International Review of Business Research Papers
Volume 6. Number 6. December 2010 Pp.164 –173

Quality Management in Small and Medium Enterprises: Experiences from a developing country

Shahnorbanun Sahran*, Masoomeh Zeinalnezhad** and Muriati Mukhtar***

The trend towards global market orientation and trade liberalization force SMEs moving to implementation of quality systems. This empirical study aims to explore current implementation of management tools and advanced improvement techniques within some Malaysian SMEs in order to enhance a deeper understanding of quality management within such contexts. Realizing what factors impact on how quality control is managed in these organizations, is another extended goal. It has found that the most frequently applied management tools among Malaysian SMEs are customer survey, quality assurance, benchmarking and management training; while, MIS, policy deployment and employee survey had been applied, with the least frequency. Furthermore, quality assurance, customer survey, management training and quality auditing program were the most effective management tools in the respondents' viewpoint. Then it can be concluded that the majority of Malaysian firms have not given due attention for developing their quality aspects in the past. Especially, the more complex quality tools and techniques are barely used among them. Consequently, for sustaining their competitiveness, they have to embrace quality management techniques efficiently, as large organizations need assurance of high quality goods and services from SMEs.

Field of Research: Management of small business

1. Introduction

Until the mid-seventies, SMEs had a minor role in economic development due to the dominance of the mass production paradigm in the industry. After this period, this paradigm was increasingly challenged, leading to large firms' fragmentation, unemployment growth and creation of new SMEs (Acs, 1992; cited in Fathian et al., 2008). When in the early 1980s unemployment rose in many of the European economies, the interest in SMEs development and self-employment (through micro businesses) intensified. Many studies were undertaken during that period and a vision for SMEs based economic growth was developed.

*Shahnorbanun Sahran, Department of Industrial Computing, Faculty of Information Science and Technology, National University of Malaysia (UKM), Malaysia email: shah@ftsm.ukm.my
**Masoomeh Zeinalnezhad, Islamic Azad University, Shoushtar branch, Faculty of Engineering, Shoushtar, Iran (currently a PhD student at the Department of Industrial Computing, University Kebangsaan Malaysia) email: m.zeinalnezhad@gmail.com
***Muriati Mukhtar, Department of Industrial Computing, Faculty of Information Science and Technology, National University of Malaysia (UKM), Malaysia email: mm@ftsm.ukm.my

Many nations, particularly developing countries, have acknowledged the value of small and medium enterprises, which are seen as the engine of growth for any economy (Okpara, 2009). However, recent global changes have forced manufacturing organizations across the globe to reconsider their management techniques and tools. To provide empirical evidence on quality management practices, this study explores the various quality improvement tools which were applicable and effective to the SMEs' environments.

After an introductory section, related literature will be reviewed in section 2, as, characteristics, needs and importance of SMEs in the economies will be described in subsection 1. Following that, in subsections 2 and 3, challenges and barriers which hinder SMEs' growth will be investigated briefly. The rest of this part, subsection 4, is devoted to literature review of the quality management tools implemented in SMEs. Section 3, is related to research methodology and survey objectives and results of the survey. Finally, section 4 gives a comprehensive conclusion of the study.

2. Literature Review

2.1. Definition, Characteristics and Needs of SMEs

SME refers to small and medium enterprises. There are a number of definitions of what constitutes an SME (Jafari et al., 2007; Fathian et al., 2008). Definitions of SMEs vary between countries (Thassanabanjong et al., 2009; Mirbargkar, 2009; Ghanatabadai, 2005) with some using the number of members and others, business capital. However, many developing countries have defined micro-businesses include sole proprietorships and partnerships without employees, businesses employing fewer than five people and other businesses employing five or more people but less than 50 people as small, whereas medium businesses are defined as those employing fewer than 150 people.

In the manufacturing sector, SMEs act as specialist suppliers of components, parts and sub-assemblies to larger companies (Gadenne and Sharma, 2009;Singh et al., 2010), because these items can be produced at a cheaper price compared to the price large companies must pay for in-house production of the same components (Singh et al., 2010). Majority of SMEs have simple systems and procedures, which allows flexibility, immediate feedback, short decision-making chain, better understanding and quicker response to customer needs than larger organizations (Singh et al. 2008). The success of SMEs basically depends on the figure of the entrepreneur-owner, who is personally responsible for managing the activities of the company. SMEs are flexible and can adapt quickly to changing market conditions, generate employment, and make a significant contribution to exports and trade (Jain, 2007). Generally, in SMEs, decision-making processes are not very formalized, rather are very centralized and based on the experience, personal knowledge and intuition of the people in the key roles in the company (Garengo et al., 2005).

