

TQM KNOWLEDGE MANAGEMENT AND ANALYSIS OF SMES IN THAILAND

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Abstract: The purpose of this research was to study the impact of analysis and knowledge management of total quality management (TQM) on the performance of Small and Medium-sized Enterprises (SMEs) in Thailand. The research instrument used was a questionnaire and the data gathered were analyzed statistically using Correlation Coefficient Analysis and Multiple Regression Analysis. The sample population included 95 SMEs who were the finalists in Thailand's SMEs National Awards. The results show that TQM both in the strategy and process management had an impact on the overall performance of an organization, both its financial and non-financial aspects, at 0.05 level significance.

Key words: corporate performance, small and medium-sized enterprises, SMEs, TQM knowledge management

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Introduction

As time passes, competition in the free world has become more and more intensified, resulting in rising awareness in many organizations for the need to develop and to create maximum satisfaction for customers. This movement is reflected on the performance of organizations, especially for SMEs whose business often experience a higher cost than larger enterprises in terms of what it takes to gain access to knowledge, technology, or raw materials due to their smaller production size resulting in a lack of 'economies of scales' advantage. Thus, it is necessary for SMEs to seek advantage through other aspects including quick responses to the market, a focus on niche markets, and rapid alteration of production processes and services which cost them less to adjust. (Sujová, & Simanová, 2021). However, two substantial issues that SMEs often face are a limitation in the number of personnel and a limitation of knowledge and skills of their current personnel. Most SMEs are unable to hire specialized personnel to take care of marketing, accounting, research, and human resources management, unlike larger organizations, causing personnel in the organization to have to work on several tasks. For some small businesses with very few employees, executives might even have to spend most of their time working on routine jobs, leaving very little time left to manage. (Jurgelevicius, & Tvaronaviciene, 2021). The key point is, when an organization grows, these business

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owners or executives will gradually transition from hands-on tasks to more supervision. Even with planning and coordination, they are not able to follow through with the work plan (BSI Thailand, n.d.). There are also certain problems in business performance due to their original focus on the quality of goods and services, which lead to having a specially-assigned Quality Assurance and Quality Control, and their contradictive attempts to reduce the cost by reducing the quality of raw materials used in production of goods or services which is not a sustainable way of cost reduction. Therefore, the concept of total quality management (TQM) has been applied to SMEs to provide guidelines for business operations. This is to facilitate organizational planning and organizational cooperation. To ensure sustainable increase of profit and cost reduction, there must be continued improvement of work processes. Executives must place importance on the TQM, while all employees must also be aware of the quality required and work together to continually improve their work to achieve such quality. The elements of TQM should also be applied in their work in order to meet customer satisfaction. (Stacho, Stachová, Varečková, & Matúšová, 2021).

Therefore, TQM is an approach in which many SMEs executives are interested and place great importance on the elements of TQM. While some organizations are able to implement TQM effectively, some other organizations are unable to implement TQM as effectively as they should. This might be due to various limitations of the organization itself despite the executives' commitment to TQM and their agreement that TQM can help their organization produce effective performance. These aforementioned issues were what inspired the researcher to investigate TQM knowledge management and analysis of SMEs in Thailand with a focus on finding impacts of TQM on the performance of these Thai SMEs.

Literature Review

TQM concept for SMEs

The general concept of TQM has been developed by several scholars from various eras and received worldwide attention from both the western and eastern hemispheres. Each of these scholars had ideas that reflect what happened in their time, resulting in a variety of concepts that have been transformed to suit the time and setting. According to the literature review, Armand V. Feigenbaum was known to be the first person to devise the concept of Total Quality Control. He started writing books about quality control in 1951, and later in 1983 he published a book called Total Quality Control (Khai, & Thanh, 2021). The concept focuses on controlling overall quality which has effects at the organizational level by using customer-focused activities, which are considered the first responsibility of the management. Feigenbaum emphasized that the quality system is a structure of operations to be used at the organizational level in order to achieve maximum customer satisfaction (Ali, & Johl, 2021). A review of related literature found that SMEs can apply TQM techniques as guidelines for management and there is an increased chance for SMEs to survive, grow, and become successful in the future.

