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FEATURE

Knowledge Management, Soft TQM and Hard TQM, and Organizational Performance

Ismael Garcia

Abstract. *Today's customers demand high-quality products, and companies need to enhance their performance and be more innovative in order to meet customers' needs. This study analyzed whether several management orientations combined could enhance organizational performance. The study surveyed 98 business organizations representing manufacturing, service, retailers from the Philippines (n=64), with an additional group (n=34) from Singapore, Indonesia, and the United States. Structural Equation Modeling indicated that model closely fit the sample data and that 35.4% of the variance of Organizational Performance was explained by the integration of knowledge management; soft TQM and hard TQM. The empirical evidence also indicated that knowledge management affects three basic indicators of organizational performance (sales growth, customer satisfaction, and profit growth) through soft TQM and hard TQM. No direct effect of knowledge management on organizational performance was found. These results suggest that business organizations must promote and execute more knowledge management and soft TQM initiatives in order to influence hard TQM practices, which in turn will positively influence the performance of the organization in the short and long run.*

Today's customers demand high-quality products and services in a competitive market. Companies are feeling the need to enhance their performance and be more innovative and creative in order to meet customers' needs. In order to adapt more quickly, organizations may integrate several management approaches to maximize their performance. The integration of

multiple management approaches may create a synergy that a single approach cannot provide, or may be inadequate for today's competitive business scene. The purpose of this study is to determine whether several management orientations combined together can enhance organizational performance.

Related Literature

The issue of performance is critical nowadays, since business organizations need to be more efficient and effective than ever in order to remain in the market. Organizational performance is regarded as important for both academicians and practitioners because of its importance for the company (Liao & Wu, 2009). Traditionally, organizational performance has included financial, operational and organizational effectiveness (Ventkartman & Ramanujam as cited in Liao & Wu, 2009). When breaking down these dimensions, it can be found that performance indicators related to financial and operations management include "revenue growth, [if the] quality program has increased profitability, [if the] quality program has increased productivity" (Powell, as cited in Rahman & Bullock, 2005, p.74).

Concerning the operational dimension, Rahman and Bullock (2005) used operational performance indicators in their study, including items such as "customer focus, employee morale, productivity, defects as a percentage of production volume, delivery in full on time to customers and others" (p.74). Finally, organizational effectiveness dimensions include the ability of the company to combine internal and external alignment; the indication that the organization is changing for improving its performance (Hayes, 2010). All these dimensions of organizational performance need to be addressed nowadays since the current economy is knowledge-based and the levels of competition are high, and one management orientation is not sufficient for enhancing the performance of the company. Consequently, I will briefly discuss the role of knowledge management and total quality management, (both soft and hard) in affecting organizational performance.

Today, it is practically impossible for business enterprises to remain competitive without managing knowledge effectively. Organizations must create a knowledge culture, since knowledge is now "the driving force in our economy" and "the lifeblood of a corporation" (Yeh, 2005 p. 36; Hauschild et al., 2001). This fact cannot be overlooked by organizations if they are pursuing sustainable growth. Knowledge management is a new discipline that has proven to be valuable in the corporate sector (Gourova & Antonova, 2008; Grimaldi, Rippa, & Ruffolo, 2008).

The typical knowledge management process includes the acquisition of knowledge, its storage, dissemination, and application (Laudon & Laudon, 2008). For managing knowledge, an organization must generate, transfer, and

apply its knowledge in its operations (O'Brien & Marakas, 2006). Additionally, managing knowledge in an organization implies connecting people with the knowledge they need, so that they can apply it in their daily activities (Kidwell et al., 2000). In recent years, knowledge management has become a management orientation that appears to be positively related to organizational performance. Grimaldi, Rippa, and Ruffolo (2008), for example, cite the quantitative benefits that an Italian company experienced after employing information technology and knowledge management in the organization. When business organizations integrate knowledge with business strategy, they can obtain competitive advantages and improve their ability to innovate, especially in this time when diverse trends show that businesses need to manage knowledge appropriately in order to survive (Combe, 2006; Pearlson & Saunders, 2004; Tang, 2008).

