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CONTRIBUTION OF QUALITY MANAGEMENT PRACTICES ON QUALITY RESULTS

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INTRODUCTION

The literature suggests the importance of performance measurement in the quality management environment (Chang, 2006; Kumar et al., 2009). Customer satisfaction, warranty costs and complaints are some of the external performance indicators of quality while the levels of defects, scrap, rework, and throughput time are some of the internal performance indicators of quality (Seth and Thripathi, 2006). Both types of indicators enable an organisation in monitoring and controlling quality at the operational level (Seth and Thripathi, 2006). In this regard, Lee and Zhou (2000) identify on-time delivery, customer complaints, and reject and rework rate as the most popular quality system performance indicators among quality initiated organisations in many countries. However, a limited number of studies investigated the relationship between quality management practices and quality results. Such studies found that quality management practices positively influence quality results such as levels of defects, scrap, rework, and throughput time (e.g. Hemsworth et al., 2008; Lambert and Ouedraogo, 2008; Sharma, 2006; Sun et al., 2006). However, it is very rare to find studies that investigated the relationship between quality management practices and quality results in the Sri Lankan context.

The objective of the present study was to investigate the extent to which quality management practices contribute to quality results in the Sri Lankan context. For the study, seven quality management practices were identified based on the review of literature (such as Abdullah et al., 2009; Flynn et al. 1995; Saraph et al., 1989). These seven practices are leadership, information and analysis, strategic quality planning, human resource development, quality assurance, supplier relationship, and customer orientation. Based on the review of literature, it is hypothesised:

H1: Each quality management practice (leadership, information and analysis, strategic quality planning, human resource development, quality assurance, supplier relationship, and customer orientation) will significantly predict quality results.

METHODOLOGY

A sample of export oriented apparel manufacturing firms was identified that fulfilled the following selection criteria set for the study, 1) a firm should be registered under the Board of Investment of Sri Lanka (BOI); 2) a firm should have ISO 9001 quality certification; and 3) a firm should have implemented a formal quality management programme and that should be running for at least three years. Of the 35 firms initially contacted that fulfilled the criteria, 31 firms agreed to participate in the survey. To fulfil the expectations of the study, the data were collected from quality managers.

Self-administered survey questionnaire was used for the data collection. For each

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measurement scale, Cronbach's alpha (α) was calculated and principal components factor analysis (Varimax rotation) was conducted. The criteria adhered to are: eigenvalues of all components should not be less than 1; loadings should be .50 or greater to be considered practically significant; Cronbach's alpha values of each factor extracted and overall measure should be greater than .7. With regard to quality management practices, each practice had satisfactory reliability statistics, i.e., leadership (α=.856; explained variation [EV] =78.83%), information and analysis (α=.791; EV=69.75%), strategic quality planning (α=.728; EV=64.41%), human resource development (α=.891; EV=82.18%), quality assurance (α=.752; EV=68.22%), supplier relationship (α=.729; EV=62.52%), and customer orientation (α=.840; EV=84.74%). Quality results were measured in terms of scrap level, rework level, warranty costs, customer complaints, and throughput time. The factor analysis yielded one factor with α=.874 and EV=75.52%.

RESULTS AND DISCUSSION

Correlations between the variables along with means and standard deviations are shown in Table 1. Regression analysis was used to identify quality management practices that significantly contribute to the quality results. Table 2 shows the results.

Table 1: Correlations

	Mean	S.D.	1	2	3	4	5	6	7
1. Leadership	3.64	.41	1						
2. Information and analysis	3.93	.22	.09	1					
3. Strategic quality planning	3.92	.23	.36*	.22	1				
4. Human resource development	3.34	.43	.35*	.03	.06	1			
5. Quality assurance	3.73	.38	.27	.12	.16	.08	1		
6. Supplier relationships	3.90	.24	.20	.18	.32*	.17	.25	1	
7. Customer orientation	3.87	.35	.33*	.31*	.32*	.31*	.34*	.24	1
8. Quality results	3.77	.44	.46**	.36*	.33*	.36*	.48**	.15	.49**

** significant at the 0.01 level (1-tailed). * significant at the 0.05 level (1-tailed).

Table 2: Regression results

	Dependant variable
	Quality results
Leadership	.464**
Information and analysis	.378*
Strategic quality planning	.354*
Human resource development	.364*
Quality assurance	.483**
Supplier relationships	.176
Customer orientation	.503**
Overall R^2	.690
Overall adj. R^2	.611
Overall F	8.91***

* p<.05; **p<.01; ***p<.001. Standardised regression coefficients (betas) are reported.