The process for implementing TQM that is suitable for SMEs consists of 7 steps (Antunes, Mucharreira, Justino, & Texeira-Quirós, 2021) as follows:

-Step 1 - Management Planning: The executives must clearly show their intention and commitment to quality and the TQM, then create a broad coalition in order to involve both the management and employees at all levels in planning and execution.

-Step 2 - Organization management and building of quality management system: The easiest way to start a TQM system is using the standard of ISO 9000 as a guideline in creating a quality system in an SME or hiring external consultants to help build a quality management system. There must be a responsible person clearly assigned during this step.

-Step 3 - Implementation of TQM: Holding an official launch of a TQM project can help build employee morale and engagement. It is also an opportunity to advocate the quality policy along with the responsible person and their team, as well as a chance to ensure that TQM is widely communicated throughout the organization.

-Step 4 - Process control techniques: At all stages of the operation, activities, or the production of goods and services must be closely supervised in order to ensure achievement of the set objectives and targets. Tools and techniques for quality improvement along with statistical tools such as Statistical Process Control (SPC) and Statistical Quality Control (SQC) may be used to control production. The chosen tools and techniques should be appropriate for each task. Therefore, it is necessary for personnel to be trained to understand and be able to use these techniques correctly and appropriately.

-Step 5 - Progress tracking and evaluation: Once the earlier steps have been achieved, the responsible person for the process must follow up periodically to see the progress of TQM. There should be evaluation on personnel feedback and issues in quality tool usage in order to improve.

-Step 6 - Review results and levels of success: After the evaluation, executives should periodically measure outcomes against the set objectives, goals, and metrics in order to draw conclusions on success or to plan further actions.

-Step 7 - Encouraging everyone to participate for continuous improvement: This can be done by stimulating and creating an atmosphere for all employees to participate or support cross-functional teamwork throughout the organization. The "recommendation system" is implemented to reward and motivate personnel. This also encourages them to accept and place importance on the people who participate in promoting a wide awareness of improvement within the organization and creates a culture of improvement, leading to an organization of learning.

All the above process must be done in a holistic way and relying on participation within the organization. This will enable the organization an effective TQM.

However, from the literature review, it was found that the concept of TQM knowledge management of modern organizations includes leadership role, strategic planning, customer focus, process management and employee focus that affect both financial and non-financial performance of the organization. There were very few studies covering such variables, especially in the context of non-profit organizations

such as foundations. This can be seen in (Malik, Iqbal, Shaukat, & Yong, 2010.) which studied constantly changing quality management with a sole focus on the study of process management affecting the financial performance, but not other dimensions. In addition, (Ulle, & Kumar, 2014.) studied the role of leaders who adopted ISO 9000 as a criterion for quality management in all fields of production, while Akhter, (2003.) studied the differences between inspection and quality control in strategic planning, customer focus, and employee focus only.

Table 1. Factors of TQM knowledge management of modern organizations

Researcher and academic	Leadership role	Strategic planning	Customer focus	Process management	Employee focus
(Malik, Iqbal, Shaukat, & Yong, 2010.)				√	
Ulle, R. S., & Kumar, A. S. (2014).	√			√	
Akhter, S. H. (2003).		√	√		√
Researcher, (2021)	√	√	√	√	√

TQM and performance of SMEs

From the literature review, a study by (Sogaxa, Simpeh, & Fapohunda, 2021) was conducted to investigate TQM and business performance using the BSC technique, exploring 4 areas of the performance: finance, customers, internal processes, and innovation. In the financial aspect, the study explored the company profits, revenue from products, and reduced cost per unit. The other 3 aspects were classified by the researcher as non-financial performance. This research was conducted on organizations in Thailand that had applied TQM or organizations that had received an award from both the Thailand Quality Award and the Thailand Quality Class. A questionnaire was used to collect information and the results revealed that factors such as customer and market focus and process management had a positive correlation with business performance at statistical significance of 0.05, though without specifying which aspects of the performance. This is consistent with (Yusr, Mokhtar, Perumal, & Salimon, 2021) who studied TQM and the performance of financial organizations, including pre-tax and after-tax return on asset ratios, return on investment, return on investment growth, market share, and market share growth. The TQM guidelines studied included 10 factors: leadership roles, teamwork, quality work between departments, authority of employees, raw material supplier development, and customer relationship. The study found the TQM approach had a

statistically significant positive effect on quality performance in several factors. It was also found to positively affect the organization's financial performance in some factors.

