

**An Investigation into the Relationship between
Total Quality Management Practice and
Performance in a Taiwan Public Hospital**

Submitted by

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A thesis submitted in total fulfilment of the requirements of the degree of
Doctor of Philosophy

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September 2003

DECLARATION

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma. No other person's work has been used without due acknowledgment in the main text of the thesis. This thesis has not been submitted for the award of any degree or diploma in any other tertiary institution. All research procedures reported in the thesis received the approval of the relevant Ethics committee.

Mei-Chiao Lai

September 2003

ACKNOWLEDGMENT

In the preparation of this thesis I wish to acknowledge the encouragement and assistance given by a number of people and institutions.

Many staff at the University were a constant challenge and source of support. Two supervisors patiently guided and advised me throughout the course of the thesis. Dr. Valda M. Ward, my principal supervisor, set me on the path of investigation, and often redirected my steps from unproductive by-ways. Dr. Kenneth H. Smith, my co-supervisor, provided me with detailed feedback and advice on the statistical sections of the research. From his extensive experience in research. I am also indebted to Mrs. Patrica Hacker and Mrs. Jo Reidy from the Student Service Unit for proof reading the thesis. I am most grateful, too, to many people in Hospital A in Taiwan, its employees, and managers, who willingly cooperated in the difficult task of data gathering. My special appreciation is extended to the five experts for their review of the questionnaire.

With tolerance and understanding, my husband, Woody Tsay, shared his knowledge and experience with me, and his invaluable guidance and financial support helped me to complete this project. My children, Irene and Andy, supported me through all the stages of the study. I dedicate this work to my husband and children.

Mei-Chiao Lai

September 2003

ABSTRACT

This thesis investigated the relationship between Total Quality Management (TQM) practice and hospital performance from 1997 to 2001 in a Taiwan public hospital.

In Taiwan, previous research focused on TQM practice and hospital performance in the manufacturing sector. Earlier research relevant to hospitals emphasised outcomes, such as hospital efficiency. The current study differs from the previous hospital research by examining comprehensive organisational performance, including financial and non-financial performance. The objective was to gain insights into ways in which the managers of hospitals might use the findings to enhance the hospital performance levels.

The Malcolm Baldrige National Quality Award (MBNQA) 2001 health care criteria for performance excellence were used as a research instrument to measure TQM practice and hospital performance. Data were collected using triangulation method, that is a self-assessment questionnaire, focus group interviews and documentation that is Government Annual Reports. Multivariate Analysis of Variance (MANOVA) and Multiple Regression Analysis were utilised to analyse data from questionnaires. Findings from focus group interviews were coded and categorised. Findings from documentation were used to verify and validate the progress of hospital performance.

The quantitative findings indicated that the demographic characteristics of employees had no significant impact on TQM practice, nor on hospital performance. Elements of TQM,

however, were important determinants of overall hospital performance, the more committed the TQM practice, the better the hospital performance. The qualitative findings indicated that, for Hospital A, effective TQM would be accomplished through incremental organisational change.

This research makes a contribution to both academic knowledge and hospital practice. It bridges the research gap in the relationship between TQM practice and hospital performance and also offers a solid foundation for future academic research. The study also provides short and long-term recommendations about quality improvement to both the manager and hospital A.

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CHAPTER ONE

INTRODUCTION

In recent years increasing internationalisation and globalisation of markets have made it necessary for organisations to improve their effectiveness, and to do so many have targeted the area of quality (Cao, Clarke, & Lehaney, 2000). Quality is at the top of consumers' lists of demands, and many companies have been forced to assign priority to the development of high-quality products. In particular, Total Quality Management (TQM) programs have been attracting the attention of many organisations (Siegal et al., 1996; Waldman, 1994), and are likely to remain a key issue for change management in this century (Schalkwyk, 1998; Spector & Beer, 1994).

During the last few years, health care organisations, particularly hospitals, have also felt the pressure to improve quality performance (Motwani, Sower, & Brashier, 1996). The increasing attention to quality is due to government influence, demands from customers and other stakeholders, and hospital management initiatives (Kunst & Lemmink, 2000). Governments in the United States, Australia, and United Kingdom have placed quality at the heart of health care (The National Expert Advisory Group, 1999). The government of Taiwan is no exception.

Challenges for Health Care Organisations

Throughout the world, health care organisations are now facing external and internal challenges. External challenges come from patients and their families, and health care payers. Health care organisations are requested to offer services that meet or exceed the patients' expectations and needs. Such challenges are concerned with the provision of the

right care, at the right place, at the right time in an efficient and satisfying way (Nelson, Batalden, Mohr, & Plume, 1998). In addition to this, the ever-increasing costs and the aging population provide further challenge for this century. In the United States actuarial estimates indicate that by 2065 from 25 to 50 % of the Gross Domestic Product (GDP) will go towards health care expenses (Meyer, 1998). Consequently, many governments are beginning to control the national health expenditure. Moreover, as competitive pressures heighten, health care organisations are acquired, merged, or closed. Meyer (1998) has argued that in 1995 alone, 59 non-profit hospitals in the United States were acquired by for-profit firms. Prior to 1995, an average of just nine hospitals per year converted from non-profit status to for-profit. While the internal challenges come from the shortage of physicians and nurses, they in turn could not provide patients with high quality care services. Physicians have been concerned about their decreased ability to deliver high-quality care over the past five years, as well as not having done enough to address the problems of medical errors (Blendon, et al., 2001). These challenges have also been found in the Taiwan public hospitals.

Challenges for Taiwan Public Hospitals

In addition to the challenges mentioned above, public health care in Taiwan has been reduced from 833 units in 1988 to 676 units in 1998, a survival rate of about 80%. Taiwan public hospitals also suffer from inherent problems, for example, low efficiency, long-term negative profit growth and inappropriate attitudes toward customers. Moreover, Taiwan public hospitals face the added government pressure to privatise by 2005 (Tsay, Tsai, & Lai, 2000).

Many researchers (Bolon, 1998; Burns & Bush, 1998; Collins, Njeru, Meme & Newbrander, 1999) claim that publicly owned hospitals are confronted with numerous

dilemmas and require a shift toward new public management with reformation or change, in order to maximise efficiency and to remain economically viable. In all public hospitals in Taiwan, the superintendent changes every two to three years. Consequently, the organisations have to adjust every time there is a change in leadership, making long-range planning very difficult. Moreover, senior leaders may have very different leadership styles and career goals. Therefore it is difficult for the organisation to maintain constancy of purpose, a key element in TQM (Deming, 1986). Most public hospitals have rigid bureaucratic structures and poor communication channels, while many employees are not willing to learn new technology, nor acquire knowledge and new skills.

Quality Improvement in Taiwan Hospitals

In order to respond to the changing and competitive environment and to meet the increasing demand for quality from customers and the government, many hospitals adopted TQM as a strategy to manage change. TQM was used in hospitals in many countries including Taiwan and was expected to improve health service quality to enhance hospital performance. The Taiwan Government required public hospitals to implement TQM programs from 1997 to 2001. To investigate the effectiveness of TQM practice, it is necessary to examine the practice of TQM and the impact of TQM on hospital performance.

For this study a public hospital (Hospital A) was selected and TQM practice and hospital performance were investigated. This hospital began its TQM program in 1997 in response to the quality request of the Taiwan Central Government and the quality focus of its major accrediting body, the Bureau of National Health Insurance.

Research Problem

Only a few studies have attempted to test the relationships between TQM practice and hospital performance (Barsness et al., 1993-1994; Carman et al., 1996; Chen, 1999; Goldstein & Schweikhart, 2002; Maldonado et al., 1999; Maldonado et al., 2001; Maldonado, Zinn, & Brannon, 1999; Meyer & Collier, 2001; Shortell et al., 1995; Weech-Maldonado et al., 2003). Their research, however, failed to identify the relationships between each element of the TQM criteria and hospital performance. Furthermore, previous empirical studies were conducted in developed countries, and not in public hospitals that were financially supported by government. An investigation in a developing country with public hospital ownership, for example, this Taiwan public hospital, will verify the impact of the TQM program on hospital performance.

There was little knowledge relevant to the situation of TQM practice in public hospitals. Carr and Littman (1990) identified that there was a lack of TQM theory and definition based on in-depth qualitative studies. To avoid TQM being perceived as "a theoretical black box", a systematic and rigorous approach to TQM theory building needs to be adopted in regard to TQM practice (Leonard & McAdam, 2001, p. 182).

This study, then, investigated the relationship between TQM practice and hospital performance. The purpose of this study was to identify the factors influencing TQM practice and hospital performance, to examine the relationship between TQM practice and hospital performance, and to investigate the impact of each TQM element on hospital performance in a Taiwan public hospital.

Research Questions

From the research problem, six research questions emerged.

1. What are the characteristics of employees influencing TQM practice in the public hospital?
2. What are the characteristics of employees influencing hospital performance during TQM practice in the public hospital?
3. In what way does the practice of six TQM elements affect the hospital performance?
4. What are the relationships between the TQM practice and hospital performance?
5. What are the benefits and difficulties while the TQM program is being implemented in the hospital?
6. Does the hospital organisational performance change as a result of the practice of the TQM programs?

Research Methodology

In order to investigate the research problem and to answer the research questions, a descriptive case study of a public hospital (Hospital A) in Taiwan was used. Data were collected and analysed from three sources, namely questionnaires, focus group interviews, and Government Annual Reports.

The questionnaire, drawn from the health care criteria of the Malcolm Baldrige National Quality Award (MBNQA), focused on identifying the elements of TQM practice and their relationship to hospital performance. The focus group interview aimed at revealing the benefits and difficulties of TQM practice through group discussion of employees' perceptions. Government Annual Reports provided data of the performance of Hospital A.

Questionnaire findings were analysed through Multivariate Analysis of Variance (MANOVA) and Multiple Regression Analysis. Findings from focus group interviews were coded and categorised in accordance with the strategies of the grounded theory approach (Strauss & Corbin, 1990). Hospital performance data in Government Annual Reports (1997-2001) were used to verify and validate the effect of TQM practice.

Significance of the Research

This research makes a contribution to both hospital practice and academic knowledge. It bridges the research gap in the relationship between TQM practice and hospital performance and also offers a solid foundation for future academic research.

From a practical perspective, this study could be used to find opportunities for improvement to the hospital. Second, the critical successful factors and barriers of TQM practice were illuminated and better understood. Third, predictable elements of hospital performance were revealed, thus allowing for managers to better allocate resources for hospitals. Fourth, as a result of the investigation of the obstacles to the practice of TQM, other hospitals could avoid the same error, and could have more successful organisational change through TQM practice. The rationale for using the health care criteria of MBNQA to measure TQM practice and hospital performance is that it not only codifies the principles of TQM, but it also provides hospitals with a comprehensive framework for assessing their progress towards a new paradigm of management (Garvin, 1991).

This is the first study of its kind to be conducted in a Taiwan public hospital, and the first to propose the use of the 2001 health care criteria of the MBNQA as a measuring tool in a hospital. It also is the first to postulate that there are relationships between the six elements of TQM and hospital performance. Moreover, this study is unique in that it is the

first to propose the use of both a quantitative and a qualitative approach to hospital management. It is also significant as it incorporates a qualitative approach with focus group interviews to explore the phenomena of organisation change through TQM practice. Finally, this study creates a new link between change management in general and quality management in health care organisations in Taiwan.

Limitations and Delimitations of the Research

Limitations

1. This study is confined to a case study of one public hospital in Taiwan.
2. There is a limited time span, from 1997 to 2001.
3. The criteria of MBNQA were assumed to be the same as the elements of TQM practice in hospitals.
4. The results of hospital effectiveness were measured by the numbers of in-patients, the occupancy rate, the numbers of patients undergoing major surgery and the numbers of outpatients.
5. Patient satisfaction indicators from patient survey documents were not accessible to the researcher.

Delimitations

1. This study did not address other public nor privately funded hospitals.
2. The period of review of performance (1997 to 2001) was the time of initial practice of TQM.
3. The study did not take into account the external population, population density, economic growth, and payment by insurance systems.

Outline of the Thesis

In this introductory chapter, the research topic is identified and articulated, the research questions are recognised, and limitations and delimitations are addressed. Chapter two elaborates the profile of the case hospital in order to provide a general background to the study. Chapter three reviews the relevant literature in terms of certain organisational characteristics of Hospital A, TQM practice, hospital performance and the relationship between the practice of TQM and hospital performance.

Chapter four focuses on developing a conceptual framework. The operational definitions of relevant variables and hypotheses are stated. Chapter five deals with the research methodology, while Chapter six presents the results in three parts, that is, from the questionnaires, the focus group interviews, and from Government Annual Reports (1997-2001). In Chapter seven, research results are analysed, as well as compared with previous research, and the discussion of the differences is presented.

Chapter eight lists conclusions and suggests the contributions and managerial implications that this research makes to TQM practice and hospital performance. Recommendations that will enable Hospital A to improve its performance and suggestions for further study conclude the thesis.

The next chapter will address the context of the research, and the profile of the selected hospital (Hospital A).

CHAPTER TWO

THE PROFILE OF HOSPITAL A

The previous chapter addressed the research problem and questions and presented an outline of the study. This chapter addresses the profile of Hospital A, including its services, hospital structure, hospital strategies, hospital culture, and leadership style. An environment analysis, the quality initiatives of Hospital A and hospital performance will also be discussed. Finally, the reasons for choosing Hospital A are advanced.

Profile of Hospital A

Services of Hospital A

Hospital A is a publicly owned hospital, located in Y City, south of Taiwan (see Appendix C). This hospital was established in 1901, and serves a total of 400,000 city inhabitants. It is part of a medical network to maintain the health of the residents of Y City and also receives patients from locations around the south of Taiwan. Hospital A admits approximately 6,000 patients per month, and treats 21,000 patients per month in its outpatient clinics. Hospital A operates 677 in-patient beds and serves as a graduate medical education facility for medical and surgical specialities. It also provides training in nursing specialties, in dentistry, in radiology and laboratory works and in medical administration.

Hospital A has extended the services of the hospital into the community. The community development unit was established to promote public health in the community, aiming to integrate preventive care and medical treatment. The community development unit provides practical health lectures, printed materials, and a health care information telephone line for the public. The unit also performs screening tests for people in the

community. For patients with chronic diseases, and after discharge from in-patient care, a continuing home-care service is provided.

The distribution of in-patient beds is relevant to the source of patients and the profit of the hospital. It reflects the specialties and strengths of physicians and also offers an index of medical quality for patient choice. There are 405 beds operated by Hospital A (60% of total in-patient beds), and 272 beds operated by a clinic in strategic alliance, that is Clinic B (40% of total beds). In the present research, the focus was on Hospital A, which is publicly funded. This study did not investigate the operation of clinic B, a privately funded facility. From the distribution of in-patient beds (Table 2.1), it may be seen that Hospital A focuses on psychiatry and long-term care patients.

Table 2. 1

The Distribution of In-patient Beds

Department	Hospital A	Clinic B	Total
General	88	129	217
Psychiatry	200	0	200
Chronic room	16	84	100
I.C.U (children)	0	10	10
I.C.U (adult)	0	10	10
Operation recovery units	1	1	2
Acute observation units	0	8	8
Hemato-units	0	30	30
Long-term care	100	0	100
Total	405	272	677
Share %	60	40	100

In contrast to Hospital A, Clinic B focuses on the treatment of general health problems and on management of the Intensive Care Unit (ICU) as well as hemato-units. ICU must have specialists, including physicians, residents, nurse specialists, pharmacists, and respiratory therapists in charge of the critically ill patients. The unit needs to be equipped with updated diagnosis facilities, too, for example, electrocardiography, echocardiography and Cardiac Catheterisation rooms. Although the ICU is not a profit unit, it provides the hospital with a major source of patients. The hemato-unit is an earning unit, which does offer the hospital a stable income and profit.

The professions within Hospital A consist of physicians, nurses, and medical support staff, such as pharmacists, radiologists, and clinical laboratory technicians. Physicians make up 12% of the total of Hospital A population, the medical support staff 10.5 % of the total population, while administration staffs are 30%, and nurse 48% of the total of the Hospital A population (Figure 2.1).

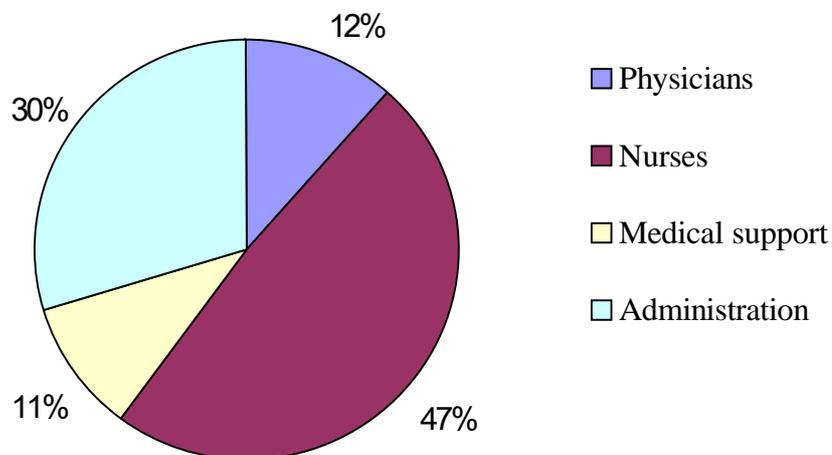


Figure 2. 1: The distribution of professional staff in Hospital A

There is an imbalance between the number of physicians and nurses and between the number of physicians and administration staff. It can be seen that the number of physicians is much lower than that of nurses and administration staffs (Table 2.2).

Table 2. 2

The Distribution of Professional Staff in Hospital A

Department	Profession	Hospital A	Clinic B	Total
Medicine	Physician	35	21	56
Nursing	Nurse	114	115	229
Medical support	Pharmacist	13	5	18
	Radiologist	5	4	9
	Clinical laboratory	11		11
	Support technician	5	7	12
Administration	Management centre	49	4	53
	General affairs dept.	17	2	19
	Records unit	30	16	46
	Other	2	21	23
Total		281	195	476

(Unit: persons)

Hospital Structure

Organisations must have a structure that facilitates rapid response to change in the environment or they will not survive. In order for the quality effort to succeed, there must be a supporting quality, organic structure. This structure would allow the organisation to react more quickly to environmental and technological change. Hospital A, however, has a very mechanistic organisational structure (Figure 2.2). Although the mechanistic structure worked well for public hospitals in the past, it was no longer appropriate for the ever-changing environment that Hospital A found itself in. Due to the hierarchical, vertical patterns of interacting and communicating, Hospital A could not react quickly to change. In a changing environment, the mechanistic structure did not function effectively. Along with a supporting structure, the hospital needs a practice strategy.

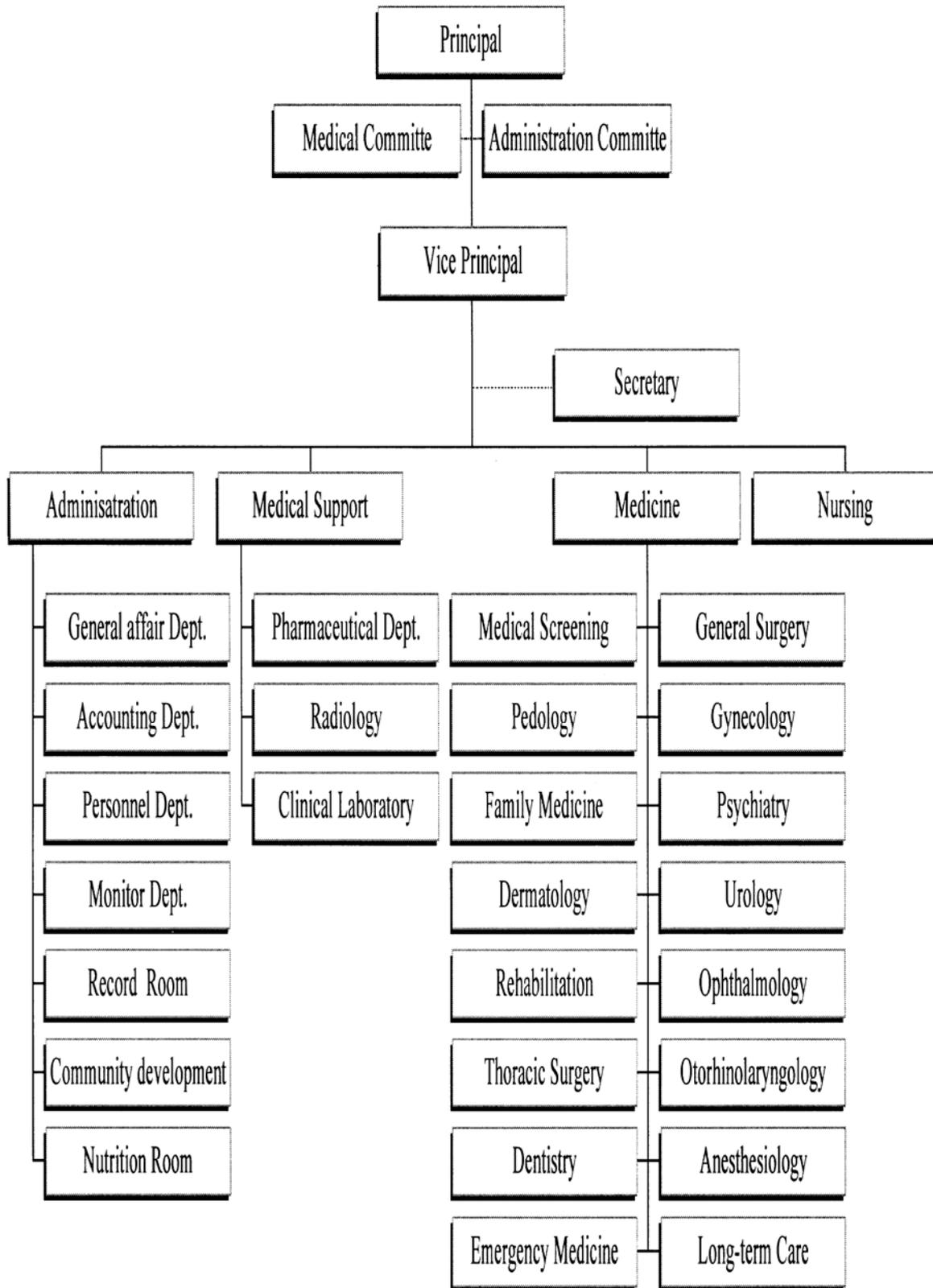


Figure 2. 2: The organisational structure of Hospital A

Hospital Strategies

The mission statement of Hospital A is to maintain and promote the residents' health in Y City. The vision is to develop community service, to provide quality health care, and to support employees in a good working environment. The five strategies outlined by the hospital's quality policies are to offer effective and varied medical services, to establish the hospital's special characteristics through taking care of elder and chronic patients, to accelerate the hospital's growth by strategic alliance with a private clinic, and to construct a learning hospital that is capable of continuous functioning. The final strategy is to develop community service to enhance the reputation of Hospital A. Clearly, the current strategies of Hospital A do not include action plans for the effective practice of such strategies.

A strategic alliance was formed in 2000 between Hospital A and Clinic B, in order to pool the facilities and share risks in confronting these challenges. As a result, there are now more physicians to offer care for patients. Because of the shortage of physicians in Hospital A, the emergency department is run by Clinic B. In addition to this, there are many more outpatient clinics offered and managed by Clinic B, such as diabetes, rehabilitation, and urology clinics. The strategic alliance solves Hospital A's shortage of physicians and also provides patients with more choice for diagnosis and cure. However, it also contributes to conflicts between employees of Hospital A and Clinic B, due to the different management styles and organisational cultures.

Hospital Culture

Juran (1989) emphasised that the development of a quality culture, one that views quality as a primary goal, is imperative for successful quality integration. The promotion of a quality culture requires change throughout the entire organisation and a collective

motivation to meet both external and internal customer requirements. According to Juran (1989), the culture can and must be changed to develop an awareness of quality. It must include not only an awareness of quality, but must also show evidence of leadership support, self-development, empowerment, participation, and recognition. All components of the organisation must be integrated within a quality structure. Unfortunately, like most public organisations, Hospital A's culture is a hybrid. It was born of government lineage and aged care from many generations. In that environment, it remains hierarchical, bureaucratic, and inflexible. However, TQM practice must ensure that all members in the organisation, no matter what their position, cooperate to achieve the organisation's collective goal of customer satisfaction. In a centralised, bureaucratic culture, quality management does not work.

Leadership Style

A successful quality improvement effort requires that top managers take the initiative to improve their leadership and their methods of doing business. Leaders need to develop and articulate an effective strategic vision and commitment to the organisation's defined goals. Effective leadership develops work processes that empower the workers and give them a sense of pride and ownership in the organisation. Leadership also has to develop a supporting structure that facilitates growth and the development of the entire organisational system (JCAHO, 1995). Hospital A is a publicly owned hospital, the superintendent and middle managers are all government officers. They need to follow the rules and meet the requirements of the Central Government Office. They also have to promote government policies and are responsible to the Central Government Office. This results in the manager in Hospital A being a commander or controller rather than a coach or an empowering leader. The leaders in Hospital A are concerned with the practice results more than with

human development. There is little reward or encouragement for high performance employees.

An Environmental Analysis of Hospital A

Following the presentation of the profile of the hospital, an environmental analysis including strengths, weaknesses, opportunities and threats analysis is offered. Such analysis should help the researcher to appreciate the hospital. It is also an important process in assisting the hospital to shore up its strengths, to remove or overcome any weaknesses, to exploit any opportunity that presents itself, and take steps to fend off any threat.

Nelson et al. (1998) argue that hospitals throughout the world are being confronted with critical challenges occasioned by a changing marketplace characterised by intense competition, decreasing insurance rates, and health care reform. These dynamics have changed the landscape of health care delivery. Mergers and acquisitions, new business developments, and joint venturing are now commonplace activities of the emerging health care environment. The difficulties for Hospital A are the decrease of government funding and the competition of the health care market.

Decrease in Governmental Funding

The Taiwan per capita Gross Nation Product (GNP) was approximately US\$ 12,900 in 2000. Due to the global economic down turn, the growth rate of Gross Domestic Product (GDP) decreased from 9.41% in 1996 down to a negative 1.62% in 2001. Taiwan's economic growth rate also turned from a positive 3.9% in 1996 to a negative 2.18% in 2001. However, the National Health Expenditure (NHE) is increasing annually, and the rate of

NHE/GDP is also rising: from 5.29% in 1986 to 5.44% in 2000 (although it is not as high as in the developed countries). This has resulted in the shortage of government finance, and the reduction of government funding to public hospitals. The growth rate of GDP and NHE of Taiwan are shown in Table 2.3.

Table 2. 3

The Growth Rate of Economic GDP, NHE and NHE/GDP.

Year	Growth Rate of Economic (%)	Growth Rate of GDP (%)	Growth Rate of NHE (%)	Ratio of NHE/GDP (%)
1996	3.9	9.41	9.82	5.29
1997	3.4	8.47	8.06	5.27
1998	3.1	7.33	8.59	5.33
1999	2.3	3.93	6.37	5.46
2000	0.6	4.02	3.65	5.44
2001	-2.18	-1.62		

(Source: Bureau of Accounting and Statistics of Taiwan, 2002; Department of Health, Taiwan, 2002).

Competition in Health Care Market

Due to the never-ending demands of customers, health care organisations face the challenges of increasing the service quality and meeting customers' requirements. In addition to this, after the policy of National Health Insurance (NHI) in Taiwan was carried out in 1995, there was intense competition in the health care market. This resulted in a reduction in hospital numbers from 629 units in 1995 to 565 units in 2001 (Table 2.4). Such evidence suggests that it is now harder to manage hospitals than ever before.

Table 2. 4

The Numbers of Taiwan General Hospitals

Accreditation levels	1995	1996	1997	1998	1999	2000	2001
Medical centre	13	13	14	17	18	22	23
Metropolitan	48	52	56	61	63	71	74
Local Community	568	544	534	496	503	484	468
Total	629	609	604	574	584	577	565

(Source: Bureau of National Health Insurance, 2002)

The Strengths of Hospital A

The strengths of the hospital are that it is the only publicly owned metropolitan teaching hospital with sufficient medical equipment and experienced professional staff in Y City. Other strengths are its geographic location and its ready access to transport. The hospital has implemented TQM, and been accredited by ISO 9002 and ISO 17025. Thus it has a positive standing in the community and within local health care organisations.

The Weaknesses of Hospital A

The weaknesses of the hospital are that it is hard to both recruit and keep physicians due to the low salaries offered and the heavy workload expected. This contributes to the low number of specialised physicians attached to the hospital. Serious and emergency patients have to be referred to academic medical centres. In addition, most of the hospital's employees do not feel threatened by unemployment, nor by the need to enhance their performance or embrace life long learning. Employees have no desire to change. Hence management of change in the hospital is hard to implement successfully. There are many such employees in the rigid organisational structure. This means that both the service and

decision-making processes lack flexibility, which in turn results in both low efficiency and performance. Moreover, the personnel and accounting systems are not flexible, and these contribute to the low competitive advantage of Hospital A.

The Opportunities Offered by Hospital A

The study hospital cooperated with a private clinic - Clinic B – in order to encourage an increase in physician numbers, and patient numbers as well, resulting in a growth of its revenue. Due to the aging population, the demands for geriatric care, long-term care and chronic therapies are increasing in Y City. This is consistent with the mission statement of Hospital A. In addition to this, some of private hospitals around the City face financial difficulties and patients have no confidence in being hospitalised in those in situations. Such circumstances present an opportunity for Hospital A.

The Threats Experienced by Hospital A

Financial support from government has decreased by 5% per year since 1997. Moreover, the insurance and retirement fees of employees are now paid by the hospital, and these factors will result in increased running costs for the hospital. Furthermore, the demands in both hardware and software from customers and the government are increasing, so the hospital will have to invest more money to meet these demands. In addition, there are many private and profit-oriented hospitals with similar features around Y City. As a result, patients have various choices, and this implies that Hospital A has to share potential patients with its competitors. Moreover, Hospital A hires many employees and has to depend upon financial support from government for personnel salaries. It is difficult to function without government funds, and the challenge of making a profit seems even more difficult to achieve.

Quality Initiatives of Hospital A

In order to meet the need for change, the Taiwan Provincial Government requested the publicly owned hospitals to implement a series of TQM / CQI programs, which were to cover the five fiscal years from 1997 to 2001. The quality improvement activities are thus being pursued in all departments of the Hospital A. The TQM project in Hospital A was carried out in three phases. A quality-training course and an organisational learning program from July 1997 to June 1998 were carried out in the first phase. In all 112 persons participated in 120 hours of education within the year. Before the Quality Control Circles (QCCs) were organised, the tutors of the QCCs were required to have further training. This training has continued with more specialised training, for example Business Process Management (BPM), Knowledge Management (KM) and performance measurement. The purpose of the first stage of the TQM project is to change the mindset of the employees in quality services to a new understanding and approach to create a new job mindset.

The second phase was to organise seven Quality Improvement Teams (QITs) and 12 QCCs from July 1998 to December 1999. The seven QITs are clinical pathways, ISO system maintenance, ISO new items preparation, education and training, QCCs, environmental quality, and process improvement. Some of the 12 QCCs focus on process improvement, such as the Cooperation Circle. The main issue of Cooperation Circle was to increase the clinical return rate of diabetic patients. The Green Garden Circle was an activity used to enhance the accuracy of special equipment in surgery. Some of the QCC's concerns were customer satisfaction, for example, the Happy Circle. While the Flower Circle's topic was to reduce the medical screening time, this improvement was not only to improve the process, but also to increase patient satisfaction.

The third phase of TQM was an ongoing process from January 2000 to December

2001. Four teams were initiated during this phase. They were a strategy-forming group, a quality indicator-developing group, a marketing development group and a patient satisfaction survey group. Several questionnaires were developed to investigate patient satisfaction, employee satisfaction and the public-private strategic alliance. The total quality management activities of Hospital A are listed in Table 2.5.

Table 2.5

The Quality Activities Implemented in Hospital A

Starting year	Quality initiatives
1997	QCC, Training course, organisational learning
1998	QCC, Clinical pathways, TQM Competitions, 5s activities
1999	5S's activities, ISO 9000 accreditation, benchmarking
2000	QCC contest, TQIP introduction, Taiwan National Quality Award
2001	QCC contest, ISO 17025 accreditation

Quality Control Circle (QCC)

The Quality Control Circle (QCC) was conceived by Kaoru Ishikawa in the early 1960s (Shariff, 1999). It was seen as a mechanism that would enable group workers in similar work areas to discuss, investigate and find solutions to problems with regard to their workplace, and come up with recommended solutions. The circle is also empowered to implement the solution. The objective of the QCC is to capture or tap the creative and innovative talent that lies within each individual, which when combined would lead to a motivated and productive workforce. The benefits of QCCs are realised in the form of savings, reduction of unproductive work and reduced wastage.

Organisational Learning

When the pressures of globalisation on business are increasing, the acquisition and use of knowledge become important for organisations. The management of a hospital is no exception. Knowledge transfer in a hospital is a basis for competitive advantage. Hospital organisational learning is a process of increasing the capacity for effective hospital action through knowledge and understanding. The superintendent of the hospital strongly supports organisational learning. Hence in Hospital A, there are many reading groups. The members of reading groups share their experience through regular meetings, workshops and seminars.

Clinical Pathways

Clinical pathways are multi-disciplinary tools that improve the coordination of care, enable resources to be used more efficiently, and help patients meet expected outcomes within a prescribed length of stay (Grant, Newton, & Moore, 1995). A clinical pathway provides a standard of practice for the care of a certain population of patients. The pathway is a guideline that is used to achieve established outcomes, and it is also a useful tool for facilitating the coordination of care (Hampton, 1993). Use of clinical pathways can lead to improvements in patient care and the effective utilisation of resources and can help achieve desired lengths of stay (Zevola, Raffa, & Brown, 2002). Thus, clinical pathways are used in Hospital A to improve patient care and the utilisation of resources, with the ultimate goal of cost containment. There are more than 50 clinical pathways used in the hospital, for example, appendicitis, hip replacement, and knee replacement.

Environmental Quality

The environmental quality 5S's activities created by Kaoru Ishikawa were important methods of quality improvement. The main purpose of this approach is to allow for things

to be done efficiently and effectively. The activities of 5S's include Seiri, Seiton, Seison, Seiketsu and Shitsuke and their objectives are as follows. The first S (Seiri) means to keep clean, to discard the materials not in use, to classify all the materials in terms of the frequencies of usage and to leave more space available. The second S (Seiton) means to label and standardise the place of materials storage, as well as to maintain them for access at any time. The focus of the third S (Seison) is on keeping everything in order in order to reduce the disorder rate of equipment and to enhance operational efficiency and quality. The idea behind the fourth activity S (Seiketsu) is that of avoiding waste, reducing pollution, maintaining cleanliness, creating a bright work place and enhancing operational efficiency. The requirement of the fifth S (Shitsuke) is to form the habit of obeying rules. The progressive purposes of 5S's are to create more available space, to promote safety and hygiene and to beautify the work place. The ultimate purpose of the 5S approach is to beautify the human mind.

Taiwan Quality Indicator Project (TQIP)

The search for objective ways to measure, monitor, and improve the quality of patient care provided by health care organisations is one of today's most pressing health care issues. The Quality Indicator Project (QIP) began in Maryland in 1985. Quality project indicators are used on a comparative basis by more than 1,500 facilities throughout the United States. Examples of indicators include mortality, hospital-acquired infection, severe adverse drug reaction, and return to the operating room from the recovery room. The Taiwan Quality Indicator Project (TQIP) was established with QIP by seventy hospitals in 2000. Indicators used in TQIP are the same as QIP.

ISO 9002 Accreditation

In 1987, the International Organisation for Standardisation (ISO) promoted international standards for quality systems. The worldwide impact of the ISO 9000 series can be illustrated by the fact that at least 115 countries, including all of the European Union (EU) and the European Free Trade Association (EFTA) countries, Japan and the US, have directly adopted the standards (Bureau of Business Practices, 1992). Dale (1994) claimed that the advantages of ISO accreditation include reduced customers' complaints, reduced errors and faulty products as well as reduced costs. In addition, ISO accreditation can improve consistency and increase quality awareness throughout organisations. ISO 9000 is viewed as the basis for quality management since it addresses the issues of setting up and implementing a management system that produces consistent products or services at a particular level of quality (Voehl, Jackson, & Ashton, 1994). As ISO accreditation positively influences the health care organisations' standing in the community, a lack of ISO accreditation means loss of customers, loss of third party payments, and loss of status in the community. Therefore, the Central Taiwan Government encouraged publicly owned hospitals to have ISO 9002 accreditation. Hospital A obtained ISO 9002 accreditation in 1999.

ISO 17025 Accreditation

ISO17025 is an international standard developed to assist organisations to implement and operate effective laboratory management systems. The quality of the clinical laboratory management system is an important means of enabling physicians to accurately diagnose and ensure good medical services. All public hospitals need to meet the ISO 17025 standards to ensure their clinical laboratory's quality. Hospital A received ISO 17025 accreditation as a result of government financial support in 2001. To assist organisations in checking on the performance of their implemented quality management

system, the Taiwan Government developed the Taiwan National Quality Award (TNQA) program.

Taiwan National Quality Award (TNQA)

The Taiwan National Quality Award (TNQA) was introduced by the Taiwan Government to recognise the efforts of outstanding organisations, to encourage other companies to benchmark and to enhance the quality level of products and services. There are a few differences between TNQA and the Malcolm Baldrige National Quality Award (MBNQA) in the United States. The nine items in TNQA replaced the seven items of the MBNQA. The nine items of TNQA are managing concepts; goals and strategies; organisation and operation; human resource development and application; information management and application; research and development, quality insurance, customer service, society responsibilities and total quality performance.

Hospital Performance

To review performance, including in-patient numbers, outpatient numbers, the productivity of employees, the ratio of revenue and expenditure, and government funding, Hospital A and ASPH (Average of Selected Public Hospitals) were examined from 1997 to 2000. Hospital A, when compared with the average of selected public hospitals, had a low performance, in terms of outpatients and in-patients numbers, productivity per employee per month, total revenue and expenditure from 1997 to 1999. While in 2000, the performance of Hospital A improved in in-patient and outpatient numbers, the ratio of revenue and expenditure also improved. Even though Hospital A had gained more government funding than the average of several other hospitals since 1997. In general,

Hospital A obtained less funding than the average value of selected public hospitals funding in 2000.

The traditional governance of the public hospital, where it is operated as an arm of government, is a critical issue that compromises the viability of those institutions. Performance reflects the viability of Taiwan public hospitals and is heavily dependent on government financial funding. According to the study by Fang (2001), 11 selected publicly owned hospitals, participating in the TQM project for 5 years, had an average ratio of revenue to expenditure of 72% in 1997, 77% in 2000. Dependence on government funding was decreased from 41 % in 1997 to 32 % in 2000. Obviously, publicly owned hospitals could not survive without government funding due to their higher expenditure than revenue, and their heavy dependence on government funding.

Reasons for Choosing Hospital A

Hospital A's quality initiatives were relevant to the topic of this research. Hospital A had been requested by the Taiwan Government to promote the TQM project over a five-year period and had received the accreditation of the International Organisation for Standardisation (ISO) series, for instance, the ISO 9002 and ISO 17025 models for the health care sectors. A further reason for the choice was that the hospital also focuses on medical quality as well as health care outcomes; consequently it had participated in Taiwan's Quality Indicator Project (TQIP) to measure quality performance. Thus, it was considered to be a suitable subject for this study.

When reviewing the relevant literature (Hung, 1998; We, 1992; Wilson & Jadow, 1982), it was found that the efficiency of public hospitals was lower than that of private hospitals. In addition to this, the lowest effectiveness rate in Taiwan was found to be in

publicly owned hospitals. Hospital A is a public hospital, and so it is not surprising that Hospital A's performance is lower than private hospitals, thus necessitating an in-depth exploration of the causes of low performance.

Moreover, recent studies (Barsness et al., 1994; Boerstler et al., 1996; Carman et al., 1996; Lai & Tsay, 2003; Weiner, Alexander, & Shortell, 1996) pointed out that the longer the TQM practice, the more the efficiency in hospital performance improved. It was also found that there would be a significant impact after 4 years of practice. However, Fang's survey (2001) argued that Hospital A with a high practice rate of quality initiatives had a low performance. This finding implied that the phenomena of TQM and the cause-effect relationship between TQM and hospital performance is not clear in Hospital A. It can be seen that Hospital A is an appropriate sample for this study to investigate the cause-effect between TQM practice and hospital performance.

In addition to this, Hospital A signed a nine years strategic alliance with a private clinic - Clinic B in 2000. This strategic alliance between a public hospital and a private clinic is a unique case in Taiwan. It is valuable for the researcher to investigate whether this strategy is suitable for a public hospital to enable an increase in performance and ensure survival in a competitive environment.

Summary

This chapter discussed the reasons for choosing Hospital A as the case hospital. It also presented an overview of the hospital under study and outlined its certain organisational characteristics, TQM practices, hospital performance, an environmental analysis were also presented.

The next chapter will review the literature pertinent to the focus of the research. Hence, the literature Total Quality Management practice, hospital performance, and their relationship will be discussed. Research streams and research gaps will also be addressed.

CHAPTER THREE

LITERATURE REVIEW

The previous chapter described a case profile, including hospital services, environmental analysis, TQM practice, and hospital performance. This chapter first reviews the literature relevant to quality, TQM practice and the influential factors of TQM practice. Second, hospital performance, its influential factors, measurement methods and national quality awards for health care are also reviewed. Third, literature focuses the relationship between TQM practice and hospital performance.

Total Quality Management Practice

This section will review the literature relevant to key definition of quality, quality in health care, TQM; the influential factors and obstacles when TQM is being implemented; the critical successful factors of TQM, and TQM adopting in health care organisations will be also reviewed. The development of TQM projects in hospitals in the West countries, in Asia countries and in Taiwan.

Definitions of Quality and TQM

TQM was first introduced to the United States by Deming in 1980. Previously, Deming had taught TQM principles to the Japanese after World War II, helping them rebuild their country. Using Deming's quality principles, Japan transformed from a war-torn country with a reputation for making low quality products into a nation known worldwide for its quality products (Strickland, 1995; Wilson, 1996).

TQM is a cooperative form of doing business that relies on the talents and capabilities of both labour and management to continually improve quality and productivity through an integrated team approach. TQM involves meeting and exceeding the customers' requirements, reducing costs by reducing the return rate of poor quality products, and empowering workers to achieve the organisational goals that they help establish (Deming, 1986; Juran, 1989; Klein, Massi, & Weidner, 1995; Spencer, 1994). In other words, management and workers are partners whose one objective is to satisfy the customers in the most efficient and most cost effective way possible. Before defining TQM, definitions of quality and quality in health care will be addressed.

Definition of quality.

Crosby (1980) defined quality as "conformance to requirement" (p. 9), focusing on people and organisational factors, emphasising cultural change, training, management commitment to quality, and the ongoing calculation of quality costs. Deming (1986) approached quality from a statistical perspective, emphasising the reduction of variance through statistical process control techniques. He also outlined 14 management principles, which include management commitment, process design and control, reducing barriers to employee participation, and continuous improvement. Juran (1989) emphasised planning and product design, quality audits, and supplier/customer relations. Taguchi and Clausing (1990) extended the quality improvement activities to include product and process design. Taguchi and Clausing's methods provide a system to develop customer-based specifications and then design those specifications into a product and/or process. A further definition offered by Griffin (1993) defines quality as the "totality of features and characteristics of products or services that bear on the ability to satisfy stated or implied needs" (p. 50). Thus, quality has implications not only for the way that products are made but also for the way that they serve

the needs and wants of customers (Reed, Lemak, & Montgomery, 1996). Reeves and Bednar (1994) stated that quality not only means conformance to specifications, but also means meeting or exceeding customer expectations. Asubonteng, Mccleary, and Munchus (1996) commented that in Deming's model, quality is not a destination, but rather a journey.

Definition of quality in health care.

Quality in health care involves sustaining an acceptable outcome through appropriate processes or services to meet or exceed patient expectations. Donabedian (1989) defined quality in health care as a kind of care which was expected to maximise an inclusive measure of patient welfare, after one had taken into account the balance of expected gains and losses (variability) that attend the process of care in all its parts. In addition to this, Lohr (1991) comments that quality is the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge. Palmer (1997) summed up Lohr's viewpoint and operationally defined quality of care in terms of those health outcomes that can be influenced by health-care processes and those processes of care that can yield desired health outcomes. Moreover, Zabada, Rivers, and Munchus, (1998) remarked, "Quality is achieved when the outcome matches or surpasses the patient expectation" (p. 58). This definition assumes that the patient knows in advance what are the possible outcomes. Without that knowledge quality cannot be measured (at least not from the patient's perspective).

Zemke and Schaaf (1989) pointed out that the needs of customers should be far more important than the values of the provider. Therefore, these writers claimed that the scope of previous quality definitions are not broad enough for modern health care providers to meet the customers' needs. This viewpoint was supported by Ovretveit (1992), who defined quality as "fully meeting the lowest cost to the organisation, within limits and directives set

by higher authorities and purchasers" (p. 2). Ovretveit (1992) further noted that quality in health care has to be considered from three dimensions, patients' quality, professions' quality and management quality. Patient quality is concerned about whether the service gives patients what they want. Professional quality emphasises professionals' views of whether the service meets patients' needs as assessed by professionals (outcome is one measure), and whether personnel correctly select and carry out procedures which are believed to be necessary to meet patients' needs. Management quality means that the most efficient and productive use of resources is set up in order to meet client needs, without waste and within limits and directives set by higher authorities.

However, in the case of health-care services, the consumer is limited by the quantity and quality of the information available to him/her (Hamilton, 1982). The National Association of Health Care Authorities and Trusts of the United Kingdom (1996) defined quality in health care from a patient perspective as available, appropriate, effective, acceptable and efficacious. Availability acknowledges that a health care service is delivered to match the patient's individual wants including time and clinical needs. Appropriateness emphasises that patients should be able to receive the best care and to share in the decision-making. Effectiveness emphasises the correct and the safe provision of care. Similarly, acceptability highlights the need for the health care service to satisfy patients and their families. Finally, to be efficacious, the system must ensure that the patients derive advantages from care services, such as curing disease and promoting health.

In the quest for improved outcomes with limited resources, health care organisations in many countries tried to look for answers. An integrated and systematic quality technique called total quality management (TQM) began to infiltrate health care organisations in order to meet patient's requirement.

Definitions of TQM.

Definitions of TQM vary from organisation to organisation and from individual to individual. Sashkin and Kiser (1991) define TQM as occurring when “the organisation's culture is defined by and supports the constant attainment of customer satisfaction through an integrated system of tools, techniques, and training. This involves the continuous improvement of organisational processes, resulting in high quality products and services” (p. 25). Wilson (1992) stated that TQM refers to “ a structured system for creating organisation-wide participation in planning and implementing a continuous improvement process that meets and exceeds customer needs” (p. 227). Kanji and Asher (1993) described TQM as being about the continuous performance improvement of individuals, of groups and of organisations.

Evans (1993) states TQM is “ an integrative management concept of continuously improving the quality of delivered goods and services through the participation of all levels and functions of the organisation. Everyone in the organisation plays a part in the production of quality goods and services” (p. 856). Moreover, Lawler (1994) defines TQM as “ A managerial approach which stresses the long-term development and growth of the organisation by customer satisfaction through total participation and the concept of total quality”. More recently, TQM is defined by Lindsay and Petrick (1997) as

A person focused management system with the main target of continually increasing customer satisfaction at the lowest cost. TQM is a comprehensive systemic approach which comprises, both horizontally and vertically, across all departments and functions, all employees of an organisation and their interfaces (customers but also subcustomers, etc.) (p. 20).

Hellsten and Klefsjo (2000) define TQM as "a management system in continuous change, which is constituted of values, methodologies and tools, the aim of which is to

increase external and internal customer satisfaction with a reduced amount of resources” (p. 41).

Taken together, Waldman (1994) advocated that the above definitions combine each of the elements that are fundamental to the TQM concept. They are:

Upper management commitment to quality as a top priority; striving continually to improve employee capabilities and work processes; involvement of all organisational members in co-operative, team-based efforts to achieve quality improvement efforts; a focus on quality throughout all phases of the design, production and delivery of a product/service, i.e., not just the end product; attempts to involve external suppliers and customers involved in TQM efforts; frequent use of scientific and problem-solving techniques, including statistical process control; the institution of leadership practices oriented towards TQM values and vision; and the development of a quality culture (p. 31).

In applying TQM to health care, Kaluzny, McLaughlin, and Jaeger (1993) offered TQM as a managerial innovation that is likely to have profound consequences on the delivery of health care services. Orvetveit (2000) argued that TQM could be distinguished in two ways. First, TQM can be viewed as an organisation wide approach and philosophy, with a strategy for organisation and personnel development, and a quality management and information structure. An example of this aspect of TQM is the Baldrige quality award framework and its many variations; and the European Foundation for Quality Management (EFQM). Second, TQM involves quality team methods and frameworks for process improvement. In European healthcare many different activities are carried out under the name of total quality management (Ovretveit, 1997). It is evident that TQM is not only a tool

for process improvement but also a systematic strategy for organisation and individual change in order to reduce costs and meet the requirements of patients and other customers (Ovretveit, 1997). Hence, it may be argued that TQM can be defined so that the ideas of all previous writers are combined. Thus, in this work, TQM has been defined as:

A quality management system for the well being of health care services. TQM is led by senior managers using a focus on strategic directions, on patients, and staff as well as other customers. Meantime every employee makes an effort through learning, sharing knowledge and outcome measurements for continuous improvement to achieve excellent performance.

