

QUALITY MANAGEMENT IMPLEMENTATION AND QUALITY OF PRODUCTION IN MALAYSIA'S MANUFACTURING COMPANIES

JULIAN PAUL SIDIN¹ & SYED AZIZI WAFA SYED KHALID WAFA²

¹Senior Lecturer, School of Business and Economics, Universiti Malaysia Sabah, Sabah, Malaysia

²Professor, School of Business and Economics, Universiti Malaysia Sabah, Sabah, Malaysia

ABSTRACT

The purpose of this paper is to explore the relationship between the extent of quality management implementation and quality of production in Malaysia's manufacturing companies. A questionnaire survey was prepared and distributed to manufacturing companies in Malaysia. Analysis of the data in this study supports a strong positive relationship between the implementation of quality management and quality of production which was consistent as claimed in the previous studies.

KEYWORDS: Quality Management, Quality of Production, Manufacturing

INTRODUCTION

The importance of quality is beyond dispute especially when we are in a dynamic environment, where everything is changing rapidly. Quality has been identified as one of the competitive strategies for improving the business performance in a global market (Gurnani, 1999). Many companies are pursuing quality management implementation to deliver high-quality products and services and hence to achieve their business objectives (Gunasekaran, 1999, Gurnani, 1999). Kuei *et al.* (2001) also contend that better quality would lead to the retention of existing customers and in attracting new customers, which in-turn would increase market share.

Quality management has been described as a management philosophy and a way of thinking that has helped many organizations towards achieving world-class status. These organizations are able to produce quality products and services that meet and exceed the needs of their customers. A study done by Tan and Sia (2001) on quality management initiative in Malaysian companies has proven that customer-focused approach in the operations will increase process efficiency and greater customer satisfaction. The implementation of quality management initiative is one of the most complex activities that any company can attempt. It is only appropriate that a sound implementation framework be developed before actual implementation to ensure a successful adoption of quality management initiative in any organization. One of the most influential factors in ensuring quality management initiative adoption success is the formulation of a sound implementation framework prior to embarking on such a change process (Yusof and Aspinwall, 2000). In reality all companies talk about the importance of employee's performance.

This is supported by Cottam *et al.*, (2001) that one way to create growth and sustain organizational performance is to create a proper structure and systems, innovate and to increase the performance of the employees. However, becoming a highly performing employee demands more than just a debate; it requires an organizational relevant practice that constantly guides organizational members to strive and produce a climate that is conducive to grow individual performance (Ahmed, 1998). There is a long history of research and writing about the positive link between quality management and

employee involvement (Tang *et al.*, 2010); quality management and new product introduction (Kumar and Wellbrock, 2009), and quality management and quality production (Battini *et al.*, 2012).

From the theoretical point of view, the variance of organizational performance would be largely explained through quality management practices since these are originally developed to achieve high quality performance. Prior studies have found that the involvement of employees (Meththa, 1999; Da Silva *et al.*, 2002; Escrig-Tena, 2003), product designs (Li *et al.*, 2003; Arawati Agus and Abdullah, 2005; Lewis, 2006; Kanapathy, 2008), and process management in production (Brah and Lim, 2006; Macinati, 2008; Fotopoulos *et al.*, 2009; Jung *et al.*, 2009; Zehir *et al.*, 2010) should be embedded in the quality management programs.

There are many definitions of quality but none of these definitions can meet with universal recognition. Juran (1992) defines quality as product features, which meet customer needs and freedom from deficiencies. Feigenbaum (1991) defines quality as the total composite product and service characteristics of marketing, engineering, manufacturing and maintenance through which the product and service in use will meet the expectations of the customer. In the broader sense, Deming (1986) defines quality as the ability to consistently meet the requirements of the customer. Whichever term or definition is being utilized, it is the principles that count.

