A Proposed Knowledge Management System in SOFCON: Saudi Arabia Perspectives

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ABSTRACT

Knowledge management has became vital in organizations in today's business environment as the implementation of knowledge management tends to provide benefits such as an enhanced way to organize existing corporate knowledge; making individuals more effective at sharing explicit knowledge; and providing new ways to expose tacit knowledge, and in turn this will lead to competitive advantage. It has been argued that the role of quality professional can contribute greatly to knowledge management to include raising strategic awareness, improving the knowledge management process, cost minimization through the usage of one model to blend knowledge management and quality verification and leading the way, and in turn achieving organizational competitiveness. Due to the contribution of quality professional to the enhancement of the knowledge management process, it is suggested that a quality management system that supports all the quality management dimensions and knowledge creation processes will be more effective than one that does not. Therefore, the purpose of this paper is to establish a knowledge management system where quality professional will be a key player   in capturing the knowledge needed for the needs of small and medium sized organizations in Saudi Arabia.

Keywords: Knowledge Management, Competitive Advantage, Saudi Arabia, Quality
            Professionals

1.0   Introduction

With the intense competition facing organizations globally, it has been emphasized that there is a need for organizations and economies to upgrade their production capacity, to restructure their operations and to improve their international competitiveness. Therefore it is imperative for organizations to develop the ability and the expertise in learning and innovate new products in order to achieve competitive advantages (Brockman and Morgan, 2003; Walter and Kellermanns, 2007). Under the environment surrounding organizations in today's market, it is imperative for organizations to create, acquire and successfully use new knowledge and maintains this knowledge as an important source for acquiring competitive advantage (Inkpen, 2000; Wang et al., 2004; Halawi et al., 2006; Passerini, 2007). In achieving this, it is recommended the utilization of a knowledge management system or process, which turns an organization's intellectual asset both recorded information and the talents of members into greater productivity, new values and increased competitiveness (Lin and Lee, 2005).

An effective knowledge management system enables a firm to convert learning capabilities and core competencies into competitive advantage. It facilitates acquisition of tacit and explicit knowledge; that is to acquire the skills to support adoption, knowledge application in the terms of the ability to put knowledge to practical use, knowledge sharing by developing knowledge sharing culture and distributing the knowledge to members in the organization, storage, the process of retaining the knowledge in formal

systems and informally, through values, norms, culture and structure of organization and retrieval, the process of utilizing the stored knowledge (Lin and Lee, 2005; Adams and Lamont, 2003). It is clear that organizations should start focusing on developing and adapting a knowledge management process/system to suit their needs in order to maintain their competitiveness in today's market, as not much of knowledge is documented and it disappears from the organizations' knowledgebase when staff members leave the organization. Therefore the purpose of this article is to develop a knowledge management system suitable for the need of small and medium size organizations in Saudi Arabia based on a case study analysis.

2.0   Literature Review

Recently the rise of the knowledge economy has created new challenges for organizations and made managing intellectual capital an integral part of the firm's strategy, thus making the creation, development and capturing of value from knowledge and competencies a critical issue. This is due to the fact that not much knowledge is documented and it disappears from the organizations' knowledgebase when staff members leave the organizations and also knowledge management is often promoted as a significant source of competitive advantage. It is important to understand the concept of knowledge management, where many authors agree that knowledge management requires a total organizational transformation including organizational culture, structure and management style (Davenport and Prusak, 2000). Beckman (1999) defines knowledge management as the formalization of and access to experience, knowledge, and expertise that create new capabilities, enable superior performance, encourage innovation, and enhance customer value. While Colman (1999) employs knowledge management as an umbrella for a wide variety of interdependent and interlocking functions which include knowledge creation, knowledge valuation and metrics, knowledge mapping and indexing, knowledge transport, storage and distribution, knowledge sharing. In furthering our understanding of the knowledge management concept, Davenport et al. (1998) elaborated further by highlighting that knowledge management is concerned with the exploitation and development of the knowledge assets of an organization with a view to furthering the organizations' objectives. The knowledge to be managed includes both explicit, documented knowledge and tacit, subjective knowledge. Management entails all of those processes associated with the identification, sharing and creation of knowledge. This requires systems for the creation and maintenance of knowledge repositories and to cultivate and facilitate the sharing of knowledge and organizational learning. Therefore, knowledge management seems to be concerned with capturing an organization's know-how and know what through creation, collection, storage, distribution and application (Coleman, 1999; Beckman, 1999; Miller, 1999).