In other words, TQM in hospitals is a totally integrated program designed to change hospital culture by Continuous Quality Improvement (CQI) in order to meet patients' satisfaction and staff requirements. The final purpose of TQM is to enable hospitals to become better at service quality while becoming more productive and competitive as well.

Although the definitions of TQM vary, all of the previous definitions include the concepts of TQM, namely continuous process improvement, people orientation, and a strong customer focus. TQM is a continuously evolving management philosophy for organisations. The philosophy involves a systematic, integrated, consistent, organisation - wide perspective involving everyone and everything.

Essential Elements of TQM

There are debates concerning various elements of TQM. Crosby (1984), Deming (1982), and Juran (1989) have provided models for using TQM. There are six common elements in these models, the common aspects of these models will now be discussed. First, an institution must be committed to the quality concept, all employees from the top leadership to the newly hired, must support and participate in the TQM process. Second, the

customer's needs must be at the centre of all improvement activities. Another common element focuses on processes and how well they work. Too often if a process does not work as expected, the employee is blamed. In most instances, it has been found that it is the process that does not work well instead of employees simply not doing their best.

Employees' satisfaction is another important element of TQM. One way to increase the satisfaction is through teamwork. Teamwork or group problem solving is the key to the TQM process. Usually, a team can accomplish more than an individual because of the collective and diverse knowledge available. The need to base decisions on data is the fifth important element of the TQM process. Structured problem solving based on data, produces better results than problem solving based on hunches alone. The needs and demands of the consumer are known, thus they can be incorporated into the solution. The final element is that the organisation should constantly seek ways to improve processes, and the organisation must also constantly investigate improvements (Crosby, 1984; Deming, 1982; Juran, 1989).

Ishikawa (1990) takes the view that TQM should also involve a system perspective, working to control unwanted variation in process performance as well as quality function deployment to match customer needs to organisational capability. Carman, et al. (1996) and Deming (1982) advocated that TQM requires a top down commitment to the process since TQM is a philosophy for the organisation as a whole. Also they argued that leadership's support is an essential element in the practice of TQM. Organisational leadership must believe in and support TQM if it is to be successful. The leaders must model this support in their daily behaviour, and they must be visible in their support of the efforts of the team members as they undertake improving a process. Carman et al. (1996) cautioned that if employees see the leader saying one thing yet doing another, they would tend to believe that TQM is not important. Davidson (1997) found that communication is another common element identified as necessary for successful TQM efforts. Davidson advocates that each

TQM effort has to be well communicated to those that would be directly affected by the change and to those that needed to support the change; and all parties must keep well informed.

Ovretveit (2000) stated that the components of TQM in health care include customer focus (internal and external); process analysis (simple methods used in a systematic way to analyse quality problems; using statistical process control methods); quality project teams (team building and team work); using data to identify and analyse problems and to investigate the results of change. These elements of TQM in health care are similar with those used in the manufacturing and services sectors. Ovretveit (2000) argued that change practice is a specific element in health care. It is the most difficult of these components to carry out in health care organisations, because of complexity and because of the power and autonomy of many professions. Doctors' involvement is an essential component, and special training for them is required, which connects quality methods with applied medical research. He noted that the development of a people-centred, quality-based culture within the health system is necessary for implementing TQM too.

The structure of the Malcolm Baldrige National Quality Award (MBNQA) in health care is a model of Total Quality Management for health care organisations. The structural elements associated with TQM include leadership, strategic planning, focus on customer, information and analysis, focus on staff, and process management. Four of the six TQM elements in MBNQA are consistent with the viewpoints of Crosby (1984), Deming (1982), and Juran (1964); while the leadership category is in accordance with the position of Deming (1982). The researchers and essential elements of TQM are summarised in the Table 3.1.

Table 3. 1

The Essential Elements of TQM

TQM elements	Authors
Commitment of quality concepts	Crosby (1984); Deming (1982); Juran (1964)
CQI and measurement Focus on customers, Focus on employees/Team working Making decision based on evidence Processes improvement	Crosby (1984); Deming (1982); Juran (1989); MBNQA (2001) and Ovretveit (2000)
System perspective	Ishikawa (1990); MBNQA (2001)
Control unwanted variation Leadership support Quality function deployment	Ishikawa (1990)
Top down commitment	Carman, et al. (1996); Deming (1982) and MBNQA (2001)
Communication	Davidson (1997)
Change practice Doctor involvement Quality based culture	Ovretveit (2000)

The Practice of TQM

This section of the chapter reviews the steps necessary to implement TQM, the reasons for TQM adoption, and addresses the obstacles and critical successful factors of TQM practice. In order to understand the impact of TQM on an organisation, the reasons for adopting TQM are also identified.

The reasons for TQM practice.

Ramirez and Loney (1993) investigated ninety-two U.S.A. companies including award winning organisations in order to study their reasons for introducing TQM. The reports showed that the reasons are various. They include competition, loss of market share, survival

and desire to improve. Companies wish to become leaders in their field, to become a world-class company. Negative publicity, customer dissatisfaction, a crisis in the operation, the need to reduce costs and to maximise productivity are also some of the reasons behind the adoption of TQM. Shea and Gobeli (1995) who carried out a survey on the experiences of 10 small businesses found that the reasons for adopting TQM could be grouped into five categories. They were a promotion of organisational growth; a consistency with management style; improvement of the processes; an increase in customer focus and a desire to reduce complaints; as well improvement of poor company performance for survival.

Taylor (1995) asserted that businesses should be citing customer focus or the need to improve customer satisfaction by putting customers first, as the primary reason for using TQM rather than to improve the organisation's efficiency and reduce costs. In Sun's (1999) survey it was found that the reasons for choosing TQM are to meet customer requirements (70 percent), to increase competition (53 percent), to reduce costs (39 percent), and to enhance survival (17 percent). About 14% of the sampled companies did not have any reasons for adopting TQM. In other words, they did not have a clear reason for why they had implemented TQM. They may just have followed the trend. Sun (1999) believes that increase in competition is the driving force behind TQM. TQM aims to help a company become competitive by improving performance in several areas, such as product quality, customer satisfaction, business performance and profitability. This is the true aim of TQM.

However, some companies may just see TQM as a quick fix to reduce product costs. Cost reduction should not be regarded as the only short-term aim of adopting TQM. If it is so, then TQM is not likely to be a success. The aim of TQM is to increase performance, as discussed in the quality award model. Companies implemented TQM for survival reasons, indicating that those companies may be in crisis, Brown, Hitchcock and Willard (1994) believed that the chance for a successful practice of TQM is high when the company is in

trouble or is at the establishment stage.

Ovretveit (2000) emphasised that increasing numbers of health care organisations want to adopt TQM, because there are three changes that are having an impact on health care and society. First, health care has become more complex. There is an increase in the complexity of treatment and medical equipment. Patients have to be carefully assessed and the right specialists have to be found. The second change is patients' expectations. Patients rising expect the same service from health care, which they have grown to expect in shops and other services. The third change is that those paying for health services have become more concerned about rising health care costs and possible inefficiencies. In response to these concerns about health care quality, many hospitals are adopting total quality management.

In Ennis and Harrington's survey of Irish health care (1999) it was found that the main aims of TQM related to improving the quality of care delivered. This finding supported other research studies, such as those by Marchington, Wilkinson, and Dale (1993); Monks, Buckley, and Sinnott (1996). Other important aims of TQM in Ennis and Harrington's study included the need to improve the service delivered (63 percent) and eliminate wastage of resources (53 percent). Only 47 percent indicated that the aim of TQM was to support organisational culture change. Given the importance of employee involvement to quality practice only 43 percent indicated this as an aim. Other reasons cited were to streamline services (37 percent) and to reduce costs (33 percent).

In summary, the reason for adopting TQM should be result of a comprehensive consideration, which includes enhancing product/service/health care quality, customer satisfaction, business performance, such as reduced costs, waste elimination, market position and competitive advantage of a company, as suggested by the Baldrige or European Quality Award models. The reasons for TQM adoption are summarised in Table 3. 2.

Table 3. 2

The Reasons for TQM Adoption

Reasons	Authors
1. Competition	Ramirez & Loney (1993); Sun (1999)
2. Loss of market share	Ramirez & Loney (1993); Shea & Gobeli (1995)
3. Desire to improve quality	Ennis & Harrington (1999); Marchington et al., (1993); Monks et al., (1996); Ramirez & Loney (1993); Shea & Gobeli (1995)
4. Survival (Crisis in operation)	Ramirez & Loney (1993); Shea & Gobeli (1995); Sun (1999)
5. Negative publicity	Ramirez & Loney (1993)
6. Customer focus/ reducing complaints	Ovretveit (2000); Ramirez & Loney (1993); Shea & Gobeli (1995); Taylor (1995); Sun (1999)
7. Reduce costs/ reduce wastage	Ennis & Harrington (1999); Ovretveit (2000); Ramirez & Loney (1993); Sun (1999)
8. Maximise productivity/ employees involvement	Ennis & Harrington (1999); Ramirez & Loney (1993)
9. Complex environment	Ovretveit (2000)
10. Increase service delivered	Ennis & Harrington (1999)
11. Support change	Ennis & Harrington (1999)

Following the review of reasons for TQM adoption, the practice of TQM in organisations will be addressed in the following pages.

The steps of TQM practice.

There are several guiding principles required for hospitals to implement TQM to achieve success. These include developing a TQM climate, identifying customer needs, using statistical methods to continuously improve processes and reducing the non-

compliance outcomes with standards, thereby pursuing zero defect in order to lower costs and ensure everyone takes part in the TQM program. Other principles are to design quality in each process, training employees and encouraging them to cooperate through teamwork, and continuously preventing error and improving processes. Furthermore, it is important to build a supplier and customer partnership chain to satisfy internal and external customers (Asubonteng et al., 1996; Saylor, 1992; Ummel, 1991; Zabada et al., 1998).

Within the health care field, there are a number of TQM practice models and methods that embody this kind of systematic approach. For example, the ten-steps model for monitoring and investigation; the FOCUS-PDCA model, the Ten Key Lessons for Quality Improvement, and the Quality Improvement Framework (Baird, Cadenhead, & Schmele, 1993). Based on these models, Baird et al. (1993) have developed a model (Figure 3.1) that incorporates many of the TQM key concepts to clarify and provide a guide to implementing a TQM program. The model consists of the following five steps: (a) executive level commitment; (b) transformation of the culture; (c) planning quality; (d) organising quality and (e) investigating quality. The five steps will be addressed below.

(a) Executive Level Commitment: Executive level commitment is organised by the Chief Executive Officer (CEO) or the executive board. The members of executive level commitment have the responsibility to actively seek input from various TQM consultants and organisations that have a well-established program. Additionally, the members need to explore the groundwork, synthesise information, and make subsequent recommendations for practice, and the initiation of the educational process. Executive level commitment is crucial to the success of TQM within an organisation. Moreover, education is the key to managers and staff understanding the relevance of TQM, quality tools, processes, and methodologies for improving quality. Executive level commitment and education for TQM are the seeds needed to transform an organisational mindset to continuous improvement.

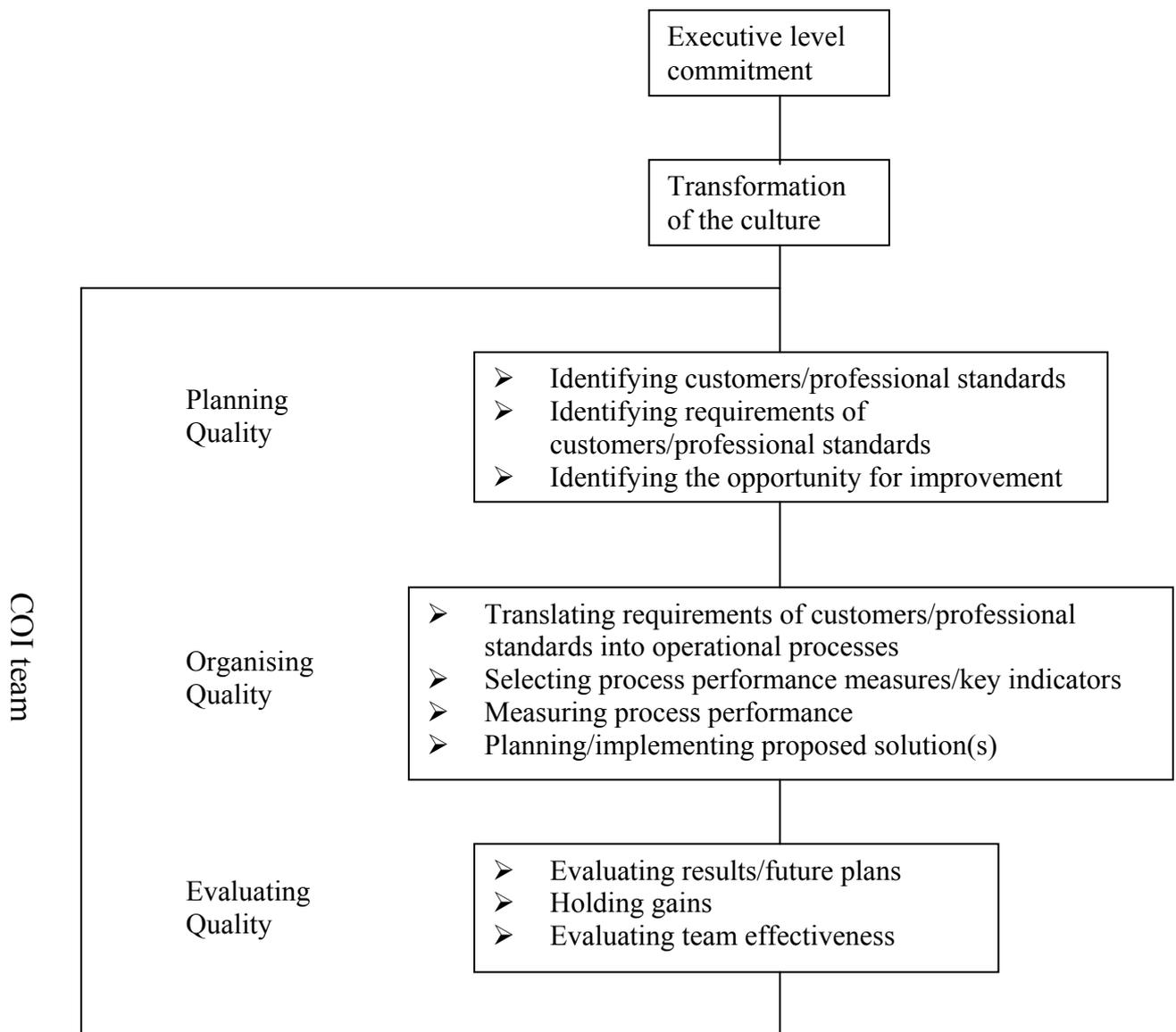


Figure 3. 1: TQM Practice Model (Source: Baird et al., 1993, p. 92)

(b) Transformation of the Culture: Cultural change begins once the executive board and CEO make the commitment to TQM. During this transformation process, key changes occur in the organisational climate, such as trust building, clear communication, increased employee participation, employee performance measurement, and above all team-building. In most process improvement activities, group and team interdisciplinary actions are desirable and essential. Team-building processes will facilitate breaking down

interdepartmental barriers and will minimise territorial issues. In addition, managers empower their employees through the use of positive feedback and reinforcement of positive attitudes and behaviours that support quality improvement. Managers who use this management style make their employees more involved and motivated, and the strong employees' motivation toward the improvement of quality is essential in order to achieve cultural transformation.

(c) Planning Quality: Once executive level management is committed to the concepts of TQM and transformation of the culture has begun, quality planning directly follows. During this process, CQI teams become the focal point in guiding the TQM process. All individuals will receive formal training in team dynamics and processes. The key elements will be emphasised in this stage. These are identification of customers and professional standards; data based identification of deviation from standards and requirements; and identification of opportunities for improvement.

(d) Organising Quality: After the completion of quality planning, organising quality becomes the second major task for any CQI team. During this phase, the team is responsible for translating customers' requirements into operational specifications; selecting process performance measures or key indicators; measuring process performance measures or key indicators; and planning and implementing the proposed solutions. To flow through this process, the team needs to focus on analysing the current situation by examining the step-by-step work processes that were used in meeting or not meeting customers requirements. During this, process performance measurement and the development of solutions are important for making decisions based on facts.

(e) Investigating Quality: Two key questions are vital when investigating quality improvement processes: (1) How did this improve organisational performance? (2) How did this improve the quality of care? In other words, in this time, it is essential to monitor both

process (quality of health care) and outcome (organisational performance). Furthermore, it is necessary that the team members investigate their overall effectiveness, to identify their success and areas needing further improvement. This model contains step-by-step and overlapping processes, the individual components are not intended to be self-contained or mutually exclusive, but rather, represent the critical elements of the process as continuous, ongoing and overlapping building blocks to the next step. The reasons why organisations adopt TQM, and some of the obstacles and critical factors that face organisations need to be explored to ensure a successful TQM practice.

The Development of TQM in Hospitals

TQM practice is a relative newcomer to hospitals. It was not until the late 1980's that sectors of the health care industry began to notice TQM's potential, (Nohria & Green, 1996) and the TQM adoption rate has increased in the last decade. In 1992, TQM has become a legitimate practice in improving performance in U.S.A. industry with 90 percent of the 100 firms reported in Fortune Magazine listed as practicing TQM.

TQM in U.S.A. hospitals.

Eubanks (1992) conducted a nationwide survey of 781 hospitals, in which 58.5 percent responded by saying that they were using a TQM process. The remaining 41.5 percent was not involved in the TQM program, but 84.6 percent of those who were not involved in the TQM program planned to begin to adopt the TQM program in the first year. However 96.7 percent of those not involved in the TQM program actually adopted the program in the next two years. Another, later, and much larger and more comprehensive survey, reported by Barsness et al. in 1993/94, found that 68.9 percent of responding hospitals indicated that they had undertaken a formal TQM effort to improve the quality of care. The survey was mailed

to 5,492 hospitals, and 3,303 responded (about 68.9 percent). The hospitals' CEO and persons in charge of quality management efforts completed surveys. In the TQM hospitals, 87 percent have assigned their TQM efforts to a specific individual, but less than half of them (48 percent) were senior managers. About half of TQM hospitals (48 percent) had established a separate unit for TQM. At most hospitals (73.4 percent), TQM activities at the time of this study were less than two years, and only 4.1 percent were involved with TQM for more than four years.

TQM in Asian countries.

Umeda (2000) noticed that the Asian Productivity Organisation had designed Total Quality Management (TQM) as one of the major thrust areas for activities, and a project on the survey of quality management practice in manufacturing and service sectors was planned in April 1993, and was undertaken in 1994 in eleven Asian countries. The preliminary survey reports from the member countries were submitted at the end of 1994, and revised in July 1995. The conclusions for Total Quality Management in Asia are that the level of TQM in many Asian countries is still relatively low. Even in those countries where TQM has been adopted for many years, there are still organisations that need much more development. However, there is a lack of survey reports relevant to TQM practice in Asian hospitals. The only study by Lim, Tang, and Fackson (1999) mentioned that hospitals in Singapore are also facing serious issues, including the dynamics of regulation, market forces, quality and a cost-conscious environment. Among these, the most significant issue is how to improve the quality of hospital services to meet and exceed customers' expectations. In order to raise health care quality and achieve the objective of customer satisfaction, many hospitals in Singapore are searching for ways to change the delivery of patient care through TQM (Lim, Tang & Fackson, 1999). However, Lim et al. did not point out the statistical data relevant to

the TQM adoption in Singapore hospitals.

TQM in Taiwan hospitals.

The sectors of the health care industry adopting TQM in Taiwan have increased. Since 1997, the Taiwanese Government had requested practice in 27 provincial hospitals a series of Continuous Quality Improvement programs CQI/TQM, this request covered five fiscal years. Some tertiary hospitals including teaching hospitals and Christian hospitals, have been implementing TQM for many years. A study by Dong (1997) found that 45.31 percent of sample hospitals in Taiwan have implemented the TQM program within five years. Private hospitals have a higher adoption rate than public hospitals (the adoption rate in private hospitals is 72.41 percent, while in the public hospitals is 27.59 percent). The average time for TQM practice in Taiwan hospitals was 2.43 years; the standard deviation was 2.31 years; the minimum time was 0.25 of a year; and the maximum time was 10.08 years (Dong, 1997). A subsequent study conducted by Chen (1999) was consistent with the previous study of Dong and stated that the Taiwan hospitals' practice time for TQM over 4 years was only 18 percent of the study sample.

The Influential Factors of TQM Practice

TQM practice often involves extensive technical, structural, strategic, and cultural changes (O'Brien et al. 1995; Shortell et al. 1995). For example, organisational theorists propose that the structural integration of management and governance fosters unity of command, shared vision, and common values among directors and managers (Alexander, Morlock, & Gifford, 1988; Finkelstein & D'Aveni, 1994).

Organisational structure.

Habib and Victor (1991) assessed strategy, structure and performance in multinationals, and also found that the “fit” between strategy and structure improved the performance of manufacturing firms. A health care organisation might need to change its organisational structure to better align it with TQM strategy (Lawrence & Early, 1992). A number of scholars have argued that a supportive organisational structure is needed to enhance the effectiveness of TQM practice (Sheu & Howell, 1998; Waldman & Gopalakrishnan, 1996). Sitkin, Sutcliffe, and Schroeder (1994) argued that the effectiveness of total quality management depends on an organisation's ability to balance control and learning.

Evidence from recent studies in the hospital industry provides some support for the need to have both the control and exploratory dimensions of structure for the successful practice of TQM. Carman et al. (1996), in their in-depth study of ten hospitals, found that a continuous learning culture enhanced the relationship between continuous improvement and hospital performance. This finding reinforces Hackman and Wageman's (1995) arguments that TQM needs a strong learning environment in which to function since employees are expected to use data about their work processes for continuous improvement.

Shortell et al. (1995) found similar results, but they also emphasised the need for a formal, strategic quality plan to be present to ensure superior efficiency. Having a bureaucratic and hierarchical structure served as a barrier of QI practice. Finally, Motwani, Sower, and Brashier (1996) argued that a structured, standardised approach for the successful practice of TQM in hospitals is required. Douglas and Judge's (2001) study provides tentative support for the argument that firms must balance both control and exploration in order to use TQM in a way that is both effective and efficient. They also noted that an organisation seems to need to provide the structural mechanisms that enable TQM techniques to be woven into its fabric (Lillrank et al., 1998) while allowing for the

development and integration of new knowledge and ways to create customer value (Grant, 1996).

Leadership involvement.

Management involvement in governance may clarify expectations about the importance and directions of TQM initiatives and tighten the degree of correspondence between strategic quality planning and goal deployment (Weiner & Alexander, 1993). Management involvement may also strengthen the board's ability to exercise strategic quality control by allowing outside directors to take advantages of insiders' knowledge of organisational processes, problems, and resources (Weiner, Alexander & Shortell, 1996). Eubanks (1992) stresses the role of positive leadership, as he states that, "To transform the health care industry, we must transform our leaders" (p. 34). Additionally, the need for commitment to the quality efforts from middle management is stressed. Often, it is this group that may feel most threatened by the organisation's TQM effort (Reeves & Bednar, 1993). However, the study of Weiner et al. (1996) showed that management involvement in governance did not significantly promote TQM adoption or leadership for quality. The negative effect of CEO tenure on top management leadership for quality was also unexpected.

Organisational culture.

Solovy (1993) argued that for health care organisations to implement TQM, an operating culture with a defined structure, documented and shared understanding of operating processes, and continuous improvement based measures is necessary. Wellins (1994) emphasised that TQM is a comprehensive strategy and it often involves the transformation of underlying beliefs, values and culture. It also requires changes in the way people behave (p. 10). Sheridan, Fairchild, Haddock and Jones (1995) found that nursing

facilities where employees shared values of concern for patients and teamwork experienced the highest quality performance ratings based on the Baldrige Award criteria. Similarly Shortell et al (1995) found that a participative, risk-taking organisational culture was positively related to QI practice.

Organisational system

In searching for TQM success, it has been suggested that a systemic perspective is needed, since the properties of an organisation are not reducible to the properties of the individual departments or functional areas (Bennett & Kerr, 1996; Gull, 1995). Zink (1997) argued that an integral, systematic approach is characterised by the following aspects. Companies as open systems are closely connected with the environment. Such an approach is based on both analytical and synthetic thinking and the notion of network structures. Linear thinking and simple cause and effect schemes are replaced by systems thinking. Thinking and cooperation should be integrated across functional and departmental lines. Structures and processes have to cope with the increasing significance of information (pp. 5-6).

There are many factors influencing the practice of TQM, thus, in numbers of organisations which have failed to implement TQM successfully, the obstacles of TQM practice will be addressed as follows.

The Obstacles to TQM Practice

Despite increasing demands from government and customers, and health care organisations' emphasis on TQM movement, there continues to be a disturbing resistance to TQM, particularly in the workplace. The identified barriers to TQM practice reside in a lack of management commitment to the TQM concept. Top management often shifts

responsibility to middle management for the solution to core business problems (Masters, 1996; Tatikonda & Tatikonda, 1996; Youssef & Zairi, 1995). In the survey conducted by Youssef and Zairi (1995), the difficulties faced by TQM included getting management commitment and support; culture change; finding time to devote to quality issues; training all employees; focus on quality. TQM also took a long time to succeed. Gordon, Lee, Picard and Stamps (1996) described the seven sins of TQM that lead to the erosion of confidence of employees and management alike: (a) reorganisation for no real reason, causing damage to people, processes and profit; (b) obsessing over winning a quality award is always the wrong goal; (c) collecting data on every piece of the processes is wasteful and expensive; (d) customer satisfaction measuring is often overdone; (e) wasting time, effort and money when all employees are trained in SPC; (f) workers solve non-consequential problems, thus productivity suffers because TQM places all employees above management; (g) when management is removed from the process of TQM, the focus shifts to the process. Hubiak and O'Donnell (1996) suggested that the main reasons for the failure of TQM programs are individualism, competitiveness, problem-solving orientation, linear thinking and control orientation. While some of these factors, such as individualism and control orientation, may well contribute to the demise of a TQM programme, some of these factors could well aid in the success of a TQM programme. For instance, individualism spurs a person on to be the best he/she can be, as well as often causing conflict with management. The component of being driven to be the best, though, can be used to influence the individual to implement SPC and become a better team player.

Although major cost savings can be made from TQM, which can be converted into increased profits, these benefits are medium to long-term (it may take 12 months before initial benefits are realized). Hence, McAdam and McKeown (1999) argued that the practice of TQM could put severe financial pressure on small businesses, as these tend to have fewer

financial resources. It is therefore not surprising that cost constraint is one of the biggest barriers to pursuing TQM. This finding supported the study of Wilkinson, Redman and Snape (1994) who pointed out that cost constraints and lack of resources were the biggest barriers to implementing TQM. Sinclair and Zairi (1996) conducted a survey that showed that there is a gap between managers' understanding of the importance of using performance measures, and the actual performance measures used. It is argued that an inappropriate performance measurement could be a major cause of failure in the practice of total quality management. This is consistent with the argument put by Dixon et al. (1990). Therefore, it can be said that a lack of an appropriate performance measurement is an obstacle to TQM. However, it can be argued that the research relevant to obstacles mentioned above focussed on the manufacturing and service sectors. Hence, the following pages will review the obstacles faced by TQM when it is applied to health care organisations.

Meyer (1998) reported that while many quality management concepts and tools used in other industries are applicable in hospitals, numerous differences between health care and other industries remain and must be addressed. Such differences include, for example, multiple customers in health care organisations. In a typical industrial model of TQM, the term customer refers only to the buyers or end-users of products and services. Health care organisations must please many customers including patients, patient families, communities, insurers or third party payers, government, and medical college students. The multiple customers of health care increases the degree of complexity in improving efficiency and effectiveness in hospitals and thus, also increases the complexity of applying the TQM to health care organisations.

The obstacle to implementing TQM in health care organisations include rigid hierarchical and authoritative structures that do not allow peer workers to make suggestions for change. TQM cannot be implemented successfully in such an inflexible environment.

Secondly, health-care organisations do not pay enough attention to the presence of the patient as both product and participant, even if this may be the crucial determinant of the outcome of any medical intervention. It is obvious that hospitals deal with human beings - the patients. On the one hand, patients are a product in the sense that work is done on their physical or mental being. They are also participants in the sense that their knowledge (information) and collaboration (compliance to instructions) are required. As such, patients' behaviour has an impact on the quality of the health-care outcome (Greene, Simmons, & Golden, 1976).

Barsness et al. (1993a) conducted a national survey and revealed two major scales. One scale was associated with barriers primarily involving senior management, including lack of board commitment and senior management time commitment, leadership turnover, lack of physician support, not enough resources committed to the effort, insufficient training and inadequate employee training. Another scale focussed on barriers involving the organisational infrastructure, such as the inability of key people to work together, an inability to use personnel in new ways, inadequate information systems, and inadequate organisational structures.

Furthermore, Shortell et al. (1995 a) suggested one noticeable difference between TQM applications in health-care and other fields. The vast majority of applications in other fields of endeavour have been directed at the core processes of the firm in areas of greatest strategic priority. In contrast, in health care, the vast majority of applications to date have been in functions providing administrative support to patient care activities rather than directly addressing clinical processes. This finding is to be correlated with the belief among the health-care organisations that TQM is used for the sole purpose of cost containment; therefore the most evident area where it can be applied is administrative and other support functions.

Among all of the obstacles to the application of TQM in health-care organisations, it seems that cultural obstacles are the hardest to remove. Obstacles to the application of TQM related to the culture of health-care organisations are documented by Shortell et al. (1995b). They argued that there are several obstacles to TQM practice in health care sectors.

Firstly, health-care organisations are inward looking; they tend to focus more on the needs of care givers and professionals than on the needs of external customers. Secondly, large health-care organisations are typically organised on a relatively hierarchical basis, exemplifying bureaucratic cultures that are resistant to employee empowerment. Thirdly, there is a lack of senior management commitment to TQM in most health-care organisations. In health-care organisations, leadership styles are based on command and control and hero/heroine models, rather than empowerment and 'manager as developer' (or manager as coach) models. In general, middle managers perceive TQM as a threat that might eliminate their jobs. Therefore they resist its introduction.

In further reviewing the literature of Zabada et al. (1998), we find obstacles to the application of TQM in health care organisation settings. First, it is physicians in most health-care organisations who do not feel pressured by TQM activities. This finding is similar to those of Shortell et al. (1995a), who claimed that health care organisations tend to focus more on the needs of care givers and professionals than on the needs of external customers. Physicians feel that TQM is not applicable to their job, while this point is crucial for the success of TQM in any organisational settings, whether it is a manufacturing or a service organisation. The under-involvement of physicians in TQM efforts includes the unavailability of time, physicians' belief that they are already doing quality work, physicians' relative inexperience or unwillingness to work as members of teams and physicians' perception that TQM is primarily a cost-control mechanism.

The second is that employees' inability to see beyond their own departments' (specialities') goal to the broader, firm-wide (hospital-wide), strategic quality issues demanded by the environment was a major reason for TQM practice failure. Other obstacles mentioned by Reinertsen (1995) included fuzzy missions, poor communication of organisation purpose and strategies as well as a lack of commitment to training and learning.

The lack of human resources was identified in 33 percent of hospitals which is interesting given the fact that this did not emerge as a problem in the other studies previously mentioned. Relatively fewer difficulties related to measurement of quality and the demand for services (23 percent) while quality not seen as an issue by staff was a further reported obstacle. Lack of top management commitment was reported in only 10 percent which is somewhat surprising given the fact that this was a considerable barrier within the financial sector (Wilkinson & McCabe, 1996).

Yasin and Alavi (1999) reviewed the status of TQM in healthcare, and identified the obstacles to effective TQM was physicians involvement, time required for TQM's successful practice, delay in financial payoff, high turn-over in the executive rank and the resistance to TQM change of employees.

Ennis and Harrington's (1999) survey in Irish health care found that the major difficulty hospitals experienced was the resistance to change (47 percent) which is a common problem with many quality programmes (Redman, Mathews, Wilkinson, & Snape, 1995; Wilkinson, Godfrey, & Marchington, 1997). A lack of financial resources was also an obstacle for 47 percent of respondents, this is similar with the studies of Wilkinson et al. (1997); Yasin and Alavi (1999). Employee resistance was reported as an impediment in 33 percent.

More recent research Ovretveit (2000) argued that the difficulties for hospital to implement TQM first are cost of investment. This finding supported the research of Ennis

and Harrington (1999) and Shortell et al. (1995). The second obstacle is management resistance towards empowering employees and to taking them away from direct care work for training or working in quality teams. Such a result is consistent with Shortell et al. (1995). Professional resistance towards teamwork or learning new methods is another barrier. Also, there is no time (due to the patient demands and need to keep professionally up to date), and a fear of loss of autonomy. There is little time for managers and professionals to concentrate on long-term projects, with reforms and frequent changes in health care. Moreover, creating a culture that is conducive and supportive of TQM practice is one of the most frequently mentioned obstacles faced by organisations attempting to implement TQM (McNabb & Sepic, 1995; Shin, Kalinowski & EI-Enein, 1998). The limitations of TQM included strategic management and planning, employee motivation and / or empowerment, employee training, top management leadership and commitment, physician involvement, conducive organisational culture change and the lack of effective measurement (Hug & Martin, 2000). The obstacles to TQM practice are summarised in Table 3.3.

Table 3. 3

The Obstacles to TQM Practice

TQM obstacles	Authors
1.No system perspective	1. Hubiak & O'Donnell (1996); Shortell et al. (1995); Zabada et al. (1998)
2.Structured organisation	2. Barsness et al. (1993); Shortell et al. (1995a); Hubiak & 'Donnell (1996)
3.Transaction leadership	3. Barsness et al. (1993); Ennis & Harrington (1999); Hug & Martin (2000); Masters (1996); Shortell et al. (1995b)
4.Under involvement of physicians	4. Barsness (1993); Hug & Martin (2000); Ovretveit (2000); Shortell et al. (1995b); Yasin et al. (1998); Zabada et al. (1998)
5.Lack of a team work/ learning culture	5. Hubiak & O'Donnell (1996); Hug & Martin (2000); Ovretveit (2000); Reinertsen (1995); Zabada et al. (1998)
6.Poor communication	6. Reinertsen (1995)
7.Lack of supportive culture	7. Barsness et al. (1993); Hug & Martin (2000); McNabb & Sepic (1995); Shin, Kalinowski, & EI-Enein (1998); Shortell et al. (1995)
8. Cost constraint	8. Ennis & Harrington (1999); McAdam & McKeown (1999), Ovretveit (2000); Shortell et al. (1995a); Wilkinson et al. (1994); Yasin et al. (1998)
9. Insufficient resources	9. Barsness et al. (1993); Ennis & Harrington (1999); McAdam & McKeown (1999); Wilkinson et al. (1994); Yasin & Alavi (1999)
10. Insufficient training	10. Barsness et al. (1993); Ennis & Harrington (1999); Ovretveit (2000); Reinertsen (1995)
11. Resistance of change	11. Ennis & Harrington (1999); Ovretveit (2000); Redman et al. (1995); Wilkinson et al. (1997); Yasin et al. (1998)
12. Lack of performance measurement	12. Dixon et al. (1990); Hug & Martin (2000); Sinclair and Zairi (1995)
13. Lack of empowerment	13. Hug & Martin (2000); Ovretveit (2000); Shortell et al. (1995)

*The Critical Successful Factors of TQM**Manufacturing sectors.*

Saraph, Benson, and Schroeder (1989) argued that no systematic attempt had been made in the literature to organise and synthesise the various sets of critical factors for organisations to measure TQM related performance. Saraph et al. (1989) was the first to group critical factors for TQM, and then conducted a study in the United States which led to the proposal of a list of 78 factors. A subsequent research conducted in the United Kingdom 101 quality managers, which replicated the study undertaken in the United States. In this study, ten critical factors were obtained out of the 78 factors mentioned above.

The study by Black and Porter (1996) used the MBNQA criteria and made an effort to develop a model for measuring the critical factors of TQM. A questionnaire with 39 critical factors was designed and through the use of a ratio scaling method respondents were asked to assign a ratio score of importance to each of the 39 criteria. The list of the 39 items was factor analysed and ten factors were identified as the most critical. They are strategic elements, people involvement, emphasis on communication, a focus on the customers, an awareness of the external market, the need to develop supplier partnership, measurement and the long-term emphasis on developing a culture for quality improvement. Another project was carried out by Ramirez and Loney (1993) to identify activities which are critical for the success of TQM practice. A questionnaire based on 22 critical factors from the teachings of quality academics and thinkers such as Deming, Crosby and Juran was devised. The list was then finalised by comparing it with activities which award winning organisations tend to undertake. Ninety-two organisations were targeted, including national quality award winning organisations in the United States and various quality experts. The results were top management commitment, and this was to be demonstrated through active involvement, setting clear goals, a vision for the organisation and integrating TQM into the strategic

quality planning process. TQM introduction is heavily reliant on employee involvement and participation and TQ-based performance is dependent on people productivity. As such, investment in people through education and training is fundamental to the success of TQM practice. TQM is long term, and can only succeed if there is a serious attempt at changing methods, ways of working, ideas, technologies etc. In a sense it requires a fundamentally new culture.

Flynn, Schoreder, and Sakakibaba's (1994) study built on the Saraph et al. (1989) study, focus on a plant rather than an organisation as a unit of analysis and utilised the perceptions of both line and managerial level employees. Seven critical successful factors to the practice of TQM were identified. These are top management leadership, quality information, process management, product design, work force management, supplier involvement and customer involvement.

The following survey was conducted by Motwani, Mahmoud, and Rice (1994) in Indian manufacturing organisations and found that all requirements for effective quality management can be classified into the following nine major critical factors: (a) top management; (b) quality policies; (c) role of the quality department; (d) training; (e) product design; (f) vendor quality management; (g) process design; (h) quality data and (i) feedback and employee relations.

Powell (1995) developed a TQM measurement instrument based on exhaustive review of the TQM prescriptive literature, and revised the scale through repeated discussion and site visits with consultants and quality executives. Unlike the other empirical studies, Powell (1995) specifically cites discrete quality management tools (for example, just in time manufacturing and materials resources planning) as part of his 12 quality management prescriptions. The final scale contained 47 items covering 12 variables, and they were executive commitment, adopting philosophy, measurement, zero defect mentality, process

improvement, flexible manufacturing, training, closer to suppliers, employee empowerment and involvement, closer to customers, and benchmarking.

Ahire, Golhar, and Waller (1996) identified, validated and tested 12 constructs of integrated quality management through an empirical survey of 371 manufacturing firms. This instrument is based on a thorough review of the conceptual, and empirical literature of TQM. In this instrument, scales pertaining to product quality and supplier performance represent TQM outcomes (outputs) rather than strategies (inputs) as in Flynn et al.'s (1990) instrument. The critical successful factors in study include top management commitment, internal quality information usage, design quality management, employee training, supplier quality management and supplier performance, employee suggestions, employee empowerment, customer focus, Statistical Process Control (SPC) usage and benchmarking.

Black and Porter (1996) conducted a factor analysis through a questionnaire based on a series of items from the Baldrige model and established literature. A 39- items questionnaire was developed and sent to over 200 managers drawn from a target sample of members of the European Foundation for Quality Management. Ten factors were extracted as critical to TQM, which are consistent with the studies of Saraph et al. (1989), Flynn et al. (1994) and Ahire et al. (1996).

Zeitz, Johannesson and Ritchie (1997) developed a survey instrument designed to measure the practice of TQM and supporting organisational culture. In this study, 13 a priori dimensions of TQM and ten a priori dimensions of organisational culture were operationalised in a 113 item instrument. A factor analysis result, seven TQM dimensions were identified to be successful TQM factors of. These were management support, suggestions, use of data, supplier relationships, customer focus, supervision, and continuous improvement.

Youssef and Zairi (1995) used the 22 critical factors developed by Ramirez and Loney

(1993) to investigate the firms in Middle East countries to check whether the list of critical factors is applicable in different countries. This study reported that the critical quality factor list also shared most of the values covered by key principles espoused by the Malcolm Baldrige Award in America and European Quality Award criteria in Europe. The study showed that the senior management role, commitment and support, and education were considered critical factors in Middle East countries. However, the vendor partnership was considered quite low. Thiagarajan and Zairi (1998) used the same factors to investigate the critical factors of TQM in Malaysian companies and Singapore and found that the senior management role and commitment were considered to be the most critical alongside customer satisfaction. Culture change was emphasised in these countries.

Motwani (2001) integrated the composite of TQM through a judgemental process of grouping similar requirements, and he claimed that the critical successful factors were top management commitment, quality measurement and benchmarking, process management, product design, employee training and empowerment, supplier quality management, customer involvement and satisfaction.

Even though the critical factors for successful TQM practice are various, all factors are included in the TQM principles. Thus it is important that each organisation customises the chosen practice method to fit its own unique needs and tries to find the successful factors. The critical successful factors in manufacturing sectors are that 'employee focus' is ranked first, 'supplier management' and 'leadership committee' are ranked second, 'performance measurement' and 'process improvement' are ranked third simultaneously. The previous researchers and their relevant critical successful factors in manufacturing sectors are shown on Table 3.4.

Table 3.4

Critical Successful Factors of TQM in Manufacturing Sectors

Researchers	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ahire et al. (1996)	*	*			*	*	*	*	*		*	*		
Black & Porter (1996)		*	*	*	*			*	*			*		
Flynn et al. (1994)			*		*	*	*		*					
McAdam (1999)					*			*	*					
Motwani (1994)					*	*	*	*		*		*		
Motwani (2001)	*		*		*		*	*	*			*		
Powell (1995)	*		*		*		*	*	*			*		
Saraph et al. (1989)					*	*	*			*	*	*		
Zeitz et al. (1997)		*	*		*	*	*					*		
Total frequencies	3	3	5	1	9	5	7	6	6	2	2	7	0	0
Rank					1		2	3	3			2		

Remark:

- | | | |
|---------------------------|----------------------------|-----------------------|
| 1. Benchmarking | 2. Communication | 3. Customer focus |
| 4. Culture change | 5. Employee focus | 6. Information usage |
| 7. Leadership committee | 8. Performance measurement | 9. Process management |
| 10. Quality strategy | 11. SPC tools | 12. Supplier |
| 13. Physician involvement | 14. Structure | |

Health care organisations.

The health care business will become more efficient, if physicians come together building business management teams and working together with the administration (Fiegenbaum, 1992; Nance, 1995; Solovy, 1993). A clearly defined structure (Godfrey et al., 1992; Lawrence & Early, 1992; Solovy, 1993), top-down TQM leadership (Eubank, 1992; Godfrey et al., 1992; Reeves & Bednar, 1993; Solovy, 1993) documented and shared understanding of operating processes (Geber, 1992; Gopalakrishnan & McIntyre, 1992; Jackson, 1992; Lawrence & Early, 1992; Solovy, 1993), training provided (Gopalakrishnan & McIntyre, 1992; Godfrey et al., 1992; Jackson, 1992; Reeves & Bednar, 1993), customer-patient focus (Fried, 1992; Lawrence et al., 1992) and continuous improvement based measures will make health care organisations more effective and efficient to quality efforts (Eubanks, 1992; Godfrey et al., 1992; Solovy, 1993). Moreover, Gopalakrishnan and McIntyre (1992) suggest that employees need to be recognised and rewarded, the reward system in health care organisations must be carefully planned (Gopalakrishnan & McIntyre, 1992; Reeves & Bednar, 1993) and changed to better align them with TQM effort (Lawrence & Early, 1992).

The 22 critical factors developed by Ramirez and Loney (1993) was used by Youssef and Zairi (1995) to investigate National Health System (NHS) in the UK, to check whether the list of critical factors is applicable to the UK situation, and in particular to examine if TQM is a genetic and transferable philosophy. The study also examined whether the same critical factors do apply to other sectors such as health care or other countries with different cultures. The results of Youssef and Zairi's (1995) study noted that there are radical changes taking place in health care when TQM is being implemented in the UK, and TQM is widely considered as an opportunity for bringing about the necessary changes and restructuring for modern management in U.K. They also indicated that quality circles/improvement

programmes, vendor partnership, projects improvement processes, and publicised successes were critical successful factors. Education, however, is not considered to be very critical.

Haigh and Morris (1993) advocate that there are 12 key elements which any public sector organisation should utilize if the intention is to implement TQM successfully. They are quality awareness, management leadership, organizing for quality improvement, creating a participative environment, training for quality improvement, involvement of every function at all levels, customer and supplier (both internal and external involvement), problem prevention and solving, statistical process control, measurement of quality performance and recognition for achievement, continuous improvement.

Ovretveit (2000) discussed the differences between health care and many other industries and considered the requirements for effectively implementing TQM in health care organisations, particularly in hospitals. He was concerned that doctor involvement, quality leadership, computer support, better training, structured team-working, communication, and measurement, are critical for TQM practice.

Based on the literature review proposed, Hug and Martin (2000) pointed out that strong top management and physician leadership and commitment, customer-patient satisfaction focus, employee involvement and empowerment, a focus on continuous improvement, supplier partnership, and the recognition of quality as a strategic management issues were essential to TQM practice effectively.

According to Jackson's (2001) argument, the characteristics associated with the successful practice of TQM in health care are similar to the characteristics of excellence in manufacturing sectors. In particular, strong leadership, involvement, empowerment and a customer focus are significant. Further characteristics associated with success are teamwork, trust (a no blame culture that focuses on system improvements and not people), availability of timely, accurate and useful information and an organisational commitment to improve

continuously. Jackson (2001) emphasises that in order to demonstrate the progress towards total quality management a culture that embraces performance measurement and management is also required which encourages openness, transparency of decision-making and good communications. The critical successful factors of TQM in health care organisations, three factors 'employees focus', 'leadership committee' and 'process improvement' are ranked first simultaneously, physician involvement is ranked second, customer focus is ranked third.

To compare the critical successful factors of TQM practice with manufacturing sectors, 'employee focus' 'leadership committee' and 'process improvement' are critical factors for the successful practice of TQM in both of manufacturing sectors and health care organisations. The factor of 'process improvement' is ranked as first in health care sectors, while it is ranked as the third in manufacturing sectors. Supplier management is also an important factor in manufacturing sectors, however, in health care sectors physician involvement is regarded as a critical successful factor. It can be seen that the operating system of health care is different from that of manufacturing industries, health care organisations seem to emphasise professional involvement and process improvement more than manufacturing sectors. The summary of critical successful factors in health care sectors are presented in Table 3.5.

Table 3.5

Critical Successful Factors of TQM in Health Care Sectors

Researchers	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Berwick et al. (1990)													*	
Eubank (1992)	*						*							
Fiegenbaum (1992)													*	
Fried (1992)			*											
Geber (1992)									*					
Godfrey et al. (1992)	*				*		*		*				*	*
Gopalakrishnan & McIntyre(1992)					*				*					
Haigh & Morris (1993)	*	*	*		*		*	*			*			
Hug & Martin (2000)			*		*		*					*	*	
Jackson (1992)					*				*					
Jackson (2001)		*	*	*	*	*	*	*	*					
Lawrence & Early (1992)			*						*					*
Nance (1995)													*	
Ovretveit (2000)		*			*	*	*	*					*	
Reeves & Bednar (1993)					*		*							
Solovy (1993)	*			*			*		*				*	*
Youssef & Zairi (1995)									*	*		*		
Rank			3		1		1		1				2	

Remark: 1. Benchmarking

2.Communication

3. Customer focus

4. Culture change

5.Employee focus

6. Information usage

7. Leadership committee

8.Performance measurement

9.Process Management

10.Quality strategy

11. SPC tools

12.Supplier

13. Physician involvement

14. Structure

Hospital Performance

The health care system has made an effort to collect information on what the best practice is and how it can be applied to promote and provide better health outcomes. These efforts enable the capability of measuring performance in meaningful and steady ways; they encourage hospitals to achieve performance excellence. Dixon et al. (1990) suggested that inappropriate performance measurement could block attempts to implement TQM, since measurement provides the link between strategies and actions. Conversely, Oakland (1993) suggested that appropriate performance measurement plays the following roles in ensuring customer requirements have been met; providing standards for establishing comparisons; offering visibility and providing a scoreboard for people to monitor their own performance levels; highlighting quality problems and determining which areas require priority attention; giving an indication of the costs of poor quality; justifying the use of resources; providing feedback for driving the improvement effort.

Definition of Performance

Quality performance measurement began to be emphasised in 1980, and became commonplace in the 1990s (Kaplan & Norton, 1996). Performance was seen as the record of outcomes produced on a specified job function, activity or behaviour during a specified time period (Bernardin & Beatty, 1984). Within this definition, performance on a job as a whole would be equal to the sum (or average) of performance on the critical job function or behaviour. The performance definition based outcome is something that is separate and distinct from the person who produced it or that person's characteristics (Smither, 1998). Additionally, Arrington, Gautam, and McCabe (1995) defined performance as performance that is concerned with the efficiency of effectiveness of customers satisfaction with, and value added by the sum total of what health care organisations achieve through their

processes, services and products.

