Quality Management Practices and Performance: Empirical Evidence from an Emergent Economy

Yarong Chen [1], Chien Nguyen[2], Luca Sensini[3], Vincenzo Piluso[3]

1 SoB, Hanoi, Vietnam
2 Department of Economics and Management, SoB, Hubei, China
3 Department of Management and Innovation Systems (DISA/MIS) – University of Salerno, Italy

Abstract

This paper investigates the dissemination and use of quality management practices in Vietnamese SMEs, examining the reasons that limit the use of such methods. We used a stratified random sampling technique to select SMEs based on geographic and economic criteria. We submitted a structured questionnaire to companies, using a 5-point Likert-type scale to measure the importance attributed to the various elements considered. Overall, the research findings show that SMEs' knowledge of quality management tools in the Vietnamese economy is still limited. However, as amply demonstrated by the extensive literature on the subject, the competitive advantages associated with these initiatives can favour the survival and development of businesses, making them more solid. In this perspective, policymakers and universities should develop training programs to improve employee skills and prepare them to adopt quality management practices.

Keywords: Quality Management Practices, SMEs, Likert, Performance

1. Introduction

Small and medium-sized enterprises (SMEs) represent the backbone of the world's economies, contributing significantly to society's growth, employment, innovation, and social development (Helfand et al., 2007; Chalmers et al., 2020).

Over the last few decades, the globalisation of markets and the overall technology development have created numerous commercial opportunities for business growth and internationalisation, including for companies in emerging economies (Singh et al., 2006; Kureshi and Mann, 2009; Felício et al., 2016; Diaz and Sensini, 2020; Ozer and Dayan, 2015; Fasil and Osada, 2011; Suárez-Ortega, 2016; Olusanya andAdegbola, 2014).

However, the competition has also become more intense nationally and internationally.In the changing context, many companies have developed quality management (QM) strategies to improve their performance and meet customer needs (Ihua, 2009;Terziovski, 2006).

Quality management practices concern the company's products, processes and services and require the involvement of the entire company to be effectively adopted (Anderson and Sohal, 1999; Beaumont and Sohal, 1999; Zhang et al., 2000; Brady and Allen, 2006; Kumar and Antony, 2008; Zeng et al., 2013; Bamford andGreatbanks, 2005; Hong et al., 2019; Chen et al., 2020).

In the current competitive scenario, applying these tools has become increasingly essential to favour the continuous improvement of company performance and, therefore, the survival and development of the organisation (Kim et al., 2012; Khurshid et al., 2012).

However, large companies have already introduced and implemented quality management tools for some time, while SMEs have more difficulties introducing and implementing such tools (Gotzamani, 2004;Majumdar et al., 2016; Chen et al., 2020; Chalmers et al., 2020).

The literature suggests that SMEs should adopt quality improvement as a path, introducing and implementing quality management practices following what large enterprises have already done.

In Vietnam, SMEs are particularly sensitive to quality management practices to compete in the current complex, competitive scenario. However, on this issue, studies investigating the practical application of these practices in SMEs in Vietnam are pretty rare.

Therefore, this study proposes to investigate the use of quality management practices by SMEs by answering the following research questions:
- Do SMEs apply quality management tools and techniques?
- Which elements (Critical Success Factors) are considered essential for the effective use of these techniques?
- What are the obstacles limiting the development of these tools?

In the context briefly outlined, this paper aims to answer these questions in the context of Vietnamese SMEs.

From this perspective, this research offers a significant contribution to the literature from several points of view. Firstly, the paper analyses the level of introduction and development of quality management tools in a context that has not yet been investigated, providing new empirical evidence relating to a developing economy.

Secondly, this study provides valuable insights for policymakers and top management of SMEs for the effective adoption of quality initiatives to improve the performance of companies in the current and complex competitive scenario.

The paper is organised as follows. The second section examines the literature, while the third illustrates the research design and sample selection methods. The fourth section analyses the spread of quality management practices and the limits to their use. Finally, the last section includes the concluding remarks.