Knowledge management can also be integrated with total quality management (TQM) in order to influence organizational performance (Ribière & Khorramshahgol, 2004; Ruþevièius, 2006). In a survey effected among 223 managers representing 1,139 Taiwanese companies, knowledge management was found to be positively related to TQM and innovation. The findings also revealed that TQM was a mediator between knowledge management and innovation performance (Hung, Lien, Fang, & McLean, 2010). This means that knowledge management tends to contribute more to innovation performance through the mediation of TQM practices.

Individually, TQM is positively related to corporate performance. Pakdil (2010) found that some performance indicators of several effective enterprises had significant differences after they began to apply TQM practices. Moreover, Mehra and Ranganathan (2008), in a meta-analysis that represented various industrial sectors, concluded that the implementation of TQM programs had a positive impact on customer satisfaction and enhanced the performance of the entire organization.

TQM has two sides, one "soft," such as leadership, culture, empowerment, employee training, and continuous improvement, and another "hard," such as statistical control process, ISO 9000 series, Pareto analysis, quality assurance practices and other techniques (Fotopoulos & Psomas, 2009; Psychogios & Vasilios Priporas, 2007). Both soft and hard TQM, working together, are associated with quality improvement, customer satisfaction, and increased organizational performance (Fotopoulos & Psomas, 2009; Rahman & Bullock, 2005). However, several studies have shown that soft TQM appears to have a major influence on customer satisfaction and organizational performance. For instance, it is considered that soft TQM factors contribute to quality improvement. Bin Abdulla, Ahmad, and Ismail, (2008) in a study conducted among 225 Malaysian firms, concluded that soft TQM factors such as employee involvement, management commitment, training and education and others were

correlated with quality improvement. In this study, employee involvement was regarded as the key soft factor for quality improvement. These conclusions support the findings of Lau and Idris (2000) who determined that the soft TQM components have a relationship with the tangible effects of TQM: organizational performance. Ooi, Arumugam and Hwa (2005) concluded in their study that "soft TQM has a significant impact on employees' attitudes, namely job involvement, career satisfaction, and organizational commitment" which has a positive effect on organizational performance (p. 287).

Rahman and Bullock (2005) posit that for hard TQM factors to contribute to organizational performance, the support of soft TQM elements is crucial. This idea seems to be supported by Fotopoulos and Psomas (2009), who found that quality management results and company's market position were primarily affected by soft TQM factors and secondarily by hard TQM factors.

However, a TQM system is not always understood as a holistic approach in which the entire organization must be involved and be willing to change and empower its employees. In a qualitative empirical study carried out in Greece among numerous executives, Psychogios and Vasilios (2007) found that top managers were more focused on hard TQM than on soft TQM. In other words, these authors found that managers were more willing to apply statistical process controls, path analysis, ISO 9000 series, Pareto analysis and other quality tools than to provide their employees with empowerment, an environment supportive of teamwork, and a philosophy of continuous improvement and cultural change. It appears that more awareness is needed regarding the scope of TQM initiatives. Additionally, Lewis, Pun and Lalla (2006) found that in small and medium enterprises (SME) in Australia, soft TQM factors were implemented to a lower degree than hard TQM factors. These results imply that soft TQM factors must be promoted more among managers if performance is to increase.

The literature reviewed shows various scenarios. For instance, in one scenario knowledge management is related to quantitative benefits—organizational performance (Grimaldi, Rippa, & Ruffolo, 2008). Another scenario shows that knowledge management through TQM contributes to organizational performance, (Hung et al., 2010). In the last scenario, soft and hard TQM practices are correlated with quality improvement, customer satisfaction, and organizational performance, with soft TQM factors providing the major support (Fotopoulos & Psomas, 2009; Rahman & Bullock, 2005). However, in these scenarios the combination of knowledge management, soft TQM, and hard TQM and their correlation with organizational performance is not presented. This study focuses on determining whether organizational performance is improved by the integration of knowledge management with soft or hard TQM, or a combination of both. Figure 1 presents the theoretical framework proposed in which several paths can be observed.