Since 1990, JCAHO has focused on performance assessment and investigative methodologies directed towards improved patient care outcomes. The JCAHO manual (1994) defines performance in health care as what is done (doing the right thing) and how well it is done (doing the right thing well). Doing the right things stresses that health care is efficient and appropriate; doing the right thing well consists of the availability, timeliness, effectiveness, continuity, safety, efficiency and respect and caring for the patients.

While the definition of performance as health care criteria of Malcolm Baldrige National Quality Award (MBNQA) “refers to output results obtained from processes and services that permit investigation and comparison relative to goals, standards, past results, and other organisations. Performance might be expressed in non-financial and financial terms” (MBNQA, 2001, p. 32).

Influential Factors of Hospital Performance

The factors that influence the hospital performance vary from hospital to hospital, due to the environment, organisations, structure, management style and human being of hospitals are all difference. Reviewing the relevant literature found that the ownership of the hospital, the size of the hospital, its accreditation level, and quality initiatives are the four major factors influencing hospital performance (Carman, et al., 1996; Dong, 1997). Powell (1995) found that organisational elements, such as an open culture, employee empowerment and executive commitment were significant determinants of TQM performance.

Ownership of hospitals.

An empirical study of the relationship between ownership and performance found that the efficiency of the profitable hospitals is rated the highest, the public hospitals are rated the lowest (Wilson & Jadow, 1982). In addition to this, productivity research of various hospitals in Taiwan claimed that the productivity of Taiwan, metropolitan hospitals is rated the best, with provincial hospitals second, while the municipal hospitals' efficiency was rated the lowest (We, 1992). Furthermore, a second study of hospital performance also showed that the lowest effectiveness rate was found in the publicly owned hospitals of Taiwan (Hung, 1998).

Size of hospitals.

Cohen's (1967) study used the total cost of hospitals as input, the number of inpatients as outcome, and found that the efficiency of the 150-350 bed hospitals was the best. Efficiency was seen to be due to big hospitals providing multiple services and more mixed cases, so the efficiency of the bigger sized hospitals was less when there were fewer than 150-350 beds. The efficiency of the smaller sized hospitals (fewer than 150 to 350 beds) was also less.

Quality initiatives.

Barsness et al., (1993/1994); Carman et al., (1996); and Weiner et al. (1997) pointed out that the longer the TQM practice, the more the efficiency in the hospitals' performance improved. They noted that as there will be a significant impact after 4 years practice, after 2-4 years the impact will be slight. They also claimed that after the first 2 years of practice, there will be no significant impact on the hospital performance.

Accreditation levels.

In an empirical study of Taiwan's hospitals conducted by Lai and Tsay (2003), approximately 1800 questionnaires were mailed to 174 hospitals in Taiwan. A total of 582 responses were received, yielding a response rate of 32.3 percent. The study used MANOVA and Post Hoc comparison of hospital performance and found that when the performance in terms of accreditation levels was compared, the medical centres were ranked the highest while local hospitals were ranked the lowest.

In summary, ownership, size of hospitals, accreditation level and quality initiatives are all able to influence the performance of hospitals. This study is confined to the impact of TQM on a hospital's performance, and will assume the three factors of ownership, bed number and accreditation level to be the control variables, and the total quality practice will act as the independent variable. The following section will reveal the relationship between TQM practice and hospital performance.

Performance Measurement

Zairi (1994) stresses the importance of performance measurement, and argues that "Performance measurements are like yardsticks that tell us how we have done and motivate us to perform better than before. Quality improvement without measurement is like hunting ducks at midnight without a moon" (p. 4). As Dixon et al. (1990) have argued, performance measurement should be geared towards embracing change that will enable organisations to reach competitive supremacy. Performance measurement in the context of TQM is concerned with recording human activity and providing a stimulus for action with the view of doing better all the time. Consequently, hospital performance measurement has to be concerned with effectiveness and efficiency. Effectiveness can be considered to refer to the extent to which customer requirements are met, and efficiency is the measure of how

economically the organisation's resources are utilised when providing a given level of customer satisfaction (Neely, 1998). Kueng (2000) pointed out that there are several propositions that have been made and various approaches and techniques that have been implemented to measure hospital performance in the last few years, for example, self-assessment, return on investment (ROI), process performance measurement system (PPMS), workflow-based monitoring and statistical process control (SPC), as shown in Table 3.6.

Table 3.6

Performance Measurement Approaches

Focus on aspects	Focus on corporations & business units	Focus on Business processes
Wide-angle lens (Quantitative & qualitative aspects)	Self-assessments (e.g. MBNQA, EFQM)	Process Performance Measurement System (PPMS)
Zoom (Mainly quantitative aspects)	Traditional controlling (e.g. ROI)	Work-flow-based monitoring Statistical Process Control (SPC)

Source: Kueng (2000, p. 69)

Self-assessment.

The roots of so-called self-assessment can be seen in the quality movement which started in Japan. In the year 1951, Japan awarded the first quality-driven enterprise with the so-called Deming Application Prize. Encouraged by the Japanese success, the USA launched the Malcolm Baldrige National Quality Award (MBNQA, 1999) in 1988. Then, the European Foundation for Quality Management (EFQM, 1999) followed in 1992 with the European Quality Award (EQA). Finally, the Australian Quality Council developed the Australian Quality Award in 1993.

According to Hakes (1996), self-assessment offers various benefits: (a) it produces an objective identification of current strengths and areas for improvement; (b) it provides a useful analysis of an organisation's capability, which is of real interest to potential customers; (c) it helps to create a vision in order to counter an organisation's tendency to skip from one initiative to the next. Overall, self-assessment is predominantly used for strategic management and action planning, or as a basis for improvement projects.

Work-flow-based monitoring.

During the last few years, work-flow systems have been given considerable attention, both in research and in practice. Work-flow systems (this category encompasses both work-flow management systems and work-flow applications) support automatic or semi-automatic execution of process instances, coordination between process activities and the communication between process actors. As a by-product of this support, masses of data are gathered. They can be investigated automatically and may provide useful information regarding activity-related costs, the queuing time of process instances and the workload of process participants. While traditional control covers the firm in its entirety, work-flow based monitoring is concentrated on business processes. A further difference lies in the time period reported. While traditional control offers a post-hoc view, work-flow-based monitoring has the character of real-time reporting (McClellan, 1996). The advantages of work-flow-based control lie in the prompt reporting procedure as well as in its focus on processes. However, it is restricted in that qualitative performance data cannot be taken into consideration. A technical view is given by the Work-Flow Management Coalition (WFMC), who defines the term 'work-flow monitoring' as "the ability to track and report on work-flow events during work-flow execution. Work-flow monitoring may be used, for example, by process owners to monitor the performance of a process instance during its execution" (WFMC, 1999, p. 56).

Statistical Process Control (SPC).

According to Juan and Gryna (1993), Statistical Process Control (SPC) can be defined as “the application of statistical methods to the measurement and analysis of variation in any process” (p. 377). The main objective of SPC lies in the achievement of stable processes through a reduction of process variation. Stability in a process makes it possible to predict the behaviour and outcome of a process. “Making reliable predictions regarding product quality (i.e. predicting whether the product specifications will be met) has become an important tool of competition ” (Juran & Gryna, 1993, p. 380).

In addition to the approaches mentioned, various management instruments and tools are being applied nowadays. These include Activity-based Costing Systems (Cooper & Kaplan, 1991; Cooper & Kaplan, 1998; Glad & Becker, 1996), which assign more accurately than traditional instruments the costs of an organisation's activities to its products and processes. The Capability Maturity Model which provides organisations with guidance for rating software process improvement programs (Paulk, 1995), and ISO 9000 certification which somewhat guarantees that enterprises execute their business processes in a specified and controlled way (Kueng, 2000, p. 69).

Balanced Score Card (BSC).

Kaplan and Norton (1996) advocated the Balanced Score Card (BSC) as a strategic management instrument and as an appropriate instrument to measure organisational performance. It would clarify and translate vision and strategy; communicate and link strategic objectives and measures; would be able to plan, set targets and align strategic initiatives; and to enhance strategic feedback and learning (p.10). The BSC supplements traditional financial measures with three additional perspectives: the customer, the internal business process, and the learning and growth perspective. It is supposed to be a tool for

describing an organisation's overall performance across a number of measures on a regular basis. An important characteristic of BSC is that the tool is focused on corporations or organisational units such as strategic business units, not on business processes. It looks at business processes only as far as they have a greater impact on customer satisfaction and achieve an organisation's financial objectives (Kaplan & Norton, 1996, p. 27).

Dobbins, Cardy and Carson (1991) argued that "performance management activities would be much more fruitful if directed at system characteristics" (p. 21). Taking into account the view that a modern performance measurement system should be comprehensive and hospital-wide; hospitals need a system which fulfils two requirements. First, the measurement system should be focused on the whole hospital; second, the measurement system should investigate performance holistically by measuring quantitative aspects as well as qualitative aspects. It can be seen that none of the previously mentioned approaches fulfils the two criteria given. From this we would conclude that a new measurement approach is needed.

Hospital Performance Measurement

A review of the relevant literature has revealed that at least four methods are used to measure hospital performance. They are ratio analysis, regression analysis, Data Envelopment Analysis (DEA), and self-performance assessment (Barsness et al., 1993; Carman et al. 1996; Kuo, 1998; Shortell et al. 1995). Each method has advantages and limitations; the choice of a performance measuring method will depend on the purpose of the research.

Ratio analysis.

Ratio analysis is popular and easy to use, it enables a group of comparable hospitals to identify relationships that are abnormally high or low, such as cost per patient day, cost per patient, or personnel full-time equivalents (FTEs) per patient, and some financial ratios (Sherman, 1984). Thus, ratio analysis represents a calculation of, and attempts to understand, the relationship between two variables. Since ratios are simple to calculate for data that is routinely and easily available, ratio analysis has become widely used for measuring hospital performance in the field of practical hospital management.

Regression method.

Regression method is used to examine the factors that impact on the hospitals' performance. The multiple regression coefficients R^2 acts as the constant of judgement, and the regression coefficient (β) of every factor represents the relationship between the factor and hospitals' performance. While the data envelopment analysis (DEA) differs from R^2 , it uses linear relationships to compare the multiple inputs and multiple outputs, and tries to distinguish between high performance and low performance organisations.

Self-assessment.

Performance measurement by self-assessment was firstly used in Japan in 1981(Hakes, 1996). The United States followed in Japan's footsteps, using performance measurement in hospital management. The benefits of self-assessment in hospitals are in providing the opportunity to take a broader view of how TQM is impacting on health care delivery, and leading hospitals to realise their strength areas for competitive advantage and weakness areas for improvement. Following this, it shows hospitals' current and potential customers the

hospital's capability. Finally, self-assessment assists hospitals to create a long-term vision to move toward the next initiatives. In sum, it is a vehicle for embarking on the journey of continuous improvement and the determination to become more competitive. Therefore, self-assessment provides a powerful tool for hospitals' performance improvement (Hakes, 1996).

However, in order to carry out self-assessment, it is necessary to have an appropriate framework. Research points to the use of MBNQA and European Foundation for Quality Management model (EFQM, 1999) as frameworks for TQM practice, and also as an assessment tool for companies to assess whether they are deploying their quality efforts in the right way and thus improve their performance. Since the award criteria of the MBNQA and the EFQM are well documented and suitable for various sectors, they often act as the model for self-assessment (Kueng, 2000).

Hospital performance indicators.

Things for which we can devise indicators can be managed; things for which we have no indicators can be out of control before we realise it (Zairi, 1994). Hong (1994) classified hospital performance indicators into five categories; they were input, output, results, efficiency and effectiveness. Drawing on Hong's categories, Chou (1995) and Chen (1999), Flood (1994) claimed that there are three kinds of hospital performance indicators, structure, process and result. The structure indicators include the types and numbers of special equipment, the ratio of professionals, the level of accreditation, the size of the hospital, and the numbers of employees. The process indicators focus on the quality of service such as infection rate, readmissions rate; and efficiency, for example average cost per patient, the ratio of numbers of inpatients and employees. The outcome indicators emphasise the outcome of patient health, for example, mortality and satisfaction of patients and operating performance, profitability, market share, employee satisfaction, employee turn over. Recently

another three precious types of performance indicators were used, (Chou, 1995), these were amount of medical care (numbers of outpatients, average length of stay), cost of service (inpatients cost per patient per year, administration cost), and quality (mortality, patient satisfaction, readmissions rate). However, in empirical studies, there are three other types of performance indicators that are used widely. Firstly, financial performance indicators including return of asset, profitability; secondly, operating performance indicators consisting of occupancy rate, average inpatients days, turn over rate of beds, cost per unit, and productivity; thirdly, quality performance, such as mortality, infection rate, and patient satisfaction (Chan, 1996).

This result measurement of hospital organisational performance in MBNQA includes patients and other customers-focused results, financial and market results, staff and work system results as well as organisational effectiveness (MBNQA, 2001). They are explained as follows.

Patient and other customer-focused results will examine health care service results, namely health care outcomes, health care service delivery results, patient/customers results in terms of patient and other customers' satisfaction and dissatisfaction, as well as aspects of building relationship with patients/other customers. Financial and market results will investigate health care marketplace performance, market share, and business growth. The staff well being, employees' satisfaction and development and work system performance will be revealed in the item of staff and work system results. The measurement of organisational effectiveness results will include operational results, such as productivity, cycle time, efficiency, as well as public responsibility and citizen results, namely hospital's accreditation, assessment and community contribution.

Performance Excellence Models: National Quality Awards

There are new trends of research in the quality management field and by far the most widely used is the criteria of quality award for self-assessment. The Australian Business Excellence Award, the Deming Prize in Japan, the Malcolm Baldrige National Quality Award (MBNQA) performance excellence in the United States, and the EFQM Excellence Model in Europe are examples to be used for organisational self-assessment. These four quality criteria often guide the elements of TQM practices and link with categories and organisational performance.

Australian Business Excellence Awards (ABA).

The Australian Quality Award (AQA) was introduced in 1988 to recognise the efforts of outstanding organisations, to encourage other companies to follow suit and to raise the level of education and awareness of the importance of quality in raising competitive standards and its impact on the community. The AQA criteria include leadership, policy and planning, information and analysis, people, customer focus, and quality of process, product and service. The title of AQA in 1993 was changed to Australian Business Excellence Awards. The Award provides a model certified by the Australian Quality Council, an organisation recognised by the Commonwealth Government of Australia as the top organisation for quality management. The council was formed in 1993 with the merger of Enterprise Australia, the Total Quality Management Institute, the Australian Quality Awards Foundation and the Quality Society of Australia. Six additional organisations later joined the council, encouraging quality performance in Australian industries (ABA, 2003).

The Deming Prize.

In 1951 the Deming Prize was instituted, and the Deming Prize Committee was formed. It was developed over four decades and went through several evolutions, until the year 2000. Ten criteria are now used for assessing Deming Prize applications. The criteria are company policy and planning; organisation and its management; quality circle education and dissemination; collection, transmission and utilisation of information on quality; analysis; standardisation; control; quality assurance; effects; and future plans (Baila, 1996).

European Foundation for Quality Management (EFQM).

The next national quality award to be addressed was European Quality Award (EQA). The European Foundation introduced this for Quality Management (EFQM) in 1991. The EFQM itself was created in 1988 by leading business organisations to alert European business organisations of the need to incorporate quality management in all operations and also to raise the level of knowledge and awareness of the benefits of TQM. The title of EQA in 1999 was changed to EFQM Excellence Model; this model drives a number of changes and enhancements, reflecting new fundamental principles. The changes also address the importance of partnerships and the need for continuous learning and innovation with emphasis on the management and sharing of knowledge (Russell, 2000). EFQM consists of nine criteria (EFQM, 1999). In this model 'people results' is included as one of the four results criteria. The assumption behind the model is that "excellent results with respect to performance, customers, people and society are achieved through leadership driving policy and strategy, people, partnerships and resources, and processes" (EFQM), as shown in Table 3.7.

Table 3.7

The Criteria of EFQM Excellence Model

	Criteria of EFQM	Assigned scores
Enablers 500 points	Leadership	100
	People	90
	Policy and strategy	80
	Partnership and resources	90
	Processes	140
Results 500points	People results	90
	Customer results	200
	Society results	60
	Key performance results	150
Total scores		1000

(Source: EFQM Excellence Model, 1999)

Malcolm Baldrige National Quality Award (MBNQA).

The final award to be presented was the Malcolm Baldrige National Quality Award (MBNQA). The health care criteria for performance excellence of MBNQA was developed in 1999, after the legislation was signed into law by President Clinton on October 30, 1998 (MBNQA, 2001). The National Institute of Standards and Technology (NIST) established it in 1987. The MBNQA is an annual award to recognise U.S. organisations for performance excellence. The award's purpose is to promote awareness of performance excellence as an increasingly important element in competitiveness, and provide information sharing of successful performance strategies and the benefits derived from using these strategies (MBNQA, 2001). The MBNQA eligibility categories include manufacturing businesses,

service businesses, small businesses, educational organisations and health care organisations (MBNQA, 2001).

The Malcolm Baldrige Health Care criteria provide a system perspective for hospitals to achieve performance excellence. The system consists of six criteria as seen in the centre of Figure 3.2. The figure defines the organisations, its operations and results. The leadership triad (category of leadership, strategic planning and focus on patients, other customers and markets) links to the results triad (category of staff focus, process management and organisational performance results). The category of information and analysis (category 4) serves as a foundation for the performance management system, and is critical to the effective management of organisational performance. The health care criteria of MBNQA have three important roles. The first one is to enhance hospitals' performance application, adoption, and outcomes; the second is to facilitate announcement and sharing of best application message among hospitals, health care providers and all types of U.S. organisations; the third is to act as a means for outcome management. Overall it is also a guideline to look for opportunities for improvement (MBNQA, 2001).

The core values and concepts of criteria are "visionary leadership; patient-focused excellence; organisational and personal learning; valuing staff and partners; agility; focus on future; managing for innovation; managing by fact; public responsibility and community health; focus on results and creating value; system perspective". They are the foundation for integrating key organisational requirements within a results-oriented framework that creates a basis for action and feedback (MBNQA, 2001, pp. 1-4)." The framework of MBNQA is shown in Figure 3.2.

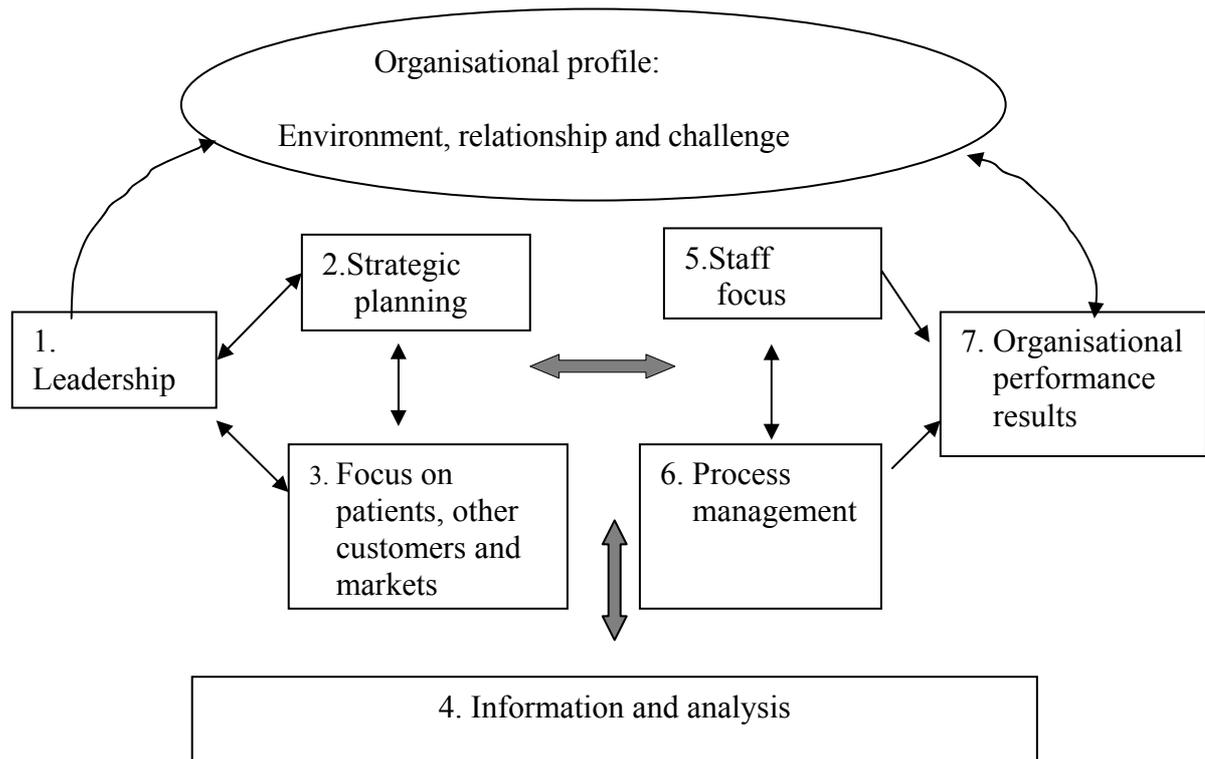


Figure 3. 2: Baldrige Health Care Criteria for Performance Excellence Framework (Source: Health Care Criteria for Performance Excellence of MBNQA, 2001, p. 5)

The Malcolm Baldrige National Quality Award (MBNQA) offers health care criteria relevant to Total Quality Management and designed specially for health care organisations. It has already promoted a new concept of total quality, which goes beyond a simple application of techniques. Furthermore, Wu and Wiebe (1997) claimed that the MBNQA was offered as a formal TQM approach for improving quality and productivity in any organisation. Indeed, these criteria have been used by a growing number of organisations as a self-assessment tool for investigating TQM performance, also MBNQA is the most frequently selected model for developing national awards. McAdam and Saulters (2000) conducted a survey of public sectors performance measurement. They found that the methods used to improve performance in the public sectors were varied. However, the MBNQA performance excellence model was the most popular, and was selected widely by the various national

quality awards (Chuan & Soon, 2000). The MBNQA Model in the 2001 health care criteria for performance excellence consists of seven categories. Each category is assigned a certain number of points defined in the award criteria. This is shown in Table 3.8.

Table 3.8

Categories and Point Values of MBNQA 2001

Categories/Items		Point Value
1.	Leadership	120
2.	Strategic planning	85
3.	Focus on patients, other customers, and suppliers	85
4.	Information and analysis	90
5.	Staff focus	85
6.	Process management	85
7.	Organisational performance results	450
7.1	Patient and other customer-focus Results	125
7.2	Financial and market results	125
7.3	Staff and work results	80
7.4	Organisational Effectiveness Results	120
Total		1000

(Source: Health Care Criteria for Performance Excellence, MBNQA, 2001)

An appropriate hospital performance measurement.

Kaplan and Norton (1996) provided three criteria to assist selection of the appropriate measures. Firstly, that there is a positive relationship existing between performance measurement and the related goal. While the goal achievement is raised, the performance increased accordingly. Secondly, that the measurement not only places emphasis on the outcome, but that it also stresses how the performance is driven, and finally that the

categories of measurement should not be too complex to mystify the respondents.

In order to comprehensively measure hospital performance, self-performance assessment approaches will be employed in this study to investigate the sample hospital's degree of TQM practice and hospital organisational performance. Kueng (2000) pointed out that MBNQA and EFQM could act as a framework to measure TQM practice deployment and examine the relationship between TQM elements and hospitals' performance. In this study, the quantitative approach will use the criteria of MBNQA performance excellence in the health care 2001 version to self-assess the sample hospital's TQM practice and hospital performance. The reasons for using the Malcolm Baldrige Award as a means of investigating the effectiveness of TQM are now discussed.

The criteria of MBNQA are consistent with TQM principles and guidelines. Garvin (1991) asserted that the MBNQA not only codify the principles of quality management, but also provide companies with a comprehensive framework for assessing their progress towards the new paradigm of management. Garvin (1991) also pointed out that the best way to understand Baldrige's criteria is an audit framework, which tells companies where, and in what ways, they must demonstrate proficiency in managing quality. The framework provides an objective systematic measurement of organisations' strengths and areas for improvement, thereby stimulating continuous improvement efforts. Juran (1995) contends that TQM consists of those actions needed to get to world-class quality. The most complete list of those actions is contained in the criteria for the Baldrige Award. Hewitt (1997) pointed out that award-based models are useful when a company has already begun its quality journey and wants to enhance its programs as well as for those who want to add to their list of 'honour rolls' in quality achievements. The three criteria of Kaplan and Norton (1996) designed to select an appropriate measurement instrument matched the criteria of MBNQA. Firstly the hospital performance will be affected by the practice of the TQM six elements. Second,

MBNQA not only measures hospital results, but also examines the performance driver, such as leadership and strategic planning. Finally, MBNQA criteria contain seven suitable categories that will not confuse the respondents.

The Impact of TQM on Hospital Performance

As mentioned before, quality initiative impacts on hospital performance, and so there are many advantages for organisations that have implemented TQM. It is necessary to explore how TQM programs impact on hospital performance.

The Benefits of TQM Practice

Lawrence and Early underscore the role of TQM as they state that “ quality initiatives might be the healthcare industry’s best chance to deal with costs” (1992, p.46). Geber (1992) and Anderson (1992) agree with their arguments. Burke (1990) writes” Hospitals are learning that quality improvement techniques borrowed from other business not only help improve quality of care, but also help lower costs and improve marketability” (1990, p. 68). Luzan (1993) investigated the small manufacturing businesses of Valencia in Spain and found that the development of a quality culture, improved training and improved labour productivity were the three main positive effects achieved by introducing TQM. A survey of over 100 TQM businesses by Mann and Kehoe (1994) noted that the main benefits arising from TQM were to improve supplier relationships; to improve processes; to improve people, to improve policy deployment and customer relationships.

Caldwell (1996) described how Ericsson Inc. of Lynchburg, Virginia, implemented a successful TQM program. The TQM program saved the company approximately US \$60 million over 10 years. Employees were divided into 63 teams, with each team electing a

coworker as a leader. The team selects ideas and receives US \$6000 to implement them.

Nelson (1996) provided some insight into how AT&T Wireless Services used TQM to transform its call centre. AT&T Wireless Services used TQM techniques while automation solved the problem of monitoring and investigating employee performance. The results showed an increase in employee performance, training and a better understanding of how pay is linked to performance as well as employee turnover rate dropped to 11.0 percent in 1995.

There is also strong evidence that TQM in health care does work, and various benefits are derived from its introduction. Morgan and Everett (1990) reported the following benefits, when TQM was being implemented in health care organisations: Managers' competence, confidence and interest in service improved; staff interest and commitment improved; staff collaboration improved; efficiency savings were made; improved interdisciplinary working resulted; establishment of practice standards was made possible and clearer information become common. Improved consistency of standards, a reduction in complaints and improvements in service quality were also reported.

In Cruz's (1996) description of the success of TQM it was stated that TQM enabled employees to break down compartmentalized departments into cross-functional teams to solve problems. Personal satisfaction comes from quality improvements, product consistency and total quality improves. Struebing (1996) advocated that TQM has positively changed the corporate culture, the level of employee involvement and satisfaction, and decision-making ability throughout the organisation. The study of Boerstler et al. (1996) showed that TQM can lead to higher quality patient care, improved patient satisfaction, and can also enhance employee morale and lower the cost of service delivery. The survey of Ennis and Harrington (1999) found that the main benefits of TQM for hospitals are the improvement of patient/customer satisfaction and an increase in quality awareness. Employee morale and

communications were improved by 53 percent while teamwork was only perceived to have improved in 37 percent of organisations. This is contrary to the findings of a study (Monks et al., 1996) showing that 70 percent of organisations indicated that more emphasis was now placed on team working as a result of the quality programme. Over 50 percent of the organisations also claimed that communications had been enhanced from the programme. Thirty percent of respondents indicated that there had been increased efficiency from the introduction of quality. Employee empowerment had only been enhanced in 27 percent of hospitals. A survey conducted by Chow-Chua and Goh (2000) reported that improving the quality of work life, reducing waiting time, introducing a more efficient work-flow, cost reduction, and improving organisational structure were the benefits of TQM in Singapore hospitals. Two of these benefits, improvement of work quality and increasing efficiency coincide with the findings of Ennis and Harrington (1999).

Douglas and Judge (2001) and Powell (1995) indicated that TQM-adopting firms obtain a competitive advantage over firms that do not adopt TQM. Consequently, theory and research suggest that the greater the degree to which a comprehensive set of TQM practices is adopted by a hospital, the greater the competitive advantages achieved, and the higher the hospital's performance. According to industry experts, proper practice of TQM in hospitals is a critical determinant in enhancing organisational performance (Shortell et al., 1995; Westphal, Gulati, & Shortell, 1997). Carman et al. (1996) pointed out that some organisations are much more deliberate and comprehensive in their practice of TQM than are others. This variability in practice efforts emphasises the importance of focusing on the depth of the practice, not just on the mere presence of a TQM program. The advantages of TQM practice are summarised in Table 3.9. From the table, it can be seen that the employees' satisfaction and cost reduction was rated as the highest benefit of TQM practice, with competition advantage second. Process improvement rated as the third benefit.

Table 3. 9

The Benefits of TQM Practice

Benefits of TQM	Authors
Change culture	Struebing (1996)
Change structure	Chow-Chua & Goh (2000); Luzan (1993)
Quality awareness	Ennis & Harrington (1999)
Training improvement	Luzan (1993); Nelson (1996)
Increased productivity/ team work	Ennis & Harrington (1999); Luzan (1993); Morgan & Everett (1990)
Communication	Cruz (1996); Ennis & Harrington (1999)
Employees' satisfaction/ Involvement/ morale	Boerstler et al. (1996); Cruz (1996); Ennis & Harrington (1999); Morgan & Everett (1990); Mann & Kehoe (1994); Nelson (1996); Struebing (1996)
Customers' satisfaction/ reduced waiting time	Boerstler et al. (1996); Mann & Kehoe (1994);
Process (Service)/ quality improvement	Boerstler et al. (1996); Chow-Chua & Goh (2000); Mann & Kehoe (1994); Morgan & Everett (1990)
Performance/ efficiency improvement	Chow-Chua & Goh (2000); Nelson (1996)
Employee turn over rate decreasing	Nelson (1996)
Supplier relationship improvement	Mann & Kehoe (1994)
Lower cost	Anderson (1992); Boerstler et al. (1996); Burke (1990); Chow-Chua & Goh (2000); Geber (1992); Lawrence & Early (1992)
Policy improvement	Mann & Kehoe (1994)
Competitive advantage	Carman et al. (1996); Douglas (2001); Powell (1995); Shortell et al. (1995); Westphal et al. (1997)

Management of Change Using TQM

Health care organisations around the world are being confronted with new and critical challenges occasioned by a changing marketplace characterised by intense competition, decreasing rates, and health care reform. Hanford (1990) states that increased competition, far-reaching technological and social changes, major industry and organisational restructuring, greater interdependencies, and increased accountability to government, the public, and customers will profoundly influence the ability of managers and organisations to survive in the coming years. Furthermore, Shamian (1998) lists six international trends that affect health care organisations. Those trends are a decrease in funds, aging populations, new and expensive medical methods, the necessity to increase efficiency, and political and economic advantages of decentralising decision-making process to regional and local levels.

For hospitals, care delivery is highly critical. Therefore, change management models are used to ensure the delivery of high quality care (Grazier, 1999) as it is hoped that by collaborating on quality improvement, hospitals through the change process can have a better grasp of and control over quality issues in order to improve patient care delivery. The Institute of Medicine (2001) in its report entitled “Crossing the Quality Chasm” provides a set of recommendations and a list of simple rules to reorient and restructure U.S. health care. It offers a vision of a health care system focused on the patient, offering timely, safe, efficient, and effective services to all who need them. In such a time of high demand for quality in the health care environment, the management of change plays a critical role in any hospitals’ survival, especially for public hospitals.

Drucker (1988) observed that health care organisations are among the most difficult organisations to manage, due to the complexity of health care system, for example, health care provider, health care insurance system, requirements of high profession and technique of employees and the uncertainty of patients’ health situation. Burnes (2000) advocated that

“change comes in all shapes, sizes and forms and, for this reason, it is difficult to establish an accurate picture of the degree of difficulty an organisation faces in managing change successfully” (p. 252). Keeping the difficulties in mind, for health care organisations it still is necessary to find an integrated approach and principles by which hospitals can develop change strategies, processes, and culture, in order to cope with the challenge of change in a dynamic, complex environment.

Ishikawa (1990) claimed that quality improvement, or total quality control as it is often called, is a management methodology for achieving improvement and change. Rooney (1990) emphasised that the quality loop demonstrates the dynamic nature of a quality system (such as accreditation of ISO 9000 series) can respond to changes, new ideas and problems in a controlled way. It is widely believed that the systematic application of industrial quality improvement (QI) methods can result in significant improvement in clinical process and medical outcomes (Godfery, Berwick, & Roessner, 1992). Geber (1992) argues that tools and managerial philosophies to reduce waste, inefficiency and mistakes are needed in health care organisations. Such philosophies and tools include, among others, Total Quality Management (TQM). Fried (1992) agrees with Geber in that CQI and TQM are opportunities to contain and reduce healthcare cost. Furthermore, Griffith (1994) pointed out that to survive in the coming era, health care organisations must support the powerful concepts of Continuous Quality Improvement (CQI) with better internal management systems. Griffith argued that the survival of health care organisations depend on continuous productivity improvement while achieving productivity improvement relies on the building CQI. Finally, researchers claimed that hospitals that have successfully pursued CQI are probably on the survival track (Deming, 1986; Griffith, 1994; Imai, 1986; Juran, 1989).

TQM focuses attention on objective, empirical, and quantitative data to measure organisational performance. Implementing TQM involves a major organisational change

(Almaraz, 1994) that requires a transformation in an organisation's culture, structure, processes, strategic priorities, individual attitudes, beliefs, and the behaviour of people (Dale & Cooper, 1994; Reger, Gustafson, Demarie, & Mullane, 1994; Hill & Collins, 1998; Lawler, 1994; Powell, 1995; Spector & Beer, 1994). CQI and TQM are used interchangeably. Griffith's research (1994) identified customers in CQI as a large group of external and internal stakeholders, giving external customers the ultimate authority. TQM also empowers internal customers or employees, enabling them to change the characteristics of the work and the workplace.

The principles included in TQM are consistent with the concepts of management of change. TQM focuses on internal and external customers as one of the purposes of management of change is to meet the requirement of customers. TQM includes new processes for making decisions from mission to clinical guidelines while management of change focuses on work, work place and process improvement to achieve organisational goals. TQM emphasises the measurement of performance and desire. The final objective of management of change is to improve organisational efficiency and performance. TQM improves quality through change in structure, practice, system and above all attitude.

While management of change stresses change from a system perspective, every one is a part of system, no one has an independent effect on the system as a whole. Management of change also focuses on team- work and then improves processes of daily work. In addition to this, management of change emphasises the change in employees' beliefs, values and attitudes, resulting in the change of organisational culture. TQM expands information covering several new dimensions, including enhance analytic capability, and supporting both traditional organisation and cross-disciplinary teams; management of change utilises new technology for patients to access to computers and information services, to reduce the health care cost, and have a positive effect on patients. The study of TQM in organisations provides

a valuable opportunity for research on the complexity of change and the chance for practice of change.

The core value of MBNQA is consistent with organisational development and management of change, because MBNQA focuses on visionary leadership, is patient-focused; focussed on the future; managing for innovation; managing by fact; focused on results and creating value; and has a system perspective. Management of change emphasises visionary leadership, flexible and organic structure; systematic perspective; strategy management; focus on meeting customer demand, and innovation values. . The comparison of TQM principles, MBNQA criteria, and management of change are shown in Table 3.10.

Table 3. 10

The Comparison among the Principles of TQM, Management of change and Criteria of MBNQA

TQM principles	Criteria of MBNQA	Management of change
1. Leadership	1. Leadership	1. Visionary leadership
2. Short/ long term planning	2. Strategic planning	2. Strategy management to meet change
3. Customers oriented and supplier partnership	3. Focuses on patients and other customers	3. Meet customers demand
4. Statistical methods	4. Information and analysis	4. Management by fact
5. Training, encouraging and team work	5. Staff focus	5. Team building/ unitary culture
6. Design quality in process	6. Process management	6. Organisational development, innovation values
7. Continuous improvement	7. Organisational performance	7. Open system perspective to meet environment change

The Relationship between TQM Practice and Hospital Performance

Barsness et al. (1993/1994) conducted a national hospitals' CEO and quality managers' survey to examine the results of quality improvement in hospitals. The research found that there is more quality improvement in the TQM implementing hospitals, when compared with the non-TQM hospitals. The impact of employee empowerment, the relationships between hospitals and physicians are both better in TQM hospitals than in non-TQM hospitals. Furthermore, the productivity and profitability surpass the non-TQM hospitals as well, and the overall cost is lower than non-TQM hospitals.

Published case studies in health-care have shown a positive effect of TQM on employees' outcomes, including employee morale, employee turnover, efficiency, profitability, and in the management of specific clinical conditions (Dempsey, 1995; Dillon, Murphy, & Larson, 1995; Koska, 1990; Rauber, 1994). An empirical study in nursing homes, carried out by Graves and MacDowell (1994), using a sample of 12 nursing homes, proved that TQM adoption had the greatest effect in human resources in areas such as employee empowerment, morale, and satisfaction. In addition to this, Maldonado, Zinn and Brannon (1999) agreed and pointed out that TQM adoption was related to improved human resources outcomes.

Similarly, Shortell et al. (1995b) examine the impact of CQI and found that the TQM adopters experienced greater clinical efficiency in terms of lower charges and length of stay for six clinical conditions, and the more the extent of the improvement, the lower the charges and the length of stay. This finding supported the argument of Barsness et al. (1993b) and Shortell et al. (1995a) who claimed that the bigger the size of the hospital, the higher the cost and the length of stay. As the bigger hospitals have more tertiary services and teaching programs, they have less time for the practice of TQM than the smaller hospitals. This viewpoint was consistent with the survey of Cohen in 1967.

Another study relevant to the relationship between the time of TQM practice and hospital performance, pointed out that the longer the TQM practice, the more the efficiency in hospital performance improved. The study revealed that there will be a significant impact after 4 years of practice, and after 2-4 years, the impact will be slight. However, after the first 2 years of practice there will be no significant impact (Barsness et al., 1994; Carman et al., 1996; Weiner et al., 1996). Powell's (1995) study found that long-term TQM adopters were more satisfied with their TQM programmes than short-term adopters. A survey of the nursing facility industry conducted by Maldonado, Zinn and Hamilton (2001) reports that facilities with more extensive TQM experienced better human resources and financial outcomes.

A study was carried out of hospitals accredited above the level of metropolitan hospitals in Taiwan (Dong, 1997). This study found that the length of implementing and the depth of major activities in TQM were significantly related to the efficiency score. The efficiency score was negatively related to length of stay when ownership and accreditation status was used as the control variables. This finding supports the results of Shortell et al.'s (1995b) study.

In addition to these studies, Carman et al. (1996) conducted an examination of the practice of CQI or TQM programs in ten acute care hospitals. The study placed more emphasis on hospital culture and on outputs, and performance measured in global terms rather than specific clinical conditions. The study used environment resources, practice approach, physician participation and depth of practice as independent variables, and used culture as an intermediate variable. Quality Improvement (QI) output and performance were used as dependent variables. Their findings are summarised as follows:

1. Only gross revenue and Length of Stay (LOS) had a significant impact on culture. These variables are really proxies for the size and the complexity of the hospital.
2. Group culture and hierarchical culture had significant paths to QI outputs or performance. Of these two, the negative effects of a hierarchical culture on QI

outputs and performance were somewhat stronger, while group culture had a positive effect on QI output and performance.

3. Early involvement of physicians in the CQI program had positive effects on practice success.

4. The depth of involvement had a very strong influence on both the measures of QI outputs and on customer satisfaction. This finding supported the viewpoint of Barsness et al. (1994); Carman et al. (1996); and Weiner et al. (1996).

5. Hierarchical culture had the expected strong negative influence on change in patient satisfaction scores. However, it did not have a significant influence on the other two measures of performance.

The only research using MBNQA to examine the relationship between TQM and hospital performance in Taiwan is Chen (1999). He conducted a study to examine the impact of TQM on operating performance. This study utilised the 1998 criterion of MBNQA and investigated the situation of TQM in hospitals which belonged to the Bureau of National Insurance Taipei Branch. These hospitals accepted the clinical pathway and Quality Control Circle (QCC) as part of TQM activities. Firstly, he found that until 1999, only 18 percent of the sample hospitals had implemented TQM over a 4-year period. Chen also pointed out that there was a significant difference in medical costs, but no significant difference in length of stay between TQM and non-TQM hospitals, using the secondary data provided by the Bureau of National Insurance Taipei Branch. This result contrasts with Shortell et al's study (1995). Finally, the study pointed out that the longer the time spent implementing TQM, the greater the differences between both groups of hospitals. This finding agreed with the reports of previous researchers (Barsness et al., 1994; Boerstler et al., 1996; Carman et al., 1996; Weiner et al., 1996). This finding was also consistent with Dong's (1997) study, and together with Chen (1999), it proves that the deeper the application and the longer the TQM activities

are practiced, the greater the difference in performance.

Meyer and Collier (2001) was the first study to empirically test the causal relationships in the Malcolm Baldrige National Quality Award (MBNQA) Health Care Pilot Criteria. The Baldrige model of quality management for the health care industry is tested here using data from 220 US hospitals. Results of confirmatory structural equation modeling show that many of the hypothesized causal relationships in the Baldrige model are statistically significant. This study also clarifies and improves the understanding of within-system performance relationships. Baldrige components of leadership and information and analysis are significantly linked with organisational performance while human resource development and management and process management are significantly linked with customer satisfaction.

Goldstein and Schweikhart (2002) investigated the relationships captured by the Baldrige Health Care framework that improving leadership, systems, and processes leads to improved results. Their findings of significant associations among Baldrige Categories 1 through 6 and each of the 5 results dimensions provide confirmatory evidence that the Baldrige Framework of Quality Management is a useful self-assessment tool for health care organisations striving for performance excellence. A focus on the customer is central to TQM. Thus the significant impact of TQM practice on customer satisfaction is not unexpected. In contrast, the influence of TQM on clinical quality is not significant. Similarly, financial and market results are not well predicted by the Baldrige Criteria. This finding supports Shortell et al. (1995a) who reported no significant relationship between quality improvement practice and perceived financial outcomes. The strongest relationship observed in the study of Goldstein and Schweikhatr (2002) is that between TQM and staff and work system outcomes. Similarly, Shortell et al. note a positive association between CQI practice and performance in the area of human resource and development. However, Goldstein and Schweikhart failed to capture the relationship between the individual TQM elements and hospital performance.

Therefore, they recommend further research to examine the relationships between the Baldrige criteria. They also suggest that a longitudinal study of quality management system and organisation performance results is necessary.

Weech-Maldonado, Neff, and Mor (2003) examined the relationship between quality of care and financial performance in 1,287 nursing homes in five states of the United States. They found that nursing homes that produce better outcomes of care were able to achieve lower patient care costs and in the process reported better financial performance. The finding was different from the studies of Goldstein and Schweikhart (2002) and Shortell et al. (1995a). Weech-Maldonado et al. (2003) also found that the relationship between the level of quality of care and the private-pay market share of the nursing home was positive, but it was not significant. Therefore, we cannot argue that the quality of care attempts to attract a higher private market share as a means of maximising revenue and in turn, profitability (p.57). The previous studies using the MBNQA framework to examine the impact of TQM on hospital performance are shown in Table 3.11.

The literature on TQM and performance, the studies related to TQM and hospital performance has been reviewed. The research streams on TQM and hospital performance and the research gaps including TQM and hospital performance will be discussed in the following section.

Research Streams and Gaps

The research streams on TQM practice and hospital performance and the research gaps including TQM and hospital performance will be discussed in the following section.

Research Streams of TQM Practice

The research that has been done in the area of TQM practice in health care can be grouped into four research streams (Motwani et al., 1996). Stream one deals with definitions, topics relevant to important elements, barriers to practice of TQM, and the comparison of performance difference between hospitals. Stream two covers practitioners building of a TQM system or strategy, the study of benefits and the importance of practice of TQM. Stream three is concerned with developing models, assessing the practice of TQM. Stream four deals with assessment in the field of study, questionnaire survey, and case study.

Counte, Glendon, Oleske and Hill (1995) noted that there has not been any attempt to systematically measure TQM effectiveness and its impact on the performance of healthcare organisations. Recent research pointed out that when striving for improvement in organisational performance and excellence, more data are needed for confirming the validity of CQI and TQM in health care (Arndt & Bigelow 1995; Bigelow & Arndt 1995; Ruiz et al. 1992 & 1999; Ruiz, Simon, Molina, Jimenez, & Grandal, 1999). Maldonado et al. (1999) also claimed that the interrelationship between the content and process of TQM and their joint effects on firm performance has, in a large part, been ignored within empirical research.

Powell's multi-industry study (1995) was not carried out in hospitals but in nursing homes, and is the only empirical study that has examined the effect of TQM adoption on performance.

Research Streams of Hospital Performance

The performance measurement of hospitals will be discussed from two perspectives. The first is concerned with the practitioners, and the second is concerned with the academic research. The performance measurement of hospitals' practitioners may be divided into three stages. These are the shift in the institutional focus in order to investigate care delivery; the shift in patient and community focus in order to investigate quality care, and a shift in commitment to health care towards a comprehensive practice of quality investigation.

The first stage is a shift in the institutional focus to investigate care delivery. Historically health care providers investigated the quality of care within the professional model, in which health care professionals were only accountable to their patients and their colleagues. The 1970s saw a shift to an institutional focus for accountability, with provider facilities asked to investigate their care delivery. Essentially, this was a strengthening of the professional accountability model, with most institutions upgrading peer-review mechanisms to address institutional accountability responsibilities.

Second, with the shift in patient and community focus to investigate quality care. The 1990s saw the beginning of a shift to a patient and community focus, with patients, communities and their representatives seeking to investigate the quality of medical care. Some in the institutions saw this shift to external accountability as a threat to health care professionals' autonomy.

Third, with the shift commitment of health care towards a comprehensive practice of quality investigation, there is an argument for the comprehensive commitment of healthcare

professionals to the development and practice of quality investigation in health care.

The recent academic literature on performance measuring systems and indices, revealed that performance measurement focused on three main aspects: cost and management accounting systems; productivity measurement for efficiency and effectiveness, and the principles of capital investment appraisal.

In 1990-2001, performance measurement moved to new multiple dimensions, including extension from financial to non-financial concern, from manager-oriented to customer-centred, to TQM based performance, and to quality award self-assessment for performance excellence, accreditation by the Joint Commission, as well as a shift in the measurement of organisational structure to process and outcomes.

It can be argued that the measurement of hospital organisational performance should be concerned with multi-dimensional perspectives. It exists not only to investigate hospital outcomes, but also to measure the performance approaches and their drivers, such as leadership, and strategic planning. Financial measures of performance are not the only ways to investigate hospital organisational performance; measures need to be concerned with non-financial indicators, including employee and customers satisfaction, staff well-being and community responsibilities (Johnson & Kaplan, 1991).

Research Gaps

Some studies examining TQM in the health care industry have been anecdotal (Bigelow & Arndt, 1995; Montwani et al., 1996). However, few empirical studies have examined the effect of TQM adoption and practice in hospitals (Barness et al., 1993; Carman et al., 1996; Shortell et al., 1995). There has not been any attempt to systematically measure TQM effectiveness and its impact on the performance of health care organisations (Counte et al., 1995). The relationship between the six TQM elements and organisational performance

has been investigated in manufacturing and service sectors. However, there is only limited empirical study focussing on the organisational performance of hospitals. Thus, to date, little empirical research on the impact of TQM has been reported (Maldonado et al., 1999). Powell (1995) conducted an empirical study using a multi-industry sample that has examined the effect of TQM adoption on performance in nursing homes. Meyer (2001) used a 1995 MBNQA pilot criterion, the framework of which is different from 2001 criteria. Goldstein and Schweikhart (2002) is the only article examining the MBNQA model 2001 version in health care. However, Goldstein and Schweikhart failed to investigate the relationship between individual TQM elements and hospital performance.

There are multiple research studies conducted that are relevant to TQM and Quality Awards in manufacturing firms. However, there are few empirical studies that have examined the impact of TQM adoption and practice in the hospital industry. There are few empirical studies using MBNQA to measure the practice of TQM. Consequently, there are few studies and research-based tools available to facilitate TQM diagnosis and practice (Whitney & Pavett, 1998). Almaraz (1994) argued that this lack of research represents a gap in knowledge about how organisations function.

Efforts to measure the performance of health care providers and to furnish useful consumer performance information are laudable (Davies, 1998; Eddy, 1998; Lied, 2001; Palmer, 1997; Roper & Cutler, 1998). However, King's (1992) survey discovered that an alarming number of businesses find it difficult to measure the impact of TQM on their own business performance. Oakland (1993) suggested that measurement is still an embryonic practice even in the most advanced businesses engaged in TQM utilisation. There is an absence of performance measurement in hospitals, either the impact of TQM on hospital performance. Sinclair and Zairi (1995) advocated that although the aims of TQM appear to have been communicated, there appears to be a gap between the message and the reality of

performance measurement (p. 45). Performance measurement at the organisational level is still in its infancy and needs further development to realise its potential (Lied, 2001). The link between measurement activities and long-term performance improvement is also not well-documented (Hannan, Kumar, Racz, Sui, & Chassin, 1994; Kazandjian & Lied, 1998). There is little empirical research to systematically measure TQM effectiveness and its impact on the performance of hospitals. There has also been little investigation into the relationships between TQM elements and hospital organisational performance.