It is clear that the goal of knowledge management in organizations is the creation of learning organizations that capable of measuring, storing and capitalizing on the expertise of employees to create an intelligent organization to secure its viability and overall success (Wiig, 1997; Bollinger and Smith, 2001). Jarrar (2002: 322) supported this further and states that *knowledge management is a systematic process of underpinning, observation, instrumentation, and optimization of the firm's knowledge economies. Its overall purpose is to maximize the enterprise's knowledge-related effectiveness and returns from its knowledge assets and to renew them constantly.*

Knowledge management has became vital in organizations in today's business environment as the implementation of knowledge management tends to provide benefits such as an enhanced way to organize existing corporate knowledge; making individuals more effective at sharing explicit[1] knowledge; and

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[1] Explicit knowledge refers knowledge that is easy to communicate. Hubert (1996), Nonaka and Konno (2000) and Seubert et al. (2001) defined explicit knowledge as that which can be captured and expressed in words and numbers and shared in the form of data by courses or books for self-reading, scientific

providing new ways to expose tacit[2] knowledge (Frappaolo and Wilson Todd, 2000), and in turn this will lead to competitive advantage as emphasized by Leitch and Rosen (2001). The effective utilization of tacit knowledge is essential for competitiveness, but the problem is tacit knowledge is difficult to capture (Frappaolo and Wilson Todd, 2000). Tacit knowledge is embedded in company practices and the people of an organization. it is highly personalized context sensitive and informal, and very hard to measure and manage. It includes know-how, intuition and informal communications that make up a large part of the company culture (Nonaka and Konno, 2000). Across industries during 1998 and 1999, there was a clear perception developed which illustrated the fact that tacit knowledgebase could account for the majority of an organization's collective knowledge. To clarify this notion, a survey carried out by Delphi Group in 1999 surveying companies about the primary repository for knowledge within the organization. The findings suggested that 42% of the corporate knowledge was within the minds of employees (Frappaolo and Wilson Todd, 2000), and this knowledge need to be captured and maintained in organizations for competitive advantage.

In order to advance the concept of knowledge management and its impact on organizational performance, it has been argued that the role of quality professional can contribute greatly to knowledge management to include raising strategic awareness, improving the knowledge management process, cost minimization through the usage of one model to blend knowledge management and quality verification and leading the way (Okes, 2005), and in turn achieving organizational competitiveness. Galagan (1997) proposed a sample list of knowledge management processes which include generating new knowledge; assessing knowledge from external sources; representing knowledge in documents, database, and software; embedding knowledge in processes, products or services; transferring existing knowledge around an organization; using accessible knowledge in decision making; facilitating knowledge growth through culture and incentives; and measuring the value of knowledge assets and the impact of knowledge management. Due to the contribution of quality professional to the enhancement of the knowledge management process, it is suggested that a quality management system that supports all the quality management dimensions and knowledge creation processes will be more effective than one that does not (Linderman et al., 2004).

In reaching a quality management system that supports all the quality dimensions and knowledge creation processes to suit the needs of small and medium sized organizations, as they have different characteristics than large organizations where they are more concerns about the daily operations and costs. It must be stated that the role of quality professional in today's business environment will change to incorporate various tasks related to knowledge creation and management to achieve organizational competitive advantage and excellence. In elaborating further on the notion of quality professionals where their conventional role is to lead and champion process improvement initiatives that can have regional or global focus in a variety of service and industrial settings. Quality professionals facilitate and lead team efforts to establish and monitor customer/supplier relations, support strategic planning and deployment

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formulae, specifications, manuals and the like. This kind of knowledge can be readily transmitted between individuals formally and systematically.

[2] Tacit knowledge refers to a knowledge which is only known by an individual and that is difficulty to communicate to the rest of an organization. Nonaka and Konno (2000) add that tacit knowledge is deeply rooted in an individual's actions and experience, as well as in the ideals, values or emotions he or she embraces. It has two dimensions: the first is the technical dimension, which encompasses the kind of informal personal skills or crafts often referred to as know-how. The second is the cognitive dimension. It consists of beliefs, ideals, values, schemata and mental models which are deeply ingrained in us and which we often take for granted. While difficult to articulate, this cognitive dimension of tacit knowledge shapes the way we perceive the world.

initiatives and help develop measurement systems to determine organizational improvement. They also motivate and evaluate staff, manage projects and human resources, analyze financial situations, determine and evaluate risks and employ knowledge management tools and techniques in resolving organizational challenges. According to Wilson and Asay (1999), a new challenge for quality professional has arisen in the knowledge management movement. Based on the understanding of the potential for rigorous, meaningful and effective knowledge management emerges out of the quality role as much as from the exciting innovations in information technologies. The degree to which quality professionals can grasp and master this growing potential will determine their ability to shape the knowledge era and ensure that quality principles continue to drive organization strategies.