2.2. The significance of SMEs

SMEs are found in every sector of the economy and play a vital role. They are crucial for sustained, long-term growth, dynamism and employment (Thassanabanjong et al., 2009). SMEs are regarded as one of the main driving forces of economic development, stimulating private ownership and entrepreneurial skills (Gadenne and Sharma, 2009). For developing economies SMEs often offer the only realistic prospects for increases in employment and value added services or products (Mirbatrgkar, 2009). They generally employ the largest percentage of the workforce and are responsible for income generation opportunities (Singh, 2010). Small and medium enterprises are critical to the economies of all countries (Akhavan and Jafari, 2008), and especially the developing ones (Fathian et al., 2008; Gadenne and Sharma, 2009) as Okpara (2009) believed that they were the engine of growth for any economy. As noted by Singh et al. (2008) and Mirbargkar (2009), SMEs are considered as the backbone of economic growth in all countries and they contribute in providing job opportunities, act as supplier of goods and services to large organizations (Singh et al., 2008; Garengo et al., 2005; McAdam et al., 2000). The importance of the small and medium industries will become more significant as the country expands its industrial base in meeting the challenges of the new millennium (Sohail and Boon Hoong, 2003).

2.3. Barriers to growth in SMEs

Although SMEs are playing an increasingly more important role, only a few has achieved high growth. The main barriers to growth in the SME sector are niche players, management resources, market intelligence and long-term strategy (McAdam and Kelly, 2002). Moreover, Khan et al. (2007) observed that SMEs face the resource constraints in terms of finance, time, people and a general lack of knowledge and expertise relative to current improvement methodologies and frameworks. Due to a lack of human and financial resources that keeps SMEs from adopting new technological solutions and innovative managerial practices, they could not improve their overall performances (Grando and Belvedere, 2006).

Managers at small businesses face real competitive challenges. Most small ventures lack the brand recognition, channel power, market reach, and resources that sustain larger rivals. Lacking these weapons, small-business managers rely on agility, hard work, and passion to gain market acceptance (Fawcett et al., 2009). These enterprises often operate under the constraints of scarce resources, a flat organizational structure, a lack of technical expertise, a paucity of innovation, reduced intellectual capital and the like.

2.4. Quality Management Tools

Quality is widely recognized as one of the most important disciplines/strategies or competitive priority for an organizational development (Sharma and Kodali, 2008). Quality management tools and techniques are practical methods, skills, means or mechanisms that can be applied to particular tasks to facilitate positive changes and improvements (Fotopoulos and Psomas, 2009). Examples of them are: benchmarking,

cross functional team, statistical process control (SPC), brainstorming, quality function deployment, and design of experiment (DOE). Past studies have reported that the application of quality management (QM) practices in small and medium enterprises, improved their overall performance by a combination of “hard” QM factors such as benchmarking and quality measurement, continuous improvement, and efficiency improvement; and the “soft” QM factors consisting of top management philosophy and supplier support, employee training and increased interaction with employees and customers (Gaddene and Sharma, 2009). More recently, Abdullah (2010) in his study of TQM practices at the SME level within Malaysia, has found that there is a logic and structure to high performance businesses and the application of TQM, as the award-winning companies perform better over their closest rivals.

3. Research Methodology

3.1. Survey Objectives

The survey methodology was used to obtain general overall information on application and effectiveness of quality improvement tools and techniques among Malaysian industrial SMEs. To achieve this, based on literature review and further information gathered by interviews to experts, the authors developed a questionnaire comprising of thirty questions in three parts: General plant information, current implementation of quality management, and continuous improvement programs. The target population for the study was 23 manufacturing firms in Selangor, Malaysia. The sample covered organizations in a variety of industries ranging from plastic products (17.4 per cent), metal products and precision parts (17.3 per cent), pharmaceutical (8.7 per cent), wood products (17.3 per cent), food beverage (13 per cent), paper and printing (13 per cent), chemical petrochemical (4.3 per cent), machinery and engineering (8.7 per cent).

