Critical Success Factors for Total Quality Management Implementation within Thai Public Hospitals

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Abstract

Total quality management (TQM) is an integrative management philosophy that aimed at continuous improving the performance of products, process and services. Many organizations have realized that TQM is a key to develop products and services. Quality has become one of the most important competitive strategies tool and it concerns affect the organization in every competitive environment. The objectives of this research were to identify the critical success factors for total quality management implementation within Thai public hospitals. Based on the objectives of the study, the theoretical linkage between the critical factors for TQM and hospital performance was explored. This study is tested by quantitative analysis. The Pearson correlation analysis and regression analysis were used to analyze the association among the variables and were tested the hypothesis. The data were collected from 452 Thai public hospitals. The findings show that three critical factors CQI, communication, and culture have affected to hospital performance. In this study hospital performance has been evaluated by Hospital Accreditation Institute. In summary, based on this research finding all people in Thai public hospitals are understand in the concept of Thailand healthcare policy implementation, accept and well-prepare for enhancing and improving their healthcare services by improving all critical factors that effect to performance to gain more quality and safety services to all stakeholders.

Keywords: Organization theory, performance measurement, total quality management, quality awards, hospital accreditation

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ปัจจัยความสำเร็จที่สำคัญสำหรับการดำเนินการจัดการคุณภาพในโรงพยาบาลภาครัฐของไทย

จีระวัฒน์ กฤษณพันธ์**

บทคัดย่อ

การจัดการคุณภาพ เป็นปรัชญาการบริหารจัดการแบบบูรณาการที่มีจุดมุ่งหมายเพื่อให้เกิดการปรับปรุงอย่างต่อเนื่องทั้งในด้านประสิทธิภาพของผลิตภัณฑ์ ด้านกระบวนการ และด้านการบริการ หลายองค์การได้ตระหนักว่า การจัดการคุณภาพเป็นกุญแจสำคัญในการพัฒนาผลิตภัณฑ์และการบริการ คุณภาพจึงเป็นเครื่องมือทางกลยุทธ์ในการแข่งขันที่มีความสำคัญที่สุด เพราะถูกคำนึงเมื่อมีสภาพแวดล้อมการแข่งขัน วัตถุประสงค์ของการวิจัยครั้งนี้คือ ค้นหาปัจจัยความสำเร็จที่สำคัญสำหรับการดำเนินการจัดการคุณภาพในโรงพยาบาลภาครัฐ วัตถุประสงค์พื้นฐานของการศึกษาคือการเชื่อมโยงทฤษฎีการจัดการคุณภาพกับการวัดผลการปฏิบัติงาน การศึกษาครั้งนี้เป็นการวิเคราะห์เชิงปริมาณ โดยใช้การวิเคราะห์ความสัมพันธ์เพียร์สันและการวิเคราะห์แบบถดถอย เพื่อหาความสัมพันธ์ระหว่างตัวแปรและทดสอบสมมติฐาน ด้านข้อมูลจะถูกรวบรวมจาก 452 โรงพยาบาลภาครัฐไทย ผลการวิจัยพบว่า มี 3 ปัจจัยจาก 10 ปัจจัยที่ส่งผลเชิงบวกต่อประสิทธิภาพการทำงานขององค์การคือ ด้านการพัฒนาคุณภาพอย่างต่อเนื่อง ด้านวัฒนธรรมองค์การ และด้านการสื่อสารในโรงพยาบาล ในการศึกษานี้ ด้านผลการปฏิบัติงานนั้น จะใช้ผลจากการประเมินคุณภาพโรงพยาบาลจากสถาบันรับรองคุณภาพโรงพยาบาล กล่าวโดยสรุป จากการวิจัยนี้ ช่วยให้บุคลากรในโรงพยาบาลภาครัฐไทย ได้เข้าใจแนวคิดในการดำเนินงานด้านงานคุณภาพในการดูแลสุขภาพและพร้อมที่จะปรับปรุงการบริการ โดยมุ่งเน้นในปัจจัยสำคัญต่าง ๆ ที่จะส่งผลต่อผลการปฏิบัติงาน เพื่อให้ผู้รับบริการและผู้ที่มีส่วนได้ส่วนเสียทั้งหมดได้รับการบริการที่มีคุณภาพและความปลอดภัย

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Introduction

Today, all types of organizations are facing challenges, so they have to evaluate their internal and external environment for opportunities and challenges in order to maintain their growth and remain competitive. Intensive global competition and increasing customer demand for better quality have made all organizations provide quality products and services. Many organizations have adopted and implemented the total quality management (TQM) strategy, which is widely recognized as a major factor in the success and survival of the organization. One type of the fastest growing organizations is health care organizations, which have now been restructuring the service delivery system in order to reduce the costs, to increase competitiveness and to survive.

The concept of TQM, including its philosophy and principles, is quite old. It was introduced into the United States around 1980, mainly in response to the challenge of furious competition from Japanese companies. TQM is a very important factor for the long-term success of the organization because it focuses on continuous process improvement within an organization to provide superior value to meet customer needs. TQM was first introduced in manufacturing sector and has quickly spread to the service sector, including healthcare sector. Healthcare organizations adopted TQM in the late 1980, mainly in response to pressure from their patients, employers, employees to offer more efficient health care. Every hospital is trying to improve the quality of service delivery and is making commitment to zero defects.