2. Literature Review

Quality management tools and practices are essential for business process management and control, regardless of business size (Anderson andSohal, 1999; Badri et al., 1995; Diaz and Sensini, 2020; Bamford andGreatbanks, 2005;Terzovsky, 2006).

In this perspective, it is a consolidated opinion that these tools play a fundamental role in favouring the continuous improvement of processes and the performance of the company organisation while improving its competitive capacity (Beaumont and Sohal, 1999; Zhang et al., 2000; Brady and Allen, 2006; Kumar and Antony, 2008; Hong et al., 2019; Chen et al., 2020).

The literature has extensively studied quality management practices in different countries, highlighting the importance such tools have on the competitive capacity, performance, survival and development of firms in industrialised countries (Ahire and O'Shaughnessy, 1998; Anderson andSohal, 1999; Kaynak, 2003;Powell, 1995; Sun, 2001;Lakhal et al., 2006; Prajogo et al., 2004; Timans et al., 2011).

However, research has paid less attention to developing economies.In this regard, the scholars who have studied this topic have highlighted that the reference context of SMEs in emerging economies makes the introduction of quality management tools and, more generally, innovations more complex and difficult (Das et al., 2000; Nair, 2006; Akgün et al., 2014; Chalmers et al., 2020; Ratnawati et al., 2019).

Therefore, the contextual conditions limit or make it more challenging to introduce adequate management tools, causing companies to face the complex, competitive scenario with often inadequate tools (Diaz and Sensini, 2020). Many studies conducted on SMEs have highlighted that the lack of knowledge, financial resources, and managerial skills are the main factors that hinder the introduction and development of quality management tools in SMEs (Talib et al., 2014; Chen et al. 2020; Zaramdini, 2007; Diaz and Sensini, 2020;Taner, 2012;Sukwadi, 2015; Sinha et al., 2016;

Olusanya and Adegbola, 2014; Muyengwa et al., 2013;Kureshi and Mann, 2009; Ihua, 2009; among others).
In the context briefly outlined, this study explores the dissemination and application of quality management practices in Vietnamese SMEs, filling a gap in the literature that has addressed this issue.

3. Research Methodology and Sample

The study aimed to investigate SMEs' spread and use of quality management practices in an emerging economy, such as the Vietnamese one.

The sample design was based on a stratified sampling procedure, in which the entire population is divided into strata. A simple random sample was extracted from these strata. This sampling methodology allows for a more efficient estimate for a fixed sample size that helps analyse the companies' main characteristics (Amendola et al., 2020).

We used this approach to use two stratification variables: geographic and economic. Geographical stratification has allowed us to consider the geographical location of each company within the area of interest, considering the structural differences and the demographic density of the companies. The economic stratification has allowed us to analyse companies that are sufficiently different in size, turnover and number of employees.In any case, all the companies represented SMEs.

We set a sample of 250SMEs with the aim ofguarantee an error $| d | \leq 0.055$ with a probability of 0.95 based on the following:

$$n = \frac{n_0}{1 + \frac{n_0}{N}}$$

where N is the population size and n_0 is given by:

$$n_o = \frac{z^2(0.975)p(1-p)}{\varepsilon^2}.$$

To determine the p level, we hypothesised a maximum for the variability of any hypothetical dichotomous variable, which reached p = 0.5. As a result, the sampling error was set as $|\varepsilon| \leq 0.05$ with a probability of 1-α = 0.095.

The data was collected through a closed questionnaire to facilitate data collection and improve the statistical analysis of the results. We used a 5-point Likert-type scale to measure CSFs, where 1 indicated no influence and 5 indicated a powerful effect. This approach is preferable to double-answer questions, such as true/false or yes / no (Hartley, 2013).

Consequently, the approach allows respondents to evaluate and grade their choices, helping researchers better understand the importance and criticality of each factor (Krosnick, 1991; Saris &Gallhofer, 2007).

The questionnaire was sent by email to the companies interviewed and started with an online link. The purposes of our study were explained in the email.In some cases, the questionnaire email was resent to improve the survey response rate.

