283 organisations in the UAE. The number in Saudi Arabia is lower because there were not many firms involved in international marketing. Since then, Saudi Arabia has experienced rapid growth in its economy and in international marketing activities so that the number of ISO 9000 certification is increasing. The Economist Intelligence Unit, (1998) described the economy of Saudi Arabia as “Relatively more prosperous than that of a typical Third World economy since the country

is the largest producer and exporter of oil in the world". In 1997, the Gross National Product (GDP) of Saudi Arabia was the largest in the Middle East, followed by Israel, Iran, Egypt, UAE, Algeria, Morocco, and Kuwait respectively, and was one of a few countries in the world that saw rapid economic growth. Despite the publications and research available into ISO 9000, there is limited literature focused on discussing the difficulties and problems related to ISO 9000 and even less on its adoption and implementation in the Arabic countries (Al-mijrab, 2010). While the implementation of ISO 9000 in different nations has been investigated, every country has its own different environments and issues; hence this empirical research will be based on the issues specifically related to the manufacturing sector of Saudi Arabia.

## **2 LITERATURE REVIEW**

Empirical evidence reveals that the implementation of ISO 9000 is associated with many obstacles, which is a common experience shared by organisations throughout the world (Gader et al., 2009; Mersha, 2007; Lipovatz et al., 1999). The literature shows that most of the failures result from a lack of commitment from top management, employee resistance to change, lack of knowledge and understanding of the ISO requirements, insufficient training and quality knowledge, a low level of quality awareness and culture, the allocation of personal responsibilities and constraints on resources such as manpower, time and finance. Another study by Sampio, Saraiva and Rodrigues (2009), suggests that the reasons for major difficulties implementing ISO 9000 are as follows; low level involvement of top management and employees, poor information flow (for the functioning of the quality system), resistance to new responsibilities, lack of appropriate technical knowledge, and difficulty in communicating new tasks and functions for each job. Matts. C and Dan. C, (1996) identified some of the factors for successful implementation of ISO 9000 in the Swedish industry, the top three were; management commitment, involvement and commitment of all personnel concern and work performed using mainly their own resources.

Zeng et al. (2007), highlighted the problems in implementing the ISO standards in China, citing the following problems; lack of commitment from some certifying bodies, excessive competition between certifying bodies, and the desire of certifying bodies to offer a total package of services from consultation to certification. In addition, the present study by Hesham (2010), based on the manufacturing sector in Egypt recommended 11 possible factors that affect the implementation of ISO 9000 and asked members to rank the level to which each aspect has assisted the interviewed companies the most. The ranking ranged from "very helpful" to "not helpful at all". By examining the results, it was clear that the most beneficial factors in successful implementation of ISO 9001:2000 are commitment from senior management; the firm's internal auditor; a well-structured system of procedures; and assistance from the parent company or partner.

Another study completed in Kuwait by Aldowaisan & Youssef (2006) indicated that the training, availability of resources, improved documentation system, sufficient time, and implementation framework were the common factors affecting ISO 9000 implementation. As can be seen from the review, there are some common factors affecting implementation of ISO 9000 that are universally applicable in both developed and developing countries. Ibrahim (2005) mentioned in his research that European organisations encountered similar problems of organisational culture, lack of understanding of ISO 9000 standards, and lack of human resources as common barriers in the ISO 9000 certification process. In addition, there are common factors that affect different geographical regions, and the research conducted in the Arab countries found that they faced similar issues; organisational culture, top management commitment, lack of human resources, government impact, and lack of understanding of the ISO 9000 standards.

## **3 METHODOLOGY**

The main purpose of this part of the PhD study is to provide empirical data on the common factors that influence the implementation of ISO 9000 in the manufacturing sector in Saudi Arabia. In order to measure this, the first task is to compile an acceptable list of applicable factors, secondly, to test the effect of these factors, and finally to uncover some of the missing details. Therefore, a three-stage survey was carried out using appropriate samples to investigate the factors affecting the

implementation of ISO 9000 in the manufacturing industry in Saudi Arabia. The three-stage approach is as follows:

- 1) An initial questionnaire was sent to participants to confirm whether the selected common factors are applicable to the Saudi manufacturing industry.
- 2) A second questionnaire focused on finding the main hypotheses such as factors that may affect the implementation of the ISO standards and techniques to analyse the data.
- 3) The last stage uses a face-to-face or telephone interview.