This is also consistent with (Sawaeen, & Ali, 2021) in a study of the impact of TQM on financial performance in the aspects of operating income, sales, total assets, return on sales, and return on assets. The results of the study show that organizations that received quality awards had better financial performance when compared with other organizations. Moreover, the nature of the organization itself was also found to affect its financial performance both in terms of organization size (small organizations have a positive effect on financial performance), capital concentration (low capital concentrations have a positive effect on financial performance), and product diversity in the organization (diversified organizations have a positive effect on their financial performance, except for the return on sales and the return on assets), etc.

Methodology

This is a survey research study in which secondary data were collected from documents, academic journals, textbooks, and dissertations. Primary data were collected from the survey using a questionnaire which the sample population was asked to fill by themselves. All the collected data were then verified for accuracy, coded, and applied in statistical analysis. The methods of the study were as follows: TQM and performance of SMEs Conceptual Framework

To create conceptual framework for research, the researcher applied the concept of TQM knowledge management and analysis (Sogaxa, Simpeh, & Fapohunda, 2021), which consists of TQM in leadership role, strategic planning, customer focus, process management, and employee focus that affect the performance of the organization. The researcher has applied the concept of (Yusr, Mokhtar, Perumal, & Salimon, 2021) which consists of financial and non-financial performance of organizations as shown in the following figure.

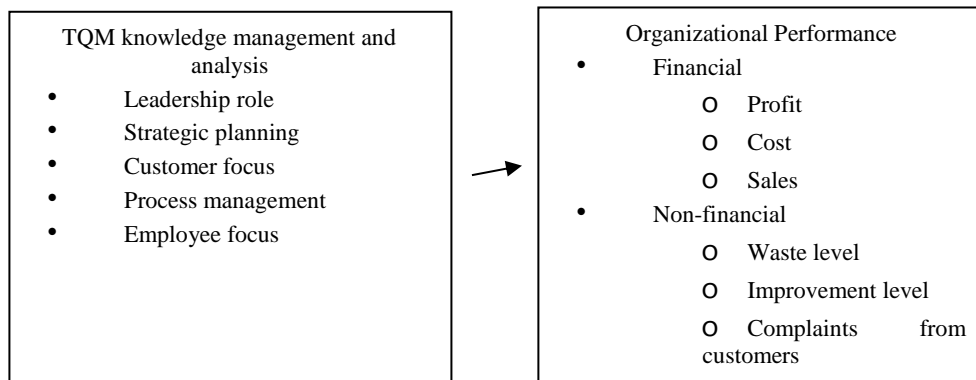


Figure 1: TQM and performance of SMEs Conceptual Framework

-Population and sample

The population used in this study w SMEs in Thailand who were the finalists in Thailand's 3rd -5th SMEs National Awards. These SMEs were also organizations that had applied the guidelines of TQM to a certain extent. There were 118 finalists in total during these 3 Thailand SMEs National Awards, but because candidates were allowed to apply more than one time, some certain SMEs were named as finalists more than once. Therefore, there were actually 95 organizations to participate in this study. The respondents to the questionnaire were executives of low, intermediate, or high levels from these SMEs who could answer questions about TQM and knew the performance of the organization before and after the implementation of the TQM.

-Research instruments

The tool used to collect data in this study was a questionnaire developed by the researcher. Research studies with a focus on TQM and its implementation, as well as the performance of the organization were used to determine the scope of study and to create the research instrument in accordance with the objectives of the study. To validate the quality of the research instrument, the questionnaire was sent to 5 experts to determine its validity both in structure and content. Then, the results from this examination were used to calculate the Index of Item Objective Congruence (IOC). The IOC value was found at 0.83 which is greater than 0.5, indicating that the questionnaire is valid enough to be used as a research tool (Birmingham, & Wilkinson, 2003). To ensure the questions' statistical reliability, 30 copies of the questionnaire were pre-tested with another population with similar characteristics to the sample used in the study. This was to test whether the questions would be interpreted accordingly with the objective of each question. The collected responses were collected and tested using a statistical software package to determine their reliability by finding Cronbach's Alpha Coefficient at 0.05-level significance. All questions were found with Cronbach's Alpha Coefficients greater than or equal to 0.7, confirming that the questionnaire was reliable (Mohamad, Sulaiman, Sern, & Salleh, 2015).