The literature has shown that the response rate to surveys on quality management techniques shows a variation ranging from 11.5 to 25.2 per cent (Beaumont &Sohal, 1999; Bhuiyan andAlam, 2004; Kumar et al., 2014), suggesting that a low response rate does not necessarily mean there is a high non-response bias (Curtin et al., 2000).

Out of 250 questionnaires submitted for the study, 136 were returned to our survey. Therefore, the overall response rate was over 50%, which is satisfactory for this type of research.

4. Quality Management Practices

This section summarises the main characteristics of the companies in the sample that participated in the survey.

Tab. 1 - General sample information

		N.	%
Sectors	Primary	23	16,9
	Industry	81	59,6
	Services	32	23,5
Age	< 5	9	6,6
	> 5 < 10	32	23,5
	> 10 < 20	61	44,9
	> 20	34	25,0
N. Employees	1 - 19	21	15,4
	20 – 49	43	31,6
	50 - 99	48	35,3
	>100	24	17,6
Studies	No University	108	79,4
	University	28	20,6
Average turnover (US dollars)	< 2 millions	35	25,7
	≥ 2 < 10 millions	74	54,4
	≥ 10 < 50 millions	21	15,4
	>50 millions	6	4,4
QM practices (1 or more)		32	23,5
		104	76,5

The companies analysed mainly belong to the industrial sector (59.6%), while a smaller share belongs to the primary sector (16.9%) and services (23.5%). Most of the companies have been established for more than five years and less than 20 years (68.4%), have employees between 20 and 99 (66.9%) and a turnover of fewer than 10 million dollars (80.1%). The owner of the business, who in most cases coincides with the manager, has not done university studies (79.4%).

Finally, only 23.5% of the companies interviewed introduced and implemented one or more practices for quality management.

The companies surveyed believe that the main critical success factors are education and training, motivation in team members and good customer relationships. Furthermore, increased competition and customer pressure appear to be helping SMEs to learn and improve some practices related to customer relationship management. Although the literature has delved into the rationale limiting the introduction and implementation of quality management practices (Antony et al., 2008; Kumar et al., 2014), the studies empirical on the subject are rare (Diaz and Sensini, 2020).

Our investigation included the various reasons for not implementing these initiatives.
Table 2 shows why companies have not invested in quality management practices.

Tab. 2 - Motivations for not Introducing Quality Management Practices

Motivations (more than one answer)	%
High consultancy and training costs	57.8
Difficulty collecting and organizing data	33.3
Unknown tools	27.6
Complex tools	22.5
Long time	16.4

The high costs of consultancy and training represent the greatest obstacle to introducing quality management practices, while 27,6% of companies don't know these tools.

The results suggest the need to increase initiatives to raise awareness among SMEs of the importance of quality management practices to create a sustainable competitive advantage.

Table 3 shows which factors are necessary for introducing and implementing quality management practices in the SMEs interviewed.

Education and training, organisational culture, and change of mentality are the main factors that can push companies towards introducing and implementing these practices. However, the growing competitive dynamics also represent a potent stimulus for introducing quality management tools and techniques.

Tab. 3 – Factors driving Quality Practices

Factors	Ranking *
Education and training	4.02
Organizational infrastructure and culture	3.92
Motivation of team members	3.87
Customer relationship	3.84
Supplier relationship	3.82
Cultural change	3.18

* (scale from 1 to 5; 1 very low; 5 very high)

Few studies have investigated corporate performance indicators relevant to quality improvement (Nonthaleeark& Hendry, 2008; Terziovski, 2006; Beaumont and Sohal, 1999; Bhuiyan and Alam, 2004). Our survey identified some relevant performance indicators for SMEs, weighing their relevance. The results, shown in table 4   summarise those deemed most significant.

Tab. 4 – Business Performance Indicators

Factors	Ranking *
On-time delivery	4.12
Price satisfaction	3.95
Correct invoices issued	3.87
Special order lead time	3.81
Warranty returns	3.42
Brand image	2.91

* (scale from 1 to 5; 1 very low; 5 very high)

The punctuality of the deliveries, the price, the correctness of the invoicing, and the delivery times of the special orders represent the leading indicators that the companies must consider to perform in the current competitive context.