Summary

This chapter reviewed the relevant literature on Total Quality Management (TQM), organisational characteristics, management of change and how TQM is used for and by hospitals to manage change. The development TQM in hospitals and its practice has been also addressed. This chapter discussed hospital performance, performance indicators and measurement methods of hospital organisational performance. It also focussed on MBNQA as a set of criteria for investigating hospital performance level. Furthermore, the literature on the impact of TQM on hospital performance and the relationships between TQM and hospital performance has been reviewed.

The following chapter will establish a conceptual framework, outline the research questions and three kinds of research variables. Operational definitions will also be discussed. Four hypotheses relating to TQM and performance will be developed and discussed as well.

Table 3. 11

The Previous Research Relevant to the Impact of TQM on Hospital Performance

Citation	Tasks & Sample	Reported results
Barsness et al. (1993-1994)	A national survey to compare the differences in performance between CQI/no CQI hospitals. 3,303 community hospitals in U.S.A.	Positive finding in human resource development, productivity, profitability and cost saving No differences between two groups in patients outcome
Graves et al. (1994)	12 nursing homes	TQM positively impacted on human resource outcome
Shortell et al. (1995 a)	Using MBNQA criteria (1993) to examine the relationship between: culture, use of CQI, implementation approach, and bed size, degree of CQI implementation and human resource outcome, patient outcome, financial outcome, and objective clinical efficiency (dependent variables) in 61 U.S.A. hospitals.	Culture and implementation approach is positively associated with CQI implementation Quality implementation was significant associated with patient outcome and human resource development Quality implementation was no significant associated with financial outcomes Large size hospital had higher charges and length of stay (LOS)
Shortell et al. (1995 b)	Examine the relationship between being a CQI hospital and human resource, patient, financial outcome, and objective clinical efficiency 38 hospitals drawn from the 61 hospitals	Whether or not a hospital is a formal CQI site is not significantly associated with any of outcomes. Only having lower charges and shorter LOS for six clinical conditions

Continued

Table 3.11 (Continued)

Citation	Tasks & Sample	Reported results
Maldonado et al. (1999)	Nursing facilities	TQM adoption was associated with the improvement of human resource outcome
Carman et al. (1996)	Examine the relationships between 3 variables Independent variables: environment resources, implementation approach, physician participation and depth of implementation Intermediate variable: culture Dependent variables: QI output and performance 10 acute care hospitals of the 61 hospitals	Gross revenue and LOS were of significant impact on culture Group culture had a positive effect, and hierarchical culture had a negative effect on QI implementation Culture did not have a significant influence on the other two measures of performance Early involvement of physicians had positive effects on CQI success. The depth of involvement had a very strong influence on QI outputs and on customer satisfaction QI output did not impact on performance
Chen (1999)	Using 1998 criteria of MBNQA to examine the situation of TQM in hospitals and the impact of TQM on operating performance 165 hospitals belonged to the Bureau of National Insurance Taipei Branch of Taiwan	A significant difference in medical cost between TQM and non-TQM hospitals No significant difference in length of stay between TQM and non-TQM hospitals The longer the time of implementing TQM, the more the differences between both groups of hospitals

Continued

Table 3.11 (Continued)

Citation	Tasks & Sample	Reported results
Maldonado, et al. (2001)	Investigate hoe organisational context mediates the impact of TQM implementation on perceived performance in 615 nursing facility industry	TQM significantly impacted on human resources and financial performance TQM did not impact on resident care performance
Meyer & Collier (2001)	Investigating the causal relationships in the MBNQA criteria in health care 220 U.S. hospitals	The MBNQA pilot criterion was a valid and reliable instrument in health care.
Goldstein & Schweikhart (2002)	Investigating the criteria of MBNQA model in health care 51 hospitals in U.S.A.	TQM impacted on customer outcome and staff and work system outcome TQM did not impact on clinical and financial outcome
Weech-Maldonado et al. (2003)	Examining the relationship between quality of care and financial performance in nursing homes 1,287 nursing homes in five states of U.S.A.	High quality care was related to lower patient care, which in turn, was related to better financial performance The relationship between the level of quality and the private-pay market share was positive, but it was not significant.

CHAPTER FOUR

DEVELOPMENT OF A CONCEPTUAL FRAMEWORK

The previous chapter reviewed the literature relevant to the research problem, that is an investigation into the relationship between TQM practice and hospital performance. In this chapter, a conceptual framework is proposed, variables are identified, operational definitions are established and hypotheses are also developed.

Assuming a Causal Relationship

Employees' Characteristics Affect TQM Practice and Hospital Performance

From the literature review, the impact of employees' characteristics (such as gender, profession, duration and supervisor status) on TQM practice and hospital performance was not clarified. Tata, Prasad and Thorn (1999) examined the influences of organisational structure on the effectiveness of TQM programs and found that there was no significant correlation between the TQM effectiveness and work experience, age and gender. However, the sample Tara et al. (1999) used was manufacturing companies' managers and supervisors.

For the successful practice of TQM in hospitals, every person including physicians, nurses, supporting technicians and administration staff in the hospital has to be involved in the program (Ho and Cicmil, 1995; Orvetveit, 2000; Shortell et al., 1995). Additionally, TQM is the application of human resources to improve the material services supplied to an organisation, and the processes within the organisation (Department of Defense, 1990). TQM requires human resource application to improve the processes within the organisation, and both time and money are required to start and sustain the TQM program (Yasin, et al., 1999). It can be seen that the employees of a hospital play an important role in the practice

of TQM. There is limited knowledge relevant to the impact of employees' characteristics on TQM practice and hospital performance. To investigate the relationship, the researcher proposed that employees' characteristics would have an impact on the practice of TQM and hospital performance.

TQM Practice Affect Hospital Performance

Various studies have examined the impact of quality initiatives on hospital performance (Barsness et al., 1993; Carman et al., 1996; Weiner et al., 1996). Barsness et al. (1993) found that the productivity and profitability of the TQM hospitals surpassed the non-TQM hospitals and the overall cost was lower. Shortell, O'Brien, Carman, Foster, Hughes, Boerstler, & O'Connor (1995) examined the impact of TQM and found that the TQM hospitals had lower costs and length of stay in six disease categories, and the more the extent of the improvement, the lower the costs and the length of stay. Carman et al. (1996) pointed out that the depth of involvement in TQM had very significant influences on both the measures of QI outputs and on customer satisfaction. The researchers stated that there would be a significant impact after 4 years implementation. Between 2 and 4 years, the impact would be slight, and after the first 2 years implementation there would be no significant impact (Barsness et al., 1993; Carman et al., 1996; Weiner, 1996). In this study, researcher proposed that the practice of TQM would have a positive impact on hospital performance.

Relationship Exists between TQM Practice and Hospital Performance

The relationship between the TQM and organisational performance has been extensively investigated in manufacturing and service sectors (Flynn, Schroeder, & Sakakibara, 1990, 1995; Samson & Terziovski, 1999). In health care organisations, previous research (discussed in chapter 3) revealed that there was a significant relationship

between TQM practice and hospital performance (Barsness et al., 1993-1994; Carman et al., 1996; Chen, 1999; Goldstein & Schweikhart, 2002; Maldonado et al., 2001; Maldonado, Zinn, & Brannon, 1999; Meyer & Collier, 2001; Shortell et al., 1995; Weech- Maldonado et al., 2003). In this study, a proposed causal relationship between employees' characteristics, TQM practice, and hospital performance was developed, as shown in Figure 4.1.

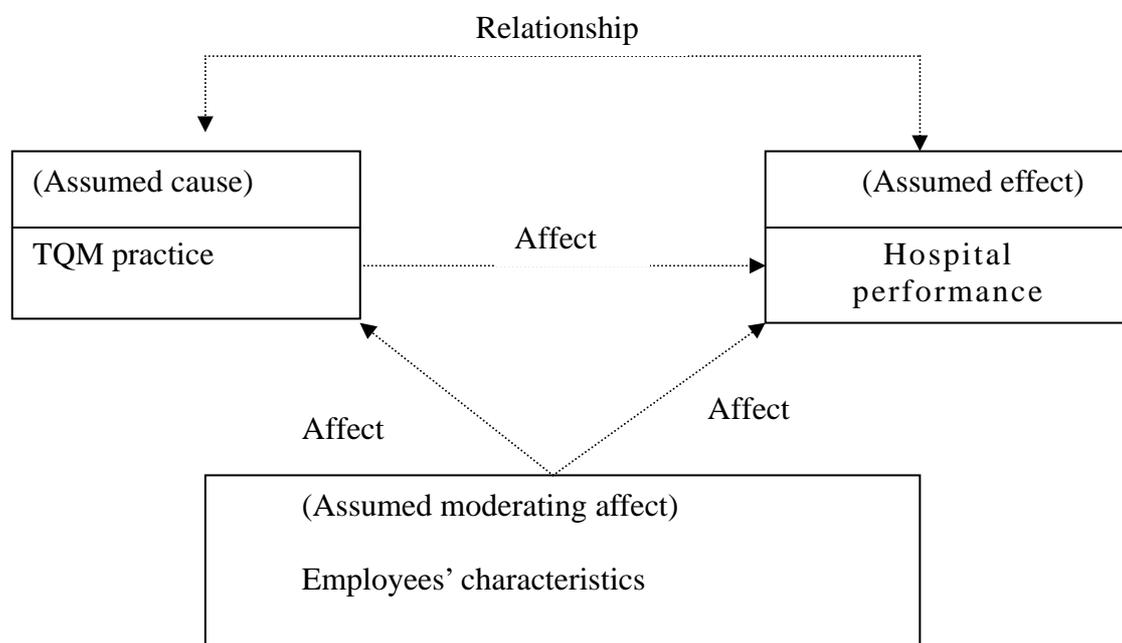


Figure 4. 1: A proposed relationship between employees' characteristics, TQM practice and hospital performance

A Proposed Conceptual Framework

Developing such a conceptual framework will help the researcher to postulate and test certain relationships so as to improve the understanding of the dynamics of the situation. The framework was used to help the researcher to achieve three purposes (Sekaran, 1992). The first purpose in the study was to examine whether the TQM practice and hospital performance could be influenced by employees' characteristics. The second purpose of the framework was to investigate whether the extent of TQM practice affected

hospital performance and the final aim was to reveal the relationships between TQM practice and hospital performance. The following section will identify the elements of TQM practice and hospital performance, as well as the relationships between TQM elements and performance.

The Elements of TQM Practice

Garvin (1991) assert that the criteria of MBNQA not only codify the principles of quality management, but also provide companies with a comprehensive framework for assessing their progress towards the new paradigm of management. This study used the criteria of MBNQA to investigate the TQM practice and hospital performance. According to the MBNQA, the first six criteria were considered as the elements of TQM, they were leadership, strategic planning, focus on customers, informational analysis, staff focus, and process management (MBNQA, 2001).

The Elements of Hospital Performance

Based on the criteria of the MBNQA, hospital performance included four areas of hospital results. They were patient results, financial results, employee results and hospital effectiveness. The four areas of performance were utilised in this study to measure hospital outcomes.

Relationships between TQM Elements and Hospital Performance

The criteria of MBNQA indicate that TQM elements not only collectively affect total hospital performance, its individual elements also impact on performance (MBNQA, 2001). The leadership triad (elements of leadership, strategic planning and focus on patients, other customers and markets) links to the results triad (elements of staff focus, process management and organisational performance results) (MBNQA, 2001, pp. 4-5). The

element of information and analysis (element 4) serves as a foundation for the performance management system, and is critical to the effective management of organisational performance (MBNQA, 2001, p. 5). The individual elements of TQM and their relationships with hospital performance are addressed in the following pages.

Leadership and hospital performance.

Some research has found that leadership affects organisational outcomes and influences those served by these organisations (Bass, 1985; Klimoski & Hayes, 1980; Posner & Kouzes, 1988, 1990, 1994). Research relevant to the behaviour of leadership impact on the hospital organisational performance, pointed out that a positive relationship existed between leadership behaviour, and the employee's productivity, and their job satisfaction as well as their organisational commitment (McNeese-Smith, 1996). More recently, there was an empirical study in manufacturing and service industries conducted by Prabhu and Robson (2000). The study examined the impact of leadership and senior management commitment to business excellence and pointed out that senior management commitment to leadership could have a positive effect on operational performance, such as customer satisfaction, inventory return, productivity and market share.

In contrast to this, empirical evidence (Weiner, Alexander, & Shortell, 1997) of leadership for quality improvement in health care found that formal management involvement in governance did not promote CQI/TQM adoption or leadership for quality. Furthermore, the negative effect of CEO tenure on top management leadership for quality was also unexpected. However, CEO participation in CQI/TQM activities strengthened both board quality monitoring and board activity in quality improvement.

Obviously, the relationship between leadership and hospital performance is not clear. Moreover, the above research failed to examine the relationship between leadership and comprehensive organisational performance. Also some studies are limited to

manufacturing and service companies only, and it needs to be noted that the characteristics of the health care industries and manufacturing industries are different. For example, the health care industry is not assembly line oriented. Hence, it is necessary to further investigate the influence of leadership on hospital performance.

Strategic planning and hospital performance.

Ven Eman (1985) examined the relationship between strategic planning and quality of patient care and found that long-range planning positively impacted on patient care. Pitts (1984) used multiple internal measures of performance, such as occupancy rates, personnel per occupied bed, personnel expenses per occupied bed, total expenses per occupied bed, and relative market share. Pitts found that a complex moderated relationship existed between strategic planning and performance. Forbes (1990) pointed out that planning could be helpful for hospitals to adopt strategic change. It was clear that there was limited empirical research to examine strategic planning in hospitals (Bruton, Oviatt, & Kallas-Bruton, 1995). Bruton et al. (1995) also proposed that the use of strategic planning was positively correlated with hospital performance for further research.

Naidu, Kleimenhagen and Pillari (1992) maintained that the higher the marketing orientation, then hospitals should experience better occupancy rates, net revenues, more admissions per bed, higher net income margins and returns on equity, and a lower salary-to-revenue ratio. From their data it also appeared that hospitals with a higher marketing orientation were able to expand. A survey of 239 top hospital administrators conducted by Wood, Bhuian, and Kiecker (2000) examined the association between strategy and hospital performance, this study revealed a strong support for the relationship between market orientation strategy and hospital performance. However, the above study did not reveal the extent of the impact of quality strategic planning on hospital performance.

In contrast, Langabeer (1998) conducted a teaching hospital survey, he used market environment, academic environment and competitive strategies as independent variables and financial performance as a dependent variable to analyse the impact of strategies on financial performance. The competitive strategies included a product market strategy, positioning, pricing, capital investment, cost leadership, and diversification strategies, the operational definition of performance was described as Return On Invested Capital (ROIC). The results revealed that product, low cost, positioning, pricing and diversification strategies had no significant relationship to financial performance, and only capital investment had a positive impact on financial performance.

Hospital organisational performance should not be measured by ROIC only. Hospital performance measurement also had to be concerned with the customer's and employees' satisfaction and hospital effectiveness. Thus, the relationship between hospital strategic planning and performance was still inadequately identified and required in depth empirical examination (Bruton et al., 1995).

Focus on patients, other customers, and markets and hospital performance.

An empirical study found that focusing on patients, procedures and process of health care would dramatically improve results for external and internal customers. Firstly by focusing on anticipating patients' needs and expectations, secondly by emphasising the need to develop critical care plans for procedures of patient care, and finally by placing stress on managing interactions within the process to ensure a smooth flow of health care delivery across departments (Mercier & Fikes, 1998).

Further research concerned with the element of customers and market has been undertaken by Andaleeb (1998), who investigated the determinants of customer satisfaction with hospitals, and pointed out that perceived competence of the hospitals' staff and their behaviour had the greatest impact on customers' satisfaction. The quality of

communication perceived by patients and the general condition of the facilities were also significant but less important in explaining customers' satisfaction with hospital services. He also suggested that the customers' satisfaction scores could be used in performance appraisal. However, Andaleeb failed to distinguish the impact of customers' satisfaction on hospital organisational performance, such as financial outcomes and hospital effectiveness.

Dansky and Miles (1997) conducted a patient satisfaction survey with ambulatory health care services by examining waiting time. The results pointed out that there was an inverse relationship existing between total waiting time and customers satisfaction, however they failed to reveal the relationship between customers' satisfaction and hospital performance. They did suggest that further research related to the examination of the relationship between cost of provider and customers' satisfaction should be carried out.

Narver and Slater (1990) were the first to test the relationship between a market orientation and organisational performance. In their study, market orientation included concern for customers' needs, concern for competitors' offerings, and inter-functional coordination of activities in the organisation, this is nominated as customer orientation. Narver and Slater's findings showed that customer orientation has a positive relationship with organisational profitability. Other relevant studies provided additional support for that relationship, such as the study of Deshpande, Farley and Webster (1993); Kohli and Jaworski (1990); Kohli, Jaworski and Kumar (1993). The research had much to reveal in the understanding of customer satisfaction. However, in depth research relevant to the influence of customer satisfaction on market share, organisational results and staff well-being is necessary.

Informational analysis and hospital performance.

The element of informational analysis is concerned with the “ scope, management, and use of data to maintain a customer focus, to drive quality excellence, and to improve

performance” (MBNQA, p. 40). Quality improvement is a data-driven process. Thus, accurate and up-to-date information will facilitate the decision-making process and help in the prediction of future trends and outcomes, and assist employees to make effective decisions on quality-related initiatives (Rao, Solis, & Raghunathan, 1999). Many popular TQM techniques, such as cause-and-effect analysis and Pareto charts have been used, aimed at helping organisations to process information effectively (Dean & Bowen, 1994). The TQM literature suggests that organisations that consistently collect and analyse information will be more successful than those that do not. However, the study of information system impact on hospital organisational performance is limited. Only a few clinical information system studies can be found. A Clinical Decision Support (CDS) system survey pointed out that 60 percent of studies demonstrated a significant difference favouring this system in improving clinician performance; and only 30 percent indicated significantly positive effects on patient outcomes (Wong, Legnini, Whitmore, & Taylor, 2000). However, the informational analysis in MBNQA cannot only be used in clinical support, it also can be employed to measure and analyse the operational process, and to provide hospital managers and employees sufficient information to make decisions. Obviously, the relationship between informational analysis and hospital performance is not clear. Therefore, it is necessary for further research to be done in this area.

Staff focus and hospital performance.

The MBNQA criteria advocate treating hospital staff as internal customers, so that attention to job design and training results in increased staff satisfaction, in turn leading to improving interactions between staff and patients and their families. Some of the staff focus studies have shown the relationship between employee's management and organisational performance. For example, employees who are experiencing job satisfaction are more likely to be productive (Cohen, 1980; Likert & Katz, 1979; McNeese-Smith,

1996) and to stay on the job (Hinshaw, Smeltzer, & Atwood, 1987; McNeese-Smith, 1996; Taunton, Krampitz & Woods, 1989; Tett & Meyer, 1993). Furthermore, a more than six-year empirical study was conducted at Ault Foods, Ltd. of Canada, which implemented a structured seven-step strategy of employee-centred management for improving organisational performance. A significant change from the intervention was shown as a 66 percent increase in operating income, and the human resource index also increased. Additionally, the correlation between yearly human resource scores and financial performance is surprisingly high at 0.866. The data strongly supported that the improvement in motivation, morale, and commitment of human organisation had led to a significantly improved organisational performance (Baker, McKay, Morden, Dunning, & Schuster, 1996). In contrast to this, Wilson and Collier's (2000) study found that human resource development did not directly impact on customer outcome, nor did it affect financial outcomes. Therefore, it is necessary to have a further examination directed to the relationship between staff focus and hospital performance, especially on financial and customer (patient) outcomes.

Process management and hospital performance.

The element of process management is concerned with how the organisation designs and introduces products and services, integrates production and delivery requirements and manages the performance of suppliers (Evans & Lindsay, 1995). The core idea behind the principle of TQM is that organisations are sets of interlinked processes, and that improvement of these processes is the foundation of performance improvement (Deming, 1986). Some organisations have achieved performance improvement through process redesign and re-engineering (Hammer & Champy, 1993; Stewart, 1993). Wilson and Collier (2000) reported that process management directly impacted on customer outcome and financial performance in manufacturing companies. As with the previous research too,

there are many studies that have found that process orientation and improvement has led to reduced cost and enhanced efficiency (Dean & Bowen, 1994; Lieberman, 1987; Reed, Lemak, & Moutgomery, 1996). However, the health care delivery process is completely different from the process of manufacturing, clinical processes are various and each process is unique and specific for the patient who is involved in the process.

Shortell et al. (1995) argued that a focus on organisational processes and systems was associated with human resource outcomes, and selected clinical efficiency, but not associated with financial performance. Meyer and Collier (2001) investigated the caused linkage within the elements of MBNQA health care pilot criteria. In another study carried out by Goldstein and Schweikhart (2002), it was found that focusing on the content addressed in the MBNQA health care criteria leads hospital to improvement on patients satisfaction and employees outcomes. However, Meyer and Collier (2001) used the health care pilot criteria, the framework of pilot criteria is different from the MBNQA 2001 criteria. Goldstein and Schweikhart (2002) examined the six elements together. This study did not point out to what extent the process management impacted on hospital performance. Hence, further investigation is needed into the relationship between process management and hospital performance. Based on the preceding literature review, a proposed conceptual framework depicted the measured variables and their relationships were presented. According to the proposed causal relationship between employees' characteristics, TQM elements and hospital performance, a conceptual framework was developed, as shown in the Figure 4.2.

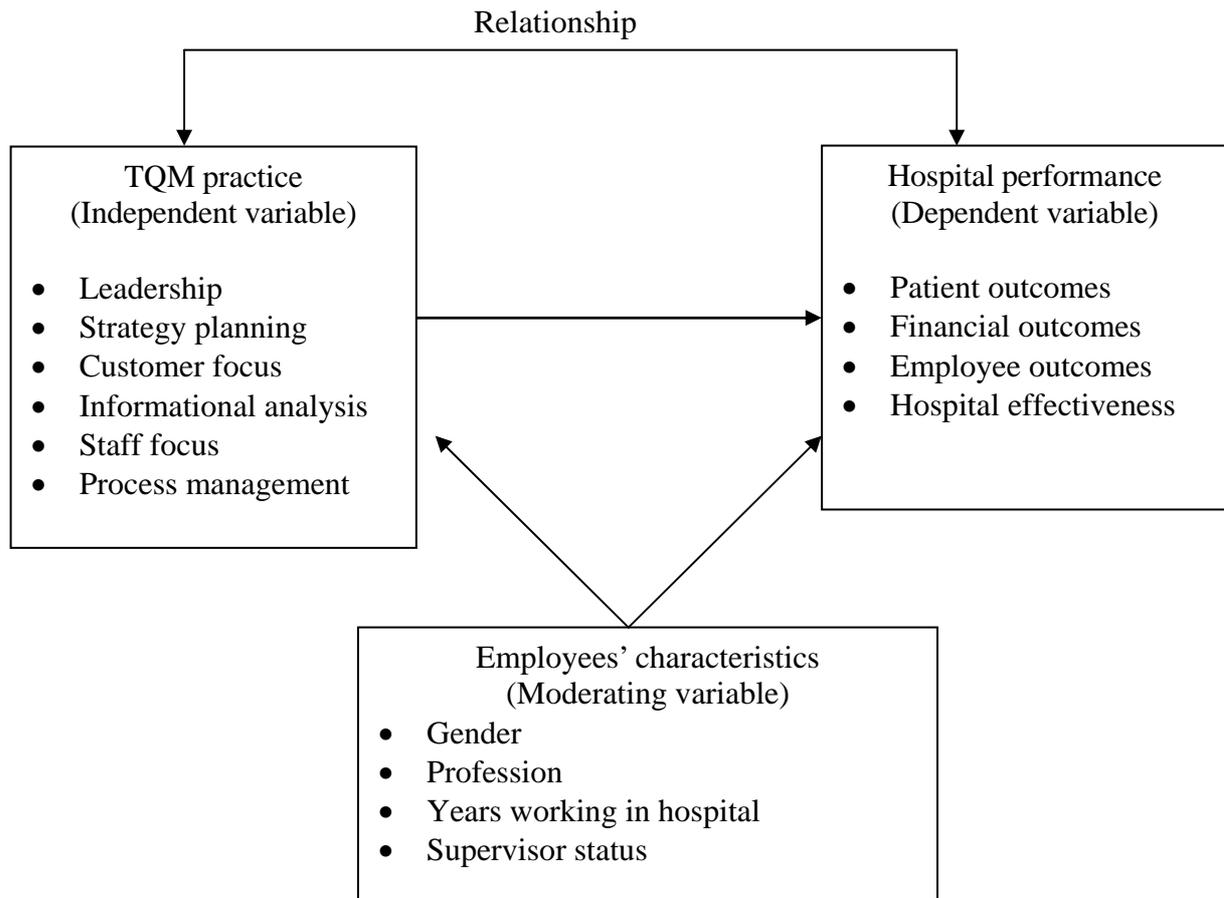


Figure 4. 2: Proposed conceptual framework

Key Variables of the Framework

Measurement of the variables in the conceptual framework is an integral part of research and an important aspect of quantitative design (Bordens & Abbott, 1991; Cavana, Delahaye, & Sekaran, 2001; Sekaran, 1992). The framework shown in Figure 4.2 has three major variables, they are independent variables (TQM practice), dependent variables (hospital performance), and moderating variables (employees' characteristics).

Independent Variables

An independent variable is one “that influences the dependent variable in either a positive or a negative way” (Cavana et al., 2001, p. 84; Sekaran, 1992, p. 66). In this study, quality initiatives account for the variances in the hospital performance. Thus, the six TQM

elements of the MBNQA health care criteria were considered as independent variables in this study.

Dependent Variables

Dependent variables (outcome variables) are the variables of primary interest to the researcher, such as organisational performance, or student's academic achievement could be dependent variables. The goal of this study was to explain or predict the variability in the hospital performance. In other words, hospital performance was the main variable that lends itself as a viable issue for investigation. Through the analysis of the hospital performance, it is possible to find answers to the problem (Cavana et al., 2001), the four areas of hospital outcomes of MBNQA were considered as dependent variables. They were patient outcomes, financial outcomes and employee outcomes, as well as hospital effectiveness.

Moderating Variables

A moderating variable is one that has a strong contingent effect on the independent variable and dependent variable relationship (Cavana et al., 2001; Sekaran, 1992). That is, the presence of a third variable (the moderating variable) modifies the originally expected relationship between the independent and the dependent variables. Kumar (1996) used another term, that of an extraneous variable. He stated that extraneous variables are factors operating in real life situation that may affect changes attributed to independent variables. These factors may increase or decrease the magnitude or strength of the relationship between independent and dependent variables, for example, age of the individual, level of education of the population, socio-economic status of the population. It can be said that Kumar's extraneous variable is similar to the moderating variable of Sekaran (1992) and Cavana et al. (2001). The employees' characteristics in terms of gender, profession,

number of years as an employee of Hospital A and supervisor status (whether the person was a supervisor or not) were deemed to be the moderating variables in this study.

Operational Definitions of Variables

A researcher may not have a valid measure without operationalising the concepts correctly. According to the model of Malcolm Baldrige Health Care criteria (2001), the operational definitions of the four dependent variables were defined in Table 4.1, and the operational definitions of the six independent variables were defined in Table 4.2.

Table 4. 1

Operational Definitions of Hospital Performance

Dependent variables (Hospital performance)	Operational definitions
Patient outcomes	General mortality Outpatients' satisfaction Length of stay Re-admission rate within 24 hours in emergency unit
Financial outcomes	Total revenue, Total expenditure, Government funding, Growth of profit
Employee outcomes	Employees hours spent in education and training, Productivity per employee per month, Employees' satisfaction, Turn over rate of employees
Hospital effectiveness	Numbers of outpatients, Numbers of inpatients, Number of patients undergoing major surgery General occupancy rate

Table 4.2

Operational Definitions of the Six TQM Elements

Independent variables (TQM six elements)	Operational definitions
Leadership	<ul style="list-style-type: none"> Appreciation of efforts of personnel to improve service quality Set hospital values, directions and performance expectations, and transfer to whole hospital Use performance review findings to improve leadership effectiveness Actively involve and support the actions of community health
Strategic Planning	<ul style="list-style-type: none"> Attention to patient care Take into account opinions or desires of stakeholders Use of information sources in formulating and evaluating strategy Strategic policy translated into departments Management attention to clarifying expectations of patients/clients Strategic policy periodically evaluated and adjusted
Customer Focus	<ul style="list-style-type: none"> Patient/client satisfaction measured periodically Listen and learn from customers Effective solution of customers complaints Analyse the customers complaints to improve health care service
Informational Analysis	<ul style="list-style-type: none"> Comprehensive information system to gather data for decision making Align daily operation to hospital performance Ensure data integrity and accuracy Analysed results act as the basis for improvement and benchmarking
Staff focus	<ul style="list-style-type: none"> Satisfaction of personnel measured periodically Improving level of expertise (recruitment, training, career development) Open communication through seminars, or on site information Staff performance management to reward high performance Ensure occupation safety and work place health
Process Management	<ul style="list-style-type: none"> Identifying processes for a high degree of patient satisfaction Measures are taken to identify needs and wishes of patients/clients Information on service process is gathered for evaluation and improvement Assurance of service delivery by means of performance measures Working procedures and norms/protocols available for all positions Improvement of service processes by comparison with other organisations Guidelines and procedures for dealing with complaints

(Source: Malcolm Baldrige Health Care Criteria for Performance Excellence, 2001)

Measuring Scales

Unless the variables are measured, the researcher may not be able to test his/her hypotheses and find answers to complex research issues. The measuring scales of three variables are described individually

Dependent variables and independent variables.

The measurement scale used in dependent variables and independent variables was a continuous scale. That is, a Likert five-point response scale, to indicate the extent to which they agree or disagree with each statement at the present time was employed. The 5-point response scale was strongly disagree, disagree, unsure, agree, strongly agree. The participants were asked to rate the four areas of hospital outcomes in their judgment; comparing the current performance level with the performance prior to the practice of TQM using the five –point scale.

Moderating variables.

The measurement scale used in moderating variables was a classificatory scale. Gender consisted of a two person classificatory scale: (1) male and (2) female. A five point classificatory scale of profession included (1) physician, (2) nurse, (3) pharmacist, (4) medical support, and (5) administration staff. The five point classificatory scale of numbers of working years consisting of (1) less than 5 years, (2) 5-10 years, (3) 11-15 years, (4) 16-20 years, and (5) more than 20 years was used. A two point classificatory scale was also utilised in the variables. This investigated whether a person is a supervisor or not, the participants were asked if they were a supervisor, (answer (1) yes), or not (answer (2) no).

Research Questions and Hypotheses

On the basis of the research problem and the developed conceptual framework, the following questions and hypotheses are stated.

Research Question 1 and Hypothesis 1

Q₁: What are the employees' characteristics influencing TQM practice in the public hospital?

H₁: There are statistically significant differences between the employees' characteristics (gender, profession, duration, supervisor status) and TQM practice, as measured by leadership, strategic planning, customer focus, informational analysis, staff focus, and process management.

Research Question 2 and Hypothesis 2

Q₂: What are the employees' characteristics influencing hospital performance during TQM practice in the public hospital?

H₂: There are statistically significant differences between the demography of participants (gender, profession, duration, supervisor status) and hospital performance, as measured by patient outcomes, financial outcomes, employee outcomes, and hospital effectiveness.

Research Question 3 and Hypothesis 3

Q₃: In what way does the practice of six TQM elements affect hospital performance?

H₃: There are statistically significant differences between the three groups of TQM practice (leadership, strategic planning, customer focus, informational analysis, staff focus and process management) and hospital performance, as measured by patient outcomes, financial outcomes, employee outcomes, and hospital effectiveness.

Research Question 4 and Hypothesis 4

Q₄: What are the relationships between the TQM practice and hospital performance?

H₄: There are statistically significant relationships between the six TQM elements (as measured by leadership, strategic planning, customer focus, informational analysis, staff focus and process management) and hospital performance (as measured by patient outcomes, financial outcomes, employee outcomes and hospital effectiveness).

Finally, four hypotheses were then built into the conceptual framework and became the research framework, as shown in Figure 4.3.

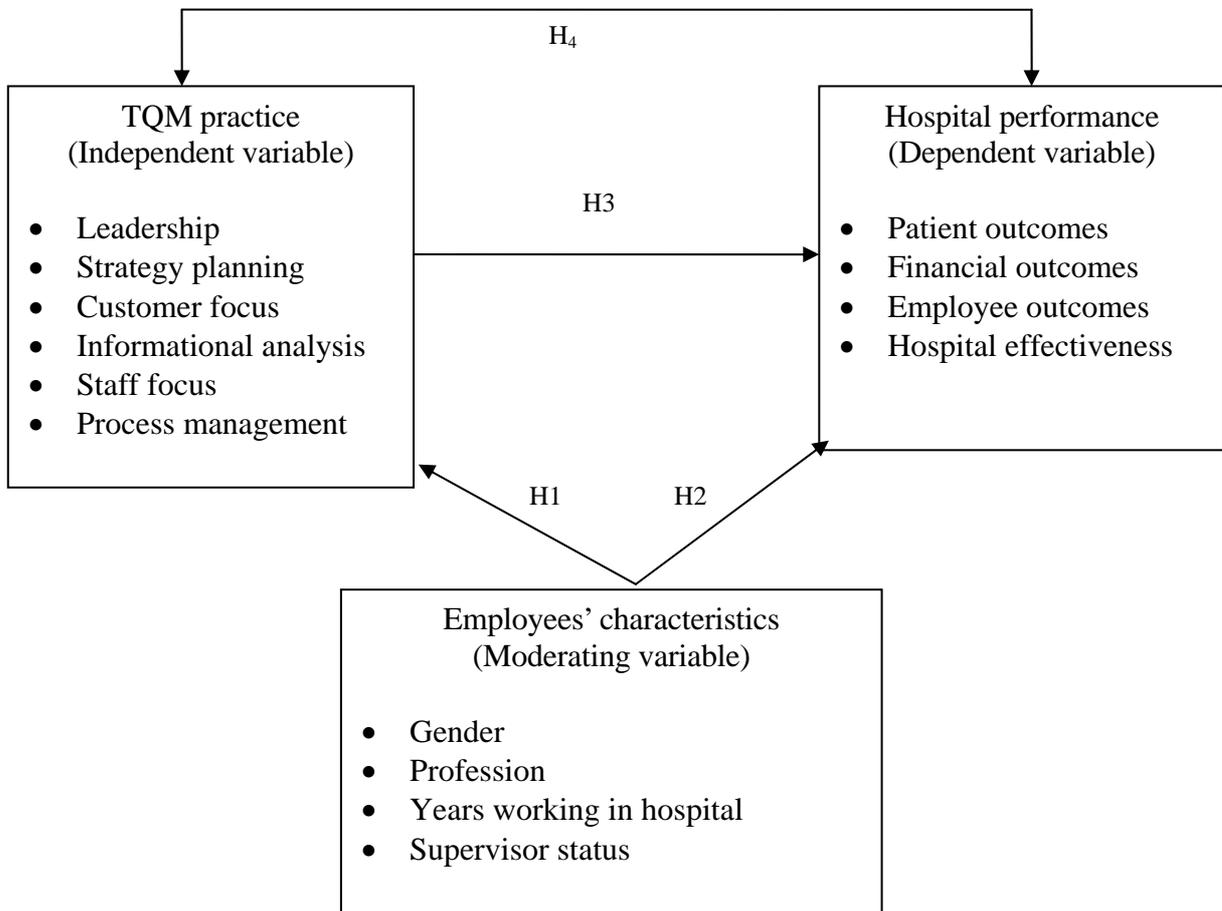


Figure 4. 3: Research framework

Summary

This chapter developed a research framework, identified three types of variables, and established the measurement scales and operational definitions of variables, as well as constructed the research hypotheses.

The following chapter will discuss the methodology and methods used in the study, and describe an operational plan that was undertaken in order to complete the study.

CHAPTER FIVE

RESEARCH METHODOLOGY

The previous chapter addressed the development of a conceptual framework including selecting variable and operational definitions, identifying the measurement scales, and constructing hypotheses. This chapter addresses case study design, and a triangulation research method, including survey, interview and documentation analysis. The related research instrument, questionnaire and interview guideline was developed. Research procedures, including sampling and the decision of sample size, data collection, data analysis and display are addressed in detail.

Case Study Design

An in depth case study to investigate the TQM practice and its performance, and to examine the relationship between them was used as the basis for this study. The descriptive case study method was used as the research design. The holistic single case study model as described by Yin (1994), that empirically examines a phenomenon in its contemporary environment, was used. The researcher dealt with Hospital A as a whole, there was no attempt to divide the unit into separate components. Chelly (1996) points out that: "Good story telling about a single case would provide better theoretical insights than multiple case research based on creating good constructs (p. 77)." Yin (2002) also advocates that case studies are one of the research strategies used in conducting evaluations of public programs. A case study provides a unique example of real people in real situations, enabling readers to understand ideas more clearly than simply presenting them with abstract theories or principles. A case study enables readers to understand how ideas and abstract principles can

fit together (Nisbet & Watt, 1984). Issues relevant to characteristics, purposes, classifications, advantages, and disadvantages, and the validity and reliability of case study will be reviewed here.

Case studies are commonly used for many aspects of research by many disciplines, not only in medicine, education, and political science, but also in law, psychology, sociology, and anthropology. In recent years, Cohen, Manion and Morrison (2000) indicated that case studies could penetrate situations in ways that are not always available to numerical analysis. The characteristics of the case study are that it not only offers in-depth, detailed data from a wide data source, but that it also enables individuals and groups to be compared. In hospitals it involves participant and non-participant observation and provides an in-depth hospital diagnosis and performance measurement. It is an empathic, holistic but non-interventionist treatment of phenomena. Reviewing the past 20 years' literature, the characteristics of case study could be summarised as having five perspectives, and they are addressed as follows.

Characteristics of Case Study

A case study is a phenomenon study from a context. This is where a case study is the method of choice when the phenomenon under study is not readily distinguishable from its context. Such a phenomenon may be a project or program in an evaluation study. Sometimes the definition of this project or program may be problematic, as in determining when the activity started or ended is an example of a complex interaction between a phenomenon and its (temporal) context (Yin & White, 1985).

A case study is research of a specific instance. In this perspective, the case study is seen as a specific instance (Nisbet & Watt, 1984). The single instance is of a bounded system. A case study sometimes focuses on a single case, perhaps because its unique or exceptional qualities can promote understanding or inform practice in similar situations. In other

instances, it may be where researchers study two or more cases—often cases that are different in certain key ways—to make comparisons, build theory, or propose generalisations; such an approach is called a multiple or collective case study.

Case study is a kind of research that seeks to portray likeness (Geertz, 1973). This is where case studies strive to portray ‘what it is like’ to be in a particular situation, to catch the close-up reality and ‘thick description’ of participants’ lived experiences of thoughts about and feelings for a situation.

A case study is a determination of cause and effect research. Case studies can be used to establish the cause and effect of events, indeed one of their strengths is that they observe effects in real contexts, recognising that context is a powerful determinant of both causes and effects. Sturman (1999) argues that a distinguishing feature of case studies is that human systems have a wholeness or integrity to them rather than being a loose connection of traits, necessitating in-depth investigation. Further, each context is unique and dynamic. Hence case studies investigate and report the complex dynamics and unfolding interactions of events, human relationships and other factors in a unique instance.

A case study is a duration and depth study research. In this perspective, a case study, a particular individual, program, or event is studied in depth for a defined period of time. It may be especially suitable for learning more about a little known or poorly understood situation. It may also be useful for investigating how an individual or program changes over time, perhaps as the result of certain circumstances or interventions. In either event, it is useful for generating or providing preliminary support for hypotheses (Yin, 1993).

Advantages and Disadvantages of Case Study

Case studies have a number of advantages that make them attractive to researchers. Adelman, Kemmis, and Jenkins (1980) indicate that case study data is strong in reality and has the ability to facilitate the recognition of the complexity and the embeddedness of social

truths, and allow generalisations either about an instance or from an instance. Nisbet and Watt, (1984) summarise several strengths of case studies as follows. Case studies catch unique features that may otherwise be lost in larger scale data (e.g. surveys), and they present reality, provide insights into other, similar situations and cases, thereby assisting interpretation of other similar cases. They can also embrace and build in unanticipated events and uncontrolled variables. Finally, they are immediately intelligible; and speak for themselves. Hitchcock and Hughes (1995) consider that case study is concerned with a rich and vivid description of relevant events. Case studies provide a chronological narrative of those relevant events and blend a description of events with the analysis of them. These writers also claim that a case study also focuses on individual actors or groups of actors, and seeks to understand their perceptions of events. Case studies can also highlight specific events that are relevant to the case.

However, case studies do have some disadvantages. A major weakness is that, especially when only a single case is studied, we cannot be sure that the results are generaliseable to other situations. The results may not be generaliseable except where other readers/researchers see their application. They are not easily open to crosschecking; hence they may be selective, biased, personal and subjective. Furthermore, they are prone to problems of observer bias, despite attempts made to address this issue through reflexivity.

Classification of Case Study

The classifications of case studies are various. Case study research can be based on single- or multiple-case studies, it also can be based on exploratory, descriptive, or explanatory outcomes (Yin, 2002). An exploratory case study is a pilot for other studies or research questions, and aims at defining the questions and hypotheses of a subsequent study or at determining the feasibility of the desired research procedures. A descriptive case study

provides narrative accounts and presents a complete description of a phenomenon within its context. An explanatory case study is used for testing theories, it always presents data bearing on relationships and explaining which causes produced which effects (Yin, 2002).

Merriam (1988) identified three types of case studies, which were descriptive, interpretative and evaluative. Stake (1994) identified three main types of case study: (a) intrinsic case studies; (b) instrumental case studies; (c) collective case studies (groups of individual studies that are undertaken to gain a fuller picture). Because case studies provide fine grain detail they can also be used to complement one another, more coarsely grained often large-scale kinds of research. Moreover, Sturman (1999), identified four kinds of case study (a) an ethnographic case study-single in-depth study; (b) action research case study; (c) evaluative case study; and (d) educational case study. The classification of case studies is summarised in the Table 5.1.

Table 5. 1

Classification of Case Studies

Yin (2002)	Merriam (1988)	Stake (1994)	Sturman (1999)
Single\ multiple	Descriptive	Intrinsic	Evaluative
Exploratory	Interpretative	Instrumental	Ethnographic
Descriptive	Evaluative	Collective	Action research
Explanatory			Educational

The Criteria of Selecting a Case

When researchers are integrally involved in the case and attempt to portray the richness of the case, they need to be concerned about whether the capability of a single researcher can undertake the case study. Some points usually can be considered from the individual, local situations; unique instances; a single case; bounded phenomena and systems

of individuals, groups, roles, organisations and communities. Consequently, three important criteria when considering the suitability of a case study are (a) that case study is essential for the theory being tested; (b) that the topic of the case study is relevant, for example, some research is best suited for a case study because of the phenomenon being studied; (c) that the case study is feasible and accessible, for example, when a person or group is willing to be the subject of a case study.

Validity and Reliability of a Case Study

An important consideration in case study design is to create designs with construct validity, internal validity, external validity, and reliability (Yin, 1993). Construct validity deals with the use of instruments and measures that accurately measure and operationalise the constructs of interest in a study. Because most instruments and measures are not necessarily as accurate as would be desired, a common strategy is to use multiple measures of the same constructs as part of the same study. Both internal and external validity was touched on in the discussion on the role of theory. Internal validity can be achieved through the specification of the units of analysis, the development of a priori rival theories, and the collection and analysis of data to test these rivals. Similarly, one can achieve external validity through the specification of theoretical relationships, from which generalisations can then be made. Finally, one can achieve reliability through the use of formal case study protocols and the development of a case study database. These protocols are especially helpful to ensure that the same procedures are followed in multiple cases or in a study conducted by multiple investigators. The case study database is a way of differentiating the evidence from the case study manuscript.

Purposes of Case Study

There are several purposes for case studies, all dependent on the different research requirements. This approach can be used to diagnose the strengths and weaknesses of a case in order to understand one situation in great depth. It may be adopted to portray, analyse and interpret the uniqueness of real individuals and situations through accessible accounts in order to give a sense of reality. A case study could be utilised to catch the complexity and situatedness of behaviours, and to measure the achievement and potential in order to assess performance and abilities. Finally, it can be employed to present and represent reality in order to contribute to action and intervention. The purpose of the current study fell into the first mentioned purpose, and the case study approach was used to identify the strengths and weaknesses of the TQM practice and hospital performance at the case hospital. Therefore, the researcher chose a case study, and the reasons for selecting a case study are addressed.

The Reasons for Conducting a Case Study

The reasons for conducting a case study are first to follow up the recommendations of previous research. Samson and Terziovski (1999) used a large sample size of 1,200 Australian and New Zealand manufacturing companies to examine the relationships between TQM practices and operational performance. They recommend that in-depth case studies are needed, which detail the impact of TQM elements and improvement initiatives on these factors to determine the rich fabric of how these initiatives lead to performance changes. They have also suggested that structured interview processes would be able to investigate the systematic factors related to performance changes apart from those TQM elements. Second, Motwani, Sower, and Brashier (1996) pointed out that there are four TQM research streams. A focus on the assessment in the field study surveys administration, and case studies fall into the current stream of TQM research. Third, although case study methodology has been

criticised as having little basis for scientific generalisation, Yin (1994) and Patton (1990) have pointed out that scientific facts are seldom based on a single experiment. It is known that important scientific propositions have the form of universals, and a universal can be falsified by a single counter-instance. Thus, a single, well-designed case study can provide a major challenge to a theory and provide a source of new hypotheses and constructs simultaneously (Cooper & Schindler, 1998). Finally, Carman, et al. (1996) supported the use of case studies and argued that a very large, representative sample would have created such problems of over aggregation. Likewise, a few case studies that went into more detail than a large sample would have generated even greater concepts about project ability to other institutions. In sum, the research design involving statistical analysis of a small sample is probably the ideal research design for the purpose of understanding of and helping with new practices.

Unit of Analysis

The unit of analysis under study was a Taiwan public hospital (Hospital A) during the time period of 1997-2001. Hospital A is a public hospital in Taiwan, located in Y City, south of Taiwan. Hospital A has been in the process of implementing TQM project for five years. However, the phenomena and context of TQM practice are not clear, and the cause-effect of TQM practice and hospital performance has not been clarified. In addition Hospital A is a specific public hospital with high practice rate of quality initiatives, but low performance.

Questionnaire Administration

At least three methods are appropriate for measuring work practices: surveys, intensive interviews, and participant observation (Martin, 1992; Ott, 1989; Zeitz, 1997). Each of these

methods has advantages and disadvantages, and their combination or "triangulation" (Ott, 1989) may yield the most valid measure (Glick, 1985; Reichers & Schneider, 1990). Flick (1992) and Luccini (1996) also argued that the triangulation data gathering method allows the research to study a complex picture of the phenomena being studied, which might otherwise be unavailable if only one method were utilised. In this study, a triangulation method, a combination of survey administration, interview and documentation analysis, was used. Survey administration was utilised to reveal associations between influencing factors of TQM practice and hospital performance and the relationships between TQM and hospital performance. Several recent studies of TQM practice have used surveys administered to key organization informants, principally managers, to measure the extent of TQM programs (Grandzol, 1996; Lawler, Mohrman, & Ledford, 1995; Saraph, Benson, & Schroeder, 1989).

A common problem in TQM programs is that policies are formally instituted at the top management level but do not affect actual behaviour and work group culture of supervisors and operatives. Therefore, the participants in this study included managers and employees, and also cover all professions. To uncover some of these associations further, and explore the causes or meanings of those associations, related interviews were conducted (Wright, MacDougall, Atkinson, Mezzini, & Booth, 1996). Moreover, in order to measure performance change after the TQM practice, which could not be done by a cross-sectional design (Kumar, 1996), the data provided by Hospital A and earlier research were also used to investigate and compare the performance change of the case hospital. The data collection methods, including questionnaire administration and focus group interviews were addressed in the following sections.

The section begins with describing the purposes and reasons for choosing this method, a research flow chart shows the development of the particular research instrument, and the testing and verifying of the research instrument, along with the sampling strategies,

determination of sample size and the distribution of the questionnaire. Then data entry and analysis, statistical analysis results will also be addressed.

A questionnaire enables the discovery of the influential factors of TQM practice and hospital performance; it also assists in realising the impact of TQM deployment on hospital performance and in revealing the relationships between TQM practice and hospital performance. The survey design provides a quantitative or numeric description of some fraction of the population- the sample – through the data collection process of asking questions of people (Fowler, 1993). This data collection, in turn, enables a researcher to generalise the findings from a sample of responses to a population (Creswell, 1994). However, there are several disadvantages, for example, the limited application, a low response, lack of opportunities to clarify issues, and furthermore that a response cannot be supplemented with other information (Kumar, 1996).