-Data Collection

Both primary and secondary data were collected and used as follows:

1. Secondary Data: Data were collected by studying, researching, and gathering various documents related to the association between the importance and application of TQM to the performance of the business.
2. Primary Data: Data were collected by sending questionnaires to executives of 95 SMEs in Thailand under the research scope.

-Data analysis

The collected data were then analyzed with a statistical software package. The correlation between the independent variable (TQM) and the dependent variable (performance of SMEs) was tested using Correlation Coefficient Analysis, to find the coefficient of correlation, while Multiple Regression Analysis was used to achieve the objectives and test the hypotheses of the research. The determined level of statistical significance of the data analysis was at .05 level.

Results

The purpose of this research was to study the analysis and knowledge management of TQM that impacted the performance of SMEs in Thailand. The data were collected using a questionnaire given to respondents from 95 organizations. The results of the data analysis are as follows:

-Results on the association between the analysis and knowledge management of TQM and the performance of SMEs

The adoption of TQM was correlated with the financial performance of SMEs at statistical significance of 0.05. On the contrary, TQM was found not correlated to the non-financial performance of SMEs at 0.05 level significance as shown in Table 2.

Table 2. Correlation coefficients between the variables of TQM knowledge management and analysis, and SMEs' performance.

Variable	TQM	Leadership role	Strategic planning	Customer focus	Process management	Employee focus	Knowledge management and analysis	Financial performance	Non-financial performance
TQM	1								
Leadership role	0.840**	1							
Strategic planning	0.744**	0.606**	1						
Customer focus	0.761**	0.692**	0.495**	1					
Process management	0.862**	0.607**	0.527**	0.657**	1				
Employee focus	0.719**	0.574**	0.511**	0.425**	0.617**	1			
Knowledge management and analysis	0.870**	0.647**	0.506**	0.514**	0.779**	0.706**	1		
Financial performance	0.507**	0.317**	0.461**	0.348*	0.479**	0.383**	0.465**	1	
Non-financial	0.286	0.173	0.305*	0.171	0.340*	0.211	0.195	0.446**	1

performance										
Remark: *0.05-level statistical significance **0.01-level statistical significance										

Table 3. Analysis results of TQM knowledge management affecting the performance of SMEs in Thailand.

Independent variable	Model 1				Model 2				Model 3			
	B	t	P-value	VIF	B	t	P-value	VIF	B	t	P-value	VIF
Process management knowledge	0.331	3.265	0.002*	1.000	0.343	3.579	0.001*	1.000	0.323	2.375	0.022*	1.000
Constant	2.219	5.824	0.000		2.572	7.143	0.000		1.983	3.879	0.000	
R	0.446				0.479				0.340			
R ²	0.199				0.23				0.116			
F-ratio	10.661*				12.810				5.638*			
Dependent variable	Overall organizational performance				Financial performance				Non-financial performance			
Remark: *0.05-level statistical significance												

Multiple Regression Analysis Results

The hypothesis was tested using the Stepwise Regression method which yielded the best equation and would prevent the issue of multicollinearity among the independent variables. However, the resulting VIF value was found to be less than 10 and not close to 0, so no such a problem occurred. The results of the analysis revealed that only one process management variable had impact on overall performance, financial performance, and non-financial performance with details as follows;

1. Process management knowledge had impact on the overall organizational performance at a significance level of 0.05, while process management variable had 20% impact, and other variables had the remaining 80% impact ($R^2 = 0.199$), and the Multiple Coefficient of Correlation (R) = 0.446.

2. Process management knowledge had impact on the financial performance of the organizations at a significant level of 0.05, while process management variable had 23% impact, and other variables had the remaining 77% impact ($R^2 = 0.230$) and the Multiple Coefficient of Correlation (R) = 0.479.

3. Process management knowledge had impact on the non-financial performance of the organizations at a significant level of 0.05, while process management variable had 12% impact, and other variables had the remaining 88% impact ($R^2 = 0.230$) and the Multiple Coefficient of Correlation (R) = 0.479.