The TQM strategy can be implemented to secure the market share, increase profits and reduce costs. Several studies have shown that TQM is positively correlated with financial performance and profitability, customer satisfaction, employee satisfaction and employee relations. So performance measurement is very important to achieve effective enterprise management. According to Deming (1982), improvement of something cannot be made without measurement. Indicators for measuring the performance of the organization are the quality of products/services, relationship with customers; reliability, productivity, durability, response to the customer needs, and the number of non-compliant and the number of complaints. Many organizations use the excellence models and excellence awards to measure and to evaluate service delivery and performance. The major business excellence awards, e.g. ISO9000, Deming Application Prize, the Excellence Quality Award (EQA) and the Malcolm Baldrige Quality Award (MBNQA), are based on a perceived model of business excellence (TQM). The models underpinning the assessment frameworks implicitly recognize that the excellence of the final results is the outcome of complex or integrated processes and employees' efforts. Each self-assessment framework also has its unique categories and emphasis. The Deming Prize addresses factors concerned with the management of facilities, vendors, procurement and service. The EFQM considers the management and provision of resources. The Baldrige Award incorporates

projection of the competitive environment, management of data and information and consideration of human resources. Many countries have established their own national awards. For example, Thailand has Thailand Quality award (TQA), Public Management Quality Award (PMQA), and Hospital Accreditation (HA) based on the Malcolm Baldrige National Quality Award (MBNQA) in the United States.

Many scholars conducted research on service quality and found the most important factor for customer satisfaction was competitiveness of the enterprise. It is important for the organization and its leader to determine the critical success factors to achieve high performance and to gain greatest competitive influence. Although thousands of Thai public hospitals have improved the quality of their service delivery by using TQM, they do not provide the same quality service. What has caused their difference? This research aimed to identify the critical success factors that affected hospital performance. Research question is "What are the critical success factors for total quality management implementation within Thai public hospitals?"

Research Objectives

This paper aims to investigate a relationship between total quality management and organization performance in healthcare organization through the development of a conceptual framework, and recognizes the critical success factors (CSFs) of TQM to organization performance in Thai public hospitals. To reach such a goal, a set of items for measuring constructs had to be well developed. Developing a valid instrument for quality management practices which can be used in multiple countries will be helpful for practical and academic perspectives. Therefore the current research proposes a holistic framework for TQM based on an extensive review of the factors that contribute to the success of TQM. This study attempts to make a contribution, as following: the first contribution is related to revealing the perception of TQM in healthcare organization. Second, the model and the factors affecting the performance will be explored. Third, the findings from this study are expected to service as valuable resource for hospital accreditation institute for evaluation the hospital management. In summary, the finding of this study produces a noticeable insight into the hospitality management in the Thai healthcare context and will be adapted in service.

Review of Literature Reviews

Organization Theory

Organization theory (OT) has been studied with different perspectives by various researchers for many years. Many articles have written on organization theory and its definitions, structure and design of organization, evaluation and measurement of organizations (Lawrence & Lorsch, 1969; Meyer, 1977; Scott, 1981). Organization theory is the subject, which concerns organization change or the ability of an organization to itself accomplish its main objectives, performance,

outcomes and organizational effectiveness (Hellriegel & Slocum, 1974; Bakke, 1959; Hicks & Gullet, 1975). The effectiveness of organization performance is the main theme in organization theory (Robbin, 1990). OT describes how organizations can deal with problems to improve their efficiency and productivity to meet what the stakeholders have expected.

Since there are internal and external organization forces so organizations must change themselves to survive by improving goals, structure, technology and process. Organizational change can be defined as an integrated process to change the present structure to increase organizational effectiveness, efficiency and performance. Organizations need to improve their performance for survival and growth by using new methods to utilize resources to create value and to respond to their employees. The organization needs to be adapted to the environment to sustain high performance. Organizational change and adaptation need to be done effectively by the leaders of organizations. Change is a continuous process so the key leaders need to motivate the employees to change. They must act as role models to increase organizational effectiveness.

Organizational control has a direct effect on organizational performance effectiveness because it is a process that monitors the achievement of the organization's objectives (Ouchi & Maguire, 1975). There are many kinds and levels of control. As different organizations pursue different kinds and levels of control, the efficiency of the control process, such as monitoring of subordinate behavior and outcome, which is employed in an organization will affect organizational performance and effectiveness. Control is the power of leadership, authority coalition, coordination of the employees, hierarchy of organizational structure, and relationship in the organization (Robbins, 1990).

Performance Measurement

Deming states that measuring is important for any organization because it helps the organization to improve strategy, process, and goals (Pyke, 2008). So performance measurement is a critical function to optimize organization management because it links between the strategies of owners or managers and management actions. And performance measurement executes the improvements in the performance of employees or teams to meet the standards (Neely, 2005).

There are several approaches and criteria to measure performance and the outputs of the accomplishment (Tan, 2002). The quality model is the other way to measure the organization performance and it is recognized internationally as a model of excellence for an organization to enhance its service and performance excellence. It helps organizations measure and improve their progress through the self-evaluation process. The model of excellence is related to the work of staff at all levels with an aim to improve their performance excellence. The model of performance excellence emphasizes the importance of process management, customer satisfaction, quality, and

the success of competitive position (Tan, 2002).

The Japanese Deming prize was awarded to an organization with best quality management. Rapidly the United States and European country established their own quality award, MBNQA for the US and EFQM for the EU. .Later, many countries establish their own national award, which were designed on the basis of MBNQA, EFQM and the Deming Prize.

Regarding quality performance excellence in Thailand; Thailand Quality Award (TQA) is determined by the Thailand Productivity Institute (FTPI) and the Office of Science and Technology (NSIDA) in September 1996. Organizations with the best practice and performance excellence can apply for a Total quality award (TQA).