The purpose of the first stage was to triangulate data, compare the factors collected from the literature, to come up with a triangulation and a list of factors. From the results of this part of the survey, a new list of factors was suggested to the companies using an “agree or disagree” type of questionnaire. This type of questionnaire is appropriate for investigating whether the most common 15 factors affecting the implementation of ISO 9000 applies to the Saudi industry or not. These 15 factors are listed below:

- |   |  |
|---|--|
| 1. Top management commitment                | 9. Insufficient knowledge in quality programme     |
| 2. Employee resistance                      | 10. Ignorance of ISO importance                    |
| 3. Difficulty of performing internal audits | 11. Weak inter-departmental relations              |
| 4. Absence of consulting boards             | 12. Unwillingness to change work systems           |
| 5. ISO 9000 requirements are unrealistic    | 13. Inflating the size of documents                |
| 6. Shortage of financial resources          | 14. Unwillingness to change organisational culture |
| 7. Insufficient human resources             | 15. Absence of quality guidelines                  |
| 8. Insufficient employee training           |  |

To be able to differentiate the degree of agreement and in order to discuss and analyse the results a five-point scale was used (5: strongly agree, 4: Agree, 3: Neutral, 2: Disagree and 1: Strongly Disagree). Once the list of the appropriate factors was compiled, the second questionnaire focused on hypothesis and multi regression questions to find out the effect of these factors. The last stage was to rank the relative importance of these factors, which was achieved by using a multi criteria decision-making approach (as there is a subjective element and people attribute differently to the factors). It was appropriate to use the Analytic Hierarchy Process (AHP).

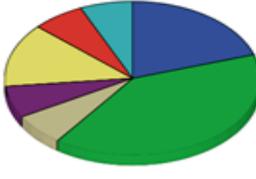
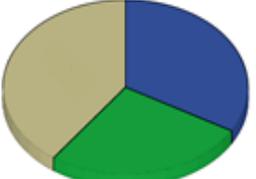
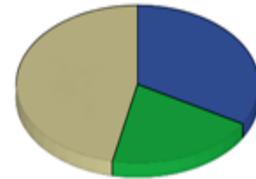
#### **4 THE ANALYTIC HIERARCHY PROCESS**

The AHP is an organised strategy for working with complicated choices. Rather than recommending a "correct" choice, the AHP helps the decision makers find the one that best matches their needs. The AHP provides an extensive and logical structure for constructing a choice issue, for comprising and quantifying its components, for relating those components to overall objectives, and for analysing alternative solutions. It is used around the world in a wide range of choice circumstances, in areas such as education, business, and government (Saaty, 2008).

#### **5 RESULTS OF ANALYSIS**

This study only forms part of the research, and the initial results from the first stage are presented here. The first questionnaire was issued to 100 manufacturing companies in Saudi Arabia by E-mail. Initial responses have been received and more are expected, to date, only 15% of the questionnaires have been returned, as shown in Table 1.