The following hypotheses are proposed:

H1: The latent variables affect the measurement indicators

H2: Knowledge management affects soft TQM.

H3: Soft TQM and knowledge management affect hard TQM.

H4: Hard TQM, soft TQM, and knowledge management affect organizational performance.

This study uses the following operational terms.

Organizational Performance—refers to the way an organization carries out its activities, which in turn affects its customers, revenue, and profit. This variable was measured with a Likert scale from 1 to 5, where 5 represented the highest level of performance (sales growth) and 1 represented the lowest level.

Knowledge Management—managerial activity that involves creates, capture, transfer, and apply knowledge within the organization, and similar to organizational performance, a 5-point Likert scale was used to measure this variable. In this case, 1 was considered a low level of knowledge creation or application and 5 a high level.

Soft TQM—refers to the behavioral aspects or factors in total quality management philosophy such as leadership commitment, empowerment, employee involvement, training and education.

Hard TQM—involves the technical elements of total quality management approach such as statistical process controls, ISO 9000 series, Pareto analysis and other techniques for measuring and improving quality. The same measurement criterion (Likert scale from 1 to 5) applied to soft and hard TQM.

Methodology

This empirical study employed a survey research design in order to determine the relationship among knowledge management, soft TQM, hard TQM, and organizational performance. It implies that the data of this study was obtained from the understanding of the managers/assistant managers about how the variables influenced organizational performance, and not from any organizational report or financial statements.

The study included 98 (n=98) business organizations representing manufacturing, service, retailers, and others, from the Philippines, Singapore, Indonesia, and the United States. Among the business organizations of the sample, 58.1% of the companies were service organizations, 17.3% were manufacturing, 16.4% were retailers, and 8.2% belonged to other industrial sectors. Concerning size, 22.45% had between 30 and 100 employees, 53% of the companies ranged from 100 to 1,000 employees, 19.4% had more than 1,000