Hospital Accreditation (HA) is the quality performance excellence model for healthcare organizations in Thailand. Hospital Accreditation (HA) in Thailand was set in 2000 based on MBNQA and was managed by the Healthcare Accreditation Institute (Public Organization) or HAI which is a formal government agency with its own governing body accountable to the Minister of Public Health. The HA process in Thailand is divided in three steps. The first step is reviewing activities of the organization and to identify how it improves and prevents risk that may be accrued. The second step is assessing quality assurance and quality improvement to fulfill the objective of the hospital. The third step is measuring the full hospital program to see if it meets the HA standard. The purpose of the HAI is to promote quality improvement of healthcare organizations in Thailand, using self assessment and self improvement together with external evaluation, and recognition as an incentive.

Total Quality Management

Quality improvement and innovations have become a main driving force throughout the globe. Total quality management (TQM) is one of important processes running organizations successfully. It has been adopted in many sectors such as banking, education, service, government. TQM is aimed at continuous improvement of the product and service quality process to achieve customer satisfaction (Gorji & Farooquie, 2011).

TQM evolution and its success in the manufacturing sector was recognized by the Japanese manufacturing industry and later admired by the USA in 1980's. Early work on TQM was developed by Deming in 1982 and brought to manufacturing around the world. For example, Australian and New Zealand manufacturing companies developed an instrument based on MBNQA criteria, empirically tested the reliability and validity of the constructs, and further investigated the relationship between these constructs and operational performance (Terziovski & Samson, 1999). Many empirical studies were conducted to establish the relationship among CSFs of TQM or TQM

practices and various performance measures and indicated its positive results in the manufacturing sector (Sila & Ebrahimpour, 2002; Munizu, 2013).

TQM in the service sector have been examined in many empirical studies. For example, the service sector in Singapore tested 11 constructs for TQM and performance (Brah et al., 2000), banking industry in Indian 12 dimensions were analyzed a positive impact on performance.

In the late 1980 healthcare organizations first adopted TQM in response to the pressure from employers, purchasers, and payers to get more cost-effective healthcare. TQM in the health sector focuses on patient satisfaction, continuous improvement, teamwork, process management, organizational culture and the commitment of the management and leadership support (Talib et al., 2011). In 1999 the Thai government enabled Thai people to access standard healthcare. The government set a policy to better many aspects of the health system including the quality of care. The Thai Medical Council was the first agency that set a short list of hospital standards. A set of hospital standards developed by the Social Security Office in 1991 aimed to approve and audit hospitals. All hospitals in the provinces applied for hospital accreditation to show their commitment to providing quality services for health and safety of patients. Hospitals have chosen to open their doors and invite certified evaluators to inspect them. The Certificate Services sent a team of inspectors to hospitals and made an observation for a period of weeks or months. The results of the inspection were sent back to the hospitals.

Table 1. Review TQM in Healthcare Organizations.

Author	Title	Source	Results	Context
Alexander et al. (2006)	Quality improvement and hospital financial performance	Journal of Organizational Behavior	• Hospitals that implement QI effectively can reasonably expect to improve their financial and cost performance, or at least not place the hospital at risk for investing in quality improvement.	1,784 community hospitals
Dilber et al. (2005)	Critical factors of total quality management and its effect on performance in health care industry: A Turkish experience	Problems and Perspectives in Management	• Implementation of TQM in healthcare industry in Turkey is found to have a strong correlation with business performance (R=0.56). • TQM model contains only four main factors: data reporting, role of top management, process management, and employee relations. • Performance of hospitals consists of two dimensions: financial and non-financial factors.	Small and medium size hospitals in Turkey.
Colonel Thomas H. Auer (1993)	Total quality management in health care : a study on TQM implementation and its application to the army health care system	United States Army	• Transformation of a health care system like Health Services Command will require it to address these stages of acceptance, education, and integration. • TQM has exceptional potential to improve markedly the quality of health care and at the same time reduce costs.	The Army Medical Department (AIEDD)

Table 1. Review TQM in Healthcare Organizations. (Continued)

Author	Title	Source	Results	Context
Horng, C. and F. Huarng, (2002)	TQM adoption by hospitals in Taiwan.	*Total Quality Management, 13*(4):	• The overall results seem to suggest that larger hospitals and non-profit hospitals are in a better position to utilize the network relationship than the smaller hospitals and for-profit hospitals.	76 hospitals in Taiwan
Joyce, P., R. Green and G. Winch. (2006)	A new construct for visualizing and designing e-fulfilment systems for quality healthcare delivery	*The TQM Magazine, 18*(6): 638-651.	•electronically delivered information and funds transaction systems do offer healthcare organizations great potential, but many large integrated ICT systems have notoriously disappointed the stakeholder health care service.	In Australia
S.M. Irfan, et al.	Identification of critical success factors of TQM implementation in health care sector of Pakistan using pareto analysis approach	*Sci.int.(Lahore),26*(5),2603-2616.	• 9 CSFs of TQM for health care sector: top management commitment and leadership role, human resource focus, process management, supplier quality management, quality data and reporting, strategic quality management, patient focus, continuous quality improvement, and services focus.	135 hospitals in Pakistan

TQM and Organization Performance

There has been a lot of research work that examined the relationship between TQM and organizational performance. The role of TQM is clear in organizational performance to encourage business practices that will satisfy customers, quality of output, productivity and reduce costs. In addition, several studies have showed that TQM is associated positively with performance outcomes, financial performance, profitability, human outcomes, employee and customer satisfaction, and employee relations (Prajogo & Sohal, 2003; Terziovski & Samson, 1999).

There have been contain a considerable number of studies that measure business performance of both the manufacturing and the service sector through total quality management criteria (Samson & Terziovski, 1999).The quality management practices or critical success factors are drawn from CQI, TQM, Six Sigma, and the MBNQA approaches and adapted recently to healthcare.

