

**QUALITY IMPROVEMENT AS MEDIATING ROLE OF THE
TQM PRACTICES'S EFFECT ON
ORGANIZATIONAL PERFORMANCE: AN EMPIRICAL
STUDY OF SMES IN THAILAND**

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Abstract

This study conducts a comprehensive review of the literature and develops a framework that links among TQM practices, quality improvement, and organizational performance. The paper provides empirical support for direct and indirect effects of TQM practices on quality improvement and organizational performance. The purpose of this research is to empirically investigate the impact of TQM practices on quality improvement and organizational performance on SMEs which amounted to 3,446,589.2 million baht representing 37.9 percent of Thai GDP. The number accounts for 99.8 percent of approximately 2,000,000 SMEs businesses and generates employment for 9.7 million people, or almost 80 percent of all jobs in Thailand. The study utilized primary data obtained from a questionnaire method. 456 SMEs in the various export-oriented manufacturing industries were surveyed in Thailand. Four hypotheses have been developed through literature review and tested using Structural Equation Modeling (SEM) by AMOS and SPSS 18.00 software. Data analysis shows that TQM practices has significant effect on organizational performance and quality improvement directly, TQM practices has significant effect on organizational performance through quality improvement, quality improvement has significant effect on organizational performance, organizational performance is more influenced by quality improvement than TQM practices.

Keywords: TQM practices, Quality Improvement, Organizational performance

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I. INTRODUCTION

The Coming of AEC Era, both service and manufacturing companies or public sectors are confronted with a challenging and increasingly competitive environment. Especially Small and medium enterprises (SMEs), they should be able to create conditions that support them both in the domestic and international markets. Adopting and implementing a set of quality management practices was one of many ways to win the competition in the marketplace.

There were many forms of best management practices in process management area i.e. Just In Time (JIT) systems, Material Requirement Planning (MRP), Six Sigma, Lean Management, Enterprises Resources Planning (ERP), Supply Chain Management (SCM), and Total Quality Management (TQM). One of the best forms of operations management practices is Total Quality Management (TQM). It has received great attention in the last two decades (Jung and Wang, 2006).

Total quality management (TQM) principles and techniques are now a well-accepted part of almost every manager's tool kit. According to Powell (1995), most large firms have adopted TQM in some form, and official quality awards are a badge of honor whether a company is operating in Japan, the USA, Europe, or Thailand. Implementing TQM is a major organizational change and development that requires a transformation in the organization's culture, processes, strategic priorities, and beliefs, among others.

To meet the challenge of this global revolution, many businesses have invested substantial resources in adapting and implementing total quality management (TQM) practices. TQM is defined as an action plan to produce and deliver commodities or services, which are consistent with customers' needs or requirements by better, cheaper, faster, safer, easier processing than competitors with the participation of all employees under top management leadership (Lakhali et al., 2006). Quality has become one of the most challenging factors in competition today. Intensifying global revolution and increasing demand by customers for better quality have caused more and more organizations to realize that they will have to provide better quality product and /or services in order to successfully compete in the marketplace. Therefore, small and medium enterprises (SMEs) in global competition today should be focus to quality. Attention to quality generates positive impact to business performance through two ways i.e. (1) the impact on production costs and; (2) the impact on earnings (Gaspersz, 2005).

In general, an organization can have one or more of the following capabilities when compared to its competitors: lower prices, higher quality, higher dependability, and shorter delivery time. These capabilities will, in turn, enhance the organization's overall performance (Mentzer et al., 2000). An organization offering high-quality products can charge premium prices and thus increase its profit margin on sales. An organization having a short time-to-market and rapid product innovation can be the first in the market thus enjoying a higher market share and sales volume (Li et al., 2006).

The previous studies which test the relationship between TQM practice and organizational performance have been done by many researchers. For example, Samson and Terziovski (1999) examine the effect of total quality management practices on operational performance of a large number of manufacturing companies (1200 Australian and New Zealand manufacturing organizations). The study reveals that the relationship between TQM practice and organizational performance is significant in a cross-sectional sense, but not all of the categories of TQM practice

were particularly strong predictors of performance. The categories of leadership, management of people and customer focus were the strongest significant predictors of operational performance.