5. Concluding Remarks

This paper aims to study the dissemination and use of quality management practices of Vietnamese SMEs while investigating the reasons that limit the use of such methods.

We used a sample of SMEs to answer our research questions, following a stratified random sampling technique based on geographical and economic criteria. This approach has the advantage of improving the efficiency of the estimates and the representativeness of the extracted sample. The data was collected through a closed questionnaire.

Out of 250 companies, 136 companies took part in the survey.

Considering previous surveys on the same topic, the level of participation obtained makes the results reliable. We used a 5-point Likert-type scale to measure CSFs, where 1 indicated no influence and 5 indicated a powerful effect.

The results show that only 23.5% of SMEs have introduced at least one quality management practice. However, 27.6% of SMEs are unaware of these tools.

The high costs of training and consultancy and the difficulties associated with collecting and processing data represent the main obstacle to introducing quality management tools.

Education and training, organisational culture, and change of mentality are the main factors that can push companies towards introducing and implementing these practices. However, the growing competitive dynamics also represent a potent stimulus for introducing quality management tools and techniques.

The on-time of the deliveries, the price, the correctness of the billing, and the delivery times of the special orders represent the most important indicators that the SMEs must consider to be competitive.
Overall, the research findings highlight that there is still limited knowledge of quality management tools by SMEs in the Vietnamese economy.

However, as amply demonstrated by the extensive literature on the subject, the competitive advantages associated with these initiatives can favour the survival and development of companies, making them more solid. In this perspective, policymakers and universities should develop training programs to improve employee skills and prepare them for adopting quality management practices.

The results of this study make a significant contribution to the empirical literature studying the use and development of quality management practices, highlighting state of the art in an emerging economy. Furthermore, the results can help raise awareness among entrepreneurs of the advantages in terms of competitiveness and performance deriving from the introduction of such practices. Finally, given the obstacles suggested by entrepreneurs, they can provide helpful information to policymakers on the actions to be taken to foster the competitiveness of SMEs.

Authorship contribution Statement

Chien Nguyen and Luca Sensini, Introduction, Research Methodology and Sample, Concluding Remarks; Yarong Chen and Vincenzo Piluso, Literature Review, Quality Management Practices.

References

Ahire, S. L., O'Shaughnessy, K. C. (1998), The role of top management commitment in quality management: An empirical analysis of the auto parts industry. International Journal of Quality Science, 3(1), pp. 5–37.

Akgün, A.E., Ince, H., Imamoglu, S.Z., Keskin, H., Kocoglu, İ. (2014), The mediator role of learning capability and business innovativeness between total quality management and financial performanceInternational Journal of Production Research, 52, 3, pp. 888-901.

Amendola, A., Candila, V., Sensini, L., Storti, G. (2020), Governance, Innovation, Profitability and Credit Risk: Evidence from Italian manufacturing firms, International Journal of Business and Social Science, 11 (6), pp. 32-42.

Anderson, M., Sohal, A. (1999). A study of the relationship between quality management practices and performance in small businesses. International Journal of Quality and Reliability Management, 16(9), pp. 859–877.

Badri, M. A., Davis, D., Donald, D. (1995), A study of measuring the critical factors of quality management. International Journal of Quality and Reliability Management, 12(2), pp. 36–53.

Bamford, D. R., Greatbanks, R. W. (2005). The use of quality management tools and techniques: A study of application in everyday situations. International Journal of Quality and Reliability Management, 22(4), pp. 376–392.

Beaumont, B., Sohal, A. S. (1999), Implementing ISO 9000: A study of its benefits among the Australian organization. Total Quality Management, 10(1), pp. 95–107.

Bhuiyan, N., Alam, N. (2004), ISO 9001:2000 implementation: The North American experience. International Journal of Productivity and Performance Management, 53(1), pp. 10–17.

Brady, J. E., Allen, T. T. (2006), Six Sigma literature: A review and agenda for future research. Quality and Reliability Engineering International, 22(3), pp. 335–367.