Table 1: Company details

Question	Result
1) What is the sector of your company?	<p>the company's sector</p>  <ul style="list-style-type: none"> <li>■ chemical</li> <li>■ Engineering</li> <li>■ Extraction</li> <li>■ Food</li> <li>■ Other</li> <li>■ Pharmaceutical</li> <li>■ Textile</li> </ul>
2) What is the average number of employees in your organisation?	<p>the number of employees</p>  <ul style="list-style-type: none"> <li>■ 50-100</li> <li>■ 100-200</li> <li>■ 200-300</li> <li>■ 300-500</li> <li>■ more than 500</li> </ul>
3) What is the type of ownership is your business?	<p>type of ownership of the company</p>  <ul style="list-style-type: none"> <li>■ Mixed government &amp; Privat</li> <li>■ Private</li> <li>■ Joint venture with foreign company</li> </ul>
4) How long have you operated in Saudi Arabia?	<p>period of your organizations operating in Saudi Arabia</p>  <ul style="list-style-type: none"> <li>■ 3-10 Years</li> <li>■ 10-20 Years</li> <li>■ Above 20</li> </ul>
5) How long has your company been registered for ISO 9000 standards?	<p>registration to the ISO 9000 standards</p>  <ul style="list-style-type: none"> <li>■ Less than a year</li> <li>■ 1-3 years</li> <li>■ 4-10 years</li> <li>■ More than 10 years</li> </ul>

From the initial responses, it was found that 40% of the organisations are in the engineering sector and more than 46% had more than 500 employees, which indicates that ISO 9000 is more popular in medium and large organisations. 46.7% of companies operating for more than 20 years have held the ISO 9000 standard for more than 10 years. Of the companies who responded to the survey, 40% are joint ventures with foreign companies and 33.3% are mixed government and private sector, indicating that the Saudi private sector is still struggling with the implementation of ISO 9000. Respondents also declared that commitment from senior management had most impact on the success of the implementation of ISO 9000, describing this as a critical factor, as shown in Table 2. The second most important factor was said to be insufficient human resources and the difficulty of performing internal audits, which was ranked third in importance of all factors, followed by insufficient employee training. One factor of less significance in the implementation of ISO 9000 is the shortage of financial resources.

Table 2: Factors influencing the implementation of ISO 9000 in the Saudi manufacturing industry

Rank	Factors	N	Mean	Std. Deviation
1	Top management commitment	15	4.53	.743
2	Insufficient human resources	15	3.9333	1.38701
3	Difficulty in performing internal audits	15	3.87	1.506
4	Insufficient employee training	14	3.7857	1.42389
5	Insufficient knowledge of quality programme	15	3.7333	1.43759
6	Ignorance of ISO importance	15	3.6667	1.34519
7	Absence of quality guidelines	15	3.4000	1.40408
8	Shortage of financial resources	15	3.2667	1.09978
9	Unwillingness to change organisational culture	15	3.2000	1.42428
10	Weak inter-departmental relations	15	3.1333	1.68466
11	Unwillingness to change work system	15	2.8667	1.45733
12	ISO 9000 requirements are unrealistic	15	2.7333	1.33452
13	Employee resistance	15	2.4667	1.12546
14	Inflating size of documents	15	2.4667	1.24595
15	Absence of consulting boards	15	2.4000	1.18322
	Valid N (list wise)	14		

Notes: The mean score was based on participants' level of agreement from a choice of five. 5 = strongly agree, 4=Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree.

The factor considered the most important, was commitment from senior managers, which is supported by the findings of other researchers (Hesham. M, 2010, Matts. C, Dan. C, 1996). The study found that insufficient human resources and a lack of qualified internal auditors who are able to support organisations to comply with ISO 9000 requirements are essential factors to successful implementation of ISO 9000. In respect of human resources, this can be affected by other factors such as inadequate levels of education, misinterpretation of the standards, low worker morale, and high worker turnover (Sabah M., 2011).

## 6 CONCLUSION AND FUTURE WORK

The literature review clearly shows that there are different factors affecting implementation, which vary from country to country, and are influenced by environment and culture. The most common 15 factors have been identified, reviewed, and presented to the manufacturing industry in Saudi Arabia in an attempt to triangulate the extracted data with data obtained from the field. The findings of this study indicate that the commitment and support of top management was regarded as the most important factor in implementing ISO 9000 in the Saudi manufacturing industry, which is a factor affecting most organisations in Saudi Arabia and in other parts of the world. Insufficient human resources and difficulty performing internal audits are also found to be important factors, and are similar to other findings that existed in the literature. This research may be valuable to the companies that are engaged in the Saudi manufacturing industry that are desperate to get the qualifications, and can learn from the findings of this study. Future work will be carried out to prepare and issue the second questionnaire, which focuses on hypothesis and multi regression questions in order to find the effects of implementation factors. This will be followed by interviews with organisations to rank the relative importance of these factors.