The other empirical studies that investigate the relationship between TQM practices and organizational performance (e.g. Samson and Terziovski, 1999; Flynn and Saladin, 2001; Sila and Ibrahimpour, 2005; Li *et al.*, 2006; Lakhalet *al.*, 2006). Generally, many researchers find out a positive effect between TQM practices and performance. While there were lack of the studies which investigate the relationship between TQM practices, quality Improvement and organizational performance in the literature.

Therefore, the purpose of this study is to empirically test a framework identifying the relationships among TQM practice, quality improvement, and organizational performance. TQM practice is directly and indirectly related to organizational performance. In this study, we aim to investigate the mediating role played by quality improvement in the explanation of the relationship between TQM practices and organizational performance on 456 SMEs in the various export-oriented manufacturing industries in Thailand.

II. RESEARCH FRAMEWORK AND HYPOTHESES

Total Quality Management

The concept of Total Quality Management (TQM) not only as management philosophy and management principles but also as a set of strategies and practices that can be used to enhance both competitiveness and Organizational performance through customer satisfaction.

Although the literature on total quality management includes a rich spectrum of research, there is no consensus on the definition of quality. The notion of quality has been defined in different ways by different authors. Gurus of the total quality management disciplines such as Garvin, Juran, Crosby, Deming, Ishikawa and Feigenbaum defined the concept of quality and total quality management in different ways. Garvin proposed a definition of quality in terms of the transcendent, product based, user based, manufacturing based and value based approaches. Garvin also identified eight attributes to measure product quality (Garvin, 1987). Juran defined quality as “fitness for use”. Juran focused on a trilogy of quality planning, quality control, and quality improvement. Crosby defined quality as “conformance to requirements or specifications”. According to Crosby, requirements are based on customer needs. Crosby identified 14 steps for a zero defect quality improvement plan to achieve performance improvement (Kruger, 2001).

Management awareness of the importance of total quality management, alongside business process reengineering and other continuous improvement techniques was stimulated by the benchmarking movement to investigate, study, implement and improve on best quality practices (Zairi and Youssef, 1995). The commitment to continuous improvement historically originated in manufacturing firms; but spread quickly to the service sector (e.g. teller transactions in banks, order processing in catalog firms, etc.).

Furthermore, to determine critical factors of total quality management, various studies have been carried out and different instruments were developed by individual researchers and institutions such as Malcolm Baldrige National Quality Award (MBNQA), EFQM (European Foundation For Quality Management), and the Deming Prize Criteria. Based on these studies, a wide range of management issue, techniques, approaches, and systematic

empirical investigation have been generated. According to Deming, quality is a predictable degree of uniformity and dependability, at low cost and suited to the market. Deming also identified 14 principles of quality management to improve productivity and performance of the organization. Ishikawa also emphasized importance of total quality control to improve organizations' performance. He contributed to this area by using a cause and effect diagram (Ishikawa diagram) to diagnose quality problems (Kruger, 2001).

Feigenbaum describes the concept of organization wide total quality control. Hewas the first user of total quality control concept in the quality literature. He defined 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 by the customer” (Kruger, 2001). Major common denominators of these quality improvement plans include management commitment, strategic approach to a quality system, quality measurement, process improvement, education and training, and eliminating the causes of problems. Total quality management is the culture of an organization committed to customer satisfaction through continuous improvement. This culture varies both from one country to another and between different industries, but has certain essential principles which can be implemented to secure greater market share, increased profits, and reduced costs (Kanji and Wallace, 2000).