As shown in Table 2, the regression model accounts for 61 percent of the variance (Adj. R^2= 0.611, $p<0.001$) and the coefficient estimates for leadership ($p<0.01$), information and analysis ($p<0.05$), strategic quality planning ($p<0.05$), human resource development ($p<0.05$), quality assurance ($p<0.01$), and customer orientation ($p<0.01$) are statistically significant. However, regression coefficient estimate for supplier relationship is not

statistically significant.

CONCLUSIONS

The main objective of the study was to investigate whether quality management practices contribute to quality results. It was found that regression coefficient estimates for leadership, information and analysis, strategic quality planning, human resource development, quality assurance, and customer orientation are statistically significant.

Leadership, which is described in terms of personal involvement and visibility in creating goals, values and systems that guide in developing and maintaining an environment of quality excellence, is vital in the pursuit of continuous performance improvement. The results of the study also imply the importance of effective leadership in achieving quality results.

Continuous quality improvement relies on a steady flow of accurate information about processes and other constituencies such as employees, suppliers and customers. The importance of effective information usage for better quality results is well highlighted by the findings.

To achieve world class quality, firms should develop and realise the full potential of the human resource and maintain an environment conducive to participation, quality leadership, and continual skill enhancement. The results of the study also imply the importance of human resource development.

The findings also highlight the importance of quality assurance by monitoring processes and systems to maintain the designed quality and make continuous improvements in quality. In the export-led industries like apparel production, quality assurance and customer orientation are key areas for success.

When producing apparel targeting developed countries in the West, local manufactures have to strictly adhere to the product design specifications provided by the foreign buyer, who defines product design and quality. It should be noted that the industry's customers are the foreign buyers. Hence, customer satisfaction is the key for the survival and growth. The quality management literature also highlights the importance of customer satisfaction identifying it as the ultimate measure of firms' performance, which may predict the future success or failure of an organisation.

However, the regression coefficient estimate for supplier relationship is not statistically significant. When the apparel manufactures receive orders from foreign buyers with product design specifications, the suppliers of the clothing materials and accessories, and the required quality levels are also specified. This may have influenced for this finding.

Overall, quality management practices of leadership, information and analysis, strategic quality planning, human resource development, quality assurance, and customer orientation are identified as vital practices in developing and maintaining an environment of quality excellence in the pursuit of continuous performance improvement.

REFERENCES

Chang, H.H. (2006). An empirical evaluation of performance measurement systems for total quality management. *Total Quality Management*, 17(8), 1093–1109.

Kumar, U., Kumar, V., de Grosbois, D. and Choisne, F. (2009). Continuous improvement of performance measurement by TQM adopters. *Total Quality Management and Business Excellence*, 20(6), 603 – 616.

Seth, D. and Tripathi, D.A (2006). Critical study of TQM and TPM approaches on business performance of Indian manufacturing industry. *Total Quality Management*, 17(7), 811–824.

Lee, C.Y. and Zhou, X. (2000). Quality management and manufacturing strategies in China. *International Journal of Quality & Reliability Management,* 17(8), 876-899.

Hemsworth, D., Sánchez-Rodríguez, C. and Bidgoo, B. (2008). A structural model of the impact of quality management practices and purchasing-related information systems on purchasing performance: a TQM perspective. *Total Quality Management*, 19(1&2), 149–162.

Lambert, G. and Ouedraogo, N. (2008). Empirical investigation of ISO 9001 quality management systems' impact on organisational learning and process performances. *Total Quality Management and Business Excellence,* 19(10), 1071-1085.

Sharma, B. (2006). Quality management dimensions, contextual factors and performance: an empirical investigation. *Total Quality Management*, 17(9), 1231–1244.

Sun, H., Yezhuang, T., Libin, L., Miyagawa, M. and Yoshida, K. (2006). Comparing quality management practices in Hong Kong-owned and Japan-owned manufacturing firms in Mainland China. *Total Quality Management,* 17(3), 341–353.

Abdullah, M.M.B., Uli, J. and Tar, J.J. (2009). The relationship of performance with soft factors and quality improvement. *Total Quality Management and Business Excellence*, 20(7), 735-748.

Flynn, B.B., Schroeder, R.C. and Sakakibara, S. (1994). A framework for quality management research and an associated measurement instrument. *Journal of Operations Management*, 11, 339-366.

Saraph, J.V., Benson, G.P. and Schroeder, R.G. (1989). An instrument for measuring the critical factors of quality management. *Decision Sciences*, 20, 810-829.