Most studies have confirmed that TQM adoption will finally add value to the organizations. For example, Ittner and Larcker (1996) provided evidence to show the effective TQM implementations should improve long-term profitability and stock returns. Schmenner (1988) confirmed that TQM could lead to time reduction, improved quality and inventory reduction all productivity.

Research Framework and Hypothesis

The objective of this study is to examine the relationship between factors of TQM and organizational performance. Based on the above literature review, a research framework was developed. Figure 1 Research framework illustrated this relationship. In this framework factors of TQM are independent variables, and organizational performance is a dependent variable correspondingly. These relationships deal with main hypotheses:

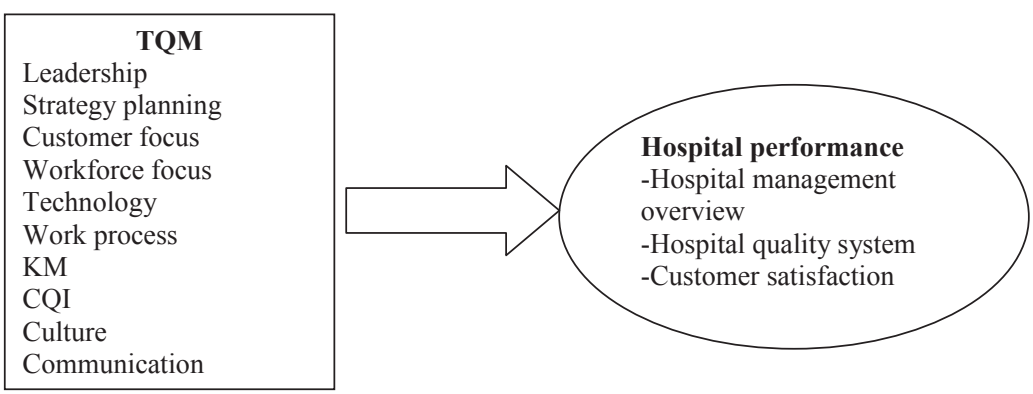

Figure 1. The Conceptual Framework

Methodology

This paper's purpose is primarily identifying the critical quality factors by interpreting the consensus among Thai public hospitals that HA certified organizations required for the success of TQM implantation in their organizations. After a thorough review of the prescriptive, conceptual, practitioner, and empirical literature on quality management, the proposed model used in this empirical study identifies 10 factors of QM as critical for the institution of a TQM in healthcare organization.

Instrument Development

The aim of this study is to develop an instrument for measuring TQM implementation for the public hospitals in Thailand. To reach such a goal, a set of items for measuring QM practices constructs had to be well developed. This was realized on based on a thorough review of the QM literature, expert guidance, and input from colleagues. Originally the questionnaire was designed in English. The decision was made to translate the research questionnaire into Thai and get it in questionnaire to make it very clear for the respondents.

This study researched the association of 10 factors for quality management and organization performance in Thai public hospitals. Measurement statements for each construct were identified from previous studies**,** and developed by the author and adopted from previous studies .Agreement 10 score will be used to measure model dimensions. The factors for TQM will be operated using namely leadership, strategic planning, customer focus, workforce focus, technology, process management, KM, culture, CQI and communication. And performance dimensions are management results, quality results, customer results, and organization performance means HA level and HA score that accredited by HAI. The questionnaire surveys which have 3 sections as indicated follows:

1. Demographic information of respondents.
2. Questions on the factors to high performance.
3. Questions on performance of the organization.

Population

Based on related theories and empirical research, this study aims to consolidate and expand the existing literature on relationship between TQM and performance in healthcare organization and choose Thai public hospitals that are controlled on Ministry of Public Health in Thailand and they have many sizes depend on number of patient's beds. The unit of analysis is organization level. The questionnaires will be used to ask the respondents about factors for TQM implementation in hospitals and organization performance that accredited by HAI. The data used in the analyses were collected with a mail survey during December 2015 to January 2016. 830 questionnaires are sent by mailing and results return back 452 questionnaires which comprised of 54.5 percent of the total number of questionnaires distributed.

Table 2. Mail Survey Results by Sized Hospitals.

Size of hospital	No. of mailed	No. of replies	Replies percentage in each size	Replies percentage in total
200 beds up	25	16	64	3.5
100 beds up	112	74	66	16.4
60 beds up	180	140	77	31.0
30 beds up	429	204	47	45.1
10 beds	84	18	21	4.0
Total	830	452	54.46	100

Table 2 has shown that the percentage returned questionnaires were 54.46 percent. The group of 30 beds up hospitals had the largest number of the respondents (45.1 percent). But the group of 60 beds up hospitals was the highest replies percentage in each size (77 percent).

Measurement and Operation of Variables

An empirical examination of the proposed model of quality management in this study requires the operation of the theoretical constructs included in the model of study. Measurement statements for each construct were identified from previous studies**,** and developed by the author and adopted from previous studies. Agreement 10 score will be used to measure model dimensions that are namely leadership, strategic planning, customer focus, workforce focus, technology, process management, KM, culture, CQI and communication. The Factor Loading of this study (Table 3) ranged from 0.75 to 0.95, which is closer 1. This meant that each item was highly correlated with the construct. Considering that the L^2_i which was more than 0.5 which showed the validity of this construct. And the reliability of variables (Table 4) was very high (Cronbach's alpha from 0.91 to 0.97), therefore the variables were reliable.

Table 3. Validity Test on Factor Loading.