Saraphet *al.* (1989) developed 78 items, which were classified into eight critical factors to measure the performance of total quality management in an organization. These critical factors are role of divisional top management and quality policy, role of the quality department, training, product and service design, supplier quality management, process management, quality data and reporting, and employee relations. Flynn *et al.* (1994) developed another instrument to determine critical factors of total quality management. They have identified seven quality factors. These are top management support, quality information, process management, product design, workforce management, supplier involvement, and customer involvement. As it is seen, this instrument is similar to the preceding instrument that was developed by Saraphet *al.* (1989).

In another noteworthy study, Anderson *et al.* (1994) developed the theoretical foundation of quality management practice by examining Deming's 14 points. They reduced the number of concepts from 37 to 7 using the Delphi Method. These are visionary leadership, internal and external cooperation, learning, process management, continuous improvement, employee fulfillment, and customer satisfaction.

Black and Porter (1996) also identified critical factors of the total quality management using the Malcolm Baldrige National Quality Award (MBNQA) criteria and investigated their validity by empirical means. They developed 32 items, which were classified into ten critical factors. These factors are corporate quality culture, strategic quality management, quality improvement measurement systems, people and customer management, operational quality planning, external interface management, supplier partnerships, teamwork structures, customer satisfaction orientation, and communication of improvement information. Various authors have also assessed the validity of Malcolm Baldrige Award Criteria (Flynn and Saladin, 2001).

Ahire *et al.* (1996) developed twelve integrated quality management constructs through detailed analysis of literature to determine critical factors of quality management of organizations. They identified twelve factors. These are supplier quality management, supplier performance, customer focus, statistical process control usage,

benchmarking, internal quality information usage, employee involvement, employee training, design quality management, employee empowerment, product quality, and top management commitment.

Motwani (2001) visualizes TQM as constructing a house. First, putting top management commitment to TQM as the base or foundation. Without a strong foundation, the house will never stand. Once the foundation is in place, attention should be given to employee training and empowerment, quality measurement and benchmarking, process management, and customer involvement and satisfaction. These factors can be viewed as the four pillars of a house. Once the pillars are being put in place and enriched, it is time to incorporate the factors of vendor quality management and product design. These are the final elements to achieving TQM.

According to the literature review, there was no consensus among researchers about the impact factors of TQM. One problem in reaching gap on dimensions is the broad range of approaches used by various TQM authors. Based on the above, the dimensions of the TQM practices used in this study are leadership, strategic planning, customer focus, teamwork, training, process management, and supplier quality management.

Quality Improvement

Quality improvement is the extent to which an organization is able to create a defensible position over its competitors (Porter, 1985 and Barney, 1991). It comprises capabilities that allow an organization to differentiate itself from its competitors and is an outcome of critical management decisions. The concept of quality improvement has diverse interpretations in the literature. None of the authors who claim the concept of quality improvement as the "standard definition" which is acceptable to all authors. The quality improvement of an organization can determine the company performance. Therefore, quality improvement which is created by the practice of TQM should be able to improve the company performance.

The empirical literature has been quite consistent in identifying price/cost, quality, delivery, and flexibility as important competitive capabilities (Tracey *et al.*, 1999). On the basis of prior literature Koufteros describes a research framework for competitive capabilities and define the following five dimensions i.e. competitive pricing, premium pricing, value to customer quality, dependable delivery, and production innovation (Li *et al.*, 2006). Based on the above, the dimensions of the quality improvement which used in this study are cost reduction, delivery dependability, product innovation, and speed.

Organizational performance

Performance measurement is very important for the effective management of an organization. Organizational performance refers to how well an organization achieves its market-oriented goals as well as its financial goals (Li *et al.*, 2006). Organizational performance is not often described in detail by academics. The traditional approach to performance measurement using solely financial performance measure is flawed. A number of prior studies have measured organizational performance using both financial and market criteria, including return on investment (ROI), market share, profit margin on sales, the growth of ROI, the growth of sales, and the growth of market share (Stock *et al.*, 2000). Based on the above, the dimensions of Organizational performance which used in this study are ROI, market share, sales, and productivity.