3.0   Research Methodology

The purpose of this paper is to establish a knowledge management system based on or incorporating quality management dimensions to capture the knowledge needed for the needs of small and medium sized organizations, as this will benefit the company in term of capturing knowledge, cost minimization, the effective usage of quality professionals where they will utilize their time and expertise in running a integrated system for quality and knowledge management. In accomplishing this task, the authors decided to use qualitative research and more specifically will follow a case study methodology in order to build a knowledge management conceptional model that is faithful to the evidence found in real world cases. In choosing this research method the authors acknowledge the need to take account of researcher bias. Qualitative researchers assume it is impossible to eliminate the effect of the researcher completely. The author assumes that there is no objective world that exists independently of ones observations. One recognizes that the very act of observation affects the phenomenon being studied. The author's subjective perceptions, feelings and interpretations and those of the study participants, are all considered legitimate data. Recognizing this does not mean the author arbitrarily interjects personal opinions or selects evidence to support personal prejudices. Instead, the author's presence is always an explicit issue. As a qualitative researcher the author takes advantage of personal insight, feelings and perspective as a human being to understand the concept under study.

4.0   Case Study

The organization (known as SOFCON) under investigation to support building the knowledge management system has began operation in 2001 as an engineering design organization in the oil and gas sector and realized substantial growth in a very short period of time. The organization is located in Al Khobar, Saudi Arabia and has been granted ISO 9000 certification and this led the organization to adopts a strict conventional corrective action process (figure 1).

5.0   Findings & Discussion

5.1   The Corrective Action Process at SOFCON

Figure 1 presents the original quality management system nonconformity handling process in SOFCON. An auditor or assessor audits or assesses a department for compliance against certain requirements or standards. If the auditor or assessor identifies nonconformity, a Corrective Action Request (CAR) is issued and forwarded to the quality department where the incident will be recorded and forwarded to the concerned department for a corrective action. The concerned department reviews the CAR, takes a suitable action to eliminate the detected nonconformity, determines the causes and advises the quality department about the progress. The quality department coordinates with the auditor/assessor to verify the