Different researchers have offered diverse views of approach on quality management initiatives. The most popular quality management frameworks applied are the ISO 9000 and total quality management. Crosby (1979) discusses fourteen quality steps as a framework for implementing quality management. They are management commitment; quality improvement teams; quality measurement; cost of quality evaluation; quality awareness; corrective action; engaging a zero-defects committee; supervisor training; zero-defects days; goal setting; error cause removal; recognition; quality councils, and doing it over again to achieve quality. Deming (1986) advocates Fourteen Points, which are linked with the successful implementation of quality management initiatives.

These include constancy of purpose; adopting the philosophy; ceasing mass inspection; refusing to award business solely on price; continuous improvement; training on the job; institute leadership; driving out fear; breaking down barriers; eliminating slogans; eliminating quotas; taking pride in workmanship; self improvement (education and retraining), and putting everybody to work. Saraph *et al.* (1989) on the other hand identify eight factors of quality management, which are role of divisional top management and quality policy; role of quality department; training; product/service design; supplier quality management; process management/operating procedures; quality data reporting, and employee relations. Flynn *et al.* (1995) propose seven dimensions of quality management from which a set of 14 perpetual scales are developed.

Their seven dimensions are top management support (quality leadership and quality improvement rewards); quality information (process control and feedback); process management (cleanliness and organization); product design (new product quality and interfunctional design process); workforce management (selection for teamwork potential and teamwork); supplier involvement (supplier relationship), and customer involvement (customer interaction). Powell (1995) suggests that complete total quality management programs tend to incorporate eleven attributes. They are executive commitment; adoption and commitment of total quality management philosophy; increased interaction with customers and suppliers; process management; measurement; employee empowerment; open organization; training; benchmarking; flexible manufacturing; and zero defects mentality. The Malcolm Baldrige Performance Excellence Criteria combine a

powerful set of proven principles and management practices that bind an organization together to yield high performance (as cited on the Enterprise web site).

The main aim of this study is to examine the implications of quality management on quality of production in Malaysia's manufacturing companies. The link between quality management and quality of production is a classical theme in management literature.

The reason that quality management has become a hot topic in both industry and academia is that it can be applied to enhance or improve competitiveness. Companies with effective quality management implementation can accomplish the internal benefits such as improving quality, enhancing productivity, and better business performance (Bemowski, 1991; Ahmed, 1998; Terziovski and Samson, 1999; Gunasekaran, 1999; Gurnani, 1999; Arawati Agus and Abdullah, 2000; Kuei *et al.*, 2001; Cottam *et al.*, 2001; Leonard and McAdam, 2002; Sharma and Gadenne, 2002). Given the importance of quality management elements that have been discussed, this study suggests that there is a positive relationship between quality management and quality of production in Malaysia's manufacturing companies.

RESEARCH BACKGROUND AND ANALYSIS

The study employed a seven-point numerical scale of self-administered for data collection that ranges from 'strongly disagree' to 'strongly agree'. Six hundred companies that are registered under the Federation of Malaysian Manufacturers (FMM) were chosen as unit of analysis. This study had applied a disproportionate stratified random sampling method for samples selection due to the heterogeneous nature of the samples. Of the 600 questionnaires distributed, only 233 questionnaires managed to be collected which represents 38.8 percent of the total response rate. The usable questionnaires for data analysis were only 201. The participants of the study consist of different positions in the company. Of the 201 companies in the 16 different industries surveyed, 33 companies were in the electrical and electronics industry, 28 in the chemical and petroleum industry, 27 in the food, beverage and tobacco products, 22 in the fabricated metal, 11 each in the basic metal industry, and paper, printing and publishing, 9 each in transport and plastic products, 17 in the wood products (including furniture), 14 in the non-metallic mineral products, 7 each in the rubber industry, and textile, wearing apparel and leather products, 3 in the medical, precision and optical instruments, 2 in machinery and 1 in other industry.