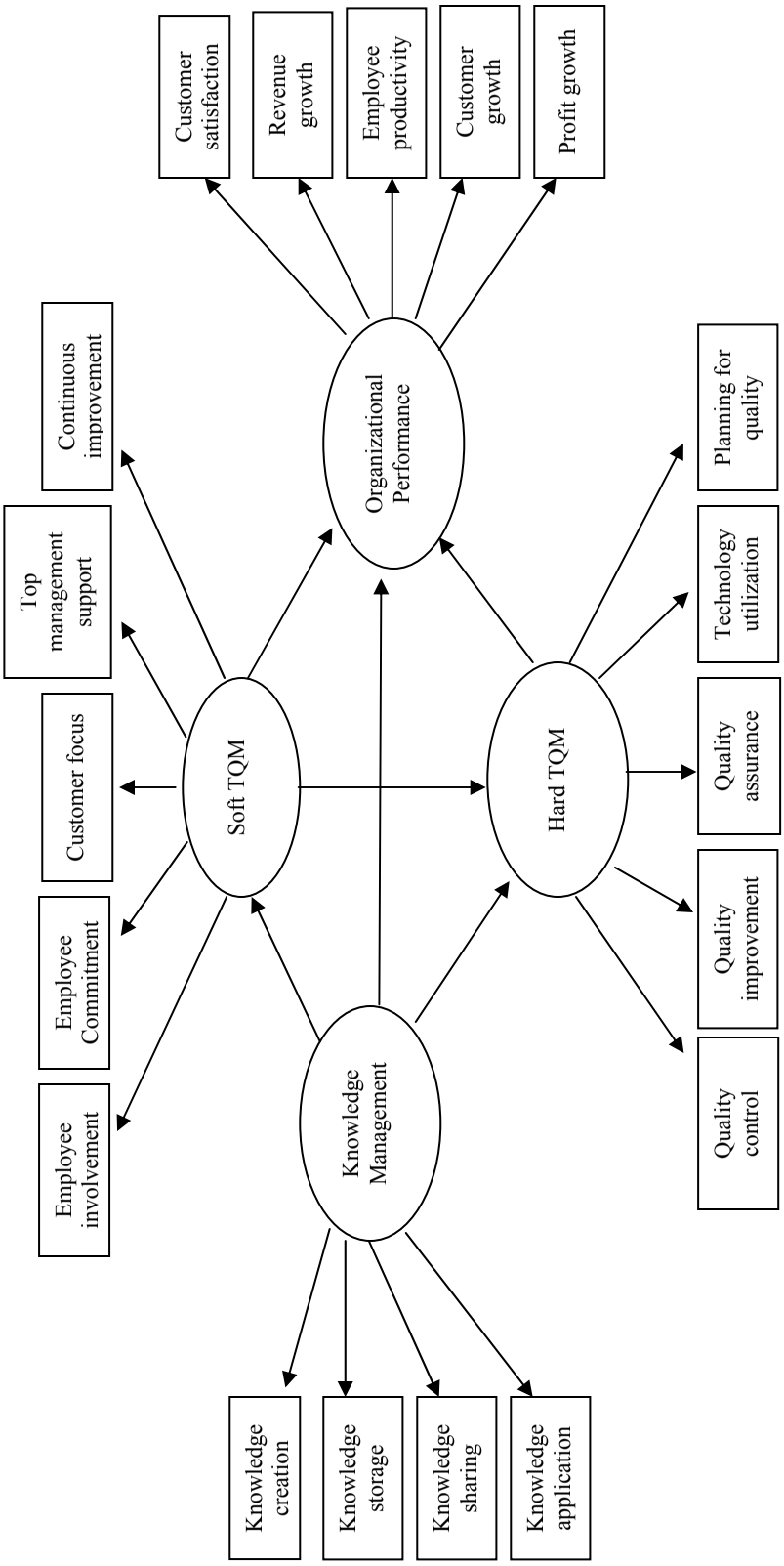

Figure 1. *Theoretical framework.*

employees, and 5.1% had over 10,000 employees. Of the ninety-eight companies 17.3% were public, 79.6% were private, and 3.1 % were governmental.

The researcher administered a questionnaire to managers, or assistant managers, when managers were not available. The researcher collected 64 completed questionnaires (65.3%) using purposive sampling in the Philippines, and from the remaining countries 34 (34.7%) completed questionnaires were collected using convenience sampling (200 online questionnaires were sent to previous known businesses in Singapore, Indonesia, and the United States).

A 5-point Likert-type questionnaire (1-strongly disagree; 2-disagree; 3-neutral; 4-agree; 5-strongly agree) was developed for data collection. The questionnaire was used to measure knowledge management, soft TQM, and hard TQM on the performance of business organizations.

The questionnaire was assessed for theoretical content validity, and pilot testing was conducted in order to assess the wording and appearance of the instrument. Finally for construct validity, the questionnaire was administered to 60 people with work experience in for profit and not-for profit organizations. The instrument had a Cronbach's Alpha of 0.929, which is considered reliable, and comparable to similar studies (see for example Hung, Lien, Fang, & McLean, 2010).

For the analysis of the data, the researcher employed Structural Equation Modeling (SEM) using AMOS 17. SEM was considered appropriate since it uses "measurement models for assessing the hypotheses about relationships between observed and latent variables and structural models of the causal relationships among both observed and latent variables" (Easterby- Smith, Thorpe and Jackson, 2008, p. 296). This statistical method also provide more accurate and reliable results when comparing the proposed model with the sample data.

Findings

In this study, for SEM to work well, the assumption is that data are normally distributed and there are no outliers. Since it was discovered that there was multivariate non-normality, the Bollen-Stine bootstrap process was employed for handling the multivariate non-normality. The analysis of the sample did not show any outliers.