Figure 1. constitutes the research framework developed in this research. The framework proposes that TQM practices will have an impact on Organizational performance both directly and indirectly through Quality Improvement.

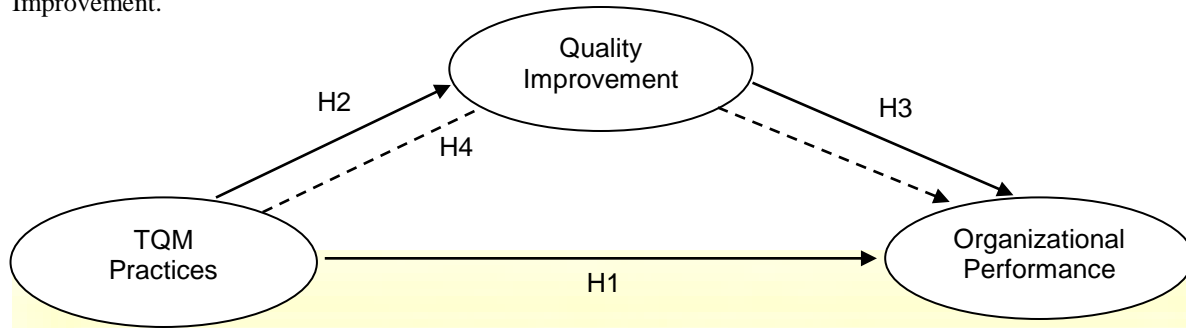


Figure 1. Research Framework

Based on figure above, four hypotheses to be tested are shown in figure 1. They are as follows:

- H1 : Total Quality Management (TQM) practices have significant effect on organizational performance
- H2 : Total Quality Management (TQM) practices have significant effect on quality Improvement.
- H3 : Quality Improvement have significant effect on organizational performance
- H4 : Total Quality Management (TQM) practices will be able to improve the organizational through quality improvement

III. RESEARCH METHOD

This study was used quantitative approach. This study sought to choose respondents who can be expected to have the best knowledge about the operation of quality management in the organization. So, it was decided to choose managers who are at higher managerial levels as respondents for the current study. The information about the companies was obtained from the Office of Small and Medium Enterprises Promotion (2004). The population of this study consisted of 39,373 SMEs in the various export-oriented manufacturing industries in Thailand. A stratified random sampling method was employed in this study.

Participants are randomly selected from six regional areas in Thailand; north-eastern, the Bangkok Metropolitan, north, south, central and eastern region. The next step is to select participants by a simple random sample method (using a random numbers table) within each region. The data used in this study were obtained from a questionnaire method. The questionnaires mailed by post in part, and the rest delivered directly by researchers at company sample. A total of 456 completed questionnaires were returned.

There were three variables studied, namely: Total Quality Management (TQM) practices, quality improvement, and organizational performance. Total Quality Management (TQM) practices as exogenous variable. While quality improvement and organizational performance as endogenous variables. Seven items were used to measure TQM practices in organizations based on the aspects leadership, strategic planning, customer focus, teamwork, training, process management, and supplier quality management (Sila and Ibrahimpour, 2005). The

quality improvement variable was measured by costreduction, delivery dependability, product innovation, and speed (Li *et al.*, 2006; Han *et al.*, 2007). Organizational performance was measured based on the aspects return on investment (ROI), market share, sales, and productivity (Stock *et al.*, 2000; Han *et al.*, 2007).

Furthermore, overall indicators in the questionnaire of the study uses five-point Likert scale was employed for scoring responses (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree). For interpretation purpose, the scale is changed into interval class as follows: (1) 1.00 to 1.80 = very low; (2) 1.81 to 2.60 = low; (3) 2.61 to 3.40 = high enough, (4) 3.41 to 4.20 = high; and (5) 4.21 to 5.00 = very high.