Reasons for Choosing Questionnaire Administration

Hillman (1994) claims that there are several benefits for using the self-assessment questionnaire, one of them is that self-assessment offers “consensus on what has been achieved and what still needs to be done, ... and provides a practical tool to drive continuous improvement”(p. 31). Hakes (1996) agreed with the viewpoint of Hillman, he also noted that the self-assessment questionnaire produces an objective identification of current strengths and areas for improvement. Self-assessment provides a useful analysis of an organisation's capability, and helps to create a vision in order to counter an organisation's tendency to skip from one initiative to the next. One of the objectives of this study is to find the weaknesses of a particular public hospital and so to strengthen its progress towards the new paradigm, this objective is similar to what Hakes' and Hillman's noted in their study. Moreover, Kueng's (2000) view that self-assessment focuses on the performance measurement of integrative

organisation rather than a small unit or department individual, which is consistent with the measurement in this study that is concerned with the wide organisational performance of a hospital.

Self-assessment can be conducted through interview, site observation and questionnaire administration. In this study, a designed structured questionnaire was utilised. A questionnaire is an ideal means of providing quantified information for government or organisations when they rely on quantified information for aspects of their decision-making. It offers a transparent set of research procedures, and can be reanalysed by others. This method gives relatively complex information in a succinct and easily understood form; the questionnaire also supplies comparability, such as longitudinal and annual surveys, and it could provide the opportunity for organisations to study change over time. A questionnaire can also be an effective means of gathering a wide range of complex information on individuals or organisations on a comparable basis. (Ticehurst & Veal, 2000). Moreover, the questionnaire is a comparatively convenient and less expensive tool, and it also offers greater anonymity, as there is no face-to-face interaction between respondents and interviewers (Kumar, 1996). So it follows that, for the purposes of this study, a self-assessment by questionnaire can be considered to be an appropriate data collection tool in this study.

Flow-Chart of Questionnaire Administration

The steps of questionnaire administration are outlined in Figure 5.1. The detailed processes are illustrated in the following pages.

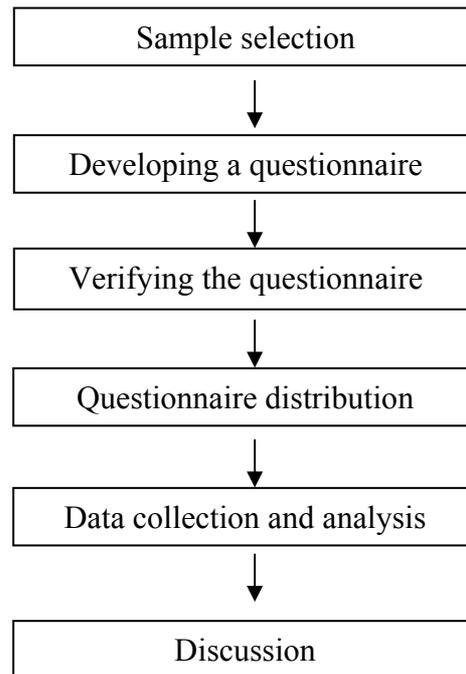


Figure 5. 1: Flow-chart of questionnaire administration

Sampling Method

Cavana et al. (2001) stated, “Sampling is the process of selecting a sufficient number of elements from the population so that by studying the sample, and understanding the properties or characteristics of the sample subjects, it would be possible to generalise the properties or characteristics to the population elements” (p. 253). Sampling provides a mechanism whereby an estimate of a population’s characteristics can be obtained and, based on probability, a numerical measure of the accuracy of the estimate can be given (Sprenst, 1988). Moser and Kalton (2001) list several advantages to sampling, for instance, the data are cheaper to collect, also fewer people are required to collect and analyse the data as well as sampling saves time, because a sample is quicker to analyse and process. Other researchers also believe that sampling permits a higher level of accuracy as the sample size allows a check of the accuracy of the design and administration of the questionnaire (De Vaus, 1991; Cavana et al., 2001).

There are two major types of sampling designs: probability and non-probability sampling. In probability sampling, the elements in the population have some known chance or probability of being selected as sample subjects. In non-probability sampling, the elements do not have a known or predetermined chance of being selected as subjects. Probability sampling designs are used when the representatives of the sample are of importance in the interests of wider generalisability. When time or other factors rather than generalisability become critical, non-probability sampling is generally used. Probability sampling can be either unrestricted (simple random sampling) or restricted (complex probability sampling) in nature. Restricted probability sampling procedures offer a viable and sometimes more efficient alternative to the unrestricted design. Efficiency is improved in that more information can be obtained for a given sample size using some of the complex probability sampling procedures than the simple random sampling design. The five most common complex probability-sampling designs are systematic sampling, stratified random sampling, cluster sampling, area sampling and double sampling. In this study, a systematic sampling design was used to draw the sample from the population.

Selecting a random starting point between 1 and k and then picking every K^{th} elements in succession from the chosen sampling frame, is a systematic sampling method (Malhotra, 1996; Cavana et al., 2001). Aaker, Kumar and Day (1998) argued that the accuracy of systematic sampling could exceed that of simple random sampling when the ordering of the elements is related to the characteristics of interest because the sample was more representative of the population. It is more or less similar to simple random sampling, in that each element in the population has a known and equal chance of being selected. The only difference is that only permissible samples of size n can be drawn from a known and equal probability of selection, while the remaining sample of size n has a zero probability of being selected.

In this case, the sample was drawn from the sampling frame – the employees name list of Hospital A, obtained from the personnel director; the order of the names was determined by functional departments and years working in the hospital. In this study, every 4th employee was picked out from the 476 employees of Hospital A starting from a random number 4, then employees numbered 4, 8, 12, 16, 20 and so on would be sampled until 119 employees were selected. This complied with the systematic sampling method and was appropriate for this study.

Sample Size

Roscoe (1975) proposes the rule of thumb for determining sample size are four points. (1) A sample size larger than 30 and less than 500 are appropriate for most research; (2) where samples are to be broken into sub-samples (males/ females, juniors/ seniors, etc.), a minimum sample size of 30 for each category is necessary; (3) in multivariate research (including multiple regression analyses), the sample size should be several times (preferably 10 times or more) as large as the number of variables in the study; (4) for sample experimental research with tight experimental controls, successful research is possible with samples as small as 10 to 20 in size (pp. 253-254).

Additionally, Tabachnick and Fidell (2001) as well as Hair, Anderson, Tatham, and Black (1998) argued that the required sample size for research using multiple regressions as a major form of analysis depends on a number of issues, such as the desired statistical power, alpha level and number of independent variables. For example, at the statistically significant level (power) of 0.80, with a significant level (alpha) of 0.05, with up to 10 independent variables, and with a minimum R^2 value of 0.20 required, a minimum sample size of 100 is needed. The other way to determine the sample size for research using regression analysis is to calculate the ratio of the cases per independent variables. Green (1991) suggested that a

desirable sample size should be more than or equal to $50 + 8m$ (m is the number of independent variables) for testing the multiple correlation, and $N = 104 + m$ for testing individual independent variables. In addition, Hair et al. (1998) pointed out that sample size could also affect the generalisability of the results by the ratio of observations to independent variables. The desirable ratio should be between 15 to 20 observations for each independent variable. However, it is acceptable if the ratio is as low as 5 to 1.

In this study, MANOVA and multiple regression are utilised to examine the factors influencing the TQM practice and hospital performance. According to Roscoe's (1975) rule of thumb, the sample size should be 10 times as large as the variables. In the present study, sample size 100 is suitable for 10 variables (six independent variables and four dependent variables). Based on the suggestion of Green (1991), the sample size should be more than the formulation $[50 + 8 * \text{numbers of independent variables}]$, so that the sample size in this case should be more than 98, $[98 = 50 + (8 * 6)]$. In addition, $N = 104 + m$, while m equals to the numbers of independent variables, thus, sample size is 110 $[N = 104 + 6 = 110]$ for testing individual variables of this study is appropriate. Furthermore, according to the suggestion of Hair et al. (1998), the desirable ratio should be between 15 to 20 observations for each independent variable. There are six independent variables in this study, therefore, a sample of 90 to 120 $(15 * 6 - 20 * 6)$ is the desired ratio for testing the independent variables. In sum, it can be seen that the sample size 119 in this study is sufficient.

Developing a Questionnaire

Floyd, Fowler and Mangione (1990) suggested that one of the most important ways for a researcher to ensure standardization of gathering information is to ask questions which are easily understood and answered. The diversity of staff being questioned with their differing roles within the organisation was a predominant factor in the researcher's mind when

designing the questionnaires. Considerable attention was given to developing clear, unambiguous and useful questions (De Vaus, 1991) and the use of jargon and technical terms was avoided. The questions selected were predominantly closed questions since they are quick to answer. This was seen as a significant factor to aid response. A structured questionnaire was selected because these provide a rapid and relatively inexpensive way to obtain information (Kumar, 1996). The study was based on a structured, clear and unambiguous questionnaire for employees.

This study utilised the seven criteria of Malcolm Baldrige National Quality Award (MBNQA, 2001) to investigate the practice of TQM and hospital performance and to examine the relationships between six TQM elements and hospital organisational performance. The questionnaire was drawn from MBNQA, and consisted of three parts; the first part (part A) pertains to demographic information, including gender, profession, working years and whether the participant was a supervisor. The following part (part B) was derived from six of the seven criteria of MBNQA, namely leadership, strategic planning, focus on patients other customers and markets, informational analysis, staff focus and process management. The final part (part C) focused on evaluating organisational performance, as measured by patient and other customer-focused results, financial and market results, staff and work system results and organisational effectiveness results. The responses to questions were designed according to the Likert five point scales. The design of questions relevant to six elements was addressed as follows.

Leadership element.

Leadership in health care criteria of MBNQA aims to show a senior leader how to guide a hospital, review the hospital's organisational performance, address the degree of the hospital's responsibilities to the public, and so to show how to provide the contributions to its

community health, through setting and deploying clear values and high performance indicators that address the needs of patients and all other stakeholders (MBNQA, 2001). The questions designed to assess the leadership category followed the directions of MBNQA mentioned above.

Strategic planning element.

The investigation of strategic planning in health care criteria of the MBNQA focuses on how a hospital develops, chooses and deploys its strategic objectives and action plans. It also emphasises how progress is measured (MBNQA, 2001). The relevant section of the questionnaire emphasised assessing the development, deployment and achievement of strategic planning, objectives and action plans and their alignment with operational performance in Hospital A.

Focus on patients, other customers and market element.

This category of focus on patients, other customers and market addresses how a hospital is to meet the requirements, expectations, and preferences of patients, other customers, and markets to ensure the relevance of current health care services and to develop new health care service opportunities. As well, the hospital should satisfy and retain its current patients and other customers and build relationships to develop new health care service opportunities (MBNQA, 2001). Therefore, the questions used in this category stressed the recognition of customers' requirement and expectation, the deployment of customers' voice throughout the whole hospital. Questions were also included to measure customers' satisfaction and compare the results with competitors, as well as to effectively manage the customers' complaints to satisfy their needs.

Information analysis element.

This information and analysis in health care criteria of MBNQA is a consideration about whether the hospital provides an effective information system to identify, link and improve hospital organisational performance. This category also utilises the performance data and information to assess and analyse overall clinical and administrative/operational performance to compare with competitors and benchmark for performance improvement (MBNQA, 2001). Thus, the questions in the informational analysis category in the study asked about the gathering and utilisation of data and information also focused on the analysing of operational and organisational performance to align the hospital strategy and objectives.

Staff focus element.

The staff focus criterion aims to examine the hospital's work and jobs design, compensation, career progression, and related work force practices, including education and training to enhance staff knowledge, skills, and capabilities to support the achievement of high performance of the individual and hospital. Besides this, the questions aim to examine whether hospitals provide good working and staff supportive environments, and whether they contribute to the well being, satisfaction and motivation of staff (MBNQA, 2001). The questions in this category stressed the well-being, satisfaction, motivation and career development of employees. They also focused on participation in decision-making and the requirement of education and training.

Process management element.

This criterion examines how hospitals manage the processes. The hospitals provide key health care service designs, delivery processes, and key support processes, which

maintain the daily hospital operations and staff in delivering health care services. Key support processes which lead to hospital growth and success were addressed as well as, key supplier and/or partnering interactions within/between all departments and work units (MBNQA, 2001). The questions regarding process management asked about the quality of health care delivery and related processes improvement, also of concern was the support and business processes to satisfy customers and to achieve better performance.

The Translation of the Questionnaire

The questionnaire was first developed in English. Since English is not an official language in Taiwan, some of the respondents were not familiar with the original questionnaire language, and so Mandarin was then used. Ramachandran (1991) suggested that the questionnaire should be translated into a local language to avoid mis-communication and misinterpretation.

Choosing a person to translate a questionnaire was an important issue. In this study, a translator was carefully selected using two criteria. First, the person must have a good understanding of both English and Mandarin languages, more importantly, the person must also be capable of writing high-standard, official Mandarin, especially that which is suitable for a questionnaire. Secondly, the person's credentials must show that he or she has extensive experience in developing questionnaires in Taiwan. In this study, a Taiwanese native, who is fluent in English, translated the questionnaire into Mandarin. In addition, this person has had more than 5 years of experience in conducting both management and academic research in Taiwan.

Later a different person, with similar qualifications carried out a back translation into English as a further means of attaining accuracy in the questionnaire. This was done to ensure that the essence of the questionnaire was not lost, distorted or diluted through

translation (Adler, 1983; Brislin, 1980). The back translation version was compared with the original (English) version. Most parts of the translated version were accurate. Some translated questions led to distortion, which required correction. A few questions from the initial questionnaire required some altered wordings (while retaining the same meaning) in order to create a better understanding for the respondents. The corrected version of the questionnaire and its translated version are presented as Appendix D.

Verification of the Questionnaire

The appropriateness of measures is established through the different kinds of validity and reliability. “Validity is defined as the degree to which the researcher has measured what he has set out to measure the constructs that they are intended to measure” (Smith, 1991, p. 106). Babbie (1990) writes, “validity refers to the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration” (p. 133). Kumar (1996) defines validity as “the ability of an instrument to measure what it is designed to measure (p. 137).” In other words, validity is defined as the accuracy of measurement. There are three kinds of validity assessment that are applicable to this study, face validity, content validity, and criterion-related validity.

Face validity.

Face validity is considered to be a basic and very minimal index of validity. It indicates that the items being presented on the questionnaire are clear and understandable to the subject. Face validity is usually tested by giving the questionnaire to a sample of respondents to gauge their reaction to the items (Cavana et al., 2001).

Content validity.

Content validity is a judgmental evaluation of how well the content of a scale represents the measures (Burns & Bush, 1998). The judgment that an instrument is measuring what it is supposed to is primarily based upon the logical link between the questions and the objectives of the study. Hence, each question on the scale must have a logical link with an objective; and the establishment of this link is called content validity. Content validity is judged on the basis of the extent to which statements or questions represent the issues they are supposed to measure. If the items of an instrument cover the full range of the issues or attitude being measured, we can say that the instrument has content validity. Malhotra (1996) also suggested that researchers should examine whether the entire domain of the construct has been covered and measured. There are three ways to achieve content validity (Cavana, et al., 2001; Kumar, 1996), from the literature, from qualitative research and from the judgment of a panel of experts in the field.

The questions in the questionnaire were designed according to the sub-dimensions of the seven categories of MBNQA, which is used widely to investigate the TQM deployment and hospital performance. Moreover, senior quality managers of hospitals and academic experts in management field were requested to review the questionnaire. Those senior quality managers and academic experts include Chao-Sung Chang, Nai-Wen Kuo, Chung-Cheng Hung, Jin-Shen Wang and Wu-Der Tsay. Chao-Sung Chang, is a physician and superintendent of Kaohsiung Municipal Hsiaokang Hospital, Taiwan. He is also an associate professor of Kaohsiung Medical University. Nai-Wen Kuo, is vice superintendent of Taipei hospital, and also an assistant professor of Taipei Medical University. Chung-Cheng Hung is an assistant professor of Taipei Medical University and a executor of Total Quality Management in Wan –Fung Hospital, Taipei, Taiwan. Jin-Shen Wang is a physician and director of Paediatric Department in Kaohsiung Municipal Women's and Children's General

Hospital. They are academic experts and practitioners in hospital quality management. Wu-Der Tsay is a professor of the department of business administration of National Kaohsiung University of Applied Science and is a significant figure in quality management. The five experts were requested to review the designed questionnaire, and provide the researcher with comments and suggestions. They were also requested to fill in the questionnaire and try to determine the suitability and difficulty of the questions. The researcher then followed their comments and suggestions. Therefore, the instrument can be considered to have both face and content validity.

Construct validity.

The construct validity of an instrument depends on whether it can measure the theoretical construct, which it was supposed to measure (Samson & Terziowski, 1999). Two specific forms of construct validity are convergent and discriminate validity. Convergent validity is established when the scores obtained by two different instruments measuring the same concept are highly correlated. Discriminate validity is established when, based on theory, two variables are predicted to be uncorrected, and the scores obtained by measuring them are indeed empirically found to be so. Construct validity can be established through correlation analysis (Cavana et al., 2001), and factor analysis (Cavana et al., 2001; Hair et al., 1998). Factor analysis is a multivariate statistical technique, that would confirm the dimensions of the concept that have been operationally defined, as well as indicate which of the items are most appropriate for each dimension. While correlation analysis could establish convergent and discriminate validity, it can also be utilised to examine the concurrent and predictive validity (Cavana et al., 2001). In this study the construct validity of each category was investigated using correlation analysis. It was conducted to examine whether the measures located were as expected constructs, and for each construct, the scale items loaded

on one factor. If the scale items converged on the expected factors and discriminated themselves from other measures, they were considered to be construct valid.

Reliability test.

Reliability is normally seen as the degree of consistency of a measure. Moser and Kalton (2001) stated, "A scale or test is reliable to the extent that repeat measurements made by it under constant conditions will give the same result" (p. 353). In other words, the measuring procedure should yield consistent results on repeated tests, hence, the greater the degree of consistency and stability in an instrument, the greater is its reliability. The various procedures of determining the reliability can be divided into two groups, external and internal reliability. External consistency procedures compare cumulative test results with each other as a means of verifying the reliability of the measure. The internal consistency of a set of measurement items refers to the degree to which items in the set are homogeneous (Samson, & Terziovski, 1999). Sekaran (1992) suggested that test-retest method and alternative form (parallel form) methods are used to measure external consistency, while the subdivided-test method (referred to as the split-half method) and inter-item consistency are utilised to estimate internal consistency. In the test-retest method, the same set of measures is administered at two different times to the same respondent; the scores obtained from the two different times are then correlated. In alternative forms, two equivalent forms of a scale are constructed and then administered at two different times to the same respondents. For the third method, the subdivided-test or the split-half method, the scale is divided into two sets of items and given to the same respondents, the reliability coefficient is estimated by correlating the scores of the two halves. The last method is a test of the consistency of respondents' response to all the items in a measure. To the degree that items are independent measures of the same concept, they were correlated with one another (Sekaran, 1992). The assumption of

internal consistency is that a good scale is comprised of homogeneous items. Hence, methods concerning internal consistency measure inter-item correlation. A scale is considered to have high internal consistency when its items are highly inter-correlated, for this suggests that the items are all measuring the same thing (De Vellis, 1991). The most popular test of inter-item consistency reliability is the Cronbach's coefficient alpha (α) (Cronbach, 1984), the value of α ranges from 0 to 1. The nearer the value of α to 1, the better the reliability is. If the value is low, either there are too few items or there is very little commonality among the items. For the early stages of any research, Hair et al. (1998) suggests that a coefficient of 0.7 or above is desirable.

The internal consistency of the seven categories in the questionnaire was estimated by SPSS v 11.0 for windows (SPSS, 2001) reliability test program, the Nunnally (1978) recommended standard (Cronbach Alpha >0.70) would act as the identification of composite reliabilities of this study (Hair et al., 1998).

Distribution of Questionnaires

There were 119 employees chosen through the systematic sampling, because four staff members were absent, only 115 participants were available to administer the questionnaire. Participants and researcher gathered in the meeting room of the survey hospital, the researcher gave an explanation to the participants of the questions and what was requested of them to complete the questionnaires. The researcher then collected the completed questionnaires.

Data Analysis

The respondents' data (on the questionnaire) was divided into three parts: Part A, Part B and Part C, part A consisted of the attributes of respondents including gender, profession,

numbers of years they had worked in Hospital A, and whether the person was a supervisor or not. While part B addressed the TQM deployment, part C was relevant to the hospital performance from the employees' perspectives. The data of the three parts was entered into the software of SPSS v 11.0. MANOVA and regression analysis was utilised to analyse the collected data.

Multivariate analysis of variance (MANOVA).

MANOVA was used to investigate the research hypotheses through the variance analysis in terms of gender, professions, numbers of years had worked at Hospital A, and whether the person is a supervisor or not. Bryman and Cramer (1997) advocated that there are two advantages using MANOVA rather than ANOVA. Firstly, MANOVA could decrease the risk of getting the error of type I. Because the critical value of significance (α) usually is 0.05, if there is only one dependent variable to be compared; however, the value of α would be raised to twice (0.10), when two dependent variables to be tested, this means that the probability of error I would be increased, if ANOVA is used. Secondly, when several dependent variables are investigated simultaneously, it is possible to realize the difference in mean value between groups. However, this would not be achieved when ANOVA is adopted. The dependent variable in this study is a four-dimensional hospital performance, so MANOVA was employed in this study to test hypotheses.

The assumption of MANOVA: The tests of MANOVA are based on a number of assumptions (Pallant, 2001) to make the task of identifying the difference of groups. These assumptions are sample size, normality, outliers, linearity, homogeneity of variance-covariance matrices, multicollinearity and singularity, and are addressed below. First, it is necessary to have more cases in each cell than the cases of dependent variables. The total cells equal to levels of independent variables by levels of dependent variables. For example,

in the MANOVA test of TQM practice by gender, the minimum required number of cases in each cell is six (the number of dependent variables). There are total 12 cells (two levels of independent variable: male/female, and six dependent variables for each). The second assumption is normality, which means that at each value of the independent variable, the dependent variable must be normally distributed in the population, and the test for multivariate normality is to calculate Mahalanobis distances using an SPSS regression menu. Mahalanobis distance is the distance of a particular case from the centroid of the remaining cases, where the centroid is the point created by the means of all the variables (Tabachnick & Fidell, 1996, p. 67). Looking at a histogram or a normal probability plot of the residuals can also test the normality assumption, and these graphs are easily obtained using SPSS. The third is outliers, multivariate outliers are subjects with a strange combinations of scores on the various dependent variables, such as very high on one variable, but very low on another (Afifi & Clark, 1998). To decide if a case is an outlier one can compare the Mahalanobis distances value against a critical value (this is obtained using a chi-square criteria value table). If an individual's Mahalanobis distance value exceeds this criterion, it is considered an outlier (Tabachnick & Fidell, 2001). The following assumption is linearity, and this assumption refers to the presence of a straight-line relationship between each pair of dependent variables. Generating scatter plots between each pair of variables can assess it. The next is homogeneity of variance-covariance matrices, which indicates that the distribution of the dependent variable should have the same spread at each value of the independent variable in the population (Francis, 2001). Box's M test of equality of covariance matrix is used to assess the homogeneity of variance-covariance matrices. If the Significant value of Box's M test is larger than 0.001, then it can be considered that the MANOVA test has not violated the assumption. Finally assumption is multicollinearity and singularity. MANOVA works best when the dependent variables are only moderately

correlated. The simplest way to test multicollinearity is to run correlation and to check the strength of the correlations among dependent variables. If correlation is up around 0.8, or 0.9, it is necessary to be concerned about multicollinearity.

The multivariate tests of significance will indicate whether there are statistically significant differences among the groups on a linear combination of the dependent variables. There are at least three statistics to choose from Wilk's Lamda, Hotelling's Trace and Pillai's Trace. Tabachnick and Fidell (1996) recommended Wilk's Lamda for general use, then Pillai's Trace is more robust, when the research involves a small sample size, unequal N values, violation of assumption (p. 401). Pillai's Trace value was used to identify the significance in this study.

Effect Size: The probability of MANOVA indicates whether the difference between groups is "statistical significant", however, probability values do not indicate the degree to which the two variables are associated with one another. With large samples, even very small differences between groups can become statistically significant. This does not mean that the difference has any practical or theoretical significance. Then, researchers need assess the effect size (also known as "strength of association"). This is a set of statistics, which indicates the relative magnitude of the differences between means. In other words, it describes the "amount of the total variance in the dependent variable that is predictable from knowledge of the levels of the independent variable" (Tabachnick & Fidell, 1996, p. 53). The most common statistics of effect size is Eta squared. Eta squared represents the proportion of variance of the dependent variable that is explained by the independent variable. Values for Eta squared can range from 0 to 1. Cohen (1988) provides a guideline to interpret the strength of Eta squared values. When the value of Eta squared is equal to 0.01, the effect of independent on dependent variables is small, when the value equal to 0.06, it is considered a moderate effect, while the value equal to 0.14, there will be a large effect between two variables.

Regression analysis.

Pearson's product-moment correlation method was performed before regression analysis, in order to examine the construct validity, and also to reveal the correlation within the six independent variables to check the presence of multicollinearity, which exists when the inter-correlation between independent variables exceed 0.8 (Berry & Feldmann, 1985). The aim of regression analysis is to summarise data as well as to quantify relationships among variables, expressed via an equation for predicting typical values of one variable given the value of other variables. Hanushek and Jackson (1977) suggested that stepwise regression is a useful procedure in determining the most significantly related variables in explaining the behaviour in question and this procedure allows the data "to tell the best model". Stevens (1996) noted that if an investigator wishes to determine whether some conceptually newer measures add anything to the dependent variable compared to older and more proven independent variables, it is appropriate to use stepwise regression. Thus, the stepwise regression analysis not only gives an indication of how comprehensive the effect of the independent variable is, but also details which aspect of grossly defined variables have been differentially affected.

There are two methods in the linear regression analysis; they are simple linear regression and multiple linear regression. When there is only one independent variable, the simple linear regression analysis would be selected, while there are more than two independent variables; the multiple linear regression would be employed. In the present study, there are six independent variables, thus, multiple linear regression method was utilised to analysis the collected data. SPSS can estimate the coefficient for multiple linear regression with more than two independent variables and list all of the possible regression models. SPSS provides three methods for controlling the entry or removal of independent variables from the regression model.

The first method is forward selection, which enters variables into the model one by one (or step by step). The variable entered at step 1 is the one with the strongest positive (or negative) simple correlation with the dependent variable, at step 2 the variable with the strongest partial correlation is entered. At each step, the hypothesis that the coefficient of the entered variable is 0 is tested using its t statistic (actually an F statistic that is the square of the t). Stepping stops when an established criterion for the F no longer holds. The second method is backward elimination, which begins with all variables in the model, and at each step, removes the least useful predictor (lowest F-to remove). Variables are removed until an established criterion for the F no longer holds. The third method is stepwise selection, which begins like forward stepping, but at each step, tested variables are already in the model for removal. This is the most commonly used method, especially when there are correlations among the independent variables. For example, a fourth variable can diminish the importance of an already entered variable, so the already entered variable is removed from the model.

Criteria for moving variables: SPSS provides two criteria for moving variables. They are based on an F statistic that is the square of the t statistics. The first criterion for removing variables is the minimum F value that a variable must have to remain in the model. Variables with F statistics less than the value specified for removal in the Linear Regression Options sub-dialog box are eligible for removal. This statistic is called F-to-remove. The second criterion is the maximum probability of F-to-remove. The default F-to-remove is 2.71, and the default probability is 0.10. Some feel that when the predictors are highly correlated, the F-to-remove should be set to a higher value, and the probability to a low value (SPSS, 1998). In sum, in order to assess the usefulness of each variable in the model, one cannot simply compare the coefficient, and the t statistics to provide some clue regarding the relative importance of each variable in the model. A search for t value well below -2 or above $+2$

(SPSS, 1998) is a guide to useful predictors.

Assumption of regression analysis.

The tests of regression are based on a number of assumptions (Francis, 2002) to make the task of estimating and testing of the model viable. First, metric scales assume that all of the variables are measured on a metric scale. Second, all of the observations are independent when samples were randomly selected. Third, linearity and additively, it assumes that the independent variables are all linearly related to the dependent variable. It is also assumed that the effects of the independent variables can be added to improve prediction of the dependent variable. That is that there is no interaction between the predictors. Fourth, equal variance (homoscedasticity), the distribution of the dependent variable should have the same spread at each value of the independent variable in the population (Francis, 2001). The linearity and equality of variance can be tested by a plot of residual versus predicted value, and equality of variance assumption also can be examined using Box's test, Bartlett's test of sphericity and Levene's test of equality of error variances. Finally, normality, means that at each value of the independent variable, the dependent variable must be normally distributed in the population. If both the linearity and the equal variances assumption are met, the normality assumption can be tested by looking at a histogram, or a normal probability plot of the residuals, these graphs are easily obtained using SPSS. If the assumption is met, the residuals should be normally and independently distributed (Hair et al., 1998).

Outliers: Outliers could change the regression output dramatically. Thus, it is necessary to detect and eliminate them before running data analysis. Outliers are cases with such extreme values on one variable or a combination of variables that they distort statistics (Afifi & Clark, 1998). Tabachnick and Fidell (2001) suggest that outliers may be detected by looking at Mahalanobis distance. Mahalanobis distance is the distance of a case from the

centroid of the remaining cases where the centroid is the point created by the means of all the variables. The process used to identify outliers was the case-wise subcommand in the regression procedure. The case-wise subcommand produces a plot of outliers that have a standardized residual greater than three (Norusis, 1988). Lewis-Beck (1980) suggested those cases that proved to have standardized residual greater than three need to be eliminated from the analysis.

In this study, linearity was examined by looking at residual plots, standardised residuals were plotted against predicted values using SPSS plot. The homoscedasticity was tested using Box's test during SPSS regression procedure, and the normality was diagnosed by looking at both histogram and normal probability plot. In this study the relationships between the elements of TQM and hospital organisational performance were examined by stepwise regression analysis of SPSS 11.0 version. The variables with the absolute t value ≥ 2 were included in the regression equation.

Focus Group Interviews

Juran (1995) and Wilson and Durant (1994) argue that there is a "paucity of systematic and rigorous evaluation" in many TQM studies (p. 138). Furthermore, Wilson and Durant state the need for more theory grounded and contingency based research rather than the research being restricted to deductive approaches. It is suggested that a methodology, which inquires more deeply into TQM-related events within the organisation, is needed. This will enable a coherent and firmly founded set of TQM theories to be elucidated (Leonard & McAdam, 2001). In this study, focus group interviews were used to explore TQM practice deeply, and the analysis of the interview data was based on grounded theory.

The data gathered from the focus group interviews were used to explore the advantages, disadvantages, strengths, weaknesses, and obstacles while TQM was being implemented in

the hospital from the employees' experience to answer the sixth research question. Focus group interviews were also used to discover methods to implement TQM successfully and then enhance hospital performance through the interaction of employees during groups interviews. This was possible because the employees' experiences provide first hand data.

A recent survey of the CINAHL database quickly revealed more than 1,000 studies using focus groups, alone or in combination with other methods (Sharts-Hopko, 2001). This strategy has been used in the fields of product development and marketing since the 1920s. In the 1930s, social scientists began to experiment with focus group methodology when they observed that in individual interviews the questioner dominated the discussion while the interviewee tended to play a passive role (Knodeel, 1994; Krueger & Casey, 2000). Focus group methodology was employed by the U.S. Department of Defence during World War II in improving troop morale (Burns & Grove, 2001). The theoretical background relevant to the focus group interview is now addressed.

Theoretical Background Relevant to Focus Group Interview

According to Khan and Moedeson (1992), a focus group interview is a qualitative method "with the primary aim of describing and understanding perceptions, and the thinking of a select population to gain understanding of a particular issue from the perspective of the group's participants (p.57)." Focus groups are a form of group interview, though not in the sense of a backwards and forwards discussion between interviewer and group. Rather, the reliance is on the interaction within the group who discusses a topic supplied by the researcher (Morgan, 1997).

Features of focus group interview.

The focus group interview enables in-depth discussion and involves a relatively small number of participants; they focus on a specific area of interest that allows participants to discuss the topic in great detail. Jarrett (1993) argued that focus groups conducted with acquaintances not only allow the participants to share their experiences but also to disclose personal information. The more participants there are, the deeper the levels of disclosure that can be obtained. A moderator introduces the topic and assists the participants to discuss it, encouraging interaction and guiding conversation. The participants usually share social and cultural experiences or particular areas of concern.

Usage of focus group interviews.

Focus groups can be used to assist decision-making before, during, or after an event, program, or the practice of a policy (Krueger & Casey, 2000). Information gathered before a program may be part of a needs assessment, asset analysis, climate survey, program, or product development or pilot testing. For example, Davis et al. (2000) conducted seven focus groups to determine college men's health concerns and barriers to seeking help and recommendations as part of their planning to develop men's health centre. During the development of policy formulation, Yin et al. (2000) used focus group methodology with 200 nursing leaders to establish the agenda for publicly funded nursing research in Taiwan, Republic of China. Formative evaluation, process evaluation, feedback, monitoring, or reporting are examples of the appropriate use of focus groups during practice of a program (Krueger & Casey, 2000). Program effectiveness as stated earlier is also an appropriate topic for focus groups interviews. For instance, the Department of Health in the Matabeleland North Province, Zimbabwe, conducted 11 focus groups including traditional healers, midwives, village community workers, high school students and teachers as well as

commercial sex workers within their district to define more appropriate health education messages (Vos, 1994). Finally, summative or outcome evaluation studies may use focus groups to gather data at the end of a program or project (Krueger & Casey, 2000). For example, Rafferty and Radosh (2000) used focus groups to investigate the effectiveness of the New York City AIDS Education and Condom Availability Project within the city's public high schools. Furthermore, quality improvement initiatives often make use of focus group methodology. Investigators in a large university medical centre in Copenhagen used nursing staff records as well as focus groups of patient and nursing personnel to examine the quality of basic nursing care, and in particular, problems experienced by patients of which the staff was unaware (Sharts-Hopko, 2001).

Focus groups have become a well-known method in qualitative research in the social sciences and this is reflected in a number of publications (Dawson, Manderson, & Tallo, 1993; Krueger, 1998; Morgan, 1988, 1997; Morgan & Krueger, 1998; Stewart & Shamdasani, 1990). However, until the early 1980's, focus groups were used only in some health areas through studies of knowledge, attitudes and practices of contraception (Folch-Lyon & Trost, 1981; Stycos, 1981). Knodeel (1994) used focus groups to elicit information about fertility in Thailand. With the Acquired Immuno- Deficiency Syndrome (AIDS) epidemic, focus groups were used as a first step to overcome researchers' limited knowledge about the gay community. Other health educators have also used the technique. Basch (1987) for example, utilised the method to improve the effectiveness of intervention programs in public health research. Although focus group interviews have been applied widely in practice and academic research, it is important to note there are several disadvantages and limitations.

The advantages and limitations of focus group interview.

Focus groups allow researchers to explore in-depth knowledge of the participants much more quickly and at less cost than individual interviews. They are appropriate when a researcher needs to obtain in-depth knowledge on sensitive subject matters in order to provide an appropriate health service, or to improve health care. Emphasis is on the interaction in the focus groups in order to produce information. Focus group interviews rely heavily on the interaction between participants (Rice & Ezzy, 1999). Interaction is the unique feature of the focus group interview, and respondents in focus group interviews react to and build upon the responses of other group members. This synergistic effect of the group setting may result in the production of data or ideas that might not have been uncovered in individual interviews (Stewart & Shamdasani, 1998). Morgan and Krueger (1993) argued that focus groups provide valuable insights into the complex behaviours and thoughts of people that are otherwise less accessible. In focus groups the researcher and the participants are able to interact directly, providing opportunities for clarification and probing of responses as well as follow-up questions. Focus group interviews also allow direct observation of non-verbal responses among the participants, which may be valuable in the interpretation of the information gathered.

Limitations of focus group interviews are that the information gathered from focus groups can only represent the perspective of the participants; it cannot be used to statistically represent the wider community or to generalise to large populations. The open-ended nature of responses obtained in focus groups often makes summarisation and interpretation of results difficult (Stewart & Shamdasani, 1998). Although focus groups can generate in-depth information, they cannot explore the complex beliefs and practices of an individual person, as can be obtained from an in-depth interview. Focus groups can examine participants' knowledge of, and attitudes on, certain issues. They cannot, however, investigate actual

behaviours as can be seen from observing participants' behaviour. As the researcher motivates the focus group interview; the topic and the answers would reflect the researcher's interests. Or if there was a very dominant or opinionated member in the focus group, the other group members may be hesitant to talk, these situations will result in some biases on the intended outcomes and so they may not reflect the participants' interest.

Reasons for Selecting Focus Group Interview

In this study, focus group interviews were used to get first hand data from employees to understand the benefits and difficulties that occurred in Hospital A when the TQM program was implemented. The first of two main reasons for employing focus group interviews is that, focus group interviews can provide "a rich and detailed set of data about perceptions, thoughts, feelings, and impressions" of people in their own words (Stewart & Shamdasani, 1990, p. 140). There is a minimum of artificiality of response, unlike in survey questionnaires that ask for constrained response categories (Stewart & Shamdasani, 1998). The second reason is that the focus group can find out not only what employees think but also how and why they think the benefits and difficulties of TQM occur (Kitzinger, 1994). Focus group interviews are one of the strategies used to test monitoring procedures or solution ideas and generally understand issues relating to quality (Krueger & Casey, 2000). Furthermore, focus groups have been proven useful following the analysis of a large-scale, quantitative survey (Stewart & Shamdasani, 1998). In this study, the focus group could facilitate interpretation of quantitative results and add depth to the responses obtained in the survey. Thus, focus group interview can be considered an appropriate approach in this study.

Flow-Chart of Focus Group Interview

Three major procedures, pre-interview organization, interview-data collection and post-interview-data analysis, were included in the following flow chart (Figure 5.2).

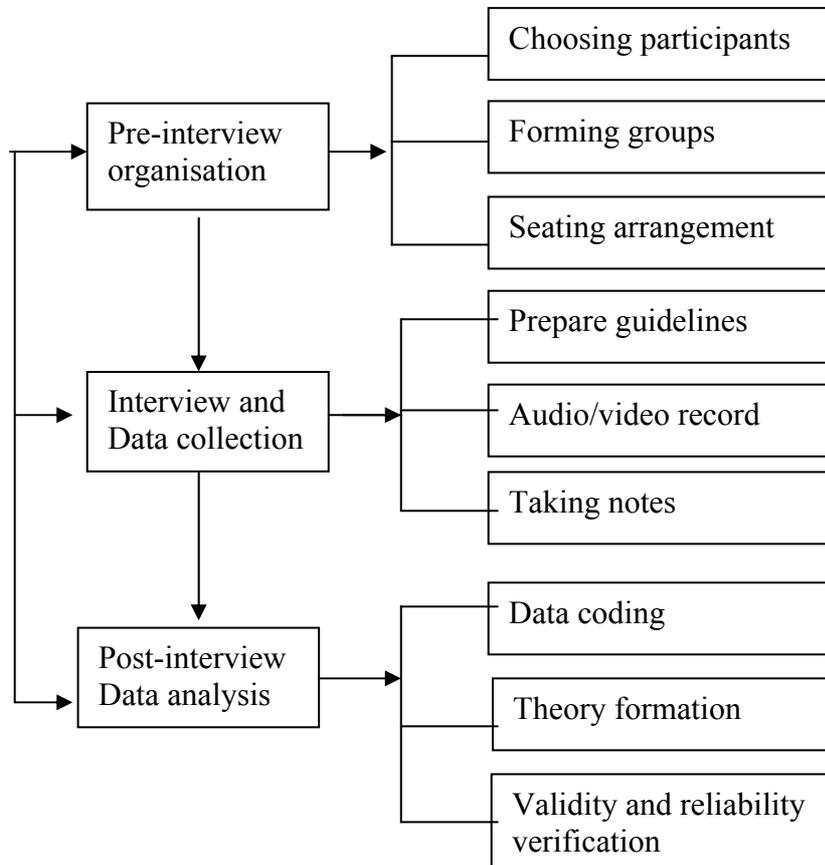


Figure 5. 2: Flow-chart of focus group interview

Pre-Interview: Organisation of Interview

Selection of participants is a major key to the success of focus group interviews. In order to achieve an overall impression of TQM practice and hospital performance, employees from different departments and different professional groups must be represented in the focus group interviews, including heads of clinical services, the chief executive, the employees working in the front line, nurses and administration staff. In this study, the participants in the focus group interviews covered five professional areas, physicians, nurses, pharmacists, supporting technicians and administration staff.

The numbers of participants also play an important role in the focus group interview, in general, there are about six to ten participants in one focus group session, but some sessions may have up to twelve people (Morgan, 1997; Stewart & Shamdasani, 1990). Dawson et al. (1993) pointed out that focus groups work well with four to twelve people. The information gained may not be adequate or rich enough if there are fewer numbers of people to interact. In this study, in order to gain sufficient information, twelve employees for each group were selected in advance, and a total 108 employees were recruited for nine groups.

It is also critical when chairing the meeting, the researcher ensures that participants have something to say, feel comfortable and relaxed enough to contribute. The researcher also needs to ensure a balance is struck between being not too directive or allowing participants to veer off the point, and to keep the meeting open-ended but to the point. There are three appropriate seating arrangements and they include U-type, semi-circle type and circle type (Hu, 2001), as shown in Figure 5.3. The symbols of black circles represent the seats of researchers while white circles represent the chair of participants. In this study, based on the consideration of space, chairs were arranged in a U type, to ensure that participants felt comfortable and relaxed to discuss issues.

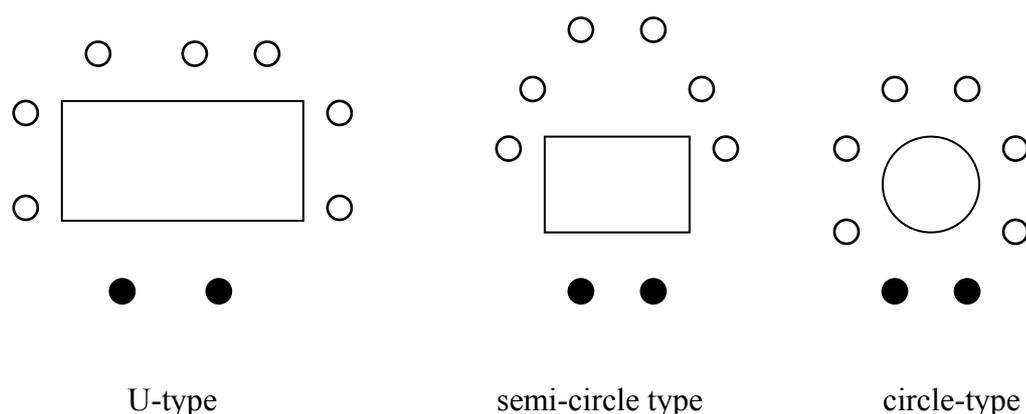


Figure 5. 3: The appropriate arrangements for focus group interviews
(Source: Hu, 2001)

In contrast, there are also three problematic arrangements consisting of lecture type, line type and interview-mediate type (Hu, 2001), as shown in Figure 5.4.

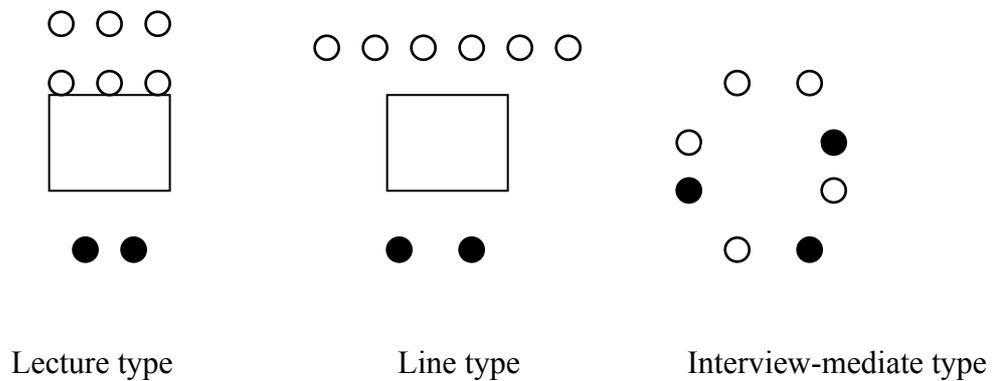


Figure 5. 4: The problematic arrangements for focus group interviews
(Source: Hu, 2001)

It is important that a researcher have well-framed research questions prior to initiating focus group research (Stewart & Shamdasani, 1998). Six conversational, clear, short and open-ended questions were designed as a guideline for the focus group interview. The English version of the guideline and its translated version are available in Appendix E.

Positive questions, about the benefits of TQM, were asked before the negative ones about the disadvantages of TQM (Sharts-Hopko, 2001). Questions of a more general nature, such the background of TQM practice were raised first, and more specific issues, for instance, how to increase the performance of Hospital A, were raised later in the guide (Sharts-Hopko, 2001). The guide aimed at identifying the adoption, acceptance and practice of TQM, the weaknesses and obstacles facing the practice of TQM, the advantages and disadvantages of TQM. Refreshments were provided as incentives (Sharts-Hopko, 2001) for successfully recruiting participants.

Focus Group Interview: Data Collection

Each group began with a greeting and introduction and consent information was explained and discussed. Following that, participants were told that their responses would remain confidential and anonymous. A semi-structured interview guide was used to facilitate group discussion about the TQM practice in the hospital.

The guideline included six broad questions: (a) What factors caused the hospital to implement a TQM program? (b) Why did this hospital implement a TQM programme? (c) What has been the advantage to you and the hospital as a result of implementing the TQM program? (d) What has been the disadvantage of the TQM practice, for you as an employee, and for your hospital? (e) What obstacles do you think inhibited the practice of TQM? (f) How do TQM implement effectively and then increase the performance of hospital? Additional questions were asked as necessary to expand on issues or probe into areas being discussed (Krueger, 1998).

The facilitator moderated the discussion and encouraged interaction among the group. No difficulties were encountered with having employees respond spontaneously to questions. The facilitator closed each group session with a summary. Each session lasted approximately one to one and half-hours. The interview processes and the opinions of participants were recorded by videotape and the researcher also took notes of the key points of participants.

During the focus group interview the researcher used a process approach that sought to constantly compare additional information, which established categories. The researcher continued to look for instances of that category until no more information could be found. In this study, the researcher enhanced theoretical sensitivity by beginning with the literature of TQM and then attempting to find empirical evidence related to factors identified by the literature.

As a rule of thumb, three to five sessions may be enough for each variable of investigation. Saturation occurs when additional information no longer generates new understanding. At this point, it is time to wrap up the research (Khan & Moedeson, 1992; Morgan, 1997; Scrimshaw & Hurtado, 1987). Strauss and Corbin (1990) suggest that the important criterion for the ending of fieldwork is “theoretical saturation”, which they define as occurring when: (1) no new or relevant data seem to emerge regarding a category; (2) the category development is dense, insofar as all of the paradigm elements are accounted for, along with variation and process; (3) the relationships between categories are well established and validated (p. 188). This may happen after only three sessions have been conducted with one group, but it may occur in others in the fifth or sixth session. Morgan (1997) pointed out that the numbers of focus groups required that were adequate for data saturation depended on the variability of the research participants, both within and across groups. In this study, there were nine focus group interviews conducted in order to reflect employees’ perspectives fully.

Post Interview: Data Analysis

The adoption, acceptance and practice of TQM reflected in the focus group interviews were analysed to assist understanding of the practice of TQM in the hospital. From the analysis of answers it was hoped to gain insight into whether TQM principles can be applied to clinical care, and what was the situation of staff participating in the TQM program, as well as the benefits, negative effects to participants and the hospital in implementing TQM program.

Wilson and Durant (1994) stated the need for more grounded theory and contingency based research rather than studies being restricted to deductive approaches. It is suggested that a methodology which inquires more deeply into a TQM-related event within the

organisation is needed as this it would enable a coherent and firmly founded set of TQM theories to be elucidated (Leonard & McAdam, 2001). Carr and Littman (1990) identify that there is a lack of TQM theory and definition based on in-depth qualitative studies. To avoid TQM being perceived as an "a theoretical black box", a systematic and rigorous approach to TQM theory building must be adopted (Leonard & McAdam, 2001, p. 182). Lincoln (1992) argues that qualitative methods, and grounded theory in particular, "exhibits greater utility, power, and synergism with emerging concepts in health research... and provides more stakeholder-based policy and analysis and evaluation studies (p. 375)." Grounded theory can focus on the temporal dimension of a TQM-based organisational setting and investigate contemporary phenomena within its real-life context (Leonard & McAdam, 2001). Van de Ven (1992) and Yin (1989) argue that case studies are especially appropriate within grounded theory methodology where real-life contexts are being investigated over a period of time. By using grounded theory, the philosophy underpinning the TQM practice can be elucidated. Thus, in this study, data collected from the focus group interviews were analysed on the basis of grounded theory.

Grounded Theory

One of the more influential research methodologies utilised in qualitative health research is grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1994). In health research, it has been widely taken up, particularly in nursing research. The work of Charmaz (1990, 1991, 1995) provides a particularly sensitive and useful introduction, overview and illustration of the application of the methods of grounded theory to health and illness research issues.