3.2. Survey Results and Findings

3.2.1. Profile of the respondents

The majority (87 per cent) of the companies surveyed were SMEs with less than 150 employees and more than five employees. Moreover, 22% of the companies had less than RM250000 annual turnover, while about half of them (47.8 percent) had a turnover which was less than RM10 million and more than RM250000 and 17.4% had less than RM25 million and more than RM10 million. Others (4.3 per cent) had more than RM25 million annual sales revenue.

The main focus of the target market in about seventy percent of the respondent companies was basically only on domestic market and only a marginal number of the companies had targeted international markets (Focus on only domestic market: 34.8%, more focus on domestic market rather than international market: 34.8%, more focus on international market rather than domestic: 17.4%, equally focus on domestic and international market: 13% and there was not any plant that just focused on only international market).

More than 90% of the sample target enterprises had operated more than five years, as 7.8% had operated for less than 5 years, 34.8% between 5 to 10 years, 17.4% between 11 to 15 years and others (39.1 per cent) had operated more than 15 years.

The majority (65.2 per cent) of surveyed SMEs was completely owned by Malaysians, meanwhile 17.4% were joint-ventures and the remainder (8.7 per cent) was owned by foreigners.

3.2.2. Level of Implementation of Quality Management Tools among Malaysian SMEs

Section 2 and 3 of the survey questionnaire consisted of *the current implementation of quality management* and *continuous improvement programs.* In these sections, the respondents were asked to indicate their level of management and quality improvement tools and techniques by using a scale of 0 to 4 for applicability and effectiveness. Table 1 illustrates the mean score for each management and improvement tools and techniques.

Referring to Table 1, the most frequently applied management tools among Malaysian SMEs are customer survey, quality assurance, benchmarking and management training. While, MIS, policy deployment and employee survey had been applied, with the least frequency.

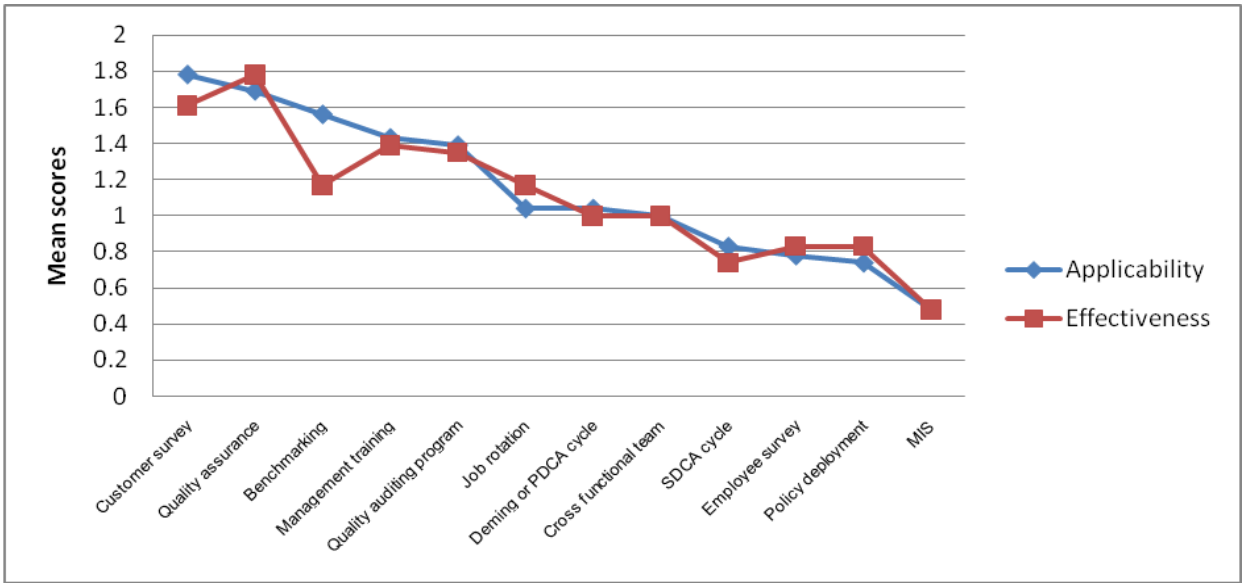
Table 1. Mean scores for applicability and effectiveness of management tools