The validity instrument is tested by Product Moment Correlation. An instrument has high validity if $r\text{-value} > 0.30$ (Cooper and Emory, 2002). Reliability of constructs was tested with Cronbach's α . As suggested by Hair *et al.* (1998) the cut off point for Cronbach's α was > 0.60 . In addition, Kline (1998) pointed out that areliability coefficient of around 0.90 can be considered "excellent", values of around0.80 as "very good," and values of around 0.70 as "adequate", depends on thequestions. The results of validity and reliability test presented in Table I.

TableI. Results for validity and reliability test

No.	Variables/Indicators	Correlation (r)	Cronbach's α	Description
1.	TQM Practices (X)		0.810	Reliable
	Leadership	0.577		Valid
	Strategic planning	0.640		Valid
	Customer focus	0.444		Valid
	Teamwork	0.508		Valid
	Training	0.711		Valid
	Process management	0.488		Valid
	Supplier quality management	0.543		Valid
2.	Quality Improvement (Y1)		0.719	Reliable
	Cost reduction	0.466		Valid
	Delivery dependability	0.678		Valid
	Product innovation	0.552		Valid
	Speed	0.445		Valid
3.	Organizational Performance (Y2)		0.872	Reliable
	Return on investment (ROI)	0.398		Valid
	Market share	0.482		Valid
	Sales	0.445		Valid
	Productivity	0.580		Valid

Source: Primary data, processed

Based on the table, value of correlation (r) and Cronbach's α were above the criteria standard. So, it could be concluded that the instrument which used in this study was valid and reliable. The method of analysisuse both descriptiveanalysisandStructural EquationModeling(Hair *et al.*, 1998; Solimun, 2006).

IV. RESULTS AND DISCUSSION

Respondents of this study have quite different characteristics. Diversity can be seen from the personal data of respondents includingsex, age, position, and educational level in the organization. A total 456 respondents which

participated in this study. The majority of respondent who participated in this research was male gender (84%), aged between 30 to 40 years (63%), they have position in their company as a production manager and operations (53%). The level of education was Bachelor degree (75%).

Furthermore, the research variables tested in this study consisted of three variables, namely Total Quality Management (TQM) practices, quality improvement, and organizational performance. The level perception of respondent on variables could be seen from mean value on every items or indicators. Value of loading factor is used for analysis of dominant indicator on every variable in this study. Complete result could be seen at table below (Table II).

Table II. Results for mean and loading factor value

No.	Variables/Indicators	Mean	Loading Factor
1.	TQM Practices (X)	3.83	
	Leadership	4.45	0.811
	Strategic planning	4.11	0.742
	Customer focus	3.88	0.570
	Teamwork	4.10	0.658
	Training	3.66	0.709
	Process management	3.20	0.552
	Supplier quality management	3.44	0.612
2.	Quality Improvement (Y1)	3.70	
	Cost reduction	4.08	0.833
	Delivery dependability	4.16	0.769
	Product innovation	3.36	0.802
	Speed	3.18	0.528
3.	Organizational performance (Y2)	3.72	
	Return on investment (ROI)	3.77	0.580
	Market share	3.65	0.721
	Sales	3.71	0.665
	Employee Productivity	3.75	0.799

Source : Primary data, processed

The table reveals that average value (mean) of TQM practices variable was in high/good category (3.83), leadership as the higher indicator than others (4.45), and process management as lower indicator (3.20). Variable of quality improvement was in high/good category (3.70), delivery dependability as the higher indicator than others (4.16), and speed as lower indicator (3.18). Organizational performance was in high/good category (3.71), Return on investment (ROI) as the higher indicator than others (3.77), and market share as lower indicator (3.65).

Furthermore, it could be explained that dominant indicator that determine TQM practices variable was leadership (0.811). Cost as dominant indicator that determine quality improvement variable, and employee productivity as dominant indicator that determine organizational performance variable. They have higher loading factor value than others. The theoretical framework illustrated in figure 1 has four hypothesized relationships among the variables TQM practices, quality improvement, and organizational performance. Table III displays the result of structural model which performed by AMOS and SPSS 18.00.