Chalmers, D.K., Mannetta E.W., Sensini L. (2020), R & D and Internationalization: Effect on the Performance of SMEs, International Journal of Advances in Management and Economics, 9 (3), pp. 39-48.

Chen, Y., Diaz, E., Sensini, L., Vazquez, M. (2020), Working Capital Management and Quality Management Systems: evidence from an emerging economy, International Journal of Business Management and Economic Research, 11 (4), pp. 1861-1868.

Curtin, R., Presser, S., Singer, E. (2000), The effects of response rate changes on the index of consumer sentiment. Public Opinion Quarterly, 64(4), pp. 413–428.

Das, A., Handfield, R.B., Calantone, R.J., Ghosh, S. (2000), A contingent view of quality management-the impact of international competition on quality, Decision Science, 31, 3, pp. 649-690.

Diaz, E., Sensini, L. (2020), Quality Management Practices, Innovation and Profitability of SMEs: Evidence from Argentina, International Business Management, 14 (9), pp. 328-336.

Fasil, T., Osada, H. (2011), Multiple dimensions of TQM success in developing countries: An empirical study on Deming Prize winners from India and Thailand. International Journal of Innovation and Learning, 9(2), pp. 184–203.

Felício, J.A., Meiduté, I., Kyvik, O. (2016), Global mindset, cultural context, and the internationalization of SMEs, Journal of Business Research, 11, pp. 4924-4932.

Gotzamani, K. D. (2004). A thorough analysis of ISO 9000 contribution to small and medium size enterprises: A comparison with large enterprises. International Journal of Management Practice, 1(1), pp. 41–56.

Hartley, J. (2013), Some thoughts on Likert-type scales. International Journal of Clinical and Health Psychology, 13, pp. 83–86.

Helfand, J., Sadeghi, A., Talan, D.(2007), Employment dynamics:Small and large firms over the business cycle. Monthly Labor Rev., 130, pp. 39-50.

Hong, J., Liao, Y., Zhang, Y., Yu, Z. (2019), The effect of supply chain quality management practices and capabilities on operational and innovation performance: evidence from Chinese manufacturers, International Journal of Production Economics, 212, pp. 227-235.

Ihua, U. B. (2009). SMEs key failure-factors: A comparison between the United Kingdom and Nigeria. Journal of Social Sciences, 18(3), 199–207.

Kaynak, H. (2003), The relationship between total quality management practices and their effects on firm performance. Journal of Operations Management, 34(2), pp. 1–31.

Khurshid, K. K., Kumar, M., Waddell, D. (2012), Status of quality management in Australian manufacturing SMEs. Proceedings of the International Conference on Industrial Engineering and Operations Management, Istanbul, Turkey, pp. 1266–1275.

Kim, D. Y., Kumar, V., Kumar, U. (2012), Relationship between quality management practices and innovation. Journal of Operations Management, 30(4), pp. 295–315.

Krosnick, J. A. (1991), Response strategies for coping with the cognitive demands of attitude measures in surveys. Applied Cognitive Psychology, 5(3), pp. 213–236.

Kumar, M., Antony, J. (2008), Comparing the quality management practices in UK SMEs. Industrial Management and Data Systems, 108(9), pp. 1153–1166.

Kumar, M., Khurshid, K. K., Waddell, D. (2014), Status of quality management practices in manufacturing SMEs: A comparative study between Australia and the UK. International Journal of Production Research, 52(21), pp. 6482–6495.

Kureshi, N. I., Mann, R. (2009). Quality management practices of SME in developing countries: A survey of manufacturing SME in Pakistan. Journal of Quality and Technology Management, 5(1), pp. 63–89.

Lakhal, L., Pasin, F., Limam, M. (2006), Quality management practices and their impact on performance. International Journal of Quality and Reliability Management, 23(6), pp. 625–646.

Majumdar, J. P., Manohar, B. M. (2016), Why Indian manufacturing SMEs are still reluctant in adopting total quality management. International Journal of Productivity and Quality Management, 17(1), pp. 16–35.

Nair, A. (2006), Meta-analysis of the relationship between quality management practices and firm performance - implications for quality management theory development, Journal of Operations Management, 24 (6), pp. 948- 975.