Construct / Label Item	Mean	S.D.	Factor Loading	L^2_i	Cronbach's Alpha
Leadership	7.94	1.400			0.947
led1	8.22	1.527	.865	0.75	
led2	8.03	1.507	.899	0.81	
led3	8.00	1.510	.928	0.86	
led4	7.64	1.736	.805	0.65	
led5	8.00	1.597	.899	0.81	
led6	7.77	1.601	.815	0.66	
Strategy planning	7.61	1.380			0.948
plan1	7.78	1.424	.864	0.75	
plan2	7.86	1.519	.837	0.70	
plan3	7.77	1.452	.862	0.74	
plan4	7.30	1.624	.927	0.86	
plan5	7.37	1.573	.933	0.87	
Customer focus	7.79	1.230			0.911
cus1	7.85	1.417	.853	0.73	
cus2	8.15	1.304	.805	0.65	
cus3	7.91	1.365	.879	0.77	
cus4	7.78	1.249	.792	0.63	
cus5	7.29	1.797	.754	0.57	
Workforce focus	7.73	1.320			0.943
emp1	7.73	1.447	0.91	0.83	
emp2	7.40	1.628	.803	0.64	
emp3	7.71	1.477	.839	0.70	
emp4	7.90	1.530	.900	0.81	
emp5	8.17	1.436	.844	0.71	
emp6	7.53	1.524	.807	0.65	
Technology	7.82	1.370			0.960
it1	7.82	1.422	.891	0.79	

Table 3. Validity Test on Factor Loading. (Continued)

Construct / Label Item	Mean	S.D.	Factor Loading	L^2_i	Cronbach's Alpha
it2	7.87	1.426	.847	0.72	
it3	7.74	1.429	.914	0.84	
it4	7.79	1.554	.962	0.93	
it5	7.88	1.582	.930	0.86	
Work process	7.64	1.390			0.930
proc1	7.46	1.595	.831	0.69	
proc2	7.62	1.507	.924	0.85	
proc3	7.69	1.552	.905	0.82	
proc4	7.81	1.460	.853	0.73	
Knowledge management	7.71	1.360			0.950
km1	7.75	1.341	.919	0.84	
km2	7.80	1.427	.970	0.94	
km3	7.61	1.514	.904	0.82	
CQI	7.54	1.460			0.953
dev1	7.74	1.468	.869	0.76	
dev2	7.44	1.566	.971	0.94	
dev3	7.46	1.550	.960	0.92	
Culture strength	7.78	1.320			0.959
cult1	8.22	1.522	.852	0.73	
cult2	8.12	1.489	.826	0.68	
cult3	7.50	1.446	.910	0.83	
cult4	7.89	1.522	.878	0.77	
cult5	7.34	1.573	.859	0.74	
cult6	7.54	1.473	.923	0.85	
cult7	7.56	1.499	.886	0.78	
cult8	8.15	1.486	.781	0.61	
Communication	7.76	1.530			0.966

Table 3. Validity Test on Factor Loading. (Continued)

Construct / Label Item	Mean	S.D.	Factor Loading	L^2_i	Cronbach's Alpha
comm1	7.91	1.581	.917	0.84	
comm2	7.69	1.611	.949	0.90	
comm3	7.81	1.633	.950	0.90	
comm4	7.63	1.617	.930	0.86	

Table 4. Reliability Test on Cronbach's Alpha.

Variable	Mean	SD.	Cronbach's Alpha	No. of Items
Leadership	7.94	1.40	0.947	6
Strategy planning	7.61	1.38	0.948	5
Customer focus	7.79	1.23	0.911	5
Workforce focus	7.73	1.32	0.943	6
Technology	7.82	1.37	0.960	5
Work design, systems, process	7.64	1.39	0.930	4
Knowledge management	7.71	1.36	0.950	3
Continuous improvement	7.54	1.46	0.953	3
Culture strength	7.78	1.32	0.959	8
Communication	7.76	1.53	0.966	3

Data Analysis and Research Findings

The hypothesis was tested by using the correlations and multiple linear regressions because it was seeking to determine the relationships between factors of total quality management (independent variables) and organization performance (dependent variables). The major statistical measure of the relationship is the correlation coefficient analysis is primarily concerned with finding out whether a relationship exits and with determining its direction. The multiple linear regressions were conducted to know the most contributory of this relationship between the variables.

Results of the Study

Table 5. The Demographic Characteristics of the Respondents.

Classified by	200 beds	100 beds	60 beds	30 beds	10 beds	Number	Percent
Gender							
Male	12	34	64	102	4	216	47.8
Female	4	40	76	102	14	236	52.2
Age							
20-29	0	2	6	24	2	34	7.52
30-39	0	4	16	54	2	76	16.81
40-49	8	34	54	76	4	176	38.94
50-59	8	34	64	50	10	166	36.73
Education Background							
Certification	0	4	6	2	0	12	2.6
Bachelor degree	8	26	64	122	10	230	50.9
Master degree	4	40	70	76	6	196	43.4
Doctoral degree	4	4	0	4	2	14	3.1
No. of service years in the org.							
<1 year	0	0	2	6	4	12	2.7
1-5 years	0	8	16	62	0	86	19.0
6-10 years	2	4	12	32	0	50	11.1
11-15 years	2	4	32	32	2	72	15.9
16-20 years	6	22	20	22	2	72	15.9
21 years up	6	36	58	50	10	160	35.4
Position in organization							
Director of hospital	2	12	50	110	4	178	39.4
Chief of hospital quality improvement	8	30	36	24	0	98	21.7
Head staff	6	24	46	60	12	148	32.7
Other	0	8	8	10	2	28	6.2

Table 5. The Demographic Characteristics of the Respondents. (Continued)

Classified by	200 beds	100 beds	60 beds	30 beds	10 beds	Number	Percent
Years in the current position							
<1 year	0	2	6	22	4	34	7.5
1-5 years	10	26	34	84	0	154	34.1
6-10 years	4	12	28	30	2	76	16.8
11-15 years	2	26	32	32	2	94	20.8
16-20 years	0	6	14	20	8	48	10.6
21 years up	0	2	26	16	2	46	10.2

Table 5 shows that 47.8 percent of the respondents were male and 52.2 percent were female. That is more women worked in a leadership position than men. When the respondents were divided into four-age groups, it was found that and the leaders in hospitals of all sizes were 40 years old or more. They earned at least a Bachelor's degree and those in large sized hospitals had a higher education in than those in small sized hospitals. About 39.4 percent of the respondents were hospital directors. This suggested the person who knew the quality of the organization well was the director of the hospital.