## REFERENCES

- Aldowaisan, T. and Youssef, A. (2006). "An ISO 9001:2000 based framework for realizing quality in small business." *Omega* 34(3) 231-235.
- Dory, J. and Schier, L. (2002), "Perspectives on the American quality movement", *Business Process Management Journal*. 8, 2, 117-139.
- Feigenbaum, A. V, 1983, *Total Quality Control*, third edition, McGraw-Hill, New York,
- Gader, A.M.A., Ismail, M.Y., Hamouda, A.M.S. and Al Khalifa, K.(2009) 'ISO 9000 performance among the Malaysian companies the effects of motives', *International Journal of Industrial and Systems Engineering*, 4 (1), pp. 32-45.
- Garvin, D. A, 1984, "What does 'product quality' really mean?" *Sloan Management Review*, Vol, 26, No, 1, pp, 25-43,
- Heras, I. Casadesus, M. and Dick, G.P.M. (2002),"ISO 9000 certification and the bottom line: a Comparative study of the profitability 'of Basque region companies", *Managerial Auditing Journal*, Vol.17 No. 1/2, Pp.72-8.
- International Organisation for Standardisation (ISO) (2008) About ISO. [Online]. Available at: <http://www.iso.org/iso/about.htm> (Accessed: April 2008).
- Juran, J.M. (1988) *Upper Management and Quality* New York Juran Institute
- Lee, S.K. and Palmer, E. (1999), "An empirical examination of ISO 9000- registered companies in New Zealand", *Total Quality Management*, Vol. 10 No.6, Pp. 887-907.
- Lipovatz, D., Stenos, F. and Vaka, A. (1999) 'Implementation of ISO 9000 quality systems in Greek Enterprises', *International Journal of Quality and Reliability Management*, 16 (6/7), pp. 534-551.
- Madu C., (1997), "Quality Management in developing economics", *International Journal of Quality Science*, Vol.2, No.4, Pp.272-291.
- Merkin, B. G. 1979. *Group Choice*, John Wiley & Sons, NY.
- Mersha, T. (2007) 'Narrowing ISO certification gap in Africa', *International Journal of Productivity and Quality Management*, 2 (1), pp. 65-80.
- Oakland, J. S. (2003) *Total quality management: text with cases*. Oxford. Butterworth- Heinemann.
- Saaty, Thomas L. (2008), "Relative Measurement and its Generalization in Decision Making: Why Pairwise Comparisons are Central in Mathematics for the Measurement of Intangible Factors -The Analytic Hierarchy/Network Process". *RACSAM (Review of the Royal Spanish Academy of Sciences, Series A, Mathematics)*, 102 (2): 251–318.
- Salaheldin, S. I. (2003), "The implementation of TQM strategy in Egypt: a field force analysis", *The TQM Magazine*, Vol.15 No.4, Pp.266-74.
- Sabah M. Al-Najjar,2011. ISO 9001 Implementation Barriers and Misconceptions "International Journal of Business Administration" Vol. 2, No. 3
- Schmalensee, W, A, 1970, "Regulation and the durability of goods," *Bell Journal of Economics and Management Science*, Vol, 1, No, 1, pp, 54-64,
- Singels J., Rue! G. and Van de Water H., (2001), "ISO 9000 series: Certification and Swan, P, L, 1971, "The durability of goods and the regulation of monopoly," *Bell Journal of Economics and Management Science*, Vol, 2, No, 1, pp, 347-357,
- Van der Wiele, T., van Iwaarden, J., Williams, R. and Dale, B. (2005) 'Perceptions about the ISO 9000 (2000) quality system standard revision and its value: the Dutch experience', *International Journal of Quality and Reliability Management*, 22 (2), pp. 101-119.