In this study, the quality management is a multidimensional construct. This construct was represented by seven dimensions. They were leadership, strategic planning, customer and market focus, information and analysis, human resource focus, process management, and business results. A principle component method with a varimax rotation was utilized in order to reduce a large number of variables to a smaller numbers of factors. After the final run of factor analysis, one factor with eigenvalues more than one was produced, that explained 65.32 of the total variance. The Kaiser-Meyer-Oklín value was 0.81 and the Bartlett test of sphericity was significant at 0.00. Anti-image correlation of the remaining seven items of quality management exceeded 0.50. The communalities of the 7 items ranged from 0.54 to 0.69. The factor loadings for the remaining 7 quality management variables were in the range of 0.74 to 0.85, which indicated above recommended cut-off point value of 0.40 for practical and statistical significance.

All the variables were loaded significantly on one factor as conceptualized. On the last run of factor analysis on quality of production which represented by 5 items, the eigenvalues was more than one, which explained 76.36% of the total variance. The Kaiser-Meyer-Oklín value was 0.86 and the Bartlett test of sphericity was significant at 0.00.

Anti-image correlation of the remaining ten items of the three constructs exceeded 0.50. The factor loadings for the remaining 13 organizational performance variables were in the range of 0.85 to 0.87, which indicated above recommended cut-off point value of 0.40 for practical and statistical significance. The Cronbach's alpha values for the dimensions of quality management and quality of production are both 0.91.

Results show that the mean scores for each of the two constructs in this study varied between 5.73 (quality management) and 5.64 (quality of production), indicating that respondents had a high opinion of all the dimensions. The standard deviation for these components ranged between 0.64 and 0.91.

In order to measure the degree of the linear relationship between two variables, the Pearson correlations coefficient was performed. Quality management correlates moderately with quality of production ($r = 0.48$, $p < 0.01$). In order to test the relationship between quality management and quality of production, the multiple regression analysis was employed. The result reveals that 22.70% of the total variances in quality of production were explained by quality management ($R^2 = 22.70$, $p < 0.01$). With $\beta = 0.48$, $p < 0.01$, the result indicates that quality management has significant influences on quality of production. This is therefore explains that there is a strong relationship between quality management practices and quality of production in Malaysia's manufacturing companies.

DISCUSSIONS AND CONCLUSIONS

The multi regression analysis results confirmed that quality management had a substantial influence on quality of production, which were consistent with the previous studies. The finding shows that quality management was associated with quality of production in Malaysia's manufacturing companies. There was a long history of research and writing about the positive link between quality management quality of production (Battini *et al.*, 2012). From the theoretical point of view, the variance of organizational performance would be largely explained through quality management practices since these were originally developed to achieve high quality performance. Prior studies found that the involvement of employees (Methta, 1999; Da Silva; Escrig-Tena, 2003), product designs (Li *et al.*, 2003; Arawati Agus and Abdullah, 2005; Lewis and Lalla, 2006; Kanapathy, 2008), and process management in production (Brah and Lim, 2006; Macinati, 2008; Fotopoulos *et al.*, 2009; Jung *et al.*, 2009; Zehir *et al.*, 2010) should be embedded in the quality management programs. This study motivates managers to invest in the time and resources to implement quality management programs in their respective organizations. Based on the results of this study, the implementation of quality management practices is associated with enhanced organization performance. This signals the importance of ensuring a supportive organizational environment for the effective implementation of quality management as this can be seen from trend of manufacturing companies in Malaysia towards adopting quality initiatives.

Evidence from this study suggests that organizations should develop an environment of support, which includes fostering support among co-workers, for the effective implementation of quality management. According to Oakland (2005), if employees do not feel there is sufficient acknowledgement and support from the organization and from colleagues with whom they work, then companies may not acquire the benefits of quality management initiatives. The results of the study also clearly indicate that companies cannot consider quality management simply a passing administrative fashion for achieving sustainable competitive advantage over time. Therefore, quality management cannot be dismissed as just an administrative trend, because it provides a typical organisational resource on which companies may build a durable competitive advantage (Juran, 1993; Kaynak, 2003; Oakland, 2005).

Managers can find in quality management practices a tool to promote innovation (Perdomo-Ortiz *et al.*, 2006; Hoang *et al.*, 2006; Martinez-Costa and Martinez-Lorente, 2008) and improve organizational performance (Terziowski and Samson, 1999; Sun, 2000; Sila, 2007). Managers should also understand the logical sequence between quality objectives, innovation objectives, and organizational goals. From a theoretical perspective, the findings of this study provide implications for how the resource based view tenets work when it comes to quality management.