Additionally, the level of significance used was 0.05. Table 1 indicates the correlations that were significant at 0.05 (observe the p-value with three***). Those correlations that were above 0.05 (not significant) were removed from the table.

Table 1
The Significance of the Causal Relationship between Latent Variables

Variables	Causal relationships			Un-stan-dardized β	P
Soft TQM	SQ	<---	KM	.815	***
Hard TQM	HQ	<---	SQ	.871	***
Organizational performance	OP	<---	HQ	.725	***
Quality assurance	HQ3	<---	HQ	.980	***
Quality control	HQ1	<---	HQ	1.144	***
Quality management	HQ6	<---	HQ	1.000	
Knowledge application	KM4	<---	KM	1.000	
Knowledge application	KM3	<---	KM	.911	***
Knowledge storage	KM2	<---	KM	.786	***
Top management support	SQ4	<---	SQ	1.000	
Customer focus	SQ5	<---	SQ	.890	***
Employee involvement	SQ6	<---	SQ	.774	***
Employee commitment	SQ7	<---	SQ	.850	***
Profit growth	OP4	<---	OP	.786	***
Sales growth	OP2	<---	OP	1.000	
Customer satisfaction	OP1	<---	OP	.838	***

The Measurement Model

The data for the measurement model (see Figure 2) shows that knowledge management was correlated with knowledge application (KM4 = 0.896 and KM3 = 0.861) and knowledge storage (KM2 = 0.695). Thus, knowledge application (KM4=0.896) is a critical factor for knowledge management practices. Knowledge creation and knowledge sharing were discarded from the final model since they were not significant.

Concerning soft TQM practices, there were correlations between top management support (SQ4 = 0.799), customer focus (SQ5 = 0.684), employee involvement (SQ6 = 0.653), and employee commitment (SQ7 = 0.837). Therefore, employee commitment (SQ7 = 0.837) is clearly a crucial factor within soft TQM practices.

Regarding hard TQM, there were correlations between quality control actions (HQ1 = 0.896), quality assurance (HQ3 = 0.803), and quality management (HQ6 = 0.837). Thus, quality control (HQ = 0.896) is a key element within hard TQM practices. Technology utilization was discarded from the final model since it was not significant.

Organizational performance was correlated with customer satisfaction (OP1 = 0.798), sales growth (OP2 = 0.965), and profit growth (OP4 = 0.702). In the final model, employee productivity was discarded since it was not significant.

The previous evidence supports the hypothesis one (H:1), that the latent variables affect the measurement indicators (Observed variables).

The results obtained after testing the model with SEM (see Tables 2 and 3) reveal that the "proposed model closely fits with the sample data" (Hung et al., 2010, p. 432). In Table 2, chi square (CMIN) is expected to be very low and the p-value to be insignificant at 0.05 level. In Table 3, there are four other indicators of goodness of fit of the hypothesized model when tested with the sample data. These indicators are expected to be above .90 for a good model fit. One of the four was slightly below .90, but since there were four indicators, and the requirements for model fit are met, it does not affect the overall result.

Table 2
Chi Square Model Fit Indicators

Model	NPAR	X2 (CMIN)	df	P
Default model	29	81.663	62	.048

Table 3
Other Model Fit Indicators

Model	NFI	RFI	IFI	TLI	CFI
Default model	.907	.883	.976	.969	.975

Note. NFI = Normed Fixed Index, RFI = Fixed Index, IFI = Fixed Index, TLI = Tucker-Lewis Index, CFI = Confirmatory Fixed Index.

The Structural Model

For the structural model (see Figure 2), it was found that knowledge management and soft TQM were highly correlated (r = 0.88) and that knowledge management explained 77.4% of the variance (R2 = 0.774) in soft TQM. This result supports H2. In addition, soft TQM and hard TQM were found to be also high correlated (r = 0.86) and soft TQM explained 74.3% of the variance (R2 = 0.743) in hard TQM. These outcomes support H3 that knowledge management and soft TQM affect hard TQM. Finally, it was found that hard TQM and organizational performance were moderately correlated (r = 0.595), since knowledge management is correlated with soft TQM, and soft TQM is correlated with hard TQM, which in turn is correlated with organizational performance. Thus, these results support H4 that the model made up of knowledge management, soft TQM and hard TQM does indeed affect organizational performance. The square of multiple correlations for this proposed model was R2 = 0.354, indicating that 35.4% of the variance in organizational performance is explained by the integration of knowledge management, soft TQM, and hard TQM (see Figure 2 below).