Rank	Management improvement tools and techniques	Applicability (mean)	Effectiveness (mean)	Rank	Management improvement tools and techniques	Applicability (mean)	Effectiveness (mean)
1	Customer survey	1.78	1.61	**7**	Deming or PDCA cycle	1.04	1
2	Quality assurance	1.69	1.78	**8**	Cross functional team	1	1
3	Benchmarking	1.56	1.17	**9**	SDCA cycle	0.83	0.74
4	Management training	1.43	1.39	**10**	Employee survey	0.78	0.83
5	Quality auditing program	1.39	1.35	**11**	Policy deployment	0.74	0.83
6	Job rotation	1.04	1.17	**12**	MIS	0.48	0.48

However, quality assurance, customer survey, management training and quality auditing program were the most effective management tools in the respondents' viewpoint (see Figure 1).

According to the questionnaires' findings, over 69% of the surveyed plants never entered for any kind of quality award, while 17% had local award, 9% had Malaysian national award and the remainder had international quality award (13 per cent). Moreover, a total of 61% of the respondents had not implemented any improvement program, yet. Considering the rapid changes in the world economy, they have to embrace quality management concepts in order to improve their productivity and competitiveness in international markets. It is, therefore, imperative for SMEs to meet quality standards, as large organizations need assurance of high quality goods and services from SMEs.

Figure 1. Mean scores for applicability and effectiveness of management tools



In order to find out the level of quality management understanding and knowledge of respondents, the respondents were asked if they knew these concepts. A total of 52% knew *quality improvement activities* and *achieving quality certification*, 43% knew *statistical quality control (SQC)* concept and 35% knew *any best practices* and *total quality management (TQM)*. It could be seen that, in Malaysia, most managers still experience a lack of knowledge with regards to the management concepts and they do not recognize the need to compete in the pursuit of modern technologies. Table 2 confirms this fact, as it illustrates the percentage of current programs of operational competence in these sample SMEs.

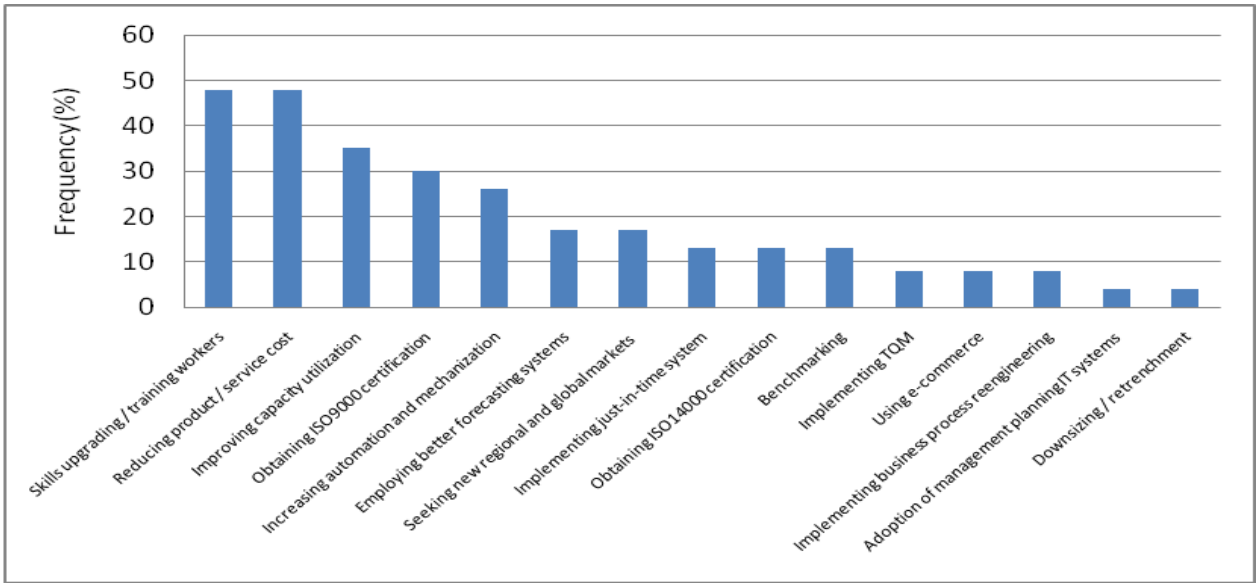
Table 2. The frequency (percentage) of current programs of operational competence