To the extent that resource based view logic focuses on the role of resources in terms of their impact on differential firm performance, the results of the present studies suggest that quality management initiatives is proven to be a potential means to create sustainable competitive advantage. To sum up the findings, this study provides evidence on the relationships between an effective implementation of quality management and quality of production. The results of this study demonstrate that the hypothesis related to the relationship between quality management and quality of production were positive implying that quality management is a must in manufacturing companies in Malaysia.

REFERENCES

1. Ahmed, P. K. (1998). Culture and Climate for Innovation. *European Journal of Innovation Management*, 1(1), 30-43.
2. Arawati Agus and Abdullah, M. (2000). Total Quality Management Practices in Manufacturing Companies in Malaysia: An Exploratory Analysis. *Total Quality Management Magazine*, 11(8), 1041-1051.
3. Battini, D., Faccio, M., Alessandro, P. and Sgarbossa, F. (2012). Design of an Integrated Quality Assurance Strategy in Production Systems. *International Journal of Production Research*. 50(6), 1682-1701.
4. Bemowski, K. (1991). Restoring the Pillars of Higher Education. *Quality Progress*, 24(10), 37-42.
5. Brah, S. A. and Lim, H. Y. (2006). The Effect of Technology and TQM on the Performance of Logistics Companies. *International Journal of Physical Distribution & Logistics Management*, 36(3), 192-209.
6. Cottam, A. Ensor, J. and Band, C. A. (2001). Benchmark Study of Strategic Commitment to Innovation. *European Journal of Innovation Management*, 4(2), 88-94.
7. Crosby, P. B. (1979). *Quality is Free*, New York: McGraw-Hill.
8. Da Silva Jonas, G., Kikuo, N. and Tadashi, O. (2002). Evaluation of TQM in Japanese Industries and Validation of a Self-Assessment Questionnaire. *The TQM Magazine*, 14(5), 318-328.
9. Deming, W. E. (1986). *Out of the Crisis*, Cambridge: Massachusetts Institute of Technology.
10. Escrig-Tena, A. B. (2003). TQM as a Competitive Factor: A Theoretical and Empirical Analysis. *International Journal of Quality & Reliability Management*, 21(6), 612-637.
11. Feigenbaum, A. V. (1993). *Total Quality Control*, 3rd ed., New York: McGraw-Hill.
12. Flynn, B. B., Schroeder, R. and Sakakibara, S. (1995). The Impact of Quality Management Practices on Performance and Competitive Advantage. *Decision Sciences*, 26(5), 659-692.
13. Fotopoulos, C. B. and Psomas, E. L. (2009). The impact of "Soft" and "Hard" TQM Elements on Quality Management Results. *International Journal of Quality & Reliability Management*, 26(2), 150-163.