Table 6. The Number and Percentage of the Respondents Classified by Performance Measurement.

Classified by	200 beds	100 beds	60 beds	30 beds	10 beds	Number	Percent
Quality evaluation							
Yes	16	74	140	204	18	452	100
No	0	0	0	0	0	0	0
Total						452	100
Type of quality evaluation							
HA	4	10	16	46	2	78	17.3
HPH	0	0	2	4	0	6	1.3
HA&HPH	8	38	98	130	10	284	62.8
HA&HPH&ISO	4	22	28	24	6	84	18.6

Table 6. The Number and Percentage of the Respondents Classified by Performance Measurement. (Continued)

Classified by	200 beds	100 beds	60 beds	30 beds	10 beds	Number	Percent
PMQA	0	0	0	0	0	0	0
TQA	0	0	0	0	0	0	0
ISO	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Total	16	70	144	204	18	452	100
Accredited by HAI							
Yes	16	70	132	198	19	435	96.24
No	0	0	6	6	5	17	3.76
Total	16	70	138	204	24	452	100
Number of Getting HA years							
No	0	0	6	8	2	16	3.54
0-2	2	20	38	86	4	150	33.19
3-5	4	18	26	50	6	114	25.22
6-8	2	10	36	38	2	88	19.47
9-11	8	16	20	14	2	60	13.27
11 ups	0	6	10	6	2	24	5.3
Total	16	70	138	204	18	452	100
Level of HA							
No passed	0	0	0	4	2	6	1.3
1	0	0	0	0	0	0	0
1 Expired	0	0	2	4	0	6	1.3
2	2	2	26	56	6	92	20.4
2 Expired	0	4	2	2	0	8	1.8
3	8	56	106	126	10	306	67.7
3 Expired	6	12	4	12	0	34	7.5
Total	16	74	140	204	18	452	100

Table 6. The Number and Percentage of the Respondents Classified by Performance Measurement. (Continued)

Classified by	200 beds	100 beds	60 beds	30 beds	10 beds	Number	Percent
Frequency of Reaccreditation							
0	0	14	30	72	0	116	26.2
1	2	16	32	50	0	100	22.6
2	10	22	48	48	0	128	29.0
3	0	12	16	14	0	42	9.5
3 UP	4	6	12	32	2	56	12.7
Total	16	70	138	218	2	442	100

Table 6 shows that 100 percent of Thai public hospitals have internal and external auditing. They have developed quality services, in line with the government policy that healthcare organizations must have good performance and meet the established standard. Almost all get both HA and HPH. 435 hospitals (96.24 percent) have been evaluated by HAI. Only 17 hospitals (3.76 percent) have not been evaluated by HAI. It means that Thai public hospitals use the quality excellence model and the quality award to improve hospital performance. Most Thai public hospitals have tried to improve their quality service to achieve the high standard. In this study found that most Thai public hospitals had passed HA level 3 (67.7 percent). The HA level 3 that are the best in terms of in performance. Thai public hospitals have been reaccredited to maintain the standard and to make continuous quality improvement and found that large-sized hospitals are reaccredited than small-sized hospitals. The Large-sized hospitals were found to have developed better quality services than small-sized hospitals because they have more resources, money, manpower, and materials.

Table 7. The Number and Percentage of the Respondents Classified by Scoring HA of Each Performance Dimension.

Variable	Score						Mean	S.D.
	0-0.99	1-1.99	2-2.99	3-3.99	4-4.99	5		
Hospital performance	2	0	152	284	14	-	3.68	0.54
	0.4%	0.0%	33.6%	62.8%	3.1%	-		
Hospital management overview	2	4	148	268	30	-	3.71	0.62
	0.4%	0.9%	32.7%	59.3%	6.6%	-		
Customer satisfaction	2	2	148	270	30	-	3.72	0.61
	0.4%	0.4%	32.7%	59.7%	6.6%	-		
Hospital quality system	2	6	150	266	28	-	3.69	0.63
	0.4%	1.3%	33.2%	58.8%	6.2%	-		

Table 7 shows that each performance dimensions had a score between 3-3.99. The mean score was 3.68, which indicated Thai public hospitals had a high score in every performance dimension.

Table 8 shows the correlation between variables in all sizes of hospitals. The relationship between 10 factors of TQM was quite high correlation with the value of 0.8. Continuous quality improvement was the most critical success factors for hospital performance (.241), for hospital management overview (.217), for customer satisfaction (.207), and for hospital quality system (.204), respectively. From the correlation matrix of table 8, it seems that there are highly correlated and statistically significant. Considered important theoretically, thus, they will be retained in the regression equation. Therefore, it will be included in the equation. The purpose of multiple regression analysis is to determine the relationships among independent variables, thus to access multicollinearity problem.

Table 9 shows the Multiple Regression Analysis between dependent variable (hospital performance) and the 10 independent variables (leadership, strategy planning, customer focus, workforce focus, technology, work process, knowledge management, continuous quality improvement, culture, and communication).