Discussion

The results indicate that knowledge management affects three basic indicators of organizational performance (sales growth, customer satisfaction, and profit growth, which were used, among other indicators, in Fotopoulos and Psomas, 2009) through soft TQM and hard TQM. No direct effect of knowledge management on organizational performance was found. Likewise, no direct effect between soft TQM and organizational performance was found. This is distinct from Rahman and Bullock (2005), who reported direct effects between soft TQM and organizational performance in Australian manufacturing companies. Because their definitions of performance indicators and the sample companies that they used were different from those used this study that could explain the difference in the direct effect of soft TQM on organizational performance.

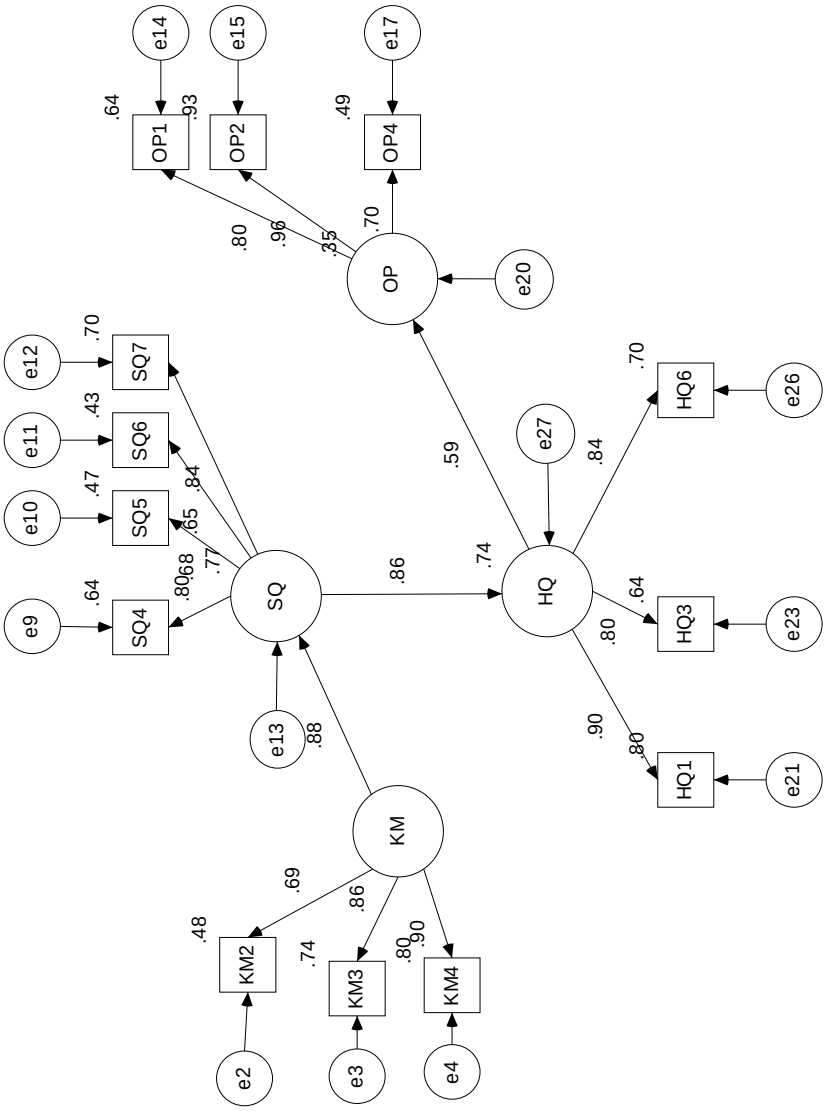

Figure 2. Structural equation model for organizational performance.