In conclusion, it was possible to create two forecast equations with 0.5-level significance for TQM knowledge management and its effects on the performance of SMEs as follows;

Organizational performance = 2.219 + 0.331 (Process management knowledge)

Financial Performance = 2.572 + 0.343 (Process management knowledge)

Non-financial performance = 1.983 + 0.323 (Process management knowledge)

Discussion

According to the results of the Stepwise Multiple Regression Analysis on the correlation of TQM knowledge management and analysis, and the impact on the non-financial performance of SMEs, one factor of TQM knowledge management, 'process management', was found to correlate with the SMEs' non-financial performance at 0.5-level significance. This means organizations that adopt TQM should focus on process management activities as they have an impact on their non-financial performance. This corresponds with research by (Lepistö, Saunila, & Ukko, 2021). which investigated a sample of Japanese industrial plants in China and found that process management had an effect on non-financial performance of the organizations with statistical significance at 0.05 level. It is also consistent with (Briones-Castañeda, Carlos-Ramon, Torres-Sifuentes, Rojas-García, & Raymundo-Ibañez, 2019) which found that process management had a statistically significant influence on non-financial performance of organizations at 0.05. Similarly, a study of (Neo, Mukwakungu, Lumbwe, & Sukdeo, 2020) on hospital businesses in England, Netherlands, and Spain also found that process management had a statistically significant impact on organizational performance at 0.05. This corresponds with research by (Sogaxa, Simpeh, & Fapohunda, 2021) was conducted to investigate TQM and business performance using the BSC technique, exploring 4 areas of the performance: finance, customers, internal processes, and innovation. In the financial aspect, the study explored the company profits, revenue from products, and reduced cost per unit. The other 3 aspects were classified by the researcher as non-financial performance. The results revealed that factors such as customer and market focus and process management had a positive correlation with business performance at statistical significance of 0.05, though without specifying which aspects of the performance. This is consistent with (Yusr, Mokhtar, Perumal, & Salimon, 2021) who studied TQM and the performance of financial organizations, including pre-tax and after-tax return on asset ratios, return on investment, return on investment growth, market share, and market share growth. The TQM guidelines studied included 10 factors: leadership roles, teamwork, quality work between departments, authority of employees, raw material supplier development, and customer relationship. The study found the TQM approach had a statistically

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Conclusion

Therefore, SMEs should support TQM knowledge management activities throughout the organization, with an emphasis being made on process management activities such as the organization's implementation of quality control systems and procedures. Employees should be encouraged to learn about different processes being operated in different departments and operations should be examined. There should be continual follow-ups on the progress on cost reduction and quality development of products and services, as such activities can result in the organization having better performance in both financial and non-financial aspects. Therefore, for TQM to be successful, organizations should not focus only on one aspect of the organization, but consider both sides concurrently. As for recommendations for further research, there should be a study of differences between organization sizes to see whether it affects the application of TQM in their performance. This is to ensure that enterprises of different sizes can focus more accurately on activities will promote performance of their organization.

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ZARZĄDZANIE WIEDZĄ TQM I ANALIZA MŚP W TAJLANDII

Streszczenie: Celem tego badania było zbadanie wpływu analizy i zarządzania wiedzą kompleksowego zarządzania jakością (TQM) na wyniki małych i średnich przedsiębiorstw (MŚP) w Tajlandii. Zastosowanym instrumentem badawczym był kwestionariusz, a zebrane dane poddano analizie statystycznej za pomocą analizy współczynników korelacji i analizy regresji wielokrotnej. Populacja próby obejmowała 95 MŚP, które były finalistami tajlandzkich nagród krajowych MŚP. Wyniki pokazują, że TQM zarówno w strategii, jak i zarządzaniu procesami miał wpływ na ogólne wyniki organizacji, zarówno w aspektach finansowych, jak i pozafinansowych, na poziomie istotności 0,05.

Słowa kluczowe: wyniki korporacji, małe i średnie przedsiębiorstwa, MŚP, zarządzanie wiedzą TQM

泰国中小企业的TQM知识管理与分析

摘要: 本研究的目的是研究全面质量管理 (TQM) 的分析和知识管理对泰国中小企业 (SME) 绩效的影响。使用的研究工具是问卷, 收集的数据使用相关系数分析和多元回归分析进行统计分析。样本人群包括入围泰国中小企业国家奖的 95 家中小企业。结果表明, 战略和流程管理中的 TQM 对组织的整体绩效有影响, 包括财务和非财务方面, 显著性为 0.05

关键词: 企业绩效, 中小企业, 中小企业, 全面质量管