Grounded theory is a detailed grounding by systematically and intensively analysing data, often sentence by sentence, or phrase by phrase of the interview; by constant

comparison, data are extensively collected and coded, thus producing a well constructed theory. It attempts to represent the reality and experience of the people being studied and it also attempts to be abstract enough to include variations and be applicable in other contexts (Strauss & Corbin, 1990).

According to the methods of grounded theory, concepts, categories and themes are identified and developed while the research is being conducted. Concepts are the basic unit of analysis. These are then grouped and related to form more abstract categories. Relationships between categories are then identified to develop what Glaser and Strauss (1967) refer to as “formal theory”. At the heart of grounded theory is the process of coding, sorting and organising data. Coding is clearly central to the analysis process, and Kerlinger (1986) defined it as the translation of question responses and respondents information to specific categories for the purpose of analysis. Coding is also the ascription of a category label to a piece of data, with the category label either decided in advance or in response to the data that have been collected (Louis, Lawrence, & Keith, 2000). Strauss & Corbin (1990) described three main coding procedures: open coding, axial coding and selective coding; they are described below.

Open coding.

The initial type of coding done during a research project is termed open coding. This is unrestricted coding of the data, and could be thought of as the first run at coding data. Scrutinising the interviews, field notes, or other documents very closely does this open coding, line by line, or even word by word. The researcher searches for differences and similarities between events, actions and interactions and applies conceptual labels to these, grouping them into categories. The aim is to look at the data in new ways to see new relationships between events or interactions and to produce concepts that seem to fit the data (Strauss, 1993).

Axial coding.

Axial coding is an essential aspect of coding. In this coding, the researcher examined the categories for any interrelationships that might exist, between central phenomena, the causal conditions that related to phenomena, the context in which the phenomena existed, and any strategies or consequences of the emerging phenomena. This results in cumulative knowledge about relationships between that category and subcategories (Strauss, 1993).

Selective coding and core categories.

Selective coding is the third stage in grounded theory analysis. The term "selective" is used because, for this stage, the researcher deliberately selects one aspect as a core category, and concentrates on that. When the selection is made, it delimits the theoretical analysis and development to those parts of the data that relate to this core category, and open coding ceases. The analysis now proceeds around the core category, and the core category becomes the centrepiece of the grounded theory (Punch, 1998).

Development of a theory.

The goal of grounded theory is to generate a theory that accounts for a pattern of behaviour, which is relevant and problematic for those involved. The generation of theory occurs around a core category or sometimes several categories. The core category has several important functions in generating theory, since a core category accounts for most of the variation in a pattern of behaviour, it has different kinds of appearances under different conditions, and nevertheless it is relevant and works. Most other categories and their properties are related to the core category, which makes it subject to much qualification and modification. In addition, through these relations among categories and their properties, the

relationships have the prime function of integrating the theory and rendering it dense and saturated as the relationships are discovered, these functions then lead to theoretical completeness (Strauss, 1993).

In this study, TQM practice in the hospital was the phenomenon being studied. The causal conditions referred to the reasons why the hospital adopted the TQM program, and how the hospital could apply different strategies to increase TQM performance. Consequences of adopting TQM could impact on individuals, the organisation, and the Central Taiwan Government. The context was a collection of organisational and environmental conditions that moderate the interactions among the causal conditions, phenomena, strategies, and consequences. Open coding identified several categories of causal conditions, phenomena, strategies, and consequences. After open and axial coding, the researcher developed a narrative (selective) coding that integrated the results.

Verification of validity and reliability of interview.

In ensuring internal validity, the following strategies were employed. Five experts in this area reviewed the content validity of the open-ended questions in the interview guide. Five experts were also asked to rate each question as clear or unclear. Comprehension and clarity of the question were found acceptable. The second strategy is peer examination, a lecturer in the Business Administration Department of Cheng Jong University in Taiwan served as a peer examiner to provide the researcher with an opportunity to explore and test the theories and interpretations of the data through discussion with him. The third strategy is member checking. The participants served as a check through the analysis process, and the display of analysis results. Consequently the strategy utilised in this study to ensure external validity provided rich, thick, detailed descriptions so that anyone interested in transferability would have a solid framework for comparison (Merriam, 1988).

In qualitative research, reliability can be regarded as a fit between what researchers record as data and what actually occurs in the natural setting that is being researched, i.e. a degree of accuracy and comprehensiveness of coverage (Bogdan & Biklen, 1992). The primary technique employed in the study to ensure reliability is that data collection and analysis strategies were reported in detail in order to provide a clear and accurate picture of the methods used in this study. The second technique used was the triangulation or multiple methods of data collection and analysis, which strengthens reliability as well as internal validity (Merriam, 1988).

Reporting of findings.

Although data collection and analysis methods are similar across qualitative approaches, the methods and the findings are presented differently. The detail of qualitative research reports is important. This is because, unlike quantitative reports, qualitative studies are concerned with nuance, shared understanding and the elaboration of meaning (Ezzy, 2002). Richardson (1997) emphasised that “qualitative research has to be read, not scanned, its meaning is in the reading” (p. 87). Creswell (1994) also argued the importance of data demonstration and suggested that narrative text has been the most frequent form of display for qualitative data. Therefore, the results of the qualitative approach in this study were presented in a descriptive form. Thick description was the vehicle for communicating a holistic picture of the experiences of the Hospital A’s employees. The final project was a construction of a theory of the participants’ experiences and the meanings of TQM practice at Hospital A.

Documentation Analysis

Ratio analysis was used to compare the performance change of Hospital A. Ratio analysis represents a calculation of, and attempts to understand the change after a period of time. Ratio analysis is popular and easy to use, to identify the performance that is abnormally high or low, such as mortality, productivity of employee per month, or growth of revenue and profit, and increase rate of patients of in-patients and outpatients (Sherman, 1984). Since ratios are simple to calculate for data that is routinely and easily available, thus, ratio analysis has become widely used for measuring performance in the field of hospital management. Thus, ratio analysis was used to compare the current performance with the performance before the practice of TQM.

The documentation used in this study was Government Annual Reports from 1997 – 2001. Four areas of hospital performance based on the criteria of MBNQA were utilised, including patient outcomes, financial outcomes, employee outcomes, and hospital effectiveness. The indicators of patient outcomes were mortality rate, outpatients' satisfaction, re-admission rate within 24 hours, and length of stay. Total revenue, total expenditure, government funding and growth of profit were indicators of financial outcomes. For employee outcomes, the document data in terms of employees hours spent in education and training, the productivity of per employee per month, employees' satisfaction and turnover rate were used. While the numbers of in-patients, outpatients and patients undergoing major surgery as well as general occupancy rate were indicators of hospital effectiveness.

Summary

This chapter firstly outlined the features of case study design. Secondly, a triangulation method to collect data was selected. The questionnaire administration was discussed, including the development of a self-assessment questionnaire, and the validity and reliability of questionnaire. The sampling strategy, MANOVA and multiple regression analysis were addressed. Next, the chapter described a qualitative approach, and outlined the usage of focus group interviews. The data analysis was based on grounded theory in order to develop a theory of TQM practice. Finally, documentation analysis from secondary data relating performance after TQM practice was addressed.

The next chapter will address the results of questionnaires, focus group interviews and documentation analysis.

CHAPTER SIX

RESULTS

In the previous chapter, the research methodology for the study was discussed. This chapter addresses the procedures of use of that methodology to obtain three kinds of results.

This chapter first depicts the results of questionnaire administration including demographic profile of employees; the verification of the validity and reliability of the research instrument follows. Next, descriptive statistical results of the study variables, Pearson correlation, assessment of the four research hypotheses by multivariate analysis of variance (MANOVA) and regression analysis results are demonstrated to identify the predictive factors of hospital performance.

Next we will portray the results of focus group interviews. The context of TQM program adoption and the casual conditions for Hospital A are categorised. The phenomena, including advantages and disadvantages of TQM practice; the weaknesses and obstacles encountered at Hospital A during the practice of the TQM program are discussed.

Finally, this chapter will present the results of the TQM practice—the performance of Hospital A through Government's Annual Reports. Patient outcomes, financial outcomes and employee outcomes, as well as hospital effectiveness are demonstrated.

Results of Questionnaire Administration

Demographic Profile of Participants

One hundred and nineteen employees were chosen through a systematic sampling method as the sample of this study. Of the 119 employees to which questionnaires were administered, 115 (96.6%) returned questionnaires. One of 115 questionnaires was not completed. Hence, the valid sample was 114. Data from three parts of the questionnaires (Part A, B, C) were entered into the Statistical Package for the Social Science, SPSS version 11.0, for analysis (SPSS, 2001). The following section will present the percentage of respondents' demographic information, in terms of gender, profession, numbers of years acting as the employee of the hospital (duration), and supervisor status (whether the person was a supervisor or not).

There were 21 male participants (18.4%), and 93 female employees (81.6%), who took part in this program. The respondents included 8 physicians (7.0%), 50 nurses (43.5%), and 4 pharmacists (3.5%), 13 supporting technicians (11.3%) and 39 administrative staff (33.9%). Of the 114 participants, there were 18 persons (15.8%) working in Hospital A for less than 5 years, 34 participants (29.8%) who had worked in the hospital for 5-10 years, 27 persons (23.7%) who had worked for 11-15 years, 15 respondents (13.2%) for 16-20 years, and 20 participants (17.5%) who had worked more than 20 years. Of the 114 participants, there were 14 supervisors, who were 12.3 percent of all respondents, and the other 100 respondents were not supervisors, and were 87.7 percent of all respondents. Respondents' demographic information is presented in Table 6.1.

Table 6. 1.

Respondents' Demographic Information

Demographic information		Frequency	Percentage
Gender	Male	21	18.4
	Female	93	81.6
Profession	Physician	8	7.0
	Nurse	50	43.9
	Pharmacist	4	3.5
	Supporting technicians	13	11.4
	Administration	39	34.2
Working years	< 5 years	18	15.8
	5-10 years	34	29.8
	11-15 years	27	23.7
	16-20 years	15	13.2
	More than 20 years	20	17.5
Supervisor status	Yes	14	12.3
	No	100	87.7

Validity and Reliability of the Instruments

Nunnally (1978) states that any pre-test must be carried out on a similar group. In this case, ten public hospitals' managers and five experts in this area were asked if the completing of the questionnaire created any difficulties. All respondents replied that they faced no problems in completing the questionnaires. As mentioned in chapter 4 (pp.140-141), five experts were also requested to review the questionnaire and determine the suitability and difficulty of the questions. The final questionnaire version then followed their comments and suggestions. Therefore the instrument can be considered to have face and content validity.

The reliability of the six TQM elements and hospital performance (Table 6.2) were examined using reliability test program of SPSS version 11.0. All the values are more than .76, and met the recommended standard $\text{Alpha} > .70$ (Hair et al. 1998).

Table 6. 2

Means, Standard Deviations, and Reliability Coefficients of the Six TQM Elements and Four Hospital Outcomes

TQM elements	Items	M	SD	No. of items	Alpha
Leadership	Q01	3.71	0.54	10	.91
	Q02	3.72	0.65		
	Q03	3.56	0.70		
	Q04	3.32	0.75		
	Q05	3.33	0.79		
	Q06	3.41	0.80		
	Q07	3.73	0.60		
	Q08	3.92	0.68		
	Q09	3.82	0.70		
	Q10	3.46	0.75		
Strategic planning	Q11	3.49	0.64	10	.93
	Q12	3.43	0.76		
	Q13	3.45	0.71		
	Q14	3.22	0.81		
	Q15	3.56	0.64		
	Q16	3.27	0.73		
	Q17	3.37	0.76		
	Q18	3.10	0.84		
	Q19	3.30	0.74		
	Q20	3.55	0.68		
Focus on customers and market	Q21	3.32	0.71	10	.94
	Q22	3.67	0.72		
	Q23	3.74	0.68		
	Q24	3.58	0.79		
	Q25	3.59	0.84		
	Q26	3.52	0.81		
	Q27	3.61	0.75		
	Q28	3.42	0.80		
	Q29	3.32	0.76		
	Q30	3.52	0.74		
Informational analysis	Q31	3.45	0.78	12	.94
	Q32	3.38	0.73		
	Q33	3.32	0.78		
	Q34	3.29	0.77		
	Q35	3.20	0.86		
	Q36	3.22	0.78		
	Q37	3.31	0.72		
	Q38	3.17	0.77		
	Q39	3.31	0.71		
	Q40	3.41	0.69		
	Q41	3.34	0.82		
	Q42	3.31	0.78		

Table 6.2 (Continued)

TQM elements	Items	M	SD	No. of items	Alpha
Staff focus	Q43	2.95	1.03	12	.94
	Q44	3.32	0.89		
	Q45	3.33	0.85		
	Q46	2.84	0.96		
	Q47	2.97	1.04		
	Q48	2.98	0.89		
	Q49	3.11	0.90		
	Q50	3.22	0.82		
	Q51	3.30	0.95		
	Q52	3.05	0.91		
	Q53	3.06	0.90		
	Q54	2.91	0.95		
Process management	Q55	3.39	0.74	12	.95
	Q56	3.17	0.76		
	Q57	3.18	0.68		
	Q58	3.39	0.75		
	Q59	3.43	0.70		
	Q60	3.36	0.74		
	Q61	3.20	0.82		
	Q62	3.24	0.79		
	Q63	3.19	0.77		
	Q64	3.26	0.80		
	Q65	3.39	0.89		
	Q66	3.32	0.76		
Six TQM elements	Q1 – Q66	3.35	0.53	66	.98
Patient outcomes	Pat1	3.18	.62	4	.80
	Pat2	3.51	.71		
	Pat3	3.38	.70		
	Pat4	3.24	.66		
Financial outcomes	Fin1	2.97	.80	4	.90
	Fin2	3.04	.71		
	Fin3	2.83	.82		
	Fin4	2.93	.77		
Employee outcomes	Emp1	3.85	.68	4	.77
	Emp2	3.19	.86		
	Emp3	3.04	.90		
	Emp4	3.32	.90		
Hospital effectiveness	Hos1	2.86	.89	4	.89
	Hos2	2.97	.89		
	Hos3	2.86	.69		
	Hos4	2.92	.82		
Total performance	Pat1-Hos4	3.13	.54	16	.93

Descriptive Statistics of the Study Variables

The mean values and standard deviations of the six elements of TQM and hospital performance at Hospital A are recorded in Table 6.3.

Table 6. 3

Means and Standard Deviations of TQM Practice and Hospital Performance

Variables	M	SD	Number of items
TQM practice			
Leadership	35.98	5.21	10
Strategic planning	33.74	5.72	10
Customer focus	35.26	6.01	10
Informational analysis	39.69	7.21	12
Staff focus	37.05	8.54	12
Process management	39.52	7.44	12
Hospital performance			
Patient outcomes	13.30	2.12	4
Financial outcomes	11.78	2.72	4
Employee outcomes	13.39	2.58	4
Hospital effectiveness	11.61	2.87	4

The theoretical midpoint for each variable is 3. All variables' means were near a theoretical midpoint suggesting no strong response bias toward either end of the variable. To compare the mean value of the practice of TQM element, leadership was ranked the highest; focus on customers was ranked the second, while the staff focus was ranked the lowest. It is interesting to compare the mean value of each performance area, the value of employee

results was ranked the highest, patient results was ranked second, while the hospital effectiveness results were ranked the lowest. It was possible to surmise that employees were concerned about their own welfare, so they ranked the focus of staff with the lowest element. However, when they were asked to rank the hospital performance, employees' thought about that they had done their best; therefore, the category known as 'employee outcomes' was ranked the highest.

Pearson Correlation

Before the analysis of regression, a Pearson Correlation analysis was conducted to investigate the correlation between dependent and independent variables. The Pearson correlation measurement was utilised in the study to examine the correlation among all variables, but especially between the predictor variables (TQM elements) and the four dependent variables (hospital outcomes). The Pearson correlation coefficient, γ , was used to measure the strength of a linear relationship among variables. The result indicated that the six-predictor variables were not independent (correlation coefficient $> .3$), and of which the correlation between information and process management was the highest, the correlation between patient focus and process management was marginally high, while correlation between leadership and informational analysis was ranked the lowest. The Pearson correlation coefficients showed that there were also significant correlations within the four hospital outcomes, of which the correlation between financial outcomes and hospital effectiveness was the highest. Significant correlations between TQM elements and outcome variables were also expected (Table 6.4).

Table 6. 4

Pearson Correlation among Variables

Variables	1	2	3	4	5	6	7	8	9
1. Leadership									
2. Strategic planning	.81 ^c								
3. Customer Focus	.69 ^c	.80 ^c							
4. Informational analysis	.64 ^c	.72 ^c	.73 ^c						
5. Staff focus	.56 ^c	.67 ^c	.58 ^c	.81 ^c					
6. Process management	.53 ^c	.71 ^c	.73 ^c	.76 ^c	.71 ^c				
7. Patient outcomes	.41 ^c	.53 ^c	.50 ^c	.56 ^c	.46 ^c	.58 ^c			
8. Financial outcomes	.38 ^b	.48 ^c	.50 ^c	.51 ^c	.46 ^c	.56 ^c	.65 ^c		
9. Employee outcomes	.56 ^c	.60 ^c	.52 ^c	.60 ^c	.64 ^c	.62 ^c	.56 ^c	.47 ^c	
10. Hospital effectiveness	.35 ^c	.51 ^c	.42 ^c	.55 ^c	.54 ^c	.57 ^c	.63 ^c	.78 ^c	.56 ^c

Note: ^bp < .01; ^cp < .001, 2-tailed significance.

According to the correlation coefficient shown in Table 6.4, it was apparent that all of the correlation coefficients were larger than .3; this indicated that there was a significant correlation between hospital performance and the six TQM elements. In other words, a hospital, which had a good leaderships or an appropriate leadership style, tended to achieve better patient outcomes ($\gamma = .407$, $p < .001$); financial outcomes ($\gamma = .379$, $p < .001$); employee outcomes ($\gamma = .555$, $p < .001$); hospital effectiveness ($\gamma = .349$, $p < .001$) and total hospital performance ($\gamma = .500$, $p < .001$). Similarly, hospitals, which focused on another TQM elements, also tended to achieve better hospital performance.

The correlation between process management and performance was ranked the highest, information and performance was ranked second and the correlation between leadership and performance was ranked the lowest. As can be seen from the three tables above, there were significant positive relationships within dependent variables and also within independent variables, as well as between dependent variables and independent variables.

Assessment of Hypothesis 1

H₁: There are statistically significant differences between employees' characteristics (gender, profession, duration and supervisor status) and TQM practice as measured by leadership, strategic planning, customer focus, informational analysis, staff focus and process management.

A multiple analysis of variance (MANOVA) of General Linear Model was utilised to reveal the differences between the practice of the six TQM elements and characteristics of employees. They were gender, profession, number of years worked in the hospital (duration), and whether the person was a supervisor or not (supervisor status). MANOVA could decrease the risk of getting the error of type I, and to realise the differences in mean values between groups when several dependent variables were investigated simultaneously. The probability (p) of MANOVA indicates whether the difference between groups is “statistically significant”, however, probability values do not identify the degree to which the two variables are associated with one another. As probability values of MANOVA do not identify the degree to which the two variables are associated with one another, the effect size (Eta squared) was then utilised in this study to realise the extent of impact of independent variables on dependent variables.

Gender.

A one-way multivariate analysis of variance between groups was performed to investigate gender differences in TQM practice. Six dependent variables were used: leadership, strategic planning, and focuses on patients, other customers and market, informational analysis, staff focus and process management. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted.

The result of MANOVA showed that there was no statistically significant difference between males and females on the combined dependent variables: Pillai's Trace = .07, $F(6, 107) = 1.26$, $p = .28$, Eta squared = .07. An inspection of the mean scores indicated that males reported slightly higher scores of TQM practice (Table 6.5) than those of females. According to Cohen's (1988) argument, Eta squared equal to .07, the effect size of gender to TQM practice was considered a medium effect (Eta squared > .06).

Table 6. 5

Means and Standard Deviations of TQM Practice by Gender

TQM practice	Male (N=21)		Female (N=93)	
	M	SD	M	SD
Leadership	38.14	5.15	35.50	5.13
Strategic planning	34.81	7.16	33.49	5.36
Customer focus	35.81	7.03	35.14	5.79
Informational analysis	40.24	9.95	39.57	6.50
Staff focus	37.71	11.08	36.90	7.93
Process management	40.24	10.19	39.35	6.72

Profession.

Another one-way multivariate analysis of variance was performed to investigate professional differences in TQM practice. Preliminary assumption testing was conducted with no serious violations noted. The result of MANOVA showed that there was no statistically significant difference between professions and the combined dependent variables: Pillai's Trace = .15, $F(24, 428) = .71$, $p = .85$, Eta squared = .04. According to Cohen's (1988) argument, Eta squared equal to .04, the effect size of profession to TQM practice was considered a small effect.

The means and standard deviations of TQM practice by profession are presented in Table 6.6.

Table 6. 6

Means and Standard Deviations of TQM Practice by Profession

TQM practice	Physician (N=8)	Nurse (N=50)	Pharmacist (N=4)	Technician (N=13)	Administration (N=39)
Leadership					
Mean	35.50	35.88	35.25	36.69	36.05
SD	8.31	5.16	3.86	5.10	4.90
Strategic planning					
Mean	34.25	33.44	35.25	34.15	33.72
SD	8.56	5.38	3.77	4.54	6.18
Customer focus					
Mean	35.30	36.25	36.62	34.64	35.26
SD	6.11	2.87	6.02	5.98	6.01
Informational analysis					
M	39.25	38.96	39.50	42.69	39.74
SD	11.97	6.32	6.76	7.97	7.01
Staff focus					
M	38.13	35.26	37.00	40.31	38.05
SD	12.11	7.89	8.04	7.38	8.86
Process management					
M	41.50	38.62	38.25	42.69	39.33
SD	10.38	6.75	5.80	7.39	7.78

Duration (working years).

The duration difference in TQM practice was investigated by one-way multivariate analysis of variance. Preliminary assumption testing was also performed with no serious violations noted. The results of one way MANOVA (Pillai's Trace = .29, $F(24, 428) = 1.40$, $p = .10$, Eta squared = .07.) indicated that there was no statistically significant difference

between different working years on the combined dependent variables. According to Cohen's (1988) argument, Eta squared equal to .07 ($> .06$), the effect size of duration to TQM practice was considered a mediate effect. The means and standard deviations of TQM practice by duration are presented in Table 6.7.

Table 6. 7

Means and Standard Deviations of TQM Practice by Duration

TQM practice	Duration (working years)				
	<5 yrs (N=18)	5-10yrs (N=34)	11-15 yrs (N=27)	16-20 yrs (N=15)	20 yrs (N=20)
Leadership					
Mean	33.24	36.35	37.44	37.19	34.75
SD	4.40	4.82	5.06	4.68	6.30
Strategic planning					
Mean	31.76	33.18	35.44	35.31	32.80
SD	3.58	5.59	6.14	4.61	7.06
Customer focus					
Mean	34.00	34.24	36.67	37.19	34.65
SD	4.68	5.54	6.43	4.68	7.73
Informational analysis					
Mean	36.53	40.12	40.33	41.56	39.30
SD	6.42	7.34	8.14	5.67	7.19
Staff focus					
Mean	36.59	36.85	38.56	36.81	35.95
SD	8.19	9.10	8.89	8.70	7.81
Process management					
Mean	38.65	39.56	39.67	41.50	38.40
SD	6.02	7.74	7.86	5.97	8.74

Supervisor status.

Whether there was a difference in TQM practice between supervisor and no supervisor was investigated by one-way multivariate analysis of variance. Preliminary assumption testing was also performed with no serious violations noted. MANOVA showed that there was no statistically significant difference between supervisor and no supervisor on the combined dependent variables (Pillai's Trace = .04, $F(6, 107) = .68$, $p = .67$, Eta squared = .37). Even though the effect size (Eta squared = .37) of supervisor status to TQM practice was considered a profound effect (Cohen, 1988), the main effect of supervisor status was no significant impact on the practice of TQM. The detailed means and standard deviations are presented in Table 6.8.

Table 6. 8

Means and Standard Deviations of TQM Practice by Supervisor Status

TQM practice	Supervisor (N=14)		No Supervisor (N=100)	
	M	SD	M	SD
Leadership	35.71	5.15	36.02	5.25
Strategic planning	32.79	6.70	33.87	5.59
Customer focus	34.07	7.19	35.43	5.85
Informational analysis	39.21	8.89	39.76	7.00
Staff focus	38.21	9.26	36.89	8.48
Process management	37.93	9.97	39.74	7.05

The four main effects of MANOVA (gender, profession, duration –working years and supervisor status) indicated that there were no significant differences ($p > .05$) in the practice of the six TQM elements (Table 6. 9).

Table 6. 9

One Way MANOVA for TQM Practice by Employees' Characteristics

Pillai's Trace and the F test for the main effect				
Employees' characteristics	Pillai's Trace	Exact F	p	Effect size (f)
Gender	.07	1.26	.28	.07
Profession	.15	.71	.85	.04
Duration	.29	1.40	.10	.07
Supervisor status	.04	.68	.67	.37

Four MANOVA tests showed that there were no significant differences between employees' characteristics (gender, profession, duration and supervisor status) and TQM practices. Thus, hypothesis one, "There are statistically significant differences between employees' characteristics and TQM practice." was rejected.

Assessment of Hypothesis 2

H₂: There are statistically significant differences between employees' characteristics (gender, profession, duration and supervisor status) and hospital performance as measured by patient outcomes, financial outcomes, employee outcomes and hospital effectiveness.

Gender.

A Multivariate Analysis of Variance (MANOVA) was also performed to investigate whether the demographic information of employees impacted on the hospital performance. First, gender difference in hospital performance was examined using MANOVA. Preliminary

assumption testing was conducted and with no serious violations noted. The MANOVA results indicated that there was no statistically significant difference between males and females on the combined dependent variables (Pillai's Trace = .02, $F(4, 109) = .63$, $p = .64$, Eta squared = .02). According to Cohen's (1988) argument, Eta squared equal to .02, the effect size of gender to hospital performance was considered a small effect (Eta squared < .06). The means and standard deviations are presented in Table 6.10.

Table 6. 10

Means and Standard Deviations of Hospital Performance by Gender

Hospital performance	Male (N=21)		Female (N=93)	
	M	SD	M	SD
Patient outcomes	12.90	2.98	13.39	1.88
Financial outcomes	11.33	3.38	11.88	2.56
Employee outcomes	13.62	2.82	13.34	2.54
Hospital effectiveness	11.24	3.38	11.70	2.76

Profession.

Accordingly, a MANOVA was conducted to investigate whether professional differences impact on hospital performance. Preliminary assumption testing was conducted with no serious violations noted. The MANOVA results indicated that there was no statistically significant difference between professions and employees on the combined dependent variables (Pillai's Trace = .11, $F(4, 109) = .77$, $p = .72$, Eta squared = .03). According to Cohen's (1988) argument, Eta squared equal to .03, the effect size of gender to hospital performance was considered a small effect (Eta squared < .06). The means and standard deviations of hospital performance by profession are presented in Table 6.11.

Table 6. 11

Means and Standard Deviations of Hospital Performance by Profession

Hospital performance	Physician (N=8)	Nurse (N=50)	Pharmacist (N=4)	Technician (N=13)	Administration (N=39)
Patient outcomes					
Mean	11.88	13.52	13.50	14.00	13.05
SD	4.09	1.78	1.73	1.58	2.11
Financial outcomes					
Mean	11.25	11.98	11.50	12.00	11.59
SD	3.65	2.29	1.73	2.48	3.23
Employee outcomes					
Mean	11.88	13.56	14.00	13.23	13.49
SD	4.36	2.32	1.83	2.68	2.49
Hospital effectiveness					
M	10.50	11.98	11.75	12.15	11.18
SD	4.38	2.60	1.71	2.15	3.13

Duration (working years).

The next was to use the MANOVA to investigate hospital performance by the differences of working years of employees. Preliminary assumption testing was conducted and no serious violations noted. The result of MANOVA showed that there was no statistically significant difference between different working years on the hospital performance (Pillai's Trace = .18, $F(16, 436) = 1.26$, $p = .22$, Eta squared = .04). According to Cohen's (1988) argument, Eta squared equal to .04, the effect size of working years to hospital performance was considered a small effect (Eta squared < .06). The means and standard deviations are presented in Table 6.12.

Table 6. 12

Means and Standard Deviations of Hospital Performance by Duration

Hospital Performance	Duration (working years)				
	<5 yrs (N=18)	5-10yrs (N=34)	11-15 yrs (N=27)	16-20 yrs (N=15)	>20 yrs (N=20)
Patient outcomes					
Mean	12.71	13.12	13.37	14.13	13.35
SD	1.26	2.00	2.79	2.00	1.93
Financial outcomes					
Mean	11.59	11.68	11.44	13.06	11.55
SD	1.73	2.94	3.61	1.95	1.99
Employee outcomes					
Mean	12.71	13.82	13.63	13.56	12.80
SD	2.34	2.26	2.91	2.10	3.12
Hospital effectiveness					
M	12.00	11.76	11.15	11.94	11.40
SD	2.00	2.93	3.48	2.44	2.95

Supervisor status.

Finally the MANOVA of hospital performance by whether the employee was a supervisor or not was examined. Preliminary assumption testing was conducted and proved the MANOVA was robust and with no serious violations noted. The MANOVA results depicted that there was no statistically significant difference between supervisor and no supervisor on the hospital performance: Pillai's Trace = .01, $F(16, 436) = .39$, $p = .81$, Eta squared = .01. According to Cohen's (1988) argument, Eta squared equal to .01, the effect size of working years to hospital performance was considered a small effect (Eta squared < .06). The detailed means and standard deviations are presented in Table 6.13.

Table 6. 13

Means and Standard Deviations of the TQM Practice by Supervisor Status

Hospital Performance	Supervisor (N=14)		No Supervisor (N=100)	
	M	SD	M	SD
Patient outcomes	13.43	1.83	13.28	2.17
Financial outcomes	11.29	3.12	11.85	2.67
Employee outcomes	13.43	2.59	13.39	2.59
Hospital effectiveness	11.14	3.44	11.68	2.79

Four MANOVA tests showed no significant differences between hospital performance and employees' characteristics (Table 6.14). Thus, H₂ "There are statistically significant differences between employees' characteristics and hospital performance." was rejected.

Table 6. 14

One Way MANOVA for Hospital Performance by Employees' Characteristics

Pillai's Trace and the F test for the main effect				
Employees' characteristics	Pillai's Trace	Exact F	p	Effect size (f)
Gender	.02	.63	.64	.02
Profession	.11	.77	.72	.03
Duration	.18	1.26	.22	.04
Supervisor status	.01	.39	.81	.01

Assessment of Hypothesis 3

H3: There are statistically significant differences between the three groups of the six TQM elements' practice (leadership, strategic planning, customer focus, informational analysis, staff focus and process management) and hospital performance as measured by patient outcomes, financial outcomes, employee outcomes, and hospital effectiveness.

The extent of practice in each TQM element was divided into three groups, namely Group 1, 2 and 3. Group 1 represented 27 percent of the respondents who had the higher score in TQM element's practice; Group 3 is 27 percent of the respondents who had the lower score of TQM element's practice; the respondents falling in the middle section were classed in Group 2. Then, MANOVA was used to investigate the impact of different groups of TQM practice on hospital performance.

Leadership practice.

In case of three groups of leadership, the preliminary assumption testing was conducted and found that this assumption had not been violated at an alpha level of .001. The results of MANOVA showed that there were statistically significant differences in hospital performance between the three groups of leadership practice (Pillai's Trace = .28, $F(8, 218) = 4.52$, $p = .000$, Eta squared = .14). Due to the existence of significant differences, it was necessary to conduct a multiple comparison to identify which mean value was different from the other. A significant F statistic in MANOVA or ANOVA indicates that the population means are probably unequal, MANOVA does not pinpoint where the differences are. A variety of special techniques, termed multiple comparison procedures, are available for determining which of the population mean is different from each other. Multiple comparison procedures protect against calling too many differences significant. These procedures set up more stringent criteria for declaring significant difference than does the usual t test. That is, the difference between two sample means

must be larger to be identified as a true difference (Norusis, 1983).

Many multiple comparison methods are available, and they all provide protection in slightly different ways. The Scheffe method is conservative for pair-wise comparison of mean. This method requires larger differences between means for significance than most other methods (Norusis, 1983). In this study, the Scheffe Post Hoc method was utilised in order to compare the differences between the three groups, and to identify which group would have a strong impact on hospital performance. The means and standard deviations of hospital performance between the three groups of leadership are presented in Table 6.15. ANOVA results and post comparisons of the four individual hospital outcomes between the three groups of leadership practice are presented in Table 6. 16.

Table 6. 15

Means and Standard Deviations of Hospital Performance Between the Three Groups of Leadership Practice

Hospital Performance	Leadership practice					
	Group 1 (N =39)		Group 2 (N =41)		Group 3 (N=34)	
	M	SD	M	SD	M	SD
Patient outcomes	14.00	2.51	13.54	1.54	12.21	1.84
Financial outcomes	13.10	2.78	11.58	2.44	10.50	2.33
Employee outcomes	14.51	2.32	13.76	2.07	11.68	2.59
Hospital effectiveness	12.92	2.75	11.37	2.47	10.41	2.91

Table 6. 16

ANOVA and Post Comparisons of Hospital Performance Between the Three Groups of Leadership Practice

Hospital performance	MS _B	MS _W	F	p	Effect size	Post comparison
Patient outcomes	31.05	4.02	7.73	.001**	.12	1>2,3
Financial outcomes	62.74	6.40	9.81	.000***	.15	1>2,3
Employee outcomes	77.25	5.38	14.37	.000***	.21	1>2,3; 2>3
Hospital effectiveness	59.25	7.30	8.11	.001**	.13	1>2,3

Note: ***p < .001, **p < .01, *p < .05, df = 2, 111

The ANOVA test demonstrated that there were significant differences in four individual hospital outcomes ($p < .001$ or $p = .001$) between the three groups of leadership practice. Based on Cohen's (1988) argument, the effects of leadership practice on patient outcomes and hospital effectiveness were medium (Effect size .12 and .13), while the impact of leadership practice on financial and employee outcomes was pronounced (Effect size .15 and .21). Post comparison of Scheffe revealed that Group 1 had higher mean values in four outcomes than those of Group 2 and 3. Group 2 had a higher mean value in employee outcomes than outcome of Group 3 too. In sum, the hypothesis, "There are significant differences in hospital performance between the three groups of leadership practice." was accepted.

Strategic planning practice.

In case of strategic planning, the homogeneity test of dependent variables was tested, the Box's \underline{M} test for homogeneity of variance – covariance matrices (Box's \underline{M} = 56.76, F (20,

42257) = 2.69, $p < .001$) indicates that this assumption seems to have been violated at an alpha level of .001. However, Mardia (1971) shows that MANOVA is also robust to modest violations of normality if the violation is created by skews rather than by outliers. According to Tabachnick and Fidell (1996, p. 381), a sample size that produces 20 degrees of freedom for error in the univariate case should ensure robustness of the test. Even with unequal sample size and only a few dependent variables, a sample size of about 20 in the smallest cell should ensure “robustness”. Therefore, it can be said this MANOVA test is robust, as the sample size in the smallest cell is more than 20. The multivariate analysis of variance indicated a significant difference in hospital performance between the three groups of strategic planning practice (Pillai’s Trace = .43, $F(8, 218) = 7.47, p < .001$, Eta squared = .22). Means and standard deviations for hospital performance between the three groups of strategic planning practice are presented in Table 6.17.

Table 6. 17

Means and Standard Deviations of Performance Between the Three Groups of Strategic Planning Practice

Hospital performance	Strategic planning practice					
	Group 1 (N =37)		Group 2 (N =42)		Group 3 (N=35)	
	M	SD	M	SD	M	SD
Patient outcomes	14.65	1.77	13.19	2.16	12.00	1.51
Financial outcomes	13.49	2.50	11.38	2.46	10.46	2.34
Employee outcomes	15.22	1.44	13.45	1.97	11.40	2.75
Hospital effectiveness	13.54	2.49	11.38	2.31	9.86	2.66

ANOVA test (see Table 6.18) showed significant differences in four areas of hospital outcomes between the three groups of strategic planning practice.

Table 6. 18

ANOVA and Post Comparisons of Hospital Performance Between the Three Groups of Strategic Planning Practice

Hospital performance	MS _B	MS _W	F	p	Effect size	Post comparison
Patient outcomes	63.48	3.43	18.50	.000***	.25	1>2,3; 2>3
Financial outcomes	87.84	5.94	14.78	.000***	.21	1>2,3
Employee outcomes	131.08	4.41	29.75	.000***	.35	1>2,3; 2>3
Hospital effectiveness	123.82	6.14	20.17	.000***	.27	1>2,3; 2>3

Note: ***p < .001, df = 2, 111

A post hoc comparison test revealed that Group 1 had higher mean values in four hospital outcomes than those of Group 2 and Group 3. Group 2 had higher mean values in three of the four hospital outcomes. They were patient outcomes, employee outcomes and hospital effectiveness. It can be considered that the high strategic planning practice group had significantly higher hospital outcomes than those from the low strategic planning practice group.

From the multivariate analysis data (Pillai's Trace = .43, $p < .001$) and the ANOVA results, it can be seen that there were significant differences in the hospital performance between the three groups of strategic planning practice. In sum, the hypothesis, "There are significant differences in hospital performance between the three groups of strategic planning practice." was accepted.

Customer focus practice.

In the MANOVA test of hospital performance by customer focus groups, a preliminary assumption testing had not been violated at an alpha level of .001. The homogeneity test was not significant (Box's \underline{M} = 31.461, $F(20, 32872) = 1.486, p > .001$). The results of MANOVA indicated a significant difference in hospital performance between the three groups of customer focus practice (Pillai's Trace = .42, $F(8, 218) = 7.15, p < .001$, Eta squared = .21). It can be seen that there was large effect of customer focuses on hospital performance (Cohen, 1988). The means and standard deviations of hospital performance between the three groups of customer focus practice are presented in Table 6.19.

Table 6. 19

Means and Standard Deviations of Hospital Performance Between the Three Groups of Customer Focus Practice

Hospital performance	Customer focus practice					
	Group 1 (N = 33)		Group 2 (N = 50)		Group 3 (N = 31)	
	M	SD	M	SD	M	SD
Patient outcomes	15.03	1.67	12.92	1.79	12.06	1.90
Financial outcomes	14.03	2.38	11.22	2.17	10.29	2.40
Employee outcomes	15.15	1.82	13.24	2.27	11.77	2.63
Hospital effectiveness	13.61	2.60	11.16	2.25	10.23	2.96

Due to significant differences, the ANOVA test was then conducted to identify where the differences were. The result of ANOVA (see Table 6.20) also showed that there were significant differences in the four areas of hospital performance, patient outcomes, financial

outcomes, employee outcomes, and hospital effectiveness. A post hoc test revealed that the four hospital outcomes of Group 1 were higher than the performance of Group 2 and three. The employee outcomes of Group 2 were higher than outcomes of Group 3.

Table 6. 20

ANOVA and Post Comparisons of Hospital Performance Between the Three Groups of Customer Focus Practice

Hospital performance	MS _B	MS _W	F	p	Effect size	Post comparison
Patient outcomes	76.67	3.19	24.01	.000***	.30	1>2,3
Financial outcomes	125.97	5.26	23.91	.000***	.30	1>2,3
Employee outcomes	92.23	5.11	18.06	.000***	.25	1>2,3; 2>3
Hospital effectiveness	100.50	6.56	15.32	.000***	.22	1>2,3

Note: ***p < .001, df = 2, 111

From the multivariate analysis data and the ANOVA results, it can be seen that there were significant differences in the hospital performance between the three groups of customer focus practice. In sum, the hypothesis, “There are statistically significant differences in hospital performance between the three groups of customer focus practice.” was accepted.

Informational analysis practice.

In case of informational analysis, a preliminary assumption testing was conducted and found the homogeneity test of dependent variables was significant (Box’s $M = 56.47$, $F(20, 35726) = 2.67$, $p < .001$). However, Mardia (1971) shows that MANOVA is also robust to modest violation of normality if the violation is created by skews rather than by outliers.

The sample size of this study excluded outliers, and produced more than 20 degrees of freedom for error in the univariate case, therefore, it can be said the test was robust (Tabachnick and Fidell, 1996, p. 381). The MANOVA test indicated a significant difference in hospital performance between the three groups of informational analysis practice (Pillai's Trace = .44, $F(8, 218) = 7.73$, $p < .001$, Eta squared = .22). Means and standard deviations of hospital performance between the three groups of informational analysis practice are presented in Table 6.21.

Table 6. 21

Means and Standard Deviations of Hospital Performance Between the Three Groups of Informational Analysis Practice

Hospital performance	Informational analysis practice					
	Group 1 (N = 33)		Group 2 (N = 48)		Group 3 (N = 33)	
	M	SD	M	SD	M	SD
Patient outcomes	14.97	1.49	12.98	1.68	12.09	2.22
Financial outcomes	13.82	2.35	11.31	2.25	10.42	2.57
Employee outcomes	15.48	1.25	13.23	2.16	11.55	2.65
Hospital effectiveness	13.85	2.32	11.19	2.28	10.00	2.82

The ANOVA test (see Table 6.22) also showed that there were significant differences in the four areas of hospital performance between the three groups of informational analysis practice. A post hoc test revealed that the four hospital outcomes of Group 1 were higher than the performance of Group 2 and three. The employee outcomes of Group 2 were higher than outcomes of Group 3.

Table 6. 22

ANOVA and Post Comparisons of Hospital Performance Between the Three Groups of Informational Analysis Practice

Hospital performance	MS _B	MS _W	F	p	Effect size	Post comparison
Patient outcomes	72.59	3.27	22.22	.000***	.29	1>2, 3
Financial outcomes	104.12	5.65	18.42	.000***	.25	1>2, 3
Employee outcomes	129.17	4.44	29.09	.000***	.34	1>2, 3; 2>3
Hospital effectiveness	129.73	6.03	21.51	.000***	.28	1>2, 3

Note: ***p < .001, df = 2, 111

From the multivariate analysis data and the univariate analysis results, it can be seen that there were significant differences in the hospital performance between the three different groups of informational analysis practice. In sum, the hypothesis, “There are significant differences between the three groups of informational analysis practice and hospital performance.” was accepted.

Staff focus practice.

In the case of staff focus, a preliminary assumption testing was conducted and found that these assumptions had not been violated at an alpha level of .001. A multivariate analysis of variance indicated a significant difference in hospital performance between the three groups of staff focus practice (Pillai’s Trace = .46, F (8, 218)= 8.17, $p < .001$, Eta squared = .23). The effect size of staff focus on hospital performance was .23, therefore it can be said that the impact of staff focus on hospital performance was pronounced (Cohen 1988). Means

and standard deviations of hospital performance between the three groups of staff focus practice are presented in Table 6.23, ANOVA test are recorded in Table 6.24.

Table 6. 23

Means and Standard Deviations of Hospital Performance Between the Three Groups of Staff Focus Practice

Hospital performance	Staff focus practice					
	Group 1 (N = 34)		Group 2 (N = 46)		Group 3 (N = 34)	
	M	SD	M	SD	M	SD
Patient outcomes	14.62	1.65	13.07	2.26	12.29	1.66
Financial outcomes	13.41	2.46	11.43	2.66	10.62	2.31
Employee outcomes	15.56	1.19	13.35	2.06	11.29	2.49
Hospital effectiveness	13.50	2.65	11.52	2.32	9.85	2.62

Table 6. 24

ANOVA and Post Comparisons of Hospital Performance Between the Three Groups of Staff Focus Practice

Hospital performance	MS _B	MS _W	F	p	Effect size	Post comparison
Patient outcomes	49.78	3.71	12.93	.000***	.19	1>2,3
Financial outcomes	70.97	6.25	11.36	.000***	.17	1>2,3
Employee outcomes	154.68	3.98	38.86	.000***	.41	1>2,3; 2>3
Hospital effectiveness	113.39	6.33	17.92	.000***	.24	1>2,3; 2>3

Note: ***p < .001, df = 2, 111

Table 6.24 showed that there were significant differences in four areas of hospital outcomes. A post hoc comparison test revealed that Group 1 had higher mean value in four hospital outcomes than those of Group 2 and three. Group 2 had higher mean in employee outcomes and hospital effectiveness than those of Group 3. The results indicated that the high staff focus practice group had significantly higher outcomes than outcomes of low practice of staff focus group.

From the multivariate analysis data and the univariate analysis results, it can be seen that there were significant differences in the hospital performance between the three groups of staff focus practice. In brief, the hypothesis, "There are significant differences between the three groups of staff focus practice and hospital performance." was accepted.

Process management practice.

In case of process management, a preliminary assumption testing was conducted and found that homogeneity was not significant (Box's $M = 44.75$, $F(20, 40347) = 2.12$, $p > .001$), the assumptions of MANOVA had not been violated at an alpha level of .001. The results of Multivariate analysis of variance indicated a significant difference in hospital performance between the three groups of process management practice (Pillai's Trace = .58, $F(8, 218) = 11.16$, $p < .001$, Eta squared = .29). The effect of process management on hospital performance (Eta squared = .29) was pronounced (Cohen, 1988). Means and standard deviations for performance from three groups of process management practice are presented in Table 6.25, and the ANOVA test is presented in Table 6.26.

Table 6. 25

Means and Standard Deviations of Hospital Performance Between the Three Groups of Process Management Practice

Hospital performance	Process management practice					
	Group 1 (N = 34)		Group 2 (N = 44)		Group 3 (N = 36)	
	M	SD	M	SD	M	SD
Patient outcomes	15.21	1.47	12.77	1.96	12.14	1.57
Financial outcomes	13.79	2.16	11.30	2.57	10.47	2.32
Employee outcomes	15.56	1.19	13.39	2.05	11.36	2.49
Hospital effectiveness	14.12	1.97	10.82	2.37	10.22	2.66

Table 6. 26

ANOVA and Post Comparisons of Hospital Performance Between the Three Groups of Process Management Practice

Hospital performance	MS _B	MS _W	F	p	Effect size	Post comparison
Patient outcomes	92.13	2.92	31.60	.000***	.36	1>2,3
Financial outcomes	104.91	5.64	18.61	.000***	.25	1>2,3
Employee outcomes	154.06	3.99	38.59	.000***	.41	1>2,3
Hospital effectiveness	155.36	5.57	27.89	.000***	.33	1>2,3; 2>3

Note: *p < .05, **p < .01, ***p < .001, df = 2, 111

The ANOVA test also showed that there were significant differences in the four areas of hospital performance between the three groups of process management. A post hoc test

revealed that Group 1 had higher mean value in four of the hospital outcomes than those of Group 2 and Group 3. Moreover, the employee outcomes of Group 2 were higher than that of Group 3. It is considered that high process management practice group had significantly higher outcomes than outcomes from low process management practice group.

From the multivariate analysis data and the ANOVA analysis results, it can be seen that there are significant differences in hospital performance between the three groups of process management practice. The hypothesis, "There are significant differences in hospital performance between the three groups of process management practice." was accepted.

Total TQM elements' practice.

In case of total elements of TQM and hospital performance, preliminary assumption testing was conducted, and the assumptions of MANOVA had not been violated at an alpha level of .001. The results of Multivariate analysis showed significant differences in hospital performance between the three groups of total TQM elements' practice (Pillai's Trace = .58). The effect of total TQM elements on hospital performance (Eta squared = .29) was pronounced (Cohen, 1988). ANOVA test also showed that there were significant differences in the four areas of hospital performance between the three groups of total TQM elements' practice. A post hoc test revealed that Group 1 had higher mean value in four of the hospital outcomes than those of Group 2 and Group 3. Moreover, the employee outcomes of Group 2 were higher than that of Group 3. It is considered that high total TQM elements' practice group had significantly higher outcomes than outcomes from low TQM elements' practice group. Means and standard deviations for performance from three groups of total TQM elements' practice are presented in Table 6.27. and ANOVA test in Table 6.28.

Table 6. 27

Means and Standard Deviations of Hospital Performance Between the Three Groups of Total TQM Elements' Practice

Hospital performance	Total TQM elements' practice					
	Group 1 (N = 31)		Group 2 (N = 52)		Group 3 (N = 31)	
	M	SD	M	SD	M	SD
Patient outcomes	15.16	1.61	13.00	1.87	11.94	1.65
Financial outcomes	14.16	2.17	11.17	2.30	10.42	2.41
Employee outcomes	15.68	1.08	13.46	1.98	11.00	2.42
Hospital effectiveness	14.03	2.30	11.19	2.28	9.90	2.74

Table 6. 28

ANOVA and Post Comparisons of Hospital Performance Between the Three Groups of Total TQM elements' Practice

Hospital performance	MS _B	MS _W	F	p	Effect size	Post comparison
Patient outcomes	84.90	3.05	27.88	.000***	.33	1>2,3; 2>3
Financial outcomes	126.17	5.25	24.01	.000***	.30	1>2,3
Employee outcomes	169.77	3.71	45.77	.000***	.45	1>2,3; 2>3
Hospital effectiveness	140.63	5.84	24.10	.000***	.30	1>2,3
Total performance	2004.39	40.02	50.08	.000***	.47	1>2,3; 2>3

Note: *p < .05, **p < .01, ***p < .001, df = 2, 111

From the multivariate analysis data and the ANOVA analysis results, it can be seen that there are significant differences in hospital performance between the three groups of total TQM elements' practice. The hypothesis, "There are significant differences in hospital performance between the three groups of total elements of TQM practice." was accepted.