corrective action and close the CAR upon acceptable action. Furthermore, the quality department determines a preventive action to eliminate the causes of potential nonconformities and prevent their occurrence, seeks management department approval and generalizes it to all applicable departments. Upon conclusion of each corrective or preventive action, the quality department forwards the action to the document control department for documentation and record keeping.
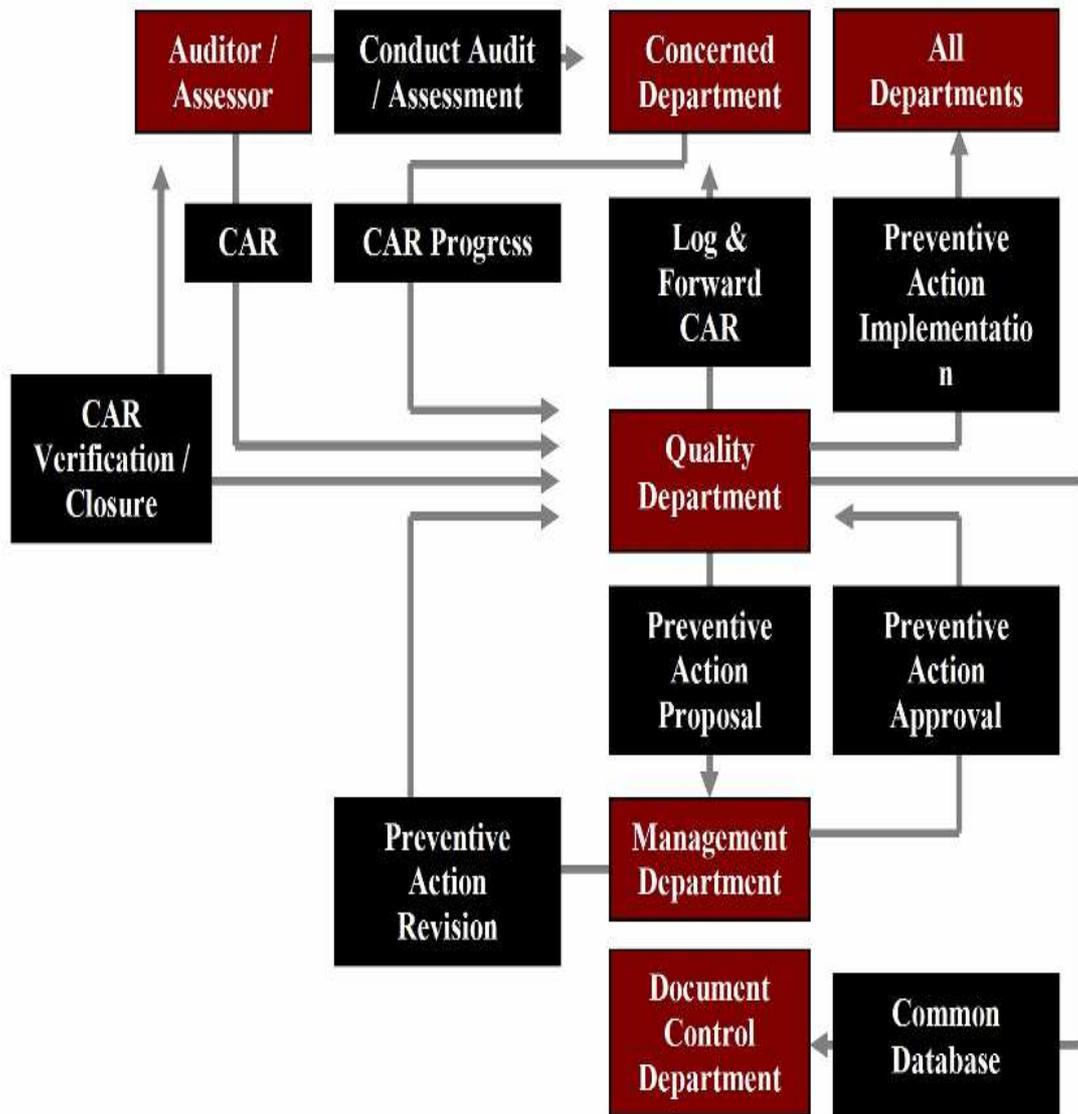

Figure 1: Conventional Corrective Action Process At SOFCON

5.2   The Knowledge Management System

Several knowledge management models were highlighted through different authors (Davenport and Prusak, 2000; Ward and Aurum, 2004; Tiwana, 2000 and McElroy, 2000) and they are not applicable to the needs of small and medium sized organizations and also they are not based on a quality management system in order to minimize the associated costs with implementing such models.   Therefore the proposed knowledge management system (Figure 2) consists of components including knowledge identification and initiation; knowledge acquisition, knowledge representation and knowledge dissemination.

Figure 2 presents how the structure of the corrective action process has been modified to create the knowledge management system. The role of each entity in the organization with quality department playing the central role is described as follow:

- An organization member may identify a knowledge sharing opportunity and therefore initiates a Knowledge Sharing Request (KSR) and forward it to the quality department. The KSR shall include a background, root cause/benefit, recommendation and initiator.

- The quality department receives the KSR initiated by any member, log it, check if it is not available in the common knowledgebase and advise the initiator if it is duplicated. This is the first refining step the system applies before the KSR can be carried to further processing.

- The quality department forwards the KSR filtered for not been existed in the knowledgebase and forwards it to the concerned department that may benefit from it.

- After review, the concerned department evaluates, validates and sends the KSR recommendations to the quality department. Recommendations from the concerned department, for inclusion or deletion, shall include justification, cost impact and schedule if implementation is recommended.

- The quality department closes the KSR and informs the initiator if the concerned department(s) evaluation result is negative.   Otherwise, the quality department forwards the KSR with recommendations from the concerned department(s) to the management department for approval. The quality department incorporates revisions proposed by the management department (if any), close the KSR if disapproved or forwarded to the document control department for inclusion in the knowledgebase if approved.

- The quality department notifies all departments about the new information that are made available in the knowledgebase.