Table 8. Correlation coefficient between variables in all sizes of hospitals

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Hospital Performance	1													
2. Hospital Management Overview	.646**	1												
3. Customer Satisfaction	.757**	.637**	1											
4. Hospital Quality system	.713**	.521**	.722**	1										
5. LED	.178**	.156*	.165*	.150*	1									
6. PLAN	.175**	.142*	.176**	.219**	.883**	1								
7. CUS	.176**	.161*	.153*	.166*	.814**	.835**	1							
8. EMP	.184**	.126	.185**	.192**	.848**	.871**	.879**	1						
9. IT	.186**	.140*	.192**	.201**	.820**	.848**	.801**	.833**	1					
10. PROC	.169*	.145*	.172**	.125	.852**	.823**	.780**	.848**	.821**	1				
11. KM	.171**	.139*	.174**	.156*	.831**	.845**	.807**	.856**	.829**	.829**	1			
12. CQI	.241**	.217**	.207**	.204**	.823**	.835**	.783**	.837**	.774**	.789**	.863**	1		
13. CULT	.209**	.187**	.206**	.173**	.840**	.841**	.845**	.881**	.818**	.841**	.885**	.880**	1	
14. COMM	.096	.087	.105	.103	.850**	.819**	.817**	.844**	.795**	.849**	.834**	.795**	.877**	1

Note: *Correlation is significant at the 0.05 level.

**Correlation is significant at the 0.01 level.

Table 9. The Result of the multiple regression Analysis of the Relationship between the Independent Variables (TQM Practices) and the Dependent Variable (Hospital Performance) in Thai public Hospitals.

Independent variable	Dependent variable : Hospital Performance					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Result
	β	Std.Error	Beta			
Constant	2.980	0.148		20.073	.000	**Significant**
Leadership	0.111	0.096	0.282	1.151	.250	Insignificant
Strategy planning	0.020	0.093	0.050	0.215	.830	Insignificant
Customer focus	0.074	0.089	0.165	0.832	.406	Insignificant
Workforce focus	0.059	0.104	0.142	0.567	.571	Insignificant
Measurement, analysis, technology	0.104	0.083	0.259	1.259	.209	Insignificant
Work design, systems, process	0.103	0.093	0.259	1.103	.271	Insignificant
Knowledge management	-0.088	0.107	-0.216	-0.823	.411	Insignificant
Continuous improvement	0.111	0.036	0.293	3.072	.002	**Significant**
Culture strength	0.129	0.050	0.308	2.560	.011	**Significant**
Communication	-0.147	0.034	-0.406	-4.321	.000	**Significant**

R^2 = 0.096 ,F=15.797***

Table 9 indicates that there were three factors that affected hospital performance of Thai public hospitals, when regression analysis was made. Continuous improvement, Culture strength and Communication were statistically significant with regression coefficients (β) of 0.111, 0.129 and -0.147, respectively. Therefore organizational development may also need to consider these important factors to hospital performance. Regression analysis revealed that the model significantly predicted F=15.797, p=.000, and R2 for the model was .096. They can explain that 10 TQM practices are 9.6 percent variation in Hospital Performance.

Hospital Performance = 2.98 +0.111LED +0.02PLAN +0.074CUS +0.059EMP +0.104IT+ 0.103PROC -0.088KM +0.111DEV +0.129CULT -0.147COMM

Table 10 The Result of the Regression Analysis of the Relationship between Independent Variable (TQM Practices) and Dependent Variable (Hospital Management Overview) in all Sizes of the Hospitals.

Independent variable	Dependent variable : Hospital Management Overview					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Result
	β	Std.Error	Beta			
Constant	3.006	0.168		17.884	.000	**Significant**
Leadership	0.083	0.098	0.188	0.851	.395	Insignificant
Strategy planning	-0.047	0.096	-0.105	-0.491	.623	Insignificant
Customer focus	0.078	0.089	0.155	0.872	.384	Insignificant
Workforce focus	-0.154	0.104	-0.330	-1.477	.140	Insignificant
Measurement, analysis, technology	0.000	0.000	0.000	0.003	.998	Insignificant
Work design, systems, process	0.064	0.095	0.143	0.676	.499	Insignificant
Knowledge management	-0.163	0.108	-0.358	-1.506	.133	Insignificant
Continuous improvement	0.114	0.041	0.269	2.792	.005	**Significant**
Culture strength	0.125	0.057	0.266	2.189	.029	**Significant**
Communication	-0.146	0.038	-0.360	-3.790	.000	**Significant**

R^2 = 0.077, F=12.391***

Hospital Management overview = 3.006 +0.083LED -0.047PLAN +0.078CUS -0.154EMP +0.00IT +0.064PROC-0.163KM +0.114DEV +0.125CULT -0.146COMM

Table 10 indicates that there were three factors that affected hospital management overview of Thai public hospitals, when regression analysis was made. The results show that the coefficient of decision (R2) is 0.077. They can explain that 10 TQM practices are 7.7 percent variation in Hospital Management Overview. Three factors (Continuous improvement, Culture strength and Communication) had affected Hospital Management Overview. They were statistically significant with regression coefficients (β) of 0.114, 0.125 and -0.146 respectively.

Table 11. The Result of the Regression Analysis to Find out the Relationship between Independent Variable (TQM Practices) and Dependent Variable (Customer Satisfaction) in all Size Hospitals.