Note. KM = Knowledge management, SQ = Soft TQM, HQ = Hard TQM, and OP = Organizational performance.

Nevertheless, a direct effect was found between hard TQM and organizational performance. In this instance, the key factor was quality control. By regularly analyzing the causes of poor quality in their products/services, companies can increase customer satisfaction and increase their sales. The finding of a direct effect of hard TQM on organizational performance is consistent with other studies that examined the influence of soft TQM and hard TQM on organizational performance and management results (Fotopoulos & Psomas, 2009; Rahman & Bullock, 2005).

This study also reveals that knowledge application was a crucial factor in knowledge management practices, and this finding confirms the study of Hung et al. (2010) about knowledge management and TQM practices with innovation performance. Concerning soft TQM, the main factors were employee commitment and top management support. This finding is closely related to the studies of Bin Abdulla et al., (2008), and Lau and Idris (2000). To a lesser extent, employee involvement was also found to be a significant element in soft TQM practices, which fits in a general sense with the ideas of Ooi, Arumugam, and Hwa (2005).

The results of the study indicate that knowledge management and soft TQM influence performance in an indirect way; no direct effect was observed between knowledge management and organizational performance. Likewise, no direct effect was found between soft TQM and organizational performance. In order to affect performance, knowledge management and soft TQM need hard TQM as a mediator variable, since hard TQM had direct and indirect effects on organizational performance (59.5% and 75.7% respectively). The direct and indirect effects of these variables can be graphically observed in Figure 2. This study suggests that knowledge management influences soft TQM practices and it in turn, affects hard TQM practices. Consequently, hard TQM actions influence organizational performance outcomes.

This implies that business organizations attempting to enhance customer satisfaction and increase sales and profit through knowledge management initiatives must realize that they need to use soft TQM and hard TQM as mediators, especially in service companies, since they represented 58.1% of the companies surveyed. Managers must encourage employees to apply new knowledge in the workplace. Additionally, managers must motivate organizational commitment in their employees and provide them with adequate management support. Furthermore, managers must train and motivate employees to analyze the causes of poor quality in products/services and reward them for continuous improvement in their performance.

All these suggested managerial actions represent a dynamic model in which the company is applying new knowledge, and the employees are dedicated to doing a better job, analyzing the causes of poor quality, and committed to

continuous improvement. This integrative approach will result in an increment in sales and customer satisfaction. In sum, it is not advisable that managers merely employ knowledge management practices to enhance organizational performance; rather, it is necessary for knowledge management to be integrated with soft TQM and hard TQM actions in order to produce improvement in the performance of the organization.

Conclusion

The performance of the organization seems not to be improved by knowledge management and soft TQM initiatives alone. In this study it was found that for knowledge management and soft TQM initiatives to enhance basic performance indicators such as customer satisfaction, sales growth, and profit growth, they need hard TQM practices. In addition, since soft TQM and hard TQM are closely related, soft TQM actions contribute to sustain hard TQM practices, which assure the level of performance achieved by the company. Therefore, business organizations must promote and execute more knowledge management and soft TQM initiatives in order to influence hard TQM practices, which in turn, will positively influence the performance of the organization in the short and the long run.

Limitations

This study used very few performance indicators, most of them related to financial performance. Future studies should expand the performance indicators in order to come up with a more complete picture concerning performance. The R-square was quite low (35.4%), which indicates that there are other variables that can explain performance which were not included in this study. Future studies should address these limitations. Additionally, the data collected from the sample outside the Philippines was small; caution is needed for generalizing. Finally, the data of this study was obtained from the understanding of the managers/assistant managers about how the variables influenced organizational performance, and not from any organizational report or financial statements.

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Ismael Garcia, PhD Student
Business Department
Adventist International Institute of Advanced Studies
Silang, Cavite, Philippines