Figure 2: The Knowledge Sharing Request (KSR) Process

5.3 Comparative analysis: corrective action & knowledge sharing process

Comparing the corrective action and the knowledge management processes as presented in Figure 1 and 2 respectively, it is clear that the original organization functions handle the knowledge management process with the quality department been the central entity. The quality professionals will have to shoulder additional workload resulting from the knowledge management process. However, since the knowledge management process structure doesn't differ from the basic corrective action process, the quality professionals can extend their responsibilities to cover the knowledge management. Therefore, it is not critical for organizations to add human resources for the implementation of knowledge management process. On the other hand, the organization can initially use simple spreadsheets as infrastructure for knowledge management where the document control department can handle with suitable password permissions to enable the document control department to edit, read, search and sort while other departments read, search and sort the knowledgebase.

5.4   Benefits form the knowledge management model implementation

The implementation of the knowledge management model will enable the organization to capture tacit knowledge from any individual creates a rich view of information captured, and provides tools to apply knowledge to solving existing problems. It also helps individuals and team members to work intuitively by capturing a great deal of information and links associate packets of information to create reusable knowledge. The knowledge management model is capable to accelerate accumulation and dissemination of knowledge by all staff, to provide easy and rapid access to knowledgebase. It also stimulates staff to experience the value of organization knowledge exchange and to eliminate time and space constraints in communication.

5.5   Challenges of the proposed model

The challenge facing the organization in implementing the proposed model is how to maintain the knowledge about services in addition to employees' knowledge.   The organization may engage knowledgeable workforce who have a tendency to stay in job positions for lengthy period of time. In case of high turnover rate of employees who are expert at developing and using the company's existing knowledge bases, the rate of knowledge acquisition into the system should be high. Employees who are not willing to stay in the organization may not positively contribute to build up the knowledgebase. Therefore, it is very critical for organizations to convert what is already known into useful knowledgebase and to continually update the knowledgebase such that it remains current, accessible and usable.

6.0   Conclusion

This study suggests that quality management systems play a good tool to guide and establish a platform for knowledge management. The study suggests that quality knowledge management system can be operated by organizations in a combined value adding framework. Organizations can develop an integrated management system mainly based on integrated assessment philosophy. The main factors taken into account when designing the system are the integration of the quality and knowledge for organizational excellence.

The knowledge system builds on the approach of continuously evaluating the organization strategy, structure and systems in terms of what is best in light of the prevailing conditions. This gives all organization members the opportunity to participate in the system irrespective of complexity or level of the issues they address. The level of integration that the organization may pursue in the design of the system depends on both the complexity of its current system and the will of the company to pursue integration.

References

Adams, G. L. and Lamont, B. T. (2003), "knowledge management systems and developing sustainable competitive advantage", **Journal of Knowledge Management**, Vol. 7, No. 2, pp. 142-154

Beckman, T. J. (1999), "The current state of knowledge management", in Liebowitz, J. (ed), **Knowledge Management Handbook**, CRC Press, Boca Raton.

Bollinger, A. S. and Smith, R. D. (2001),"Managing organizational knowledge as a strategic asset", **Journal of Knowledge Management**, Vol. 5, No. 1, pp. 8-18

Brockman, B. K. and Morgan, R. M. (2003), "The role of existing knowledge in new product innovativeness and performance", **Decision Sciences**, Vol. 34, No. 2, pp. 385-419

Coleman, D. (1999), "Groupware: Collaboration and knowledge sharing", In Liebowitz, J. (ed), **Knowledge Management Handbook**, CRC Press, Boca Raton.

Davenport, T. and Prusak, L. (1998), **Working Knowledge**, Harvard University Press, Boston

Davenport, T. and Prusak, L. (2000), **Working Knowledge: Howe organizations manage what they know**, Boston, MA: Harvard Business School Press McElroy, M. W. (2000), "The new knowledge management", **Knowledge and Innovation Journal of the KMCI**, Vol. 1, pp. 43-67

Davenport, T. H., Delong, D. W. and Beers, M. C. (1998), "Successful knowledge management projects", **Sloan Management Review**, Vol. 39, No. 2, pp. 43-57

Galagan, P. (1997), "Smart companies (Knowledge Management)", **Training and Development**, Vol. 51, No. 12, pp. 20-25

Halawi, L. A., McCarthy, R. V. and Aronson, J. E. (2006), "Knowledge management and the competitive strategy of the firm", **The Learning Organization: An International Journal**, Vol. 13, No. 4, pp. 384-397

Hubert, S. (1996), "Tacit knowledge: The key to the strategic alignment of intellectual capital", **Strategy and Leadership**, Mar/Apr