Five MANOVA tests showed significant differences between the practices of the three groups of TQM elements and hospital performance (Table 6.29). Thus, Hypothesis 3, "There are statistically significant differences between three groups of TQM practices and hospital performance." was accepted.

Table 6. 29

One Way MANOVA for Hospital Performance by Three Groups of TQM elements Practice

Pillai's Trace and the F test for the main effect				
TQM practice	Pillai's Trace	Exact F	p	Effect size (f)
Leadership	.28	4.52	.000***	.14
Strategic planning	.43	7.47	.000***	.22
Customer focus	.42	7.15	.000***	.21
Informational analysis	.44	7.73	.000***	.22
Staff focus	.46	8.17	.000***	.23
Process management	.58	11.16	.000***	.29
Total TQM elements	.58	11.17	.000***	.29

Note: ***p < .001, df =8, 218

Assessment of Hypothesis 4

H₄: There are statistically significant relationships between the six TQM elements (leadership, strategic planning, customer focus, informational analysis, staff focus and process management) and hospital performance as measured by patient outcomes, financial outcomes, employee outcomes and hospital effectiveness.

The stepwise regression analysis was used to reveal the predictors of hospital performance. In regression analysis, in order to assess the usefulness of each variable in the model, one cannot simply compare the regression coefficient, and the *t* statistics to provide some clue regarding the relative importance of each variable in the model. As a guide regarding useful predictors, look for *t* values well below -2 or above $+2$. (SPSS, 2001). In other words, the variables of which the absolute value of *t* should be equal or larger than 2, then this can be selected into the candidate predictor. In this study, the relationships between the elements of TQM and hospital performance were examined by stepwise regression analysis of SPSS 11.0 version. The variables with the absolute *t* value ≥ 2 would be included in the regression equation. The entry criterion was also passing the *F*-test at the .05 level of significance. The variables in the equation were examined to see if any could be removed by failing *F*-test at the .10 level of significance too.

The following section initially used stepwise multiple regressions to reveal the relationships between the six TQM elements and the four individual hospital outcomes, including patient, financial, and employee outcomes and hospital effectiveness, then continually to run the six TQM elements on the total hospital performance.

TQM and patient outcomes.

In stepwise regression, the variable with the strongest correlation that can meet the entry criteria was entered first, so model 1 contained first one predictor- process management. The variable, by itself, explained 33 percent of the variation in patient outcomes.

Informational analysis explained an additional three percent of variation in patient outcomes (For model 2, R square change = 0.03). So, while some of the relationships between informational analysis and patient outcomes could be explained by the fact that hospital focused on informational analysis tended to emphasise the process management (Table 6.30).

Table 6. 30

Stepwise Regression Analysis Results of TQM on Patient outcomes

Variables	β	SE β	Standardised β	t	R ²	ΔR^2
Step 1						
Process management	.17	.02	.58***	7.48	.33	
Step 2						
Process management	.10	.03	.37**	3.17		
Informational analysis	8.21E-02	.03	.28*	2.42	.36	.03

Note: *p < .05, **p < .01, ***p < .001

TQM and financial outcomes.

Financial outcomes, another outcome variable, stopped the stepwise regression with only one variable entered - process management, and it explained 32 percent of the variation in financial outcomes. No further variables were entered, as they would not contribute significantly to the regression (see Table 6.31).

Table 6. 31

Stepwise Regression Analysis Results of TQM on Financial Outcomes

Variables	β	SE β	Standardised β	t	R ²
Step 1					
Process management	.21	.03	.56***	7.21	.32

Note: *p < .05, **p < .01, ***p < .001

TQM and employee outcomes.

The stepwise regression model 1 contained one predictor- staff focus; the variable explained 40 percent of the variation in employee outcomes. Leadership explained an additional six percent of variation in employee outcomes (For model 2, R square change = .06). So, while some of relationship between leadership and employee outcomes could be explained by the fact that hospital focusing on leadership management style tended to put emphasis on its staff. In model 3 process management was entered, and it contributed the additional four percent of variation in employee outcomes (For model 3 R square change = .04). No further variables were entered, as they would not contribute significantly to the regression (see Table 6.32).

Table 6. 32

Stepwise Regression Analysis Results of TQM on Employee Outcomes

Variables	β	SE β	Standardised β	t	R ²	ΔR^2
Step 1						
Staff focus	.19	.02	.64***	8.79	.41	
Step 2						
Staff focus	.14	.03	.48***	5.70		
Leadership	.14	.04	.29**	3.42	.47	.06
Step 3						
Staff focus	9.36E-02	.03	.31**	3.07		
Leadership	.12	.04	.24**	2.81		
Process management	9.59E-02	.03	.28**	2.80	.50	.04

Note: *p < .05, **p < .01, ***p < .001

TQM and hospital effectiveness and efficiency.

For hospital effectiveness, model 1 contained only one predictor- process management. The variable gave explanation 32 percent of the variation in hospital effectiveness. Staff focus elucidated an additional four percent of variation in hospital effectiveness (R square

change = .04) as illustrated in Table 6.33.

Table 6.33

Stepwise Regression Analysis Results of TQM on Hospital Effectiveness

Variables	β	SE β	Standardised β	t	R ²	ΔR^2
Step 1						
Process management	.22	.03	.57***	7.27	.32	
Step 2						
Process management	.14	.04	.37**	3.40		
Staff focus	9.27E-02	.04	.28*	2.55	.36	.04

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

From Table 6.33, it can be seen that some of relationship between staff focus and hospital effectiveness could be clarified by the fact that a hospital emphasis on staff focus had a tendency to emphasise process management

TQM and hospital wide performance.

For total hospital performance, the variable with the strongest correlation was process management, the second is informational analysis and strategic planning was the third (Table 6.34). The table indicated that process management gave an explanation of 48 percent of the variation in total hospital outcome. Informational analysis explained an additional four percent of variation in total performance (For model 2, R square change = .04). Strategic planning was entered in the model 3, and gave two percent additional explanation.

Table 6. 34

Stepwise Regression Analysis Results of TQM on Total Performance

Variables	β	SE β	Standardised β	t	R ²	ΔR^2
Step 1						
Process management	.80	.08	.69***	10.14	.48	
Step 2						
Process management	.53	.12	.46***	4.54		
Informational analysis	.37	.12	.31**	3.10	.52	.04
Step 3						
Process management	.44	.12	.38**	3.59		
Informational analysis	.27	.13	.23*	2.08		
Strategic planning	.30	.15	.20*	2.00	.54	.02

Note: * $p < .05$, ** $p < .01$, *** $p < .001$, N= 114

Results of Focus Group Interviews

This section categorises the data of the focus group interviews to explore the benefits and difficulties of TQM practice, and to answer research question five that is “What are the benefits and obstacles during the practice of the TQM program in the hospital?”

There were nine focus group interviews conducted on 6th, 13th and 20th July 2002. The interviews were held at the meeting room of David Camp in Kaohsiung county Taiwan (see Table 6. 35). One hundred and eight employees were recruited in advance, and there were 100 participants (92.6%) to take part in the nine focus groups.

Table 6. 35

The Focus Group Interviews Conducted by the Study

Groups	Date	Time	Place	Numbers of participants
1.	06/07/2002	AM 10.00-12.00	David Camp	12
2.		PM. 1.30 - 3.00		10
3.		PM. 3.30 - 5.00		12
4.	13/07/2002	AM 10.00-12.00	David Camp	10
5.		PM. 1.30 - 3.00		12
6.		PM. 3.30 - 5.00		11
7.	13/07/2002	AM 10.00-12.00	David Camp	10
8.		PM. 1.30 - 3.00		11
9.		PM. 3.30 - 5.00		12

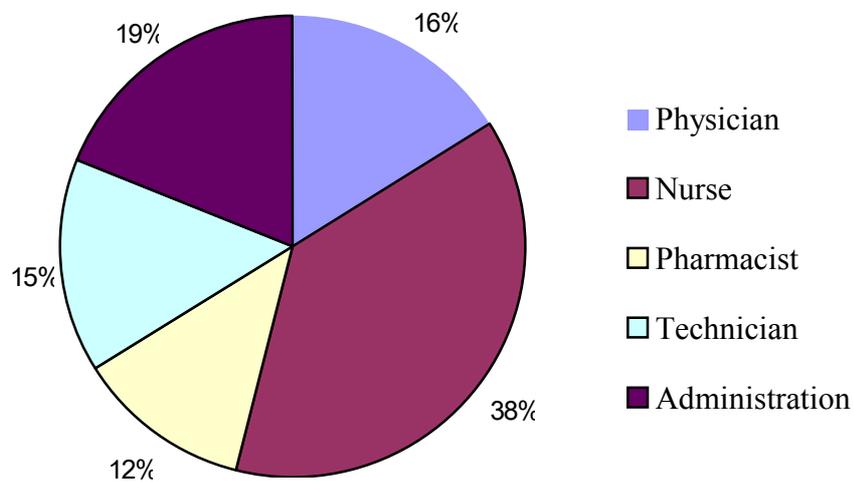
Demographic Profile of Participants

The participants’ demographic information is presented in Table 6.36. The professional distribution of the participants and working years’ distribution in focus group interviews from which data were collected are presented in Figure 6.1 and Figure 6.2.

Table 6. 36

Participants' Demographic Information

		Number	Percentage
Gender	Male	34	34.0
	Female	66	66.0
Profession	Physician	16	16.0
	Nurse	38	38.0
	Pharmacist	12	12.0
	Technician	15	15.0
	Administration	19	19.0
Working years (yrs)	<5	26	26.0
	5-10	33	33.0
	11-15	17	17.0
	16-20	14	14.0
	>20	10	10.0
Supervisor	Yes	23	23.0
	No	77	77.0

*Figure 6. 1: The professional distribution of the participants of focus group interviews*

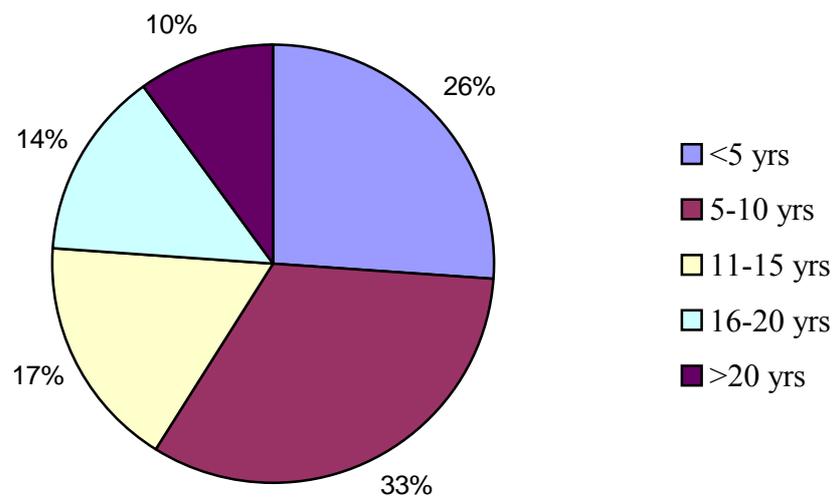


Figure 6. 2: The working years' distribution of the participants of focus group interviews

The Context of TQM Practice

This section presents the context of adopting TQM in Hospital A, participants were asked to describe what was the factors causing for the practice of the TQM program in hospitals? Open and axial coding was used to develop a classification of concepts in context. From the interview data of the employees, the context of the adoption of TQM was categorised into environmental factors and organisational factors (see Table 6.37).

Table 6. 37

Context for TQM practice

Categories	Concepts
a. Environmental factors	NHI policy was carried out The competitive health care market
b. Organisational factors	Limitation of Central Taiwan Government Inflexible personnel and salary system Decreased government funding

Environmental factors.

Two major concepts under the environmental factors were that National Health Insurance (NHI) policy of Taiwan was implemented and the nature of the competitive market of the health care system in Taiwan.

NHI policy: National Health Insurance (NHI) was initiated in March 1995, the practice of NHI brought about that the civil right for medical care as an entitlement. However, it also resulted in a high cost to the government. In order to slow down the financial deficit, the Bureau of National Insurance put into action a case-payment of Diagnosis Related Groups (DRG) in 2000 and global payment in 2002. Consequently, the payment of medical treatment is more reasonable; it means that the income of hospitals is less than before. After NHI was carried out, hospitals confronted serious market competition, the revenue and the profit decreased. In the meantime, patients could choose other hospitals without the problem of charges, so obviously, the loyalty of patients decreased, so that it was difficult for hospitals to keep patients.

The competitive health care market: Taiwan hospitals experienced difficulty with the survival rate of about 80% (Tsay et al. 2000), and publicly owned hospitals are confronted with “serious competition” from private hospitals. Due to the convenience of transportation, there is easy access from Y City to Kaohsiung academic medical centre and Chen-Kung academic medical centre, patients have a number of various choices, and it is difficult for Hospital A to keep patients. There are two teaching hospitals and many “competitive private hospitals” around Y City, Hospital A shares patients with other hospitals, and this results in the low numbers of patients. To respond to this environmental impact, Hospital A therefore commenced to implement its TQM program.

Organisational factors.

Hospital A is a public hospital, and it was hard for the hospital to manage after the NHI was introduced. The reasons were that hospital A not only had an inflexible personnel structure and salary system, but also needed to follow the regulations of Central Government; these factors contributed to Hospital A having more difficulties in operating than private hospitals.

Government limitation affecting public hospitals: The service charge in public hospital (the service charge of public hospitals is enacted by Central Taiwan Government) is too low to cover the costs. The administration fee is free when patients were treated in public hospitals. For the public hospitals to take the price difference of drugs and gain profit is not permitted by government. In addition, the repayment paid by the Bureau of National Insurance for insurance ward is too low to cover cost. The numbers of insurance patients in Hospital A were higher than non-insurance patients, and this contributed to the lower income and profit of the hospital.

Hospital A has a rigid structure, inflexible personnel and salary system: After NHI was introduced, people could choose hospitals randomly without the problem of charges. Public hospitals were harder to manage than private hospitals, because “the organisational structure, personnel and accounting systems are not flexible in public hospitals, and the salary system is unreasonable.” The salary of public physicians is lower than physicians’ salaries in private hospitals, and the reward system for physicians is very complicated, consequently it is difficult for physicians to get rewards, so it is hard for public hospitals to recruit physicians. This results in a shortage of physicians; however, there are surplus administrators, supporting technicians and nurses in Hospital A.

Decreased government funding: Government funding to public hospitals is decreased year by year, due to the increasing of national health expenditure and the shortage of the

government budget. Additionally, government policy requests public hospitals to manage independently without government funding by 2005 (Tsay et al., 2000). One of the purposes for Hospital A to implement TQM was to change the rigid organisational structure, the inflexible personnel and salary system towards a new paradigm.

Causal Conditions for TQM Practice

Participants were asked to describe what were the reasons (motivations) for hospitals to implement a TQM program? The causal conditions that motivate the use of TQM programs were categorised into three major categories, customer initiated, organisationally initiated and reaction to competition, and the concepts under each category were also discussed.

Customer initiation.

The reasons submitted by the participants of the focus group interviews for Hospital A implementing TQM can be discussed in three categories. The first category was customers initiated, the concepts under the category were to improve health care quality, to increase customers' satisfaction, loyalty and to meet customers' needs. "Public hospitals face numerous pressures since the NHI was carried out; part of the pressures came from "customers' demands", and the reasons for implementing TQM were in order "to improve medical quality, to provide patients with better service and to meet customers needs." An administrative staff member expressed the view that, "TQM practice assisted hospital to provide good service quality, to increase customers' satisfaction, and to increase the patients' loyalty."

Organisational initiation.

The second category for TQM adoption was organisationally initiated, three concepts were included: to standardise and document processes, to reduce cost, enhance profit, and to enhance efficiency. The director of the operational unit described the position as follows “Government had requested our hospital to implement TQM, the purposes were lower cost and to run hospitals without government funding as well.” The purposes of the application of the business management model of TQM were “processes standardisation and documentation”, for example, the medical records in Hospital A could manage with standardisation and documentation. Another purpose of TQM adoption was in order to “simplify service processes, to improve efficiency, and to create profit with limited resources.”

Reaction to competition.

In response to the competition of health care market, Hospital A adopted a TQM program. The concepts, which were included in the category of reaction to competition, were to gain competitive advantages, to promote the survival rate and to avoid being privatised. TQM adoption has been common in manufacturing and service sectors for more than 10 years, and many private hospitals have followed their footsteps in implementing TQM for many years. It is necessary for public hospitals to adopt TQM programs to improve health care service quality and “gain competitive advantages.” Participants described a TQM is possible way to increase profit and to promote “the survival rate”. Public hospitals have tried to adopt a business management method, known as TQM. Participants also stated that the practice of TQM could achieve high efficiency by process standardisation, and increase hospital profit; enhance the “competitive advantages”, and “could assist to avoid the hospital being merged or being privatised.” The summary of causal conditions for TQM practice is

presented in Table 6.38.

Table 6. 38

Causal Conditions for TQM Practice

Categories	Concepts
a. Customer initiated	To improve health care quality To increase customers satisfaction To increase patients' loyalty To meet customers needs
b. Organisational initiated	To standardise and document processes To enhance efficiency To reduce cost and enhance profit
c. Reaction to competition	To gain competitive advantage To promote the survival rate To avoid from being privatised

The Phenomena of TQM practice

The phenomena of TQM practice presented here consist of advantages and disadvantages. The participants were asked to describe the advantages (the third question, guideline of focus group interview) and disadvantages (the fourth question) of TQM, during the practice of the TQM program in the hospital. As is typical in this style of research, many more disadvantages than advantages were reported. However, the inverse of most disadvantages could be considered advantages of TQM adoption. Within the advantages there were four categories, they were providing high quality care and increasing customer satisfaction; increasing revenue and profit; offering education and training, enhancing friendship, solidarity and cohesiveness; as well as increasing hospital efficiency. The summary of advantages and disadvantages are illustrated in Table 6.39.

Table 6. 39

Advantages and Disadvantages of TQM Practice

Categories	Concepts (advantages)	Concepts (disadvantages)
Patients services	High quality care Provide comfortable environment Enhance customers satisfaction	Patients not well cared for Negative attitude towards patients
Hospital finance	Reduce cost Increase revenue Raise profit	Training, education and QCC programs and processes standardisation were all costly
Employees learning and development	Education and training Increase friendship, solidarity and cohesiveness Promotes self-esteem	Occupies too much time Causes pressure and burden Imposes heavy workload Inappropriate mindset
Hospital efficiency	Change toward flexible structure To standardise procedures High efficiency	Does not assure the performance improvement. Has too much paper work TQM is a difficult process to carry out

Providing high quality care.

Focus on customers is central to TQM principles and theory (Deming, 1986; Juran, 1988) and the criteria of the MBNQA. Therefore, it is not unexpected that TQM improves the health care quality for patients. Manufacturing studies of TQM report similarly significant customer satisfaction findings (Samson & Terziovski, 1999; Wilson & Collier, 2000). Most of the participants claimed that TQM practice could provide patients with high quality care and better care service, as noted by an anesthetics nurse. The advantages of TQM practice were that TQM provides patients with “a high quality service and a better care.” The TQM activities in Hospital A include 5S environmental quality, process management, and ISO 9002 accreditation. 5S environmental quality contributes to “a comfortable, clean environment for patients”, such as clinical rooms, waiting rooms and wards. Process management and procedures standardisation could offer patients a smooth

service delivery, reduce administration and waiting time, as well as minimise the service/clinical variation. A manager of records explained that, TQM offers patients a comfortable health care process; it also provides “a customer oriented and immediate service.”

TQM practice in health care should not consider administrative quality only, but should take account of clinical quality. The Diagnosis Related Groups (DRGs) and clinical pathways were adopted in Hospital A in order to increase medical quality and patient outcomes, and consequently “enhance customers’ satisfaction.” Participants observed this advantage, as mentioned by an administration staff member, “TQM could improve medical and administrative quality, and as well it could enhance customer satisfaction.”

Although there were many advantages for patients, it is acknowledged that there were also disadvantages, such as poor service attitude towards patients, inefficiencies of employees and/or physicians. Participants expressed concern that TQM activities took them away from direct care work for training or working in quality teams or QCC activities. An operational theatre nurse stated that, “Patients would not be well cared for when nurses took part in TQM activities.” Sometimes, physicians complained with nurses participating in TQM and making them care for patients’ solely. These TQM activities made nurses perplexed, stressed, and frustrated. Many participants complained that TQM was time consuming and it was an extra task for them, they had to spent much private time to attend meetings, training and deal with TQM reports, these gave them a heavy burden. Sometimes, there was a poor service attitude to patients, because of work stress. A nurse of a diabetic clinic described that, “Sometimes, the attitudes of nurses were not good, due to the pressure of the heavy work load caused from TQM activities.” Even though TQM practice offered patients a high quality service and an increase in customer satisfaction, nurses found that it was difficult to do health care services and TQM activities well simultaneously.

Increasing of revenue and reducing costs.

In Hospital A, participants experienced financial advantages, for instance, the reduction of costs, the increase of revenue and hospital profits. Because of the introduction of TQM and promotion of QCC, employees are informed knowledge of quality, cost and efficiency. These concepts were reflected in daily operations, and thus resulted in the reduction of waste and the fluency of process, as well as in the increasing of efficiency and profits. A nurse of psychology expressed that, “When implementing TQM in Hospital A, financial advantages were the reduction of costs, the increase of revenue and the increase in hospital’s profits.” Several supervisors of nurses and administration staff also expressed agreement with the opinion of the nurse.

In contrast, Hospital A experienced the problem of cost constraint. One of the TQM principles is that everyone in the hospital is involved in the TQM activities, and each employee has to attend the relevant training and education courses, including information on the basic TQM concepts, seven statistical tools, and the QCC development methods. These are encountered by the hospital, the processes of re-engineering/ standardisation, and procedure documentation are also financial burden. All of these activities required much from the hospital’s financial budget, it can be said that TQM is a money-consuming program. As a pharmacist pointed out that, “All of the staff in the hospital have to attend the relevant TQM education and training courses, particularly in standardisation processes, and procedure documentation, these contribute to the consumption of the financial budget and employees private time.” A family medicine nurse agreed with the previous viewpoint and stated that, “QCC is a big task in the TQM program, most of the staff are not familiar with the quality methods, consequently education and learning are necessary, and so money and time spent is unavoidable. A chest physician explained the disadvantage of TQM is that even though hospital had spent a lot of money to implement TQM, “ The TQM practice is nothing to do

with hospital performance, it only puzzles physicians.”

Enhancing employees' learning and development.

The participants of focus group interviews presented their experiences of TQM in the following: to have learned quality concepts and statistics methods, to gain knowledge relevant to TQM and skills to access computer software. Their statements were “...to have education and training workshops, to have learned TQM and quality methods, TQM helps us to learn individually and from the experience of others’, TQM assists us to gain knowledge, TQM is helpful in learning skills and computer document managing skills, for example, Power-Point, Microsoft Word.” TQM also provides opportunities to enhance cohesiveness within the crew, promotes solidarity and consolidation of all hospital staff, and offers the chance to improve the interpersonal relationships and cooperation between colleagues. TQM adoption was seen to have the possibility to enhance involvement, employees’ morale, and employees’ satisfaction. Many participants seem to have had the same experience, a nurse supervisor explained, “TQM provides opportunities for reward through the QCC presentation, encourages self-esteem, TQM is helpful in self-potential development, assists participants to develop the ability of independent improvement.”

Employees participating in the TQM activities also mentioned disadvantages of TQM practice. These disadvantages could be considered as the inverse of the advantages of TQM adoption, for example, poor communication, insufficient time for training and wasting time, effort and money, especially when all employees were trained in Statistical Process Control (SPC). In addition to this, most participants noted that TQM was a time-consuming program, participants found little time available for them to do routine work and found it difficult to be involved in TQM activities simultaneously. These factors caused many employees mental stress and burdens. For instance, participants stated, “ It occupies too much employees time

and thus causes pressure for them. TQM causes great mental pressure and stress for participants, with the result of feeling burdened.” “TQM causes great pressure mentally and a burden for participants because of the difficulty in finding available time to attend the TQM activities. “My workload is so heavy that it keeps me from attending the TQM program.” “TQM is a burden for employees because of the shortage of staff and the heavy workload.”

Some employees have little willingness to learn new knowledge and skills relevant to TQM, however they are compelled to participate in TQM activities. Sometimes, managers took them away from direct care work for training or meetings for QCC projects, this resulted in a stressed relationship between managers and employees and between physicians and nurses. One participant expressed his concern: “Participants are compelled to attend the TQM program or meetings by their superiors, sometimes they were threatened if they did not comply with unsatisfactory performance appraisal by their superiors. TQM meetings usually affected routine care work, if every staff member put TQM on the first priority, there would be no staff responsible to care for patients. Furthermore, some participants only attended training classes for inappropriate reasons, such as getting learning scores, not for learning. These are not good incentives for employees to learn more about the process of adopting TQM.”

Enhance hospital effectiveness.

Due to the adoption of TQM, employees communicated well through cross-functional teamwork, and increased solidarity, this decreased the break down of the inter-department barriers and consequently enhanced hospital efficiency. A nurse of the operational unit stated, “ TQM offers the opportunities for helping the rigid medical systems become flexible and adaptable, due to TQM activities, employees can work together and have solidarity, common

goals and views.”

Hospital A got the benefits from the introduction of the TQM program, the statement of a staff member of the clinical laboratory and a Family Medical nurse was: “TQM provides opportunities for the hospital to set up standardised processes, to get the ISO9002 and ISO 17025 accreditation.” A Family Medical nurse stated, “ TQM could simplify the original working procedure, also it could minimise the difficulties encountered at work.” A nurse supervisor added that, “When adopting TQM, the advantages for the hospital were that TQM enhances processes fluency, and offers the opportunities for high efficiency.” TQM adoption also enables the hospital to get positive feedback from patients and promotes the hospital’s reputation, assists in publicity, helps the hospital to be more “competitive and survive.”

Notwithstanding the popularity of TQM, some companies have found it difficult to successfully implement this program. The TQM process consumed a lot of the financial budget of Hospital A, however, the employees have never experienced an improvement of the hospital performance. The lack of evidence of no performance progress resulted in employees’ frustration, and hindered employees moving forward. A physician pointed out that the practice of TQM could not improve hospital performance. He implied that the improvement of hospital performance has to rely on the efforts of all employees in the hospital, and he explained that, “The employees of Yu-Loong Company (a vehicle company in Taiwan) organised a safe-guard committee to save their company. One can only save oneself first, then can one save one’s company, not by implementing TQM only”. In addition a nurse stated that, “The practice of TQM and QCC does not guarantee an improvement of the hospital administration.” Other experiences were that the procedures of TQM were hard to carry out and maintain, resulting in burdens and frustrations for participants. A pharmacist and a nursing supervisor said that, “The procedure is hard to carry out, and the leader of QCC is reluctant to take on more, such as final reports of QCC.”

As a nurse pointed out, “TQM has too much paper work, the final reports do not reflect the real situation but are copies of other QCC’s assignments.” From the hospital efficiency perspective, the disadvantages of the TQM practice that occurred in Hospital A were that there was much superficial paper work and that it was hard to carry out and maintain the processing because of the routine health care work also required. The leader of QCC was responsible for all the typing and the final report. Consequently, some of the final reports contained copies of other QCC’s assignments, and were not a true reflection of the actual situation.

The Obstacles to TQM Practice

One of the purposes of this study is to examine the weakness of TQM adoption at Hospital A, to find the opportunities for improvement. The weak areas of TQM practice obtained from questionnaires were explored through focus group interviews, to realise the obstacles and to try to look for ways of improvement. The low scoring answers of TQM practice are presented in Table 6.40.

Table 6. 40

The Lower Scoring Answers

TQM practice	Questions’ number in the questionair
Leadership	1, 2, 4, 5.
Strategic planning	14, 16, 18, 19.
Focus on customers	21, 26, 28, 29, 30.
Informational analysis	34, 35, 36, 38, 42.
Focus on staff	46, 47, 48, 52, 53, 54.
Process management	56, 57, 61, 63, 64.

These questions were also presented to all participants, the participants were asked,

“ What difficulties (Obstacles) did you experience when the TQM program was being implemented in your hospital, particularly in these areas? The interview data relevant to the obstacles were categorised.

Obstacles to the practice of leadership.

The weaknesses in the practice of leadership at Hospital A were that the values of hospital, short and long term directions, and performance expectations did not permeate to all employees, and leaders had not established an environment for empowerment, innovation and organisational learning. The participants were asked to express their opinions, relevant to the weaknesses and the possible obstacles to the practice of leadership, and their statements were categorised into two concepts.

Hospital goals did not permeate to all employees: The superintendent and senior managers had set hospital values, short and long-term direction five years previous to the TQM program practice. However, the values and hospital’s directions had not permeated through to the whole hospital including its employees, so those employees were not aware of those values. Although the hospital had set departmental goals, the goals had never been followed up on, nor achieved. As a supporting technician explained, “There were hospital values and long-term directions, however, they were seldom announced to employees. There was no specific performance expectation before, because each department had difficulties setting goals. Even if goals were set, they were never reached. The reasons for this are that all the public hospitals need to follow the policies and rules of the Central Taiwan Government, and Department of Health.”

Leaders failed to create an organisational learning environment: At Hospital A, there was not “an empowering and innovative environment”, and the comprehensive program was thoroughly planned by senior managers. The leading strategies made by senior managers did

not match the expectations of the employees. Also, the time for policy making was limited, and more or less, misleading in the direction for action. A technician stated, “If everyone in the hospital could participate in policymaking, there would be an integral strategic program carefully mapped out, and the direction of policymaking would stay on the right track. If senior managers make decisions or policies without discussion with employees, employees will not know how to carry out the policies and feel confused.” A nurse from the operating theatre, who was a nurse of the emergency unit agreed with this viewpoint and explained, “The policy was made by senior managers, and staff were never included and involved. For example, Clinic B manages the emergency unit of Hospital A, and although the employees of Hospital A working at the unit were drawn from the emergency unit, they were still given tasks by Clinic B, this resulted in the confusion for those employees.” A further obstacle to leadership practice at Hospital A was the avoidance of leaders taking responsibility. The participants stated that, “The employees were dissatisfied with the avoidance by the leaders in taking responsibilities”.

The former superintendent had made an effort to create an organisational learning environment, and he had organised many reading clubs, and encouraged employees to take part in these clubs to develop their knowledge and mindset. However, there were poor results, because some employees were still reluctant to acquire new knowledge and skills. A supporting technician expressed the following opinions: “The hospital had set reading clubs, however many staff in the hospital has a bureaucratic attitude, and has no desire for new knowledge and skills. They felt reluctant to attend education or training courses, this made it difficult for the hospital to have a paradigm shift towards high performance.”

Obstacles to the practice of strategic planning.

Hospital A experiences a number of difficulties when deploying strategic planning. These difficulties consisted of an absence of strategic objectives, which were balanced according to the needs of patients/ or human resource action plans, a lack of comprehensive strategic planning processes and performance measurements system. In addition to this, the hospital strategy/measurement results were not well communicated to employees. These obstacles contributing to the weaknesses of strategic planning practice are categorised in the following section.

The strategic objectives do not effectively align to customers' needs: The Central Taiwan Government set most of the strategies of Hospital A, and Hospital A only followed the regulations of Government. So it could be said that the strategic objectives were those of the Central Taiwan Government. However, the strategic objectives set by Government were not effectively aligned to customer needs/health care market expectations until the new superintendent came on board. A participant stated that: " Our stakeholder is the Central Taiwan Government, they made most of the strategies for all of Taiwan's public hospitals, and our hospital always followed the rules of Government. Most of the medical equipment and drugs were bulk purchased by Central Government, so the Central Taiwan Government is also one of our suppliers, so it can be said that our strategic objectives are balanced according to the needs of suppliers/ stakeholders. However, the strategic objectives were not effectively aligned to customers needs." Some participants however felt disappointed even though they were comfortable knowing they were to follow the regulations of the hospital and Government. However, the patients' requirements seem to have been neglected for a long time, until the new superintendent started to make an effort to focus on patients' requirements, such as to give consideration to the elders and aborigines' health services as well as to set up a diabetes classroom. A nurse supervisor explained that: "The hospital did

not have set specific strategic objectives for patients before, but this year, there is a whole new focus on the aged, such as clinical appointments for the rural aged, day-care centres for the aged. This change also enhances long-term care, for example, by increasing of numbers of beds in long term care departments, nursing homes, and creating a diabetes classroom to provide health education and to have a special care for the diabetes patients.”

Lack of a comprehensive performance measurement: The TQM practice in Hospital A had never tried to create employees’ career development plans, had never had a comprehensive performance measurement to review the performance to track progress, to establish human resource actions plans, or to find the opportunities for improvement. Many participants expressed concern that the progresses of TQM practice had never been tracked and seemed never to be incorporated into daily operations. Consequently, employees including physicians, nurses, laboratory and administration staff did not know what their weakness were and nor did they have any opportunity to improve health care services. A laboratory technician summed up these responses, when he stated: “The hospital had never had a comprehensive performance measurement, nor performance reviews. The findings were never been announced to employees, employees did not know how to nor where to improve their daily work or to innovate.” However, the new director has come on board and he pays more attention to performance, which has lead to the increase of performance in the TQM processes. He needs more time to discover and to deal with problems.”

The potential problem of policy and hospital alliance: Another obstacle to the practice of strategic planning was the potential problem of policy and hospital alliance. There is a nine-year alliance contract between Hospital A and Clinic B. The purposes of this contract are to ensure the facilities of Hospital A are utilised effectively, and also to cover the physician shortage of Hospital A. However, Clinic B is a private and profit generating clinic. Its functional model is different from that of the public hospital A. The two groups of

employees felt confused when they worked under two different functional systems, and so conflicts between the two systems were unavoidable.

Lack of a top committee: There was a lack of a top committee with responsibility in Hospital A to launch the TQM activities, the superintendent had assigned the relevant TQM tasks to the nursing department. Some of nurses were not willing to do the extra work (some of employees look at TQM as an extra workload), some of them had no time available, finally, and the supervisors of the nurses compelled nurses to do the work. This probably contributed to the employees' resistance to the TQM practice. Due to the lack of top committee, most of the TQM activities were assigned to the nursing department. A nurses' supervisor pointed out, "Assigning the relevant work of TQM activities to the nursing department is an inappropriate policy, because nurses are not familiar with TQM principles and methods, also there is no time available for nurses to care for patients and to attend TQM meetings simultaneously."

Consultant companies inconsistencies: There was no TQM manager or TQM expert within Hospital A, so that Hospital A had to hire consultants outside to assist the TQM practice in the hospital. Although the TQM program for public hospitals is a five-year project, the Taiwan Government's financial support is released year by year, so Hospital A implemented their TQM program under each year's budget. Hospital A changed the Consultant Company every year, due to the purchasing constraints of public hospitals. The budget constraint and the change over of consultant companies resulted in confusion for the employees of Hospital A. A participant stated that "Employees are confused because of the many consultants who suggested different methods for TQM activities. Sometimes the employees did not understand what consultants had done for our hospital." Consequently, employees were often confused when doing TQM activities.

Obstacles to the practice of patient and market focus.

The weaknesses in the practice of focus on patients, other customers and the market were that they had no previous set target, potential customers and market segments of health care, until the new superintendent arrived, and initiated a focus on market promotion. In addition, the hospital had not aggregated or analysed customers' complaints to seek opportunities for improvement.

Patients' complaints were not integrated or treated as the first priority: Most of the complaints that occurred in Hospital A come from the two different operational models between Hospital A and Clinic B, patients were always confused and did not understand how to follow up within the guidelines. Senior managers failed to communicate with the Dean of Clinic B; this resulted in customers' complaints not being resolved. The manager of medical records described an example; "The administration processes between our Hospital and Clinic B were different. When patients who were treated by our Hospital physician visited Clinic B, he/she felt confused by the two different operational systems for their health care, this often would lead to complains from patients." To solve the problem of different operational systems, senior managers should discuss the issues with the Dean of Clinic B. Another reason for patients' complaints was that hospital staff were not well organised for special events, such as when physician's leave or alterations to the timetable were made. Many of the participants outlined similar views to the following: "If the time table of the physicians of the outpatient clinic were changed, or once when a physician was off duty, and there was no official notice put on the board of registration. This was inconvenient to patients and complaints followed."

No comparisons of customer satisfaction information with competitors: Patients' satisfaction information informs how the hospital handles the demand of customers, the satisfaction of patient's leads to loyalty towards the hospital. However, Hospital A did not compare customer satisfaction information with competitors/ similar providers, due to the difficulties of obtaining customer satisfaction survey data of other hospitals. Thus it was difficult to appreciate the strengths and weaknesses from a customer' point of view in Hospital A. The secretary of Hospital A explained, "It is hard to make comparisons because each hospital has its own customer satisfaction questionnaire. Even though, in 2000, every public hospital adopted the customer satisfaction questionnaire, provided by the Central Government Taiwan, Department of Health. We do not compare the results with competitors and other similar hospitals, because the customers satisfaction survey data is seen as the private information of hospitals, and we could not access the survey data of other hospitals."

No focus on health care market promotion: The sources of potential patients are derived from the community development, medical screening for National Health Insurance, for children and laborers, as well as pre-marital screening. Even, the superintendent had not made an effort to promote the hospital as a health care option. Currently the superintendent has extended the health care market, and it is now focused on the aged, and medical screening for adults. However, the supporting resources is inadequate, such as vehicles and drivers are limited, and the aborigine's service centre and newborn baby care centre are also unavailable, so these limitations make it difficult to expand the health care market. The nurse of community development claimed that, "It is inconvenient for patients of rural areas to be hospitalised or to have medical screening without bus services. Besides, there is no aborigines' service counter in the hospital, this makes it difficult to have aborigines cared for in the hospital." A Pediatric nurse also claimed that, "It is hard for newly delivered mothers without a newborn baby care centre."

Obstacles to the practice of informational analysis.

The weaknesses in the practice of informational analysis were that Hospital A did not use the analysis results for action as the basis for improvement and benchmarking and it also did not regularly audit processes and performance to minimise costs associated with inspections and tests. The obstacles are categorised as follows.

Lack of informational analysis and communication across departments: The analysis of information is a very important factor in TQM practice, the report of informational analysis would be of benefit for senior managers to inform their decision making; also it could act as the basis of process improvement. The results of analysis should be well transmitted to every relevant staff member, then to ensure the smooth practice of TQM. However, the largest obstruction to TQM in Hospital A is the lack of informational analysis and the absence of communication across departments. Hospital A did not have a comprehensive performance measurement system to evaluate hospital performance, nor were most of the evaluation results communicated to work groups or at functional level operations, the staff in the hospital did not know whether the data and information was integral, or accurate. For example, medical quality reports were not announced to all staff. A surgical nurse explained that, "The mortality report was never been transmitted to the physicians of the general medical department, the surgical department, the operational department or the emergency unit. The Taiwan Quality Indicator Project (TQIP) reports were not communicated to the physicians of the cooperative hospital (Clinic B) to make correction activities." Moreover, internal messages were not effectively communicated to all staff members, nor were the employees' satisfaction results announced to employees. The nurses' supervisor continued and said: "Since the survey results of employees' satisfaction were not announced, employees did not know the accuracy or credibility of the data, and no mention of consistency with the current directions of health care services."

Insufficient hardware and software: Due to the insufficiency of hardware and software, it was difficult for employees to offer accurate and immediate data and to provide informational analysis on time, consequently decisions could not be made based on the feedback of measurement and analysis. An administrative staff member stated, "Hardware in the hospital is not well managed; problems of the hardware and software of the computers are common place." Participants expressed that there were similar problems of deficiency in computer software in other departments, problems such as Office 2000 not being able to be installed, because of the copyright. The computer numbers is insufficient for everyone's use, also there are difficulties in peripheral accessories supports.

Obstacles to the practice of staff focus.

The weaknesses in deploying focus on staff from the focus group interviews are summarised in the following section. Hospital A did not organise work time and job flexibility, to motivate, to reward high performance staff, or to help them attain career development nor did Hospital A regularly measure the staff's satisfaction.

Lack of staff satisfaction measurement: Hospital performance depends on each employee's effort, the more employees are concerned with the hospital and patients, the better the reputation and performance of the hospital. The methods that make employees contribute to the hospital were to improve their work environment, enhance employees' satisfaction and in turn induce them to stay at the hospital longer. Unfortunately, Hospital A failed to periodically measure employees' satisfaction, and the measurement results were never passed on to employees, some staff even doubted the value of employees satisfaction. A nurse from the operation theatre explained and wondered, "The hospital does not measure the staff's satisfaction periodically. If they did, could the hospital improve the work environment or performance appraisal? Furthermore, a nurse of anesthesiology mentioned

that, “The hospital did take a survey of staff’s satisfaction, however, the result of the survey was not announced. Employees were doubtful about the accuracy, and some employees were afraid of being punished for telling the truth.”

Lack of a reward system: Timely supports, proper rewards can enhance the solidarity of employees and also create excellent performance. The participants explained that Hospital A had no comprehensive system to motivate staff, and helped employees attain career development, and did not have a system to reward the high performance of staff, these factors contributed to employees not working to high performance levels. Promotion for employees is restricted in Hospital A; hence they lose the motivation for moving upward. In addition to this, hospital management cannot be flexible because of bureaucratic policy, which leads to the lack of responsibility for the supervisor and relevant staff. For instance, a participant claimed that, “...No particular reward plan and practice can be seen in the hospital. There is no procedure toward tracing and no control centre to establish a human resource action plan. No one cares about the final result of practice.” A Pediatric nurse argued, “Since there is no evaluation system and method available to assess the staff’s performance, there is no reward for the high performing staff.”

Knowledge management not adopted in the hospital: The increasing development of information technology, such as intra-net and the World Wide Web has increased organisational interest in the topic of knowledge management. Knowledge management is often described as an organisation's ability to handle the knowledge around the organisation and makes it accessible throughout the organisation, improving its competitiveness and ability to innovate (Artemis, 1997). If Hospital A could deploy advanced information technology for knowledge sharing throughout the hospital, it would be of benefit to the hospital in its core competency. However, there were difficulties for Hospital A to incorporate knowledge management. The manager of an operational department clarified,

“Due to the shortage of software, hardware, and the lack of employee’s computer skills, the hospital has not yet considered adopting knowledge management.” A physician indicated that, “If knowledge management should be utilised for the routine processes, then the standard operating procedures could be changed into digital data, which can be used as a resource for the training and education of new-incoming or transferred staff.”

Recruitment of new staff not better evaluation: Regarding the processes of recruitment, hiring and retaining of new staff are not well evaluated by the personnel department. The manager of the personnel department explained that the recruitment, hiring and retaining of new staff in a public hospital are not completely controlled by the personnel department of the hospital. The relevant recruiting processes should follow the rules of the Central Taiwan Office, the public hospital seldom has independent power to recruit permanent new staff, however, and it is permitted to hire contract staff or physicians. It can be seen that the public hospitals in Taiwan have no autonomy in hiring staff, all of permanent staff should be recruited by Government through a public and formal process.

Lack of physician's involvement: The physicians were dissatisfied with the public hospitals’ salary; posing a difficulty for public hospitals when recruiting doctors. This is a continuing problem for the hospital and results in a shortage of physicians. Moreover, some physicians took patients away when they left the hospital; this also led to the decreasing number of patients at Hospital A. Physicians are the key members of a hospital, if there is no physician on duty, patients cannot be cared for. Participants noticed that this affected the extent of customer satisfaction and the reputation of Hospital A; consequently, this further decreased the number of patients. In addition to this, some physicians did not participate in TQM activities and sometimes they complained about nurses’ taking part in TQM meetings. A family medicine nurse said, “Most of the physicians did not take part in the TQM activities, some were reluctant to attend the TQM program, and some physicians even complained

about nurses' participation in the TQM program." This factor made it difficult for nurses to do their health care and TQM activities well.

The difficulties in timetabling: More than half of the participants pointed out the difficulty in caring for patients and attending to the TQM activities simultaneously. Some of the TQM documentation needed to be done using employees' private time. "The heavy workload keeps employees from attending the TQM classes. Such as QCC discussions which require each group member to attend, but it is difficult for group members to have discussions together because of the busy working hours." Care service and attending TQM meetings at the same time affect health care quality, insufficient numbers of staff makes it difficult to take care of both work and meetings.

The lack of enthusiasm and solidarity of employees: The employees of Hospital A are civil officers, most of them have a bureaucratic attitude and do no more than what they are asked to do. They prefer to maintain the current working environment and do not like to change and sometimes resist change, not to mention innovation. A nurse supervisor stated, "Even though there are many employees actively participating in TQM activities, many of the employees have a bureaucratic attitude and lack enthusiasm for any change in the hospital. The employees are reluctant to co-operate with each other, leaders of the QCC are compelled to finish all the typing and final reports themselves, thus, and they feel weary and burdened." The personnel manager pointed out; "Participants are reluctant to cooperate with each other to complete the TQM activities. Employees are reluctant to use private time to do the TQM activities, because of lack of solidarity with the hospital, and difficulty in reaching consensus within group members."

The frustration of seeing no progress: Participants observed that there was no progress in performance after the practice of TQM, so employees showed frustration and lacked motivation to do the TQM activities. The manager of the clinical laboratory stated, "TQM

program is of little help to real work, employees doubt the effectiveness of the TQM program, complaining about the time and money wasted, because of no sign of progress in hospital performance.” An administrative staff member argued, “Even though environment quality 5S, was done well in the hospital. However, five years ago, our hospital was the best hospital in the Y City region without TQM, and now the TQM has being implemented for five years, there are no particular results showing in progress at Hospital A.”

Education and training not better evaluation and classification: Even though many employees mentioned that TQM offers opportunities to attend education and training workshops. There were some employees who complained about the lack of TQM knowledge. The probable reasons are that the training courses are not based on individual requirements. The requirements of training for employees were various, the new staff member needs relevant knowledge and skills for their work and the relevant education /training can help them to do their work well. Senior staff could provide them with information to assist the transformation of their mindset. Education needs relevant to TQM concepts were also different, if the personnel department did not evaluate well the requirements of employees, and only provide all employees with one kind of education course, employees have no interest in attending the course. A pharmacist stated and suggested that, “Training courses need to be classified and evaluated according to the needs and specialties of employees, then employees would attend the TQM program or training courses only when they are necessary.” A supporting technician argued: “The heavy workload keeps employees from attending the TQM classes and their lack of background information on TQM also makes it difficult for employees to understand TQM.”

Obstacles to the practice of process management: Participants' discussion indicated that Hospital A did not incorporate the changing customer/market requirements and new-technology into related processes; nor had the hospital addressed the operational performance requirements into the design processes. Hospital A had no effective methods to assess performance to improve service delivery processes; nor did they regularly audit processes and performance to minimise costs associated with inspections and tests. The obstacles coded from the interview statements are outlined as follows.

The absence in processes of new technology design: The concept of TQM is not only concerned with customer orientation, but also it is to meet customer demands. Customers need a clear clean and comfortable environment, including clinical room, waiting room, inpatients ward, and toilets. New technology is also necessary for the modern health care service; it provides patients with a convenient and fast health care process and accurate medical records. In Hospital A, outdated computer systems and out of order of computers are often commonplace. This makes it difficult for patients to register through the computer system. The problems of registering through the computers occur from time to time and at this time the computer services have no function at all. Outdated hardware also results in complaints of a poor working environment among staff.

Inconvenience of referral processes: When clinic practitioners need to refer patients to another hospital or medical centre, he/she should consider the reputation, professional abilities, medical equipment and whether the process of hospital transferral is fast and smooth enough to meet his/her request or not. Moreover, whether the admission processes, cure method, status of patient's recovery, were also taken into account. However, Hospital A does not have a transfer centre, nor special privileges for referrals, all referral patients will be treated as same as outpatients. No distinction is made between outpatient service or hospitalisation, this referral process causes inconvenience to referral patients. Sometimes,

referral reports were sent back to the originating general practitioners or hospitals with perfunctory writings.

Standardised processes not set up: A regular audit of process and performance could enhance the fluency of service delivery, and reduce the cost of repeat inspection and testing. However, at present, the procedures of standardisation are not operating fully in Hospital A and the standardised processes were not carried out throughout the whole hospital, thus, it is unavoidable that there is some inefficiency during the services processes.

No assessment system for a process performance: The participants' opinions indicated that the hospital should have a measurement system to monitor hospital efficiency and to improve the service processes. At present, there is no evaluation system to evaluate hospital performance, only a suggestion system to offer comments to the related department to improve the process. However, the suggestion system is only partially implemented, sometimes, when the suggestion project relates to another department, it can reflect poorly on that department, then in turn influence the relationships between departments. Suggestions within one's own department for process improvement would be more acceptable, so this should be encouraged. A nurse from infection control asked that, "There is no systematic performance measurement, then how can the performance requirement be addressed in the design processes?"

Excessive paper work: Participants summarised that the principles of TQM could not be applied in the routine processes. The focus on documentation and data collection were two major barriers to process management in Hospital A. A nurse explained with the comment that, "TQM reports are a lot of paper work, and some of the reports lack reality." Due to no recording or notes taking immediately after or during the process of QCC, the data sometimes lacks reality, and may not represent the actual situation. A staff member of the medical records department explained, "TQM reports focus on documentation and data

collection and results in the employees feeling frustrated and losing their understanding of the progression of the activities. The principles of TQM “are not carried out in daily processes”, moreover, TQM activities affect employees’ routine work and take up their private time, these factors made employees complain about the TQM program.