Independent variable	Dependent variable : Customer Satisfaction					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Result
	β	Std.Error	Beta			
Constant	2.869	0.172		16.729	.000	**Significant**
Leadership	0.065	0.099	0.150	0.658	.511	Insignificant
Strategy planning	0.040	0.101	0.091	0.396	.692	Insignificant
Customer focus	-0.040	0.092	-0.081	-0.433	.665	Insignificant
Workforce focus	0.072	0.109	0.157	0.659	.510	Insignificant
Measurement, analysis, technology	0.072	0.036	0.162	1.967	.050	**Significant**
Work design, systems, process	0.095	0.100	0.216	0.953	.341	Insignificant
Knowledge management	-0.016	0.107	-0.036	-0.150	.881	Insignificant
Continuous improvement	0.117	0.098	0.280	1.192	.234	Insignificant
Culture strength	0.189	0.048	0.409	3.940	.000	**Significant**
Communication	-0.152	0.039	-0.383	-3.887	.000	**Significant**

R^2 = 0.075, F=12.168***

Customer Satisfaction= 2.869+ 0.065LED+ 0.04PLAN- 0.04CUS+ 0.072EMP+ 0.072IT+ 0.095PROC- 0.016KM+ 0.117DEV+ 0.189CULT- 0.152COMM

Table 11 indicates that there were three factors that affected customer satisfaction of Thai public hospitals, when regression analysis was made. The results show that the coefficient of decision (R2) is 0.075. They can explain that 10 TQM practices are 7.5 percent variation in customer satisfaction. There were three factors that affected customer satisfaction. Measurement/analysis/ technology, Culture strength and Communication were statistically significant with regression coefficients (β) of .072, .189 and -.152 respectively.

Table 12. The Result of the Regression Analysis of the Relationship between Independent Variable (TQM Practices) and Dependent Variable (Hospital Quality System) in all Size Hospitals.

Independent variable	Dependent variable : Hospital Quality System					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Result
	β	Std.Error	Beta			
Constant	2.972	0.163		18.231	.000	**Significant**
Leadership	-0.134	0.112	-0.301	-1.194	.233	Insignificant
Strategy planning	0.141	0.042	0.312	3.347	.001	**Significant**
Customer focus	0.028	0.092	0.055	0.305	.761	Insignificant
Workforce focus	0.112	0.109	0.238	1.028	.305	Insignificant
Measurement, analysis, technology	0.131	0.092	0.288	1.430	.153	Insignificant
Work design, systems, process	-0.101	0.097	-0.224	-1.046	.296	Insignificant
Knowledge management	-0.089	0.107	-0.194	-0.831	.406	Insignificant
Continuous improvement	0.076	0.038	0.178	2.021	.044	**Significant**
Culture strength	0.086	0.124	0.182	0.696	.487	Insignificant
Communication	-0.120	0.035	-.295	-3.481	.001	**Significant**

R^2 = 0.075, F=12.045***

Hospital Quality System = 2.972-0.134LED +0.141PLAN +0.028CUS+0.112EMP +0.131IT -0.101PROC -0.089KM +0.076DEV +0.086CULT -0.12COMM

Table 12 indicates that there were three factors that affected hospital quality system of Thai public hospitals, when regression analysis was made. . The results show that the coefficient of decision (R2) is 0.075. They can explain that 10 TQM practices are 7.5 percent variation in hospital quality system. There were three factors that affected the hospital quality system in Thai public hospitals. Strategy planning, Continuous improvement and Communication were statistically significant with regression coefficients (β) of .14, .076 and -.120 respectively.

Conclusion from multiple regression analysis:

1) Three factors of TQM (Continuous quality improvement, Culture Strength, and Communication) were the critical success factor for **hospital performance** in Thai public hospitals. Communication was the most important factor.

2) Three factors of TQM (Continuous quality improvement, Culture strength and Communication) were the critical success factor for **hospital management overview** in Thai public hospitals. Communication was the most important factor.

3) Three factors of TQM (Technology, Culture strength and Communication) were the critical success factor for **customer satisfaction** in Thai public hospitals. Culture strength was the most important factor.

4) Three factors of TQM (Strategy planning, Continuous quality improvement and Communication) were the critical success factor for **hospital quality system** in Thai public hospitals. Strategy planning was the most important factor.

Conclusions

Today awareness of the quality performance in healthcare is growing. TQM is recommended to be implemented in healthcare organization to improve hospital quality system. And this study indicated that

1. The performance could be measured by four multifaceted dimensions including hospital performance, hospital management overview, hospital quality system, and customer satisfaction.

2. The performance measurement was important for the improvement of organizational performance.

3. The relationship between the critical factors for TQM and organization performance.

4. TQM is likely to help accomplish better performance in terms of quality, better business performance, greater customer satisfaction, and better employee relations

5. TQA, PMQA, ISO, JCI and HA are awards serving as guidelines for helping hospitals in planning, organizing, staffing, directing and controlling the organization to perform services effectively and efficiently.

6. TQM implementation contributed to the critical success of the organizational performance of Thai public hospitals.

7. Customer satisfaction is an important thing that must be regularly surveyed for development. Healthcare organizations are assumed to be more customer focus (Patient centered) than any other organizations.

8. CQI had the highest impact on the quality results.

9. The high level of culture of working together cohesively was the important factor.

10. Communication was the critical success factors to hospital performance. Good communication between all members of a work team is one of the most critical aspects of creating and maintaining a positive and productive work environment.

The findings from this study would bring about several benefits to the Thai public hospitals that made an attempt to implement the healthcare service policy at hospital. Finally, this research proposed an alternative model for hospital accreditation institute for evaluation the hospital management.

Future Studies

The recommendations for future studies are the following:

1) A study can be conducted on specific critical factors of TQM, such as the effect of strategy planning on organization performance, the effect of the workforce focus on quality performance.

2) In this research, only 10 critical factors of TQM that affected hospital performance were studied. There are other critical factors that may affect to organization. So, the future research should find what they are.

3) In this research, the data was collected from directors or office head. So, the future research should seek opinions of the employees.

4) The sample of the study included only Thai public hospitals, so future studies should focus on comparison of TQM practice in Thai private and public hospitals to confirm the results of this study.

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