Inkpen, A. (2000), "Learning through joint ventures: A framework of knowledge acquisition", **Journal of Management Studies**, Vol. 37, No. 7, pp. 1019-1043

Jarrar, F. Y. (2002), "Knowledge management: Learning for organizational experience", **Managerial Auditing Journal**, Vol. 17, No. 6, pp. 322-328

Leitch, J. M. and Rosen, P. W. (2001), "Knowledge management, CKO and CKM: The keys to competitive advantage", **The Manchester Review**, Vol. 6. No. 2 & 3, pp 9-13

Lin, H. F. and Lee, G. (2005), "Impact of organizational learning and knowledge management factors on e-business adoption", **Management Decision**, Vol. 43, No. 2, pp. 171-188

Linderman, K., et. (2004), "Integrating quality management practices with knowledge creation processes", **Journal of Operations Management**, Vol. 22, pp. 589-607

Miller, (1999), "Building the ultimate resource", **Management Review**, Vol. 8, No. 2

Nonaka, I. and Konno, N. (2000), "The concept of "ba": Building a foundation for knowledge creation", in Hermans, J. (Ed.), **The Knowledge Management Yearbook 1999 – 2000**, Butterworth – Heinemann, pp. 37-51

Okes, D. (2005), "Corral your organization's knowledge", **Quality Progress**, Vol. 1, pp. 25-30

Passerini, K. (2007), "Knowledge driven development indicators: Still an eclectic panorama", **Journal of Knowledge Management**, Vol. 11, No. 5, pp. 115-128

Seubert, E., Balaji, Y. and Makhija, M. (2001), "The knowledge imperative", http://www.cio.com/sponsors/031501_km.html, accessed 13 January 2002

Tiwana, A. (2000), **The knowledge management toolkit: practical techniques for building a knowledge management system**, USA: Prentice Hall

Walter, J., Lechner, C. and Kellermanns, F. W. (2007), "Knowledge transfer between and within alliance partners: Private versus collective benefits of social capital", **Journal of Business Research**, Vol. 60, No. 7, pp. 698-710

Wang, P., Tong, T. W. and Koh, C. P. (2004), "An integrated model of knowledge transfer from MNC parent to China subsidiary", **Journal of World Business**, Vol. 39, No. 2, pp. 168-182

Ward, J. and Aurum, A. (2004), "Knowledge management in software engineering describing the process", **15ᵗʰ Australian software engineering conference (ASWEC) proceedings**, Melbourne, Australia: IEEE Computer Society Press, pp. 137-146

Wiig, K. M. (1997), "Knowledge management: Where did it come from and where will it go?", **Expert Systems with Applications**, Vol. 13, No. 1, pp. 1-14

Wilson, L. T. and Asay, D. (1999), "Putting quality in knowledge management", **Quality Progress**, pp. 25-31

Authors' Background

Prof. Hesham Magd is the Vice Chancellor and Dean of Prince Mohammad University, Al Khobar, Saudi Arabia, where he serves as the Dean of the College of Business Administration and the EMBA Director. He has held various administrative posts in the UK and the Middle East and he is well known for his scholarly activities around the UK and the Middle East where he has developed several models to suit the need of small and medium sized organizations. In addition, he serves as editor and associate editor for several journals and teaches a variety of business courses, including small business management, total quality management, human resource management, entrepreneurial process and organizational behavior. His personal research interests include total quality management, benchmarking, human resource management, small and medium-sized enterprises and e-business in Europe, Africa and the Middle East. In recent years, he has published articles in a number of scholarly journals including *The TQM Magazine, International Journal of Benchmarking, Managerial Auditing Journal, and International Journal of Contemporary Hospitality Management*.

Mr. Salah Hamza *is from SOFCON Consulting Engineering Company in Saudi Arabia, Salah Hamza is a Quality and Project Management professional with almost 23 years of experience in the engineering, design, and project management industry. A large portion of this has been in organizational management, project management, civil engineering, quality management, and surveying engineering. Salah has experience of supervision and management at both corporate and project levels. Salah has taken a key role on the development, maintenance, management, and certification of the Quality Management System and on managing quality of many multi-million dollar (oil & gas/infrastructure) design projects in Saudi Arabia. He earned both B.Sc and M.Sc degrees in Engineering from the University of Khartoum and M.Sc degree in Total Quality & performance Management from Bradford University.*