Environmental obstacles.

There were also three environmental obstacles from the interviews, arising from the limitations of the National Health Insurance System, the delay of supply of medical resources and equipment by the Central Taiwan Office, and the conflict between quality and profit.

Government requested public hospitals to implement the TQM program; TQM practice was a costly project. However, Central Taiwan Government confined the National Health Insurance System by “imposing many limitations” on the public hospitals’ ability to increase profit, such as the limitation of physicians’ ‘prescriptions and drugs’ usage, the number and brand of tablets. Lower inpatients’ charge and lower ward fees than that of private hospitals, these reasons contributed to the decrease of profit of the hospital. Free administration fees contributed to the hospitals’ financial deficit. To embark on TQM practice with financial restrictions meant that the performance was not as good as may have been expected.

The Central Taiwan Office controlled the purchasing of drugs and medical equipment, while the hospital depended on the Central Taiwan Office to be responsible to keep the resources in supply, the purchasing of medical equipment and delivery needed to be on time, to ensure the quality of health care. The other government obstacle was the “imbalance between profit and quality.” Government requests public hospitals to enhance health care quality and promote people’s health; in the meantime, government asks the public hospitals to be financially independent, consequently, the employees of Hospital A felt confused. The

interview data relevant to the obstacles were categorised and summarised in Table 6.41.

Table 6. 41

The Obstacles for Hospital A to Implement TQM

Categories	Concepts
Environment	Limitations of National Health Insurance System The delay of supplies of medical resources and equipment by the Central Taiwan Office The conflict between quality and profit
Leadership	Lacking in clear understanding of TQM goals The avoidance of taking responsibilities
Strategic planning	A lack of a top committee The potential problems of hospital strategic alliance Inappropriate task assignment Inconsistency of consultants of TQM
Customers focus	Patient complaints not integrated and treated as the first priority Did not compare customer satisfaction with other hospitals Absence of focus on market
Informational analysis	A lack of informational analysis An absence of communicating the analysis results across departments The insufficiency of hardware and software
Staff focus	Shortage and under involvement of physicians Difficulties in time tabling The lack of enthusiasm, solidarity of employees Frustration at lack of progress An inflexible personnel management system A lack of reward system A lack of employee satisfaction measurement Knowledge management was not adopted
Process management	Did not design new technology into processes Lack of process assessment Inappropriate referred process TQM focused on documentation and data collection The principles of TQM were not applied in the routine processes

Action Plans for TQM Practice

This section will address strategies for enhancing hospital performance. The participants of the focus group interviews were asked “ How to increase the performance of the hospital through TQM practice?” Employees understood the culture of Hospital A, they understood how and what was the best way forward for the hospital. The participants shared their experiences of TQM practice, and provided recommendations for the hospital for the successful practice of TQM. The recommendations are grounded, categorised into six categories, known as leadership, strategic planning, focus on customers and market, informational analysis, focus on staff, and process management. There are several concepts under each category, and they are shown in Table 6.42.

The practice of leadership.

In order to enhance hospital performance, leaders of the hospital should be responsible for the patients’ complaints, and take responsibility to negotiate with Clinic B to get a consistent operational model. Additionally, leaders should manage the hospital in a better direction for staff to follow.

Leadership has to be responsible for the patients’ complaints by setting up a consistent operational model with Clinic B. Participants suggested that service model of Hospital A and Clinic B “need to be consistent to avoid confusing the patients.” Further suggestions were that the senior manager should be responsible to “negotiate with the dean of Clinic B”, in an effort to get a “consistent operational model” to keep patients from being confused.” Furthermore the supervisor should be “in charge of patients complaints”, because if patients complaints are dealt with as a first priority, then customers satisfaction and loyalty could increase, and thus keep patients at Hospital A.

Table 6. 42

Action Plans for Effective Practice of TQM

Categories	Concepts
Leadership	To take account into the customers' complaints by setting up a consistent operational model with Clinic B Manage hospital in an appropriate direction
Strategic planning	Keeping resources from shortage Reduction of medical stock and cost Management by walking around (MBWA) and more suggestion system
Focus on patients, and market	Concerned attitude towards patients Aggregated analysis of customers' complaints Market expansion
Informational analysis	Setting up performance measurement system The analysis report should be communicated to relevant levels Using digital order and prescription management
Focus on staff	Increase Physician's medical care quality A bureaucratic attitude will not be tolerated. Development of a positive attitude towards the hospital Develop team-work Create a rational work environment and make more progress A fair and reasonable performance appraisal of employees Flexible work assignment for staff Well evaluated and classified training courses
Process management	To improve the signage of the hospital. The practice of standard processes Design performance requirements into processes To assess hospital performance periodically

Leaders should manage the hospital with better direction. The leader is like an engine, when the engine runs, the machine moves, while the cooperation of the other staff members is also important. The superintendent could act as an engine and the hospital's entire staff act as peripheral services, both cooperates together to maintain the hospital's functioning. In a similar way, physicians could act as an engine, and supporting technicians act as peripheral services, both work together to care for patients."

The practice of strategic planning.

To enhance hospital performance through the category of strategic planning, the participants' opinions reflected in the focus group interviews are addressed below. First, the hospital should be in charge of keeping resources in full supply, reducing medical stock and cost, Management by walking around and suggestions from staff.

Keeping medical resources in full supply: Central Government purchases medicines, drugs and most of medical materials for public hospitals. This inflexibility of the purchasing system caused difficulties between patients, physicians and nursing staff. The Central Taiwan Office, Department of Health, caused most of the shortages of medical resources; the hospital does not have control. As a result, the Central Taiwan office is responsible to ensure there are no medical resources shortages.

The reduction of medical stock and cost as much as possible: There is a "medical material stock problem", which contributes to the difficulties of cash flow. This problem at Hospital A results in the high turnover rate of physicians' and preferences for using different medicines between physicians. Usually the old medicines are still in stock when replacement medicines have already arrived. The method of reducing drug stock is to inform physicians of the amounts of drug and medical material stock periodically and to mention to relevant physicians to use the stock drug or material first. The government has decreased the funding by NTD 2.7 million per year since 1998, and the funding will continue to be decreased year by year. Moreover, the hospital confronts severe market competition since the introduction of NHS; thus, the concept of "controlling and reducing the cost" should be established throughout the hospital to increase the possibility of survival for the hospital.

MBWA and suggestion system: The management style of the supervisor will influence the business achievement of each section, if "MBWA" can be implemented, relevant internal information can be disseminated at any time and accordingly accurate information can be

verified when received and the right decision can be made. The “suggestion system” is effective and requires the involvement of less staff members, thus the suggestion system could be used in daily operations.

The practice of patient focus and market expansion.

The participants of focus group interviews reflection on this category included a concern attitude for patients, aggregation and analysis of customers’ complaints as well as market expansion.

Needs for staff to have a concerned attitude towards patients: Only when the “service attitude” of staff is modified, will the publicly owned hospital be competitive with private practitioners. Patients are human beings, once they are sick, the physicians and nurses also feel bad; service to humanity has to be emphasised; let the patients feel like they are at home during their stay at the hospital. This will not only directly advance relations with the patients, but also help to improve the marketing efforts of the hospital indirectly. If our service can “satisfy the patients”, they will come back to look for health care at our hospital more often.

The aggregation, analysis and elimination of customer complaints: Participants suggested that the root causes of “customers’ complaints should be analysed, aggregated and eliminated”, this strategy should enable the setting of the priorities for process and service improvements. Employees need to communicate with patients completely and treat them well, and to preempt patients’ complaints by reducing their dissatisfaction and improving service quality and satisfying the patients as much as possible.

Market expansion: Participants recommended that the hospital could “expand its health care market” through providing child-care services, offering vehicle services for aged as well as developing and integrating community members involvement; also through medical screening for staff’s relatives, friends and department clerks. Medical screening is one

opportunity to have patients treated at the hospital, because there could be some problems emerging after the screening. Consequently, the tracing of medical screening results is an important matter. It will enable the hospital to be concerned about the patients' condition and to ensure patients' satisfaction as well as the opportunity to have patients cured at the hospital. For instance, psychological patients are very loyal to the hospital, the occupancy rate of psychological beds is usually quite high, once public praise is earned through offering high quality services and the periodical tracing, the psychological patients will come to be treated consistently by the hospital. Some community members and the aged are also loyal to the hospital, if the hospital could provide transport services, and there would be an increase of patients in Hospital A.

The practice of informational analysis.

Effective alignment and integration of informational analysis is a key category for successful practice of hospital performance measurement. The participants of the focus group interviews offered suggestions for concepts under this category. Setting up a performance measurement system could increase hospital performance, and the system could be able to track the progress of daily actions and to communicate the analysis report to relevant functional levels. Furthermore it was suggested that a digital order and prescription management system could be used.

Setting up a performance measurement system: Participants suggested that in order to enhance hospital performance, it was thought necessary to establish "a performance measurement system"; and the system could align the daily operation, hospital strategy planning and senior managers review, reflecting the daily action performance immediately. Then the corrective actions would be done on time if the daily action were not complying with the performance criteria. In contrast, if informational analysis could not align with the

daily operational actions, it would be seen as not helpful for hospital performance.

Communicating the analysis report to relevant functional level: The best way to improve hospital performance is through survey data, for example, customer's satisfaction, employees satisfaction and inpatients satisfaction are announced to all staff to seek improvement opportunities. The analysis report, such as mortality, infection rate would also be transmitted to relevant departments of the hospital and Clinic B.” It could be seen that if employees could not access the reports of informational analyses, that it would be difficult for them to improve their performance.

Using a digital order and prescription management system: It was suggested that the hospital could make an effort to put physicians' orders and prescriptions in digital management, so as to avoid transcription and writing mistakes. Due to the shortage of staff, physicians' orders and prescriptions are often written by physicians, when physicians' time is not available, the prescription can be written by assistants, mistakes are unavoidable. In this circumstance, it is recommended that digital management is a necessity.

The practice of staff focus.

Staff are the most important assets for organisations, particularly for hospitals because the features of hospitals are different from other industries, the professionals in hospitals are absolutely crucial, and the hospitals would not operate without physicians and supporting staff. As a result, if the hospital wants to enhance hospital performance, the most efficient method to do this is to focus on staff, and to increase staff satisfaction. Consequently, staff can contribute their expertise and create a better performance for the hospital.

The employees who participated in the focus group interviews reflected various concepts under this category to enhance hospital performance. These concepts include the increase in medical care quality of the physicians, the development of teamwork and a

rational work environment. In addition to this, a mindset change and a transformation of the hospital image, provision for employees of a flexible work assignment, a fair and reasonable performance appraisal, and a well evaluated and classified training course are also needed.

Increase medical care quality of physicians: Firstly, physicians should improve their service attitude, for example, pay attention to their tone of voice when they speak with the patients. Because an inappropriate tone may not only offend patients, but also impact on the persons who recommended patients to the hospital, thus, it is necessary to inspire physicians to participate in TQM and TQIP programs to improve their service quality. Moreover, physicians and nursing staff need to be consistent with their answers, in an effort to avoid confusing patients. Secondly, physicians' productivity would be raised, because currently physicians' productivity in public hospitals is less than that of private clinics, increased productivity is required to increase the numbers of patients. Thirdly, professionalism of the physicians is imperative for not only the physician himself but also for the hospital. For instance, if one patient were cured, he/she would have confidence in the physician and the hospital. In sum, physicians' performance, including quantity and quality, is very important; this not only impacts on the reputation of hospital, but also influences the numbers of patients. Therefore, the hospital leader should inspire all physicians to improve medical service quality and quantity, thereby increasing the business performance of the hospital."

Development of teamwork and a rational work environment: It is important for employees to have a nice working atmosphere. This could be accomplished by respecting each other and "working together" with all of the hospital's staff. TQM would be a more successful strategy if "team- work environment" were carried out throughout the hospital, so full cooperation and a respect for each other should be encouraged.

The process and practice of teamwork is a most important matter to be concerned with. With positive intentions the staff of the hospital can make progress at any time. Patients should be treated on a timely and efficient basis by the teamwork of staff, with the consequence of meeting the strategy of increasing customers' satisfaction of the hospital. The superintendent claimed, "Each staff member should be enthusiastic, not only doing his/her own job well, but also helping patients with all their heart." He continued, "The hospital should operate through teamwork, each link is an important connection. The common view that all staff need to come to an agreement; each one not only to do their job well, but also to consider their supervisor status in the team. It is not easy in the beginning, but when it becomes routine work, it will be part of the job. TQM can only be achieved by the cooperation of all staff in the hospital, if TQM is implemented successfully, patients will be satisfied, and the hospital performance would be enhanced."

Mindset change for all staff and a transformation of the hospital image: A complete "mindset change for all staff", and a "transformation of the hospital image" is crucial for Hospital A at this moment. All staff of Hospital A have to make an effort to improve their service attitude and medical quality to gain customers satisfaction and to change the disposition of the hospital, which will then strengthen the hospital's competitive advantage. The attitude of each staff member has to be modified with no tolerance for the bureaucratic attitude. Each one has to be more active and be proud to work at Hospital A, and everyone should do his/her own job well and help patients get better. In the case of a crisis at the hospital, everyone will have to work together to re-establish the reputation of Hospital A, to make an effort to enrich the culture and restore the reputation of the publicly owned hospital.

Provide employee with a flexible work assignment, a fair and reasonable performance appraisal: "Staff assignment and work distribution" should be controlled in a timely basis; if there is no flexibility for staff, due to a heavy workload in each section, volunteer workers

can be of assistance. The supervisor should respect everyone on staff equally and reward their feedback as well as make a “fair and reasonable evaluation of the performance of all staff.” Only when the evaluation is rational, will staff do their best work.

Well-evaluated and classified training courses: In order to improve staff service quality and career development, education and training workshops are required. However, the individual TQM training and education workshop would be “well evaluated by the personnel department”, the relevant courses and training could be “classified according to the profession”, and the training courses could be held on weekends or holidays. Consequently, employees could attend the courses flexibly, and also this could meet the requirement of individual employees.

The practice of process management.

The participants recommended that the improvement of process could enhance hospital performance. The concepts under this category consist of the improvement of the signage of the hospital, the practice of standard processes, and the incorporation the performance requirement into the processes, and the periodical assessment of hospital performance, as well setting up a transfer centre and fluent transfer process.

The signage of the hospital should be altered: The signage at Hospital A is not clear enough to see; often patients cannot find the right therapy rooms, waiting rooms and inspection laboratory. This posed a difficulty and complaints, and lack of willingness to return to the hospital, so it is necessary to improve the signage in the hospital to be clear enough for patients, other customers and also for all staff.

The practice of standard procedures: The input and health care processes should be “standardised and be documented”, and all of the standardisation processes have to be implemented carefully. If processes could be based on “standard procedures”, the quality is

also under control.

Customers needs and new technology should be designed into the health care process. It is most important to design the performance requirement into the daily operational processes, then, the staff could understand the performance criteria and operate to meet the performance requirement.”

The incorporation the performance requirement into the processes, and the periodical assessment of hospital performance are required: The output should be “assessed periodically” to examine whether the results confirm the standard requirement and to enable corrective actions, also to find the opportunities for improvement and thereby improve hospital efficiency.

Setting up a transfer centre and transfer process: A transfer centre and a prompt transfer process for Hospital A should be established and the physician should report the present status of the referral to the original doctor periodically, then, in turn build trust among general practitioners and physicians of Hospital A.

Results of Documentation Analysis

Part one of this chapter presented the results of hypotheses testing and findings to answer research questions one to four. Part two of this chapter presented the results of focus group interviews. Part three of this chapter presents the results of TQM practice - the performance of Hospital A in order to verify and validate the effectiveness of TQM practice. The performance was investigated from three kinds of data: employees' perceptions, Government Annual Reports, and a comparison with the performance of eleven selected public hospitals.

Employees' Perceptions

First, the researcher explored the performance change in Hospital A by using focus group interviews. She found that more than half the participants were of the opinion that employees were frustrated seeing no progress in hospital performance. They argued that the principles of TQM were difficult to carry out. Secondly, the analysis utilised responses from questionnaires, which represented the employees' perspectives in order to reveal the performance improvement after TQM practice. In the questionnaires, the participants were asked to rate the hospital's performance, comparing the current performance level with the levels that existed before TQM practice. The results showed that 56.1 percent of respondents agreed that the patient outcomes had increased after the TQM practice. Similarly, 61.4 percent of participants agreed that Hospital A had a better performance in employee outcomes. However, more than half of the participants (57.9 %, 51.8 %) were unsure about the improvement in financial and hospital effectiveness, while 71.8 percent of participants were uncertain about changes in hospital performance, as shown in Figure 6.3.

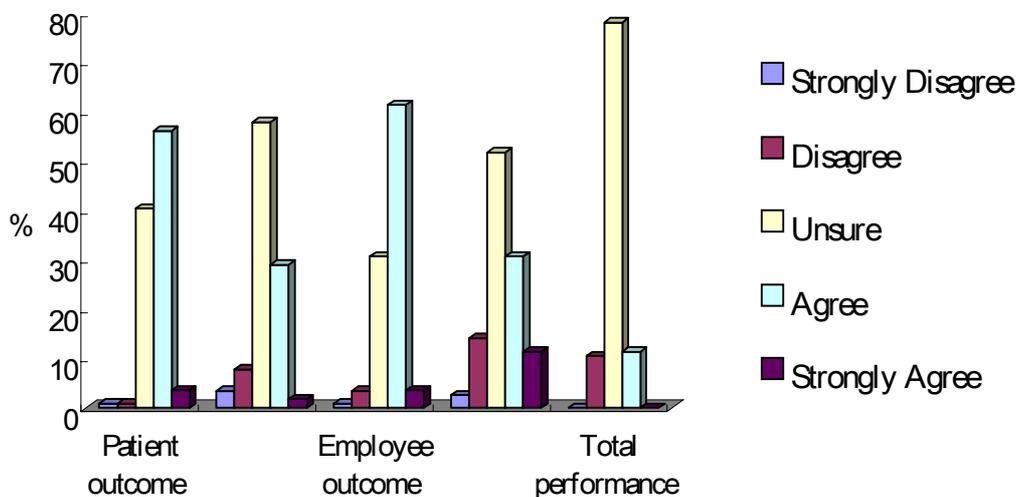


Figure 6. 3: The participants' perception for the improvement of hospital performance

Documented Data from Government Annual Reports

The four areas of hospital performance of Hospital A are presented individually in the following pages. However, some data were not collected, such as employee satisfaction as this data was not measured periodically. Re-admission rates within 24 hours and outpatients' satisfaction were only measured after the year 2000.

Patient outcomes.

The patient outcomes of Hospital A were shown in Table 6.43. The mortality rate of Hospital A (Appendix F, Figure 1) showed an unstable trend, and ranked the highest in 2001. The length of stay (Appendix F, Figure 2) increased year by year.

Table 6. 43

Patient Outcomes after TQM Practice

Patient outcomes	1997	1998	1999	2000	2001
General mortality (%)	2.13	1.24	1.58	2.18	2.75
Outpatients' satisfaction (%)	N/A	N/A	N/A	92.16	87.38
Length of stay (days)	9.06	8.00	10.33	12.04	N/A
Readmission rate within 24 hours (%)	N/A	N/A	N/A	1.15	1.25

N/A: Data not available.

Financial outcomes.

The total revenue and total expenditure (Appendix F, Figure 3 & Figure 4) increased. These were highest in 2001, while the ratio of profit (Appendix F, Figure 5) and Government funding (Appendix F, Figure 6) decreased from 1998 to 2001, as shown in Table 6.44.

Table 6. 44

Financial Outcomes after TQM Practice

Financial outcomes	1997	1998	1999	2000	2001
* Total revenue (MNT\$)	481	469	477	736	869
Total expenditure (MNT\$)	465	453	462	722	852
Growth of profit (MNT\$)	16	16	15	14	17
Government funding (%)	42.54	36.77	35.11	25.64	22.64
Ratio of profit (%)	3.44	3.53	3.25	3.21	2.00

***Total revenue includes government funding; MNT\$ represents Million New Taiwan dollars.**

Employee learning and development outcomes.

From Table 6.45, it can be seen that the trend of the turnover rate of employees (Appendix F, Figure 7) had decreased. In contrast, the hours employees spent in education and training (Appendix F, Figure 8) increased year-by-year. It can be seen that the productivity per employee per month (Appendix F, Figure 9) was also raised, even though employee satisfaction was not measured periodically and not announced to all staff.

Table 6. 45

The Employee Outcomes after TQM Practice

Financial outcomes	1997	1998	1999	2000	2001
Hours spent in education (hours)	N/A	2,918	3,806	3,987	4,200
Productivity per employee per month (persons)	47	53	57	69	72
Employees' satisfaction	N/A	N/A	N/A	85	N/A
Turnover rate	N/A	13.80	12.25	12.46	6.25

N/A: Data not available

Hospital effectiveness.

The hospital effectiveness consequences shown in Table 6.46, indicated that the occupancy rate (Appendix F, Figure 10) was ranked the highest in 1997, and presented an unstable trend. The numbers of outpatients (Appendix F, Figure 11) were the highest in 2000. The numbers of in-patients (Appendix F, Figure 12) and numbers of patients (Appendix F, Figure 13) undergoing major surgery were highest in 2000, which was the fourth year after the TQM practice, while in 2001 the numbers decreased.

Table 6. 46

The Effectiveness of Hospital A

Hospital effectiveness	1997	1998	1999	2000	2001
Occupancy rate (%)	76.94	50.93	48.58	56.34	54.50
Numbers of outpatients	236,410	216,481	192,294	279,282	237,783
Numbers of in-patients	43,761	40,743	40,474	84,768	55,560
Numbers of patients undergoing major surgery	277	249	314	442	373

The Comparison of Performance between HA and ASPH

After the examination of the performance of Hospital A, and it is necessary to compare this with other public hospitals to ascertain whether the performance of Hospital A increased through a change in the management of TQM practice. The researcher selected a reference standard to compare Hospital A's performance with the referenced standard from 1997 to 2000, and discussed the performance changes that occurred in Hospital A. Fang (2001) detailed the performance of eleven selected Taiwan public hospitals, and Hospital A (HA) was included. The researcher used the Average performance value of Average of Selected Public Hospitals (ASPH) as the reference standard in order to differentiate the performance change of Hospital A. The comparisons of outpatients and in-patients numbers between HA and ASPH are illustrated in Table 6.47. and Figure 6.4.

Table 6. 47

A Comparison of Outpatients and In-patients Between HA and ASPH

Year	Outpatient numbers		In-patient numbers	
	HA	ASPH	HA	ASPH
1997	236,410	209,374	43,761	56,886
1998	216,481	209,864	40,743	51,315
1999	192,294	236,451	40,474	57,648
2000	279,282	254,634	84,768	64,220

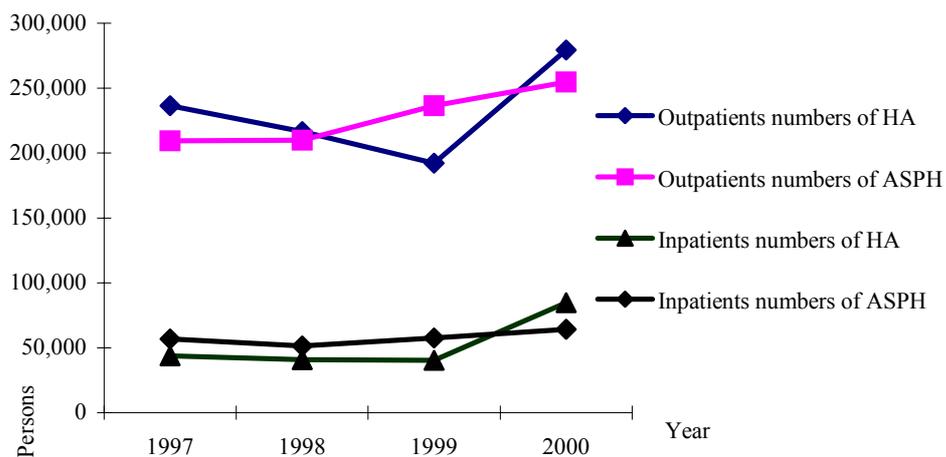
*Figure 6. 4:* A comparison of outpatient and in-patient number between HA and ASPH

Figure 6.4 indicates that the outpatient and in-patient number of Hospital A (HA) decreased from 1997 to 1999. However, the number dramatically increased in 2000. To compare with ASPH, the numbers of in-patients were less than ASPH from 1997 to 1999. In contrast, the numbers were more than ASPH in 2000.

When compared with ASPH, Hospital A has a lower productivity, although the productivity of Hospital A had increased since 1997. Similarly, the ratio of revenue to

expenditure of Hospital A was lower than that of ASPH from 1997 to 1999. However, in 2000, Hospital A had a higher ratio of revenue to expenditure than ASPH. Due to the decrease of the dependence on government funding, Hospital A appeared to have a lower trend than that of ASPH. The comparisons in productivity, the ratio of Revenue to Expenditure (R/E) and government funding between Hospital A and ASPH are presented in Table 6.48 and Figure 6.5.

Table 6. 48

A Comparison of Productivity, Ratio of Revenue to Expenditure, Government Funding Between HA and ASPH

Year	Productivity (%)		R/E (%)		Government funding (%)	
	HA	ASPH	HA	ASPH	HA	ASPH
1997	47	55	69	72	42	41
1998	53	56	67	69	37	40
1999	57	67	67	74	35	35
2000	69	72	80	77	26	32

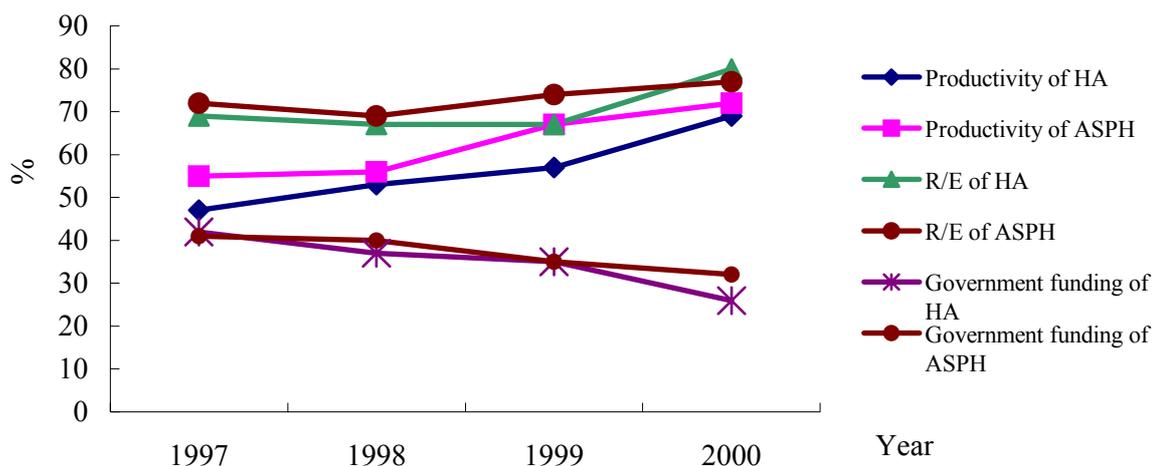


Figure 6. 5: A comparison of performance between HA and ASPH

To sum up then, three kinds of data showed that the performance of Hospital A did not dramatically improve. However, it did have an incremental improvement. In answer to research question six, “Does the hospital’s performance change after the TQM practice? The answer is that Hospital A can be categorised as a medium achievement in the successful practice of its TQM initiatives.

Summary

The chapter first examined four hypotheses; hypotheses one and two revealed that the employees’ characteristics had no significant influence on TQM practice and on hospital performance. Hypothesis three showed that the extent of TQM practice had a strong impact on hospital performance: the greater the TQM practice, the better the hospital performance. Hypothesis four showed that three of the six TQM elements explained 54 percent of the variance in total hospital performance. These three elements were process management, informational analysis and strategic planning.

The chapter then focused on analysing the data of focus group interviews. The context of TQM adoption in the hospitals, the causal conditions and the phenomena including advantages, disadvantages of the practice of TQM at Hospital A were categorised. The weaknesses in implementing TQM at Hospital A were drawn from the questionnaires and presented to the focus group interviews to identify the possible obstacles. The recommended strategies for effective practice of TQM were discussed in the interviews. A theoretical model of TQM practice was developed too.

The final section of the chapter presented the hospital performance change of a five-year TQM practice to answer the research question five. From three kinds of information: employees' perspectives, Government Annual Reports and a performance comparison with selected public hospitals, Hospital A was categorised as a medium achievement in the successful practice of its TQM initiatives.

The next chapter will present the findings, following a comparison between the results of the current study and previous research; the differences emerging from previous research will then be discussed.

CHAPTER SEVEN

FINDINGS AND DISCUSSION

The previous chapter reported the procedures of data collection through a triangulation method, that is questionnaires, focus group interviews, and Government Annual Reports to obtain results of testing hypotheses and answer research questions. In this chapter, those results are analysed and discussed from three aspects: employee's characteristic affect on TQM practice and hospital performance, TQM practice affect on hospital performance, and the relationships between the six TQM elements and hospital performance. Some findings according to each research question and hypothesis are discussed.

Characteristics of Employees Do Not Affect TQM Practice and Hospital Performance

Research question one: “What are the employee characteristics influencing TQM practice in the public hospital?” and question two: “What are the employee characteristics influencing hospital performance during TQM practice in the public hospital?” will be answered in this section.

The MANOVA of main effects (gender, profession, duration –working years and supervisor status) indicated that there is no significant difference ($p > .05$) in the practice of the six TQM elements. Thus, the hypothesis H_1 : There are significant differences in TQM practice results between the demographic characteristics of employees is rejected. In this study, the demographic characteristics of employees do not affect TQM practice.

The four MANOVA results indicated that there is no significant difference ($p > .05$) in hospital performance by the four main effects of demographic information, in terms of gender, profession, Working years and supervisor status of employees. Thus, the hypothesis

H₂: There are significant differences in hospital performance as measured by patient outcomes, financial outcomes, employee outcomes and hospital effectiveness, between demographic characteristics of employees when TQM is being implemented, is rejected.

Therefore, the hospital performance in Hospital A, measured by patients', financial, employees' outcomes and hospital effectiveness, is not affected by the demographic characteristics of the respondents in this study. The impact of characteristics of employees on TQM practice and hospital performance is summarised in Table 7.1.

Table 7. 1

The Impact of Characteristics of Employees on TQM Practice and on Hospital Performance

Characteristics of employees	MANOVA test	
	TQM practice	Hospital performance
Gender	No significant difference	No significant difference
Profession	No significant difference	No significant difference
Duration	No significant difference	No significant difference
Supervisor status	No significant difference	No significant difference

This finding is consistent with that of Tata and Prasad (1999) who reported that there are no significant correlations between a TQM program's effectiveness and the age and gender of the employees.

From focus group interviews, the study found that some employees of Hospital A were lacking in enthusiasm, solidarity and conscientiousness. These factors were close to the comments made by Hubiak and O'Donnell (1996) when they suggested societal reasons for the failure of TQM programs, such as individualism and control orientation. These might

well have contributed to the demise of a TQM program. Hospital A also encountered the employees' resistance to change. Most of the employees in Hospital A had a bureaucratic attitude, and no willingness to attend the workshops on TQM activities, and some of them were compelled by their leaders to participate in the training courses. There is a great lack of learning culture at Hospital A. This feature made the practice of TQM difficult and limited its possibility for success. This finding coincides with the positions of Hug and Martin (2000); Hubiak and O'Donnell (1996); Ovretveit (2000); Reinertsen (1995); Zabada et al. (1998). They maintain that for successful TQM practice to occur, people need to be able to learn new skills, new ways of doing things and how to relate to the new process of improving the business. Regardless of how much an organisation might plan to undertake TQM, if people within that organisation cannot readily adapt to new ways of doing things, then any changes the company attempts to implement will be slowed or even halted.

Physicians in the hospital did not attend TQM activities and even complained about the participation of nurses. Despite the new board superintendent's intention this year to expand the hospital's market into areas such as medical screening and community development, the physicians are reluctant to cooperate. The low level involvement by physicians in the TQM efforts in Hospital A made it difficult to develop a market strategy in Hospital A, not to mention the introduction of individual performance improvement.

There is a lack of total quality culture among all personnel. This factor also influenced the TQM practice and hospital performance. The finding is in agreement with the studies of McNabb and Sepic (1995); Shin et al. (1998); Shortell et al. (1995a); Tata et al. (1999); and Vermeulen (1997). The heavy dependence on an outside consultant company of Hospital A, and the fact that there is no transferral of TQM practice to the people in Hospital A also contributed to the improvement of hospital performance, this finding is consistent with the research of Glover (1993).

TQM Practice Affect Hospital Performance

Question three: “In what way does the practice of six TQM elements affect the hospital performance?” will be answered in the following pages.

The Pearson correlation measurement showed that there are significant correlations between the six TQM elements and hospital performance in this study. The performance of Hospital A is measured by patient outcomes, financial outcomes, employee outcomes, and hospital efficiency and effectiveness. The MANOVA results provided strong evidence that the hospital performance is affected by the degree of TQM practice. Group one had a higher hospital performance than group three. Results showed that the deeper the practice of the six TQM elements, the better the hospital performance. The study demonstrated that the deeper the practice of the six TQM elements, in terms of leadership, strategic planning, focus on customers, informational analysis, focus on staff and process management, the better the hospital performance.

The results support the relationship model of Samson and Terziovski (1999); Wilson and Collier (2000) claim that the performance of manufacturing companies have a causal linkage as implied by the criteria of the Malcolm Baldrige National Quality Award. This study's results also supported the study by Lai and Tsay (2003) who conduct their research in Taiwan hospitals. They found that the higher the scores of TQM practice, the better the performance. In the same way, the lower the scores of TQM practice, the worse the hospital performance. The finding is also consistent with studies conducted by Barsness et al. (1994); Boerstler et al. (1996); Carman, et al. (1996); Chen (1999); Douglas and Judge (2001); Maldonado, et al. (2001); Powell (1995); Shortell et al. (1995a) and Weiner et al. (1996) in hospitals. These studies emphasise that the length of practice, the depth of major activities and the extent to which a comprehensive array of TQM elements is implemented are all significantly related to the performance of the hospital.

From the results of multiple regression analysis, the study finds that five of the six TQM elements significantly affect hospital performance. These elements were leadership, strategic planning, informational analysis, staff focus, and process management, as illustrated in Table 7.2.

Table 7. 2

TQM Elements Affect Hospital Performance

TQM elements	Hospital performance				
	Patient outcomes	Financial outcome	Employee outcomes	Hospital efficiency and effectiveness	Total hospital performance
Leadership			*		
Strategic planning					*
Informational analysis	*				*
Staff focus			*	*	
Process management	*	*	*	*	*

Leadership affects employee outcomes only.

The study shows that the leadership element in Hospital A has an association with employees' outcomes only. However, leadership has no impact on patient outcomes, financial outcomes and hospital efficiency and effectiveness. This study's findings support the judgments of Wilson and Collier (2000). They claim that leadership has no direct impact on financial and customer outcomes, leadership influences outcomes through strategy planning, human resource management, process management and informational analysis.

The current study reveals that leadership practice affects employees' hours of education and training, as well as the productivity of employees. This result supports the

finding of McNeese-Smith (1996), who maintains that a positive relationship exists between leadership behaviour and the employee's productivity, and job satisfaction as well as their organisational commitment. There is a relationship between leadership and the turnover rate of employees in Hospital A. This finding is also consistent with the studies of Dempsey (1995); Dillon et al. (1995); Koska (1990) and Rauber (1994).

The leadership element in Hospital A affects employee outcomes only in this study. In spite of the MBNQA causal model implying that leadership drives the system that causes results. This finding contrasts with the argument of Wilson and Collier (2000), who argue that leadership is the most important driver of system performance. Samson and Terziovski (1999) argue that leadership proves to be strongly and positively related to performance. The current finding does not support the research of Maldonado et al. (2001) who report that board involvement is not significantly associated with performance in the nursing facility industry. Another difference is found in the empirical evidence of the leadership for quality improvement study conducted by Weiner et al. (1996). They comment that formal management involvement in governance does not promote CQI/TQM adoption or leadership for quality.

The reasons for the unexpectedly minor affect of leadership on performance are that the leadership style in Hospital A is based on a control model rather than an empowerment model. The leadership in Hospital A has the power to influence employees' performance appraisal. This probably results in the employees' training outcomes and improvement in productivity. The government has funded public hospitals since their establishment. Hence, superintendents of public hospitals are assigned by the government, and are therefore free of any anxiety concerning market competition. Nor do they care about the financial shortages of hospitals. The leadership of public hospitals follows the guidelines for operating their hospitals from the Central Taiwan Office. They are not responsible for the profits of the

hospitals and the leadership of Hospital A has been no exception. These factors which contribute to the leadership practice in Hospital A do not affect financial matters, patient outcomes and hospital efficiency and effectiveness.

Strategic planning affects total hospital performance.

This study shows that strategic planning in the hospital has a significant impact on the total hospital performance. However, there is no impact on individual hospital performance areas, such as patients, financial outcomes, hospital effectiveness and employees' development. The finding supports the reports of Samson and Terziovski (1999) and Wilson and Collier (2000). These researchers reveal that strategic planning does not directly affect financial outcomes and customer outcomes. This finding is different from previous research, such as Langabeer (1998), who points out that capital investment can have a very positive impact on financial performance. Wood, Bhuian, and Kiecker (2000) reveals that the relationship between market orientation strategy and hospital performance could be a strong one. Bruton, Oviatt, and Kallas-Bruton (1995) remark that a complex moderated relationship existed between planning and performance. Thus, the relationship between hospital strategic planning and performance is still in conflict, and offers an opportunity for in depth empirical examination. Comparisons between these findings and previous research on leadership and strategic planning are summarised in Table 7.3.

Table 7. 3

Leadership and Strategic Planning Affect Hospital Performance

TQM elements	Previous research	The impact of TQM elements on performance	The present study
Leadership	Koska (1990); Rauber (1994)	A decrease in turnover rate	Support
	Maldonado et al. (2001); Weiner et al. (1996)	Leadership does not affect performance.	No
	McNeese-Smith (1996)	Productivity and job satisfaction of employees are important.	Support
	Wilson & Collier (2000); Samson & Terziovski (1999)	Leadership is an important driver of systematic performance	No
Strategic planning	Bruton et al. (1995)	There is a complex moderated relationship between strategy and performance.	Support
	Wilson & Collier (2000); Samson & Terziovski (1999)	No direct affect on individual performance	Support
	Wood et al. (2000); Langabeer (1998)	Strong relationship between market orientation strategy and performance	No

The possible reasons for the lack of any relationship between strategy planning and the individual outcome of Hospital A, the first is that health care organisations, especially hospitals, do not lend themselves readily to the law of the free market. Hence hospitals, especially public hospitals, do not have a market strategy to attract more patients. Like other public hospitals, Hospital A has never paid attention to market strategy practice. The second reason pertains to the under involvement of physicians in the TQM efforts in Hospital A. Physicians in the hospital complain about the TQM participation of nurses. Despite the new board superintendent's intention this year to expand the hospital's market into areas such as medical screening and community development, the physicians are reluctant to cooperate. These factors make it difficult to develop a market strategy in Hospital A, not to mention the

introduction of individual performance improvement.

Focus on patients, other customers and market does not affect hospital performance.

The present study reveals that TQM elements that focus on patients, other customers and the market do not significantly affect the four areas of individual hospital performance and nor do they affect total hospital performance. This finding contrasts with the results of studies by Goldstein, and Schweikhart (2002); Meyer and Collier (2001); Samson and Terziovski (1999); Wilson and Collier (2000). These writers argue that the TQM element of customer focus has a significantly positive effect on organisational performance. This result also differs from the judgments of Deshpande et al. (1993); Kohli et al. (1993); Kohli and Jaworski (1990); Narver and Slater (1990). All of the above researchers argue that a strong customer orientation has a positive relationship with organisational profitability.

The reasons contributing to the differences from previous research are first that the practice of the patients' and other customers' focus has not sufficient time to influence financial and hospital effectiveness (Carman et al., 1996). With the environmental influence on financial and hospital effectiveness so strong in health care today, a successful focus on patients and other customers should permit survival, and might not immediately reflect on the financial and hospital effectiveness performance (Carman, et al. 1996). From the results of the interviews, it is found that the second possible reason is that some physicians in Hospital A do not display a good service attitude to their patients. Sometimes their tone of voice with patients is not professional enough to keep patients returning to Hospital A. Some physicians are even absent when they are on duty, and there are no substitute physicians when physicians are absent. Moreover, the shortage of physicians and insufficient outpatient doctors do not meet the requirement of patients. This might explain why patients are

dissatisfied about the care in Hospital A.

Informational analysis affects patients and total hospital performance.

The practice of informational analysis influences both patients' outcomes and total hospital performance. However, it does not affect financial outcomes, employee's outcomes or hospital efficiency. These results are consistent with Wilson and Collier's (2000). They assert that informational analysis influences process management, strategic planning and human resource management, but it does not directly affect financial outcomes. These findings are similar with the position of Rao et al. (1999), who emphasise that informational analysis would facilitate the decision-making process, enable effective decisions on quality related initiatives and assist organisations to predict the future trends and outcomes. However, this finding is not consistent with the result of Samson and Terziovski (1999) who argue that informational analysis has a negative effect on organisational performance. The findings of this study do not support the result of Stuart's (2001) study. Stuart maintains that the practice of informational analysis enables organisations to obtain a competitive advantage through the improvement of productivity and performance as well as assisting in increasing business efficiency. The summary of the findings from this area of the research and the comparison with the findings of previous studies are presented in Table 7.4.

Table 7. 4

Focus on Customers and Informational Analysis Affect Hospital Performance

TQM elements	Previous research	Affect performance	The present study
Focus on customers	Goldstein & Schweikhart (2002); Meyer & Collier (2001); Samson & Terziovski (1999); Wilson & Collier (2000)	Significantly positive affect performance	No
	Deshpande et al. (1993); Kohli et al. (1993); Kohli & Jaworski (1990); Narver & Slater (1990)	Positive affect organisational profitability	No
Informational analysis	Wilson & Collier (2000); Stuart (2000)	Affect process and improved efficiency	No
	Stuart (2000); Wilson & Collier (2000)	Improved human resource and productivity	No
	Wilson & Collier (2000)	Do not affect financial outcome	Support
	Rao et al. (1999); Stuart (2000)	Predict future outcome and obtain competitive advantage	Support
	Samson & Terziovski (1999)	Negative affect performance	No

Staff focus affects employees' outcomes and hospital efficiency and effectiveness.

The element of staff focus significantly affects two of the four hospital outcomes: employees' outcomes and hospital efficiency and effectiveness. However, it does not influence the patients' outcome and financial results. Employee outcomes include an increase in productivity, as well as a decrease in turnover rate. The element of staff focus affects the productivity in Hospital A. The result is similar to the findings of McNeese-Smith (1996), who points out that employees who are experiencing job satisfaction are more likely to be productive. The finding that a staff focus decreases the turnover rate of employees in Hospital A is consistent with the studies of Dempsey (1995); Dillon et al. (1995); Graves and

MacDowell (1994); Hinshaw et al. (1987); Koska (1990); Maldonado et al. (1999); McNeese-Smith (1996); Rauber (1994); Taunton et al. (1989); Tett and Meyer (1993). They all emphasise that focusing on employees and creating an appropriate work environment could improve employees' morale and enable them to stay on the job.

The finding that focusing on employees affects on the efficiency and effectiveness of Hospital A is compatible with the arguments of Baker et al. (1996); Dempsey (1995); Dillon et al. (1995); Goldstein and Schweikhart (2002); Koska (1990) and Rauber (1994). This study offers some evidence for the proposition that when a hospital focuses on employees, cares about their work environment and welfare, these activities can increase employees' satisfaction, and consequently enhance productivity and decrease the turnover rate.

Process management affects four individual outcome and total performance.

The element of process management is the strongest element to affect hospital performance in the current study. This study proves that process management does not only affect individual performance in terms of the patients' outcomes, financial outcomes, employees' learning and productivity and hospital effectiveness. It also influences comprehensive hospital performance. This finding supports the study of Shortell et al. (1995a), who report that focusing on process management leads hospitals to improve human resource development and selected clinical efficiency. The result is also in agreement with the study of Carman et al. (1996), who emphasise that focusing on process management enables hospitals to improve efficiency.

The summary of the findings from the staff focus and the process management are shown in Table 7.5.

Table 7. 5

Staff Focus and Process Management Affect Hospital Performance

TQM elements	Previous research	Affect performance	The present study
Staff focus	Dempsey (1995); Dillon et al. (1995); Graves and MacDowell (1994); Hinshaw et al. (1987); Koska (1990); Maldonado et al. (1999); McNeese-Smith (1996); Meyer (1993); Rauber (1994); Tett and Taunton et al. (1989)	Increase employees' satisfaction, enhanced productivity, decreased turnover rate	Support
Process management	Shortell et al. (1995)	Improve patient outcome	Support
	Dean & Bowen (1994); Lieberman (1987); Reed et al. (1996)	Reduce costs	Support
	Shortell et al. (1995)	Enhance employee outcomes	Support
	Carmel et al. (1996); Dean & Bowen (1994); Lieberman (1987); Reed et al. (1996); Shortell et al. (1995)	Enhance efficiency	Support
	Samson & Terziovski (1999); Wilson & Collier (2000)	Influence organisational performance	Support

The current finding is in agreement with the results of Samson and Terziovski (1999) and Wilson and Collier (2000), who emphasise that process management significantly influences organisational performance in the manufacturing sector. Process management enhances financial results and hospital efficiency in Hospital A. This finding is consistent with the studies of Dean and Bowen (1994); Lieberman (1987); and Reed et al. (1996). They point out that process orientation and improvement lead to reduced costs and enhanced efficiency. The finding of this study is also in accordance with the results of Hammer and Champy (1993); and Stewart (1993) who argue that organisations have gotten performance improvement through process redesign and re-engineering.

Qualitative-Quantitative Distinction

To answer the research question one and two, the researcher finds that the results of hypotheses one testing shows no significant difference between employees' characteristics and TQM practice. In contrast, from focus group interviews, the researcher explores that the minimal involvement by physicians and the avoidance of responsibility of leadership contribute to the difficulties of TQM practice and no improvement in performance of Hospital A. It can be seen that the findings are different between a quantitative approach and a qualitative approach in the present study. There also has a distinction between the results of questionnaires and focus group interviews to answer research question three. Hypothesis three testing shows that TQM has a significant impact on hospital performance, while the finding from the focus group interviews of employees indicates that TQM practice has a weak relation with hospital performance, and the principles of TQM are hard to carry out. The first reason is inappropriateness of the measuring scale. In this study, the Likert five point scale is used to measure the extent of TQM practice and hospital performance. The Likert five respondent scale is widely used by researchers around the world. However, the response to questionnaires depends on employees' abstract concepts, attributes, and personal habits. Most Taiwanese, particular southern Taiwanese, are conservative and friendly, and they are used to please researchers with an incorrect respondent's attitude when they are asked to answer questionnaires. Thus, most questionnaire responses show a trend of central tendency. This contributes to the difficulties for researcher to identify the significance between two variables. The second reason may come from the attitude of employees, they are government officers and are used to complain and criticize others, rather than to accept a new policy or to think about the mismanagement of themselves, when they have a group discussion or to make comments. These reasons contribute to the differences between hypotheses testing and focus group interviews.

Relationships Exist between TQM and Hospital Performance

Question four: “What are the relationships between the TQM practice and hospital performance?” is reported here.

The Pearson correlation measurement and multiple regression analysis show that there are relatively strong positive relationships between TQM practice and hospital performance. The investigation results from Chapter 6, showed that there is a relationship between various TQM elements and hospital organisational performance ($R^2 = 0.54$; $p < .001$); TQM and patients' outcomes ($R^2 = 0.36$; $p < .001$); TQM and financial outcomes ($R^2 = 0.32$; $p < .001$); TQM and employees' outcomes ($R^2 = 0.50$, $p < .001$); TQM and hospital efficiency and effectiveness ($R^2 = 0.36$; $p < .001$). Three TQM elements: process management, informational analysis and strategic planning, can be considered appropriate predictors for hospital performance. Because all three t values are larger than 2, these have been included in the regression equation in order to predict hospital performance.

The current study finds that there are strong associations not only between TQM practice and the four individual areas of hospital performance, but also between TQM and hospital wide performance. Some of the findings are in agreement with previous studies, and some are different from those presented in previous research. These findings are summarised and compared those with previous research, as shown in Table 7.6, and discussed below.

A Strong Relationship Exists between TQM and Hospital Performance

There is a strong relationship between TQM and total hospital performance ($R^2 = 0.54$). The finding is consistent with the studies of Samson and Terziovski (1999) and Wilson and Collier (2000). These researchers claim that the TQM model of MBNQA is a reliable and valid instrument for predicting performance in manufacturing sectors.

Table 7. 6

The Relationships between TQM and Hospital Performance

Items	Relation Status	Previous research	Current Study
TQM and total performance	Positive	Goldstein & Schweikhart (2002); Meyer & Collier (2001); Samson & Terziovski (1999); Wilson & Collier