Table III. Results of the structural model

Hypothesis	Relationship	Mediating Variable	Direct effect	Indirect effect	Description
H1	TQM Practices --- →Organizational performance	-	0.299 (3.410)	-	Supported
H2	TQM practices ---→Quality Improvement	-	0.722 (6.480)	-	Supported
H3	Quality Improvement --- →Organizational performance	-	0.336 (4.357)	-	Supported
H4	TQM Practices --- →Organizational performance	Quality Improvement	-	0.243	Supported

Source: Primary data, processed

The mediating test should be done to know more clearly the role of quality improvement in relationship with the effect of TQM practices on organizational performance. In this study, Quality Improvement could be as complete mediation, partial mediation or non-variable mediation (Solimun, 2006). The test results of mediation variables are presented in figure 2 and 3 as follow.

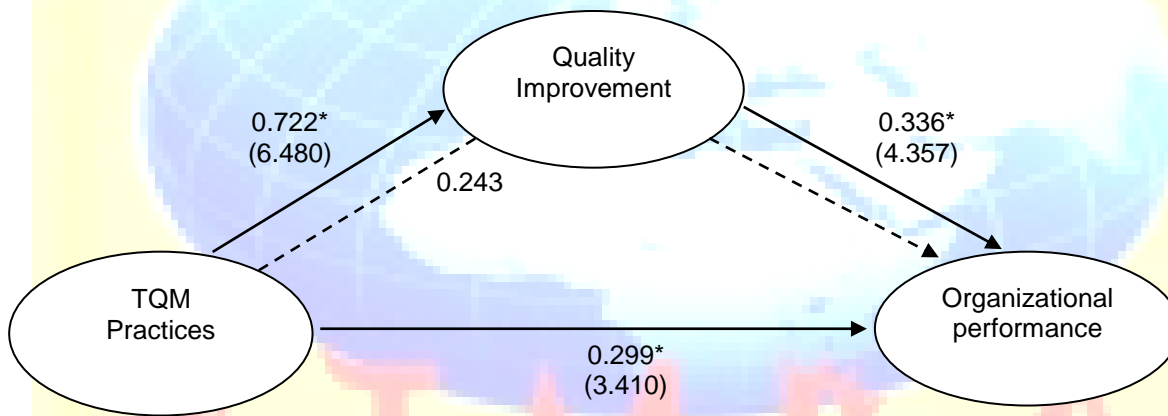


Figure 2. The result of mediating variable test (involving Quality Improvement variable)

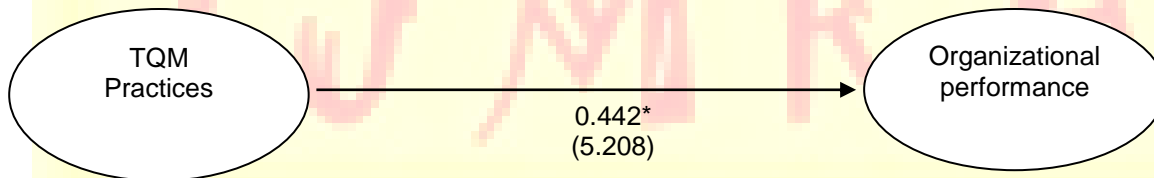


Figure 3. The result of mediating variable test (without Quality Improvement variable)

From the test results above, it can be seen that the coefficient of TQM practices on organizational performance without the involvement of quality improvement as a mediating variable is 0.442, whereas after involving quality improvement as a mediating variable, the value of coefficient TQM practices on organizational performance decreased to 0.299. In accordance with the rules of examination of mediating variables, it can be concluded that the role of quality improvement can be mentioned as partial mediation.

The results of the structural model which is presented in the table show support for all the hypotheses. Hypothesis 1, which states that Total Quality Management (TQM) practices has significant effect on organizational

performance is accepted. The standardized coefficient is 0.299, which is statistically significant at $\text{prob.} < 0.05$ ($t = 3.410$). This result confirms that the implementation of TQM practices may directly improve organizational performance in all aspects in the long run.