14. Gunasekaran, A. (1999). Enablers of Total Quality Management Implementation in Manufacturing: A Case Study. *Total Quality Management*, 10(7), 987-996.
15. Gurnani, H. (1999). Pitfalls in Total Quality Management Implementation: The Case of a Hong Kong Company. *Total Quality Management*, 10(2), 209-228.
16. Hoang, D. T., Igel, B. and Laosirihongthong, T. (2006). The Impact of Total Quality Management on Innovation: Findings from a Developing Country. *International Journal of Quality & Reliability Management*, 23(9), 1092-1117.
17. Jung, Y. J., Wang, J.Y., and Wu, S. (2009). Competitive Strategy, TQM practice, and Continuous Improvement of International Project Management. A Contingency Study. *International Journal of Quality & Reliability Management*, 26(2), 164-183.
18. Juran, J. M. (1993). Made in USA: A Renaissance in Quality. *Harvard Business Review*, 71, 42-50.
19. Kanapathy, K. (2008). Critical Factors of Quality Management Used in Research Questionnaires: A Review of Literature. *Sunway Academic Journal*, 19-30.
20. Kaynak, H. (2003). The Relationship between quality management practices and their effects on firm performance. *Journal of Operations Management*, 21, 405-435.
21. Kuei, C., Madu, C. and Lin, C. (2001). The Relationship between Supply Chain Quality Management Practices and Organizational Performance. *International Journal of Quality & Reliability Management*, 18(8), 864-872.
22. Kumar, S. and Wellbrock, J. 2009. Improved New Product Development through Enhanced Design Architecture for Engineer-to-order Companies. *International Journal of Production Research*, 47(15), 4235-4254.
23. Leonard, D. and McAdam, R. (2002). The Role of the Business Excellence Model in Operational and Strategic Decision Making. *Management Decision*, 40(1), 17-25.
24. Lewis, W. G., and Lalla T. R. M. (2006). Exploring Soft versus Hard Factors for Total Quality Management Implementation in SMEs. *International Journal of Productivity and Performance Management*, 55(7), 539-554.
25. Li, J. H., Andersen, A. R., and Harrison, R. T. (2003). Total Quality Management Principles and Practices in China. *International Journal of Quality & Reliability Management*, 20(9), 1026-1050.
26. Macinati, S. M. (2008). The Relationship between Quality Management Systems and Organizational Performance in the Italian National Health Service. *Elsevier Ireland Ltd*, 85(7), 228-241.
27. Martinez-Costa, M. and Martinez-Lorente. A. R. (2008). Does Quality Management Foster or Hinder Innovation? An Empirical Study of Spanish Companies. *Total Quality Management & Business Excellence*. 19(3), 209-221.
28. Mehta, J. (1999). Business Excellence Through Quality: Indian Experience. *Total Quality Management*, 10(4/5), 647-652.
29. Oakland, J. (2005). From Quality to Excellence in the 21st Century. *Total Quality Management*, 16(8-9), 1053-1060.

30. Perdomo-Ortiz, J., Gonzalez-Benito, J. and Galende, J. (2006). Total Quality Management as a Forerunner of Business Innovation Capability. *Technovation*, 26(10), 1170-1185.
31. Powell, T. C. (1995). Total Quality Management as Competitive Advantage: A Review and Empirical Study. *Strategic Management Journal*, 16(1), 15-37.
32. Saraph, J. V., Benson, P. G. and Schroeder, R. G. (1989). An Instrument for Measuring the Critical Factors of Quality Management. *Decision Sciences*, 20(4), 810-829.
33. Sharma, B. and Gadenne, D. (2002). An Inter-industry Comparison of Quality Management Practices and Performance. *Managing Service Quality*, 12(6), 394-404.
34. Sila, I. (2007). Examining the Effects of Contextual Factors on TQM and Performance through the Lens of Organizational Theories: An Empirical Study. *Journal of Operations Management*, 83-109.
35. Sun, H. (2000). Total Quality Management, ISO 9000 Certification and Performance Improvement. *International Journal of Quality & Reliability Management*, 17(2), 168-179.
36. Tan, G. L. P. and Sia, L. T. (2001). ISO 9000: The Answer for Total Quality Management Implementation? The Malaysian Case. *Total Quality Management*, 12(2), 223-229.
37. Tang, Z., Chen, X. and Wu, Z. (2010). Using Behaviour Theory to Investigate Individual-Level Determinants of Employee Involvement in TQM. *Total Quality Management & Business Excellence*, 21(12), 1231-1260.
38. Terziovski, M. and Samson, D. (1999). The Link between Total Quality Management Practice and Organizational Performance. *International Journal of Quality & Reliability Management*, 16(3), 226-237.
39. Yusof, S. M. and Aspinwall, E. (2000). Critical Success Factors for Total Quality Management Implementation in Small and Medium Enterprises. *Total Quality Management*, 10(4/5), 803-809.
40. Zehir, C., and Sadikoglu, E. (2010). The Relationship between Total Quality Management (TQM) Practices and Organizational Performance: An Empirical Investigation. *International Journal of Production Economics*, 101(2), 1-45.