Rank	Current program	Frequency (%)	Rank	Current program	Frequency (%)
1.5	Skills upgrading / training workers	48	**9**	Obtaining ISO14000 certification	13
1.5	Reducing product / service cost	48	**9**	Benchmarking	13
3	Improving capacity utilization	35	**12**	Implementing TQM	8
4	Obtaining ISO9000 certification	30	**12**	Using e-commerce	8
5	Increasing automation and mechanization	26	**12**	Implementing business process reengineering	8
6.5	Employing better forecasting systems	17	**14.5**	Adoption of management planning IT systems	4
6.5	Seeking new regional and global markets	17	**14.5**	Downsizing / retrenchment	4
9	Implementing just-in-time system	13			

It is notable that the percentage of e-commerce usage and TQM in Malaysian firms is relatively low (only 8 per cent). This may be due to the fact that SMEs have little financial and human resources and their owners-managers often do not have the required strategic and global view of their enterprise to conduct quality management tools.

Figure 2, clearly, shows none of these quality improvement programs have implemented in almost half of the sample SMEs. Meanwhile, in majority of firms (about 50 percent), *skills upgrading / training workers* and *reducing product / service cost* are major current programs of operational competence.

Figure 2. The frequency (percentage) of current programs of operational competence



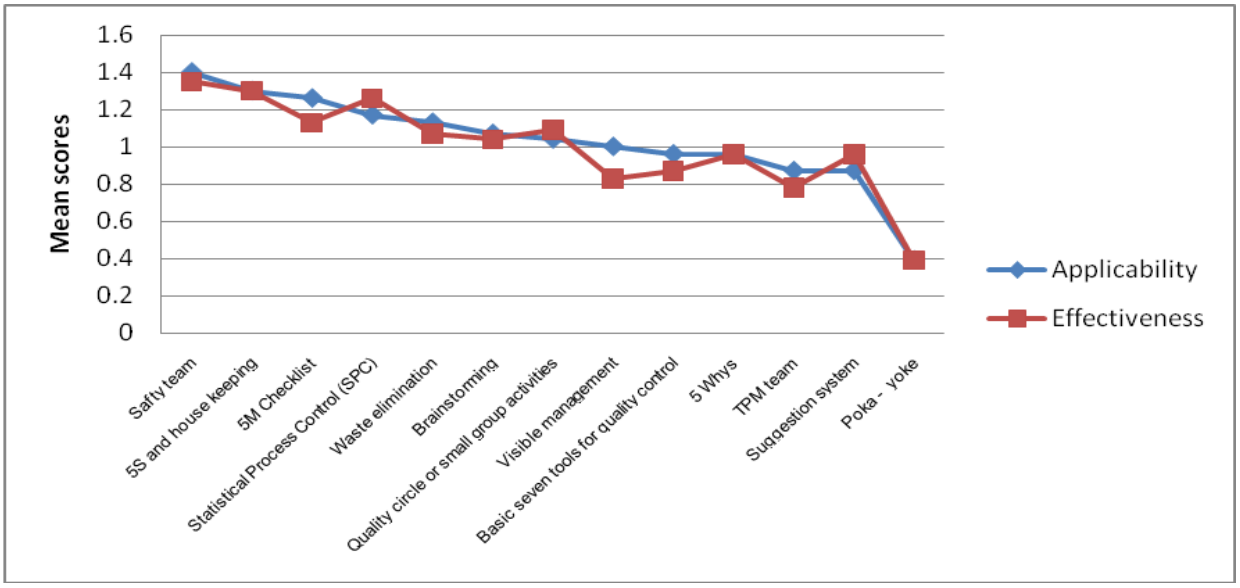
Regarding the usage and efficiency of basic improvement tools and techniques, Table 3 clearly demonstrates that the majority of participating firms had found *Safety team* , *5S and house keeping* and *5M checklist* as the most applicable tools, whereas, *poka – yoke*, *suggestion system* and *TPM team* were the least applicable and effective improvement techniques among sample SMEs. It is worth noting that where *5M checklist* tool was more applied than *statistical process control*, *SPC* had a bigger mean score for effectiveness.