Muyengwa, G., Mukhuba, K., Battle, K., Mbohwa, C. (2013), Barriers to enterprise development: The case of SMMES operating in the South African motor body repair sector. International Conference on Law, Entrepreneurship and Industrial, Engineering (ICLEIE), pp. 244–248.

Nonthaleerak, P., Hendry, L. (2008), Exploring the Six Sigma phenomenon using multiple case study evidence. International Journal of Operations and Production Management, 28(3), pp. 279–303.

Olusanya, S. O., Adegbola, E. A. (2014). Impact of total quality management practice on small and medium scale enterprises in Nigeria. IOSR Journal of Business and Management, 16(4), 39–45.

Ozer, M., Dayan, M. (2015), Strategic, organizational and operational challenges of product innovation in emerging economies, Journal of Global Scholars of Marketing Science, vol. 25, 1, pp. 5-16.

Powell, T. C. (1995). Total quality management as competitive advantage: A review and empirical study. Strategic Management Journal, 16(1), 15–37.

Prajogo, D. I., Sohal, A. S. (2004), The multidimensionality of TQM practices in determining quality and innovation performance: An empirical examination. Technovation, 24(6), pp. 443–453.

Ratnawati, S.B.E., Murwani, F.D., Wahyono, H. (2018), The role of SMEs' innovation and learning orientation in mediating the effect of CSR programme on SMEs' performance and competitive advantage, Global Business Review, 19, 3Suppl., S21–S38.

Saris, W. E., Gallhofer, I. N. (2007), Design, evaluation and analysis of questionnaires for survey research. New York, NY, Wiley.

Sinha, N., Garg, A. K., Dhall, N. (2016), Effect of TQM principles on performance of Indian SMEs: The case of automotive supply chain. The TQM Journal, 28(3).

Singh, L. P., Bhardwaj, A., Sachdeva, A. (2006). Quality management practices vs. performance of SMEs: An empirical study of Indian industries. Proceedings of Portland International Conference on Management of Engineering and Technology, Istanbul, Turkey, pp. 2393–2399.

Suárez-Ortega, S. M., García-Cabrera, A. M., Knight, G. A. (2016), Knowledge acquisition for SMEs first entering developing economies: Evidence from Senegal. European Journal of Management and Business Economics, 25(1), pp. 22–35.

Sukwadi, R. (2015), The implementation of quality management practices in Indonesian SMEs. International Journal of Trade and Global Markets, 8(3), pp. 207–222.

Sun, H. (2001), Comparing quality management practices in the manufacturing and service industries: Learning opportunities. Quality Management Journal, 8(2), pp. 53–71.

Talib, H. H. A., Ali, K. A. M., Idris, F. (2014), Critical success factors of quality management practices among SMEs in the food processing industry in Malaysia. Journal of Small Business and Enterprise Development, 21(1), pp. 152–176.

Taner, M. (2012), A feasibility study for Six Sigma implementation in Turkish textile SMEs. South East European Journal of Economics and Business, 7(1), pp. 63–71.

Terziovski, M. (2006), Quality management practices and their relationship with customer satisfaction and productivity improvement. Management Research News, 29(7), pp. 414–424.

Timans, W., Antony, J., Ahaus, K., Solingen, R. V. (2011), Implementation of lean Six Sigma in small- and medium-sized manufacturing enterprises in the Netherlands. Journal of Operations Research Society, 63(3), pp. 339–353.

Zeng, J., Chi Anh, P., Matsui, Y. (2013). Shop-floor communication and process management for quality performance: An empirical analysis of quality management. Management Research Review, 36(5), pp. 454–477.

Zaramdini, W. (2007), An empirical study of the motives and benefits of ISO 9000 certification: the UAE experience. International Journal of Quality and Reliability Management, 24(5), pp. 472–491.

Zhang, Z., Waszink, A., Wijngaard, J. (2000), An instrument for measuring TQM implementation for Chinese manufacturing companies. International Journal of Quality and Reliability Management, 17(7), pp. 730–755.