Hypothesis 2 is also supported, which indicates that Total Quality Management (TQM) practices have a significant effect on quality improvement. The standardized coefficient is 0.722, which is statistically significant at $\text{prob.} < 0.05$ ($t = 6.480$). The implementation of TQM practices may provide the organization with quality improvement, cost reduction, dependability, innovation, and speed dimensions. The results also indicate that quality improvement has a significant effect on organizational performance. Higher levels of quality improvement may lead to improved competitive performance, thus confirming hypothesis 3. The standardized coefficient is 0.336, which is statistically significant at $\text{prob.} < 0.05$ ($t = 4.357$).

Furthermore, the standardized coefficient of the indirect effect of the TQM practices on organizational performance is 0.243, which is significant at the 0.05 level. An analysis from Table III shows that TQM practices not only have a direct and positive effect on organizational performance, but also an indirect and positive effect through the quality improvement variable.

The results show that organizational performance is more influenced by quality improvement than TQM practices. This indicates that TQM practices produce quality improvement to the organization in the first place, and quality improvement will, in turn, lead to improved organizational performance. In general, top management and quality managers or production managers in these companies regarded TQM as the first priority for the survival of the company. According to Krajewski *et al.* (2006), quality management is defined as one element of operations management and as a management method designed to reach organizational objectives more efficiently, thus enhancing the quality of business resources as well as the competitiveness and vitality of the organization.

If TQM practices are implemented properly, they produce a variety of benefits such as understanding customers' needs, improved customer satisfaction, improved internal communication, better problem solving, and fewer errors. The success of a TQM program when its implementation is extended to the entire company. Consequently, effective implementation of TQM is a valuable asset in a company's resource portfolio. TQM practices can produce important competitive capabilities. It could be a source of quality improvement. Therefore, implementing TQM practices as a competitive weapon can improve both the quality improvement and organizational performance.

These findings were in line with previous studies. In the literature, TQM practice mostly has been linked directly to organizational performance (Samson and Terziovski, 1999; Sila and Ibrahimpour, 2005; Demirbag *et al.*, 2006; Lakhal *et al.*, 2006; Li *et al.*, 2006; and Han *et al.*, 2007). The findings of this research also indicate the presence of an intermediate measure of quality improvement between TQM practices and organizational performance.

CONCLUSIONS AND SUGGESTION

Conclusions

The aim of this study was to empirically investigate the impact of TQM practices on quality improvement and organizational performance at SMEs in the various export-oriented manufacturing industries in Thailand. TQM practices have a positive and significant effect on organizational performance and quality improvement. Quality Improvement has a positive and significant effect on organizational performance. Organizational performance is more influenced by quality improvement than TQM practices. These findings indicate that TQM practices can produce quality improvement to the organization in the first place, and quality improvement in the second place to improve organizational performance. On the other hand, TQM practices provide a better explanation on organizational performance through quality improvement criteria such as cost, delivery dependability, product innovation and speed.

Suggestions

The dominant factors that determine the success of TQM practices is role of top management or leadership. Therefore, TQM practices must be initiated by the top management. Quality improvement plans proposed by several gurus strongly emphasize the commitment of top management. Managers of the organization are directly responsible for determining an appropriate organization capability in supporting their quality improvement. Managers should also determine quality policy and develop specific measurable goals to satisfy customer expectations and improve their organizations' performance.

Number of other factors both internal and external may also mediate TQM practices and organizational performance relationship. Although this study establishes relationship among TQM practices, quality improvement and organizational performance, other factors such as size, organizational culture, innovative capacities and market orientation every firm may also has some impact on organizational performance. Market orientation, consumer satisfaction, organizational culture and level of innovation seem to be highly relevant to TQM practices implementation and performance for further research on manufacturing companies. Thus, this study focused on manufacturing companies. So, the next research also could be carried forward with a focus on service companies in order to obtain more specific results.

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