Table 3. Mean scores for how applicable and effective are the applied basic improvement tools

Rank	Basic improvement tools and techniques	Applicability (mean)	Effectiveness (mean)	Rank	Basic improvement tools and techniques	Applicability (mean)	Effectiveness (mean)
1	Safety team	1.4	1.35	**8**	Visible management	1	0.83
2	5S and house keeping	1.3	1.3	**9**	Basic seven tools for quality control	0.96	0.87
3	5M checklist	1.26	1.13	**10**	5 Whys	0.96	0.96
4	Statistical Process Control (SPC)	1.17	1.26	**11**	TPM team	0.87	0.78
5	Waste elimination	1.13	1.07	**12**	Suggestion system	0.87	0.96
6	Brainstorming	1.07	1.04	**13**	Poka - yoke	0.39	0.39
7	Quality circle or small group activities	1.04	1.09				

Figure 3 compares the calculated mean scores for applicability and effectiveness of basic improvement tools in the Malaysian SMEs.

Figure 1. Mean scores for applicability and effectiveness of management tools



And finally, Malaysian firms surveyed were asked if they had ever used any advanced improvement tools such as new seven tools of quality control, statistic method, DOE and etc. The mean score for applicability and effectiveness of these techniques are summarized in Table 4.

Table 4. Mean score for each advanced improvement tools

Rank	Advanced improvement tools and techniques	Applicability (mean)	Effectiveness (mean)
1	Quality function deployment	0.78	0.87
2	Design of experiment (DOC)	0.69	0.78
3	Statistic method	0.61	0.65
4	Motion study and time study	0.48	0.52
5	Work design or Ergonomics	0.48	0.48
6	New seven tools of quality control	0.26	0.35

As Table 4 shows, the most applied and effective advanced techniques in sample SMEs were *quality function deployment* and *design of experiment.* While, *new seven tools of quality control* was the least effective and applicable technique among Malaysian firms surveyed. Overall, it is worthwhile to note that the mean scores for applicability of advanced improvement tools are less than basic ones.

This may relate to resource constraints in terms of finance, time, people and a general lack of knowledge and expertise relative to current improvement methodologies and frameworks (Khan et al., 2007). A wide literature exist which shows that SMEs perform worse than large companies, due to a lack of human and financial resources that keep them from adopting new technological solutions and innovative managerial practices, necessary to improve their overall performances (Grando and Belvedere, 2006).

4. Implications and Conclusion

A wealth of literature exists on benefits of SMEs to an economy. These include: creation of jobs, reducing income disparities, the development of skilled and semi-skilled workers for future industrial expansion, an excellent breeding ground for entrepreneurial and managerial talents, the critical shortage of which is often a barrier to economic development. To stimulate processes of qualitative growth in SMEs, this study investigated the application and effectiveness of basic and advanced quality management tools in Malaysian firms. The results highlighted that most managers still are experiencing low levels of quality management implementation and they do not recognize the need to compete in the pursuit of modern technologies. This could be due to major problems to SMEs such as knowledge loss, human and financial resource limitation, product design and development capability, training infrastructure and networking. There is a growing need for advanced and codified quality managerial practices. SMEs in Malaysia are expected to transcend from their present state through training and skill development, in order to undertake a more important role in supporting the requirements of Malaysia's industrialization process. This study was not entirely free from limitations, especially because of limited sample size; the results must therefore be treated with caution. In studied area, Hulu Longat District, in 2008 there were about 100 SMEs, which a total of 23 SMEs were respondent to their received questionnaires, a respond rate of 20%.persistence loan default and loan loss since mid-1980s.

Acknowledgement

This project was supported in part by UKM Grant Numbers UKM-HEJIM-INDUSTRI-24-2010 and UKM-GUP-NBT-08-29-119. The authors would like to thank UKM for providing its financial sponsorship.

References

Abdullah, A. 2010, “Measuring TQM implementation: a case study of Malaysian SMEs”, *MEASURING BUSINESS EXCELLENCE*, vol. 14, no. 3, pp. 3-15.

Akhavan, P. & Jafari, M. 2008, “Towards learning in SMEs: an empirical study in Iran”, *Development and Learning in Organizations*, vol. 22, no. 1, pp. 17-19.

Fawcett, S.E., Allred, c., Magnan, G.M. & Ogden, J. 2009, "Benchmarking the viability of SCM for entrepreneurial business model design", *Benchmarking: An International Journal*, vol. 16, no. 1, pp. 5-29.

Fathian, M., Akhavan, P. & Hoorali, M. 2008, “E-readiness assessment of non-profit ICT SMEs in a developing country: The case of Iran”, *Technovation*, vol. 28, no. 9, pp. 578-590.

Fotopoulos, C. & Psomas, E. 2009, “The use of quality management tools and techniques in ISO 9001:2000 certified companies: the Greek case”, *International Journal of Productivity and Performance Management,* vol. 58, no. 6. Pp. 564-580.

Gadenne, D. & Sharma, B. 2009, "An investigation of the hard and soft quality management factors of Australian SMEs and their association with firm performance", *International Journal of Quality & Reliability Management*, vol. 26, no. 9, pp. 865-880.

Garengo, P., biazzo, S., Simonetti, A. & Bernardi, G. 2005, "Benchmarking on managerial practices: a tool for SMEs", *The TQM Magazine*, vol. 17, no. 5, pp.440-455.

Ghanatabadi, F. 2005, "Internationalization of small and medium-sized enterprises in Iran", Luleå University of Technology, Department of Business Administration and Social Sciences, Division of Industrial Marketing and e-Commerce an unpublished PhD Thesis.

Grando, A. & Belvedere, V. 2006, "District's manufacturing performances: A comparison among large, small-to-medium-sized and district enterprises", *International Journal of Production Economics*, vol. 104, pp. 85-99.

Jafari, M., Fathian, M., Akhavan, P. & Hosnavi, R. 2007, "Exploring KM features and learning in Iranian SMEs", *VINE: The journal of information and knowledge management systems*, vol. 37, no. 2, pp. 207-218.

Jain, A. 2007, "Significance of SMEs in emerging markets", uploaded November 17, available at: www.insightory.com/view/83//significance_of_smes_in_emerging_markets.

Khan, Z., Bali, R.K. & Wickramasinghe, N. 2007, "Developing a BPI framework and PAM for SMEs", *Industrial Management & Data System*, vol. 107, no. 3, pp. 345-360.

McAdam R. & Kelly M. 2002, "A business excellence approach to generic benchmarking in SMEs", *Benchmarking: An International Journal*, vol. 9, no.1, pp. 7-27.

McAdam, R., Stevenson, P. & Armstrong, G. 2000, "Innovative change management in SMEs: beyond continuous improvement", *Logistic Information Management*, vol. 13, no. 3, pp. 138-149.

Mirbargkar, S.M. 2009, "Global Competitiveness: Iranian SME", SCMS Journal of Indian Management, October - December, 2009.

Okpara J.O. 2009, "Strategic choices, export orientation and export performance of SMEs in Nigeria", *Management Decision*, vol. 47, no. 8, pp. 1281-1299.

Sharma, M. & Kodali, R. 2008. "TQM implementation elements for manufacturing excellence", *The TQM Magazine,* vol. 20, no. 6, pp. 599-621.

Singh, R.K., Garg, S.K. & Deshmukh, S.G. 2008, "Strategy development by SMEs for competitiveness: a review", *Benchmarking; An International Journal*, vol. 15, no. 5, pp. 525-547.

Singh, R.K., Garg, S.K. & Deshmukh, S.G. 2010, "The competitiveness of SMEs in a globalized economy Observations from China and India", *Management Research Review*, vol. 33, no.1, pp. 54-65.

Sohail, M.S. & Boon Hoong, T. 2003, "TQM practices and organizational performances of SMEs in Malaysia", *Benchmarking: An International Journal*, vol. 10, no.1, pp. 37-53.

Thassanabanjong, K., Miller, P. & Marchant, P. 2009, "Training in Thai SMEs", *Journal of Small Business and Enterprise Development*, vol. 16, no. 9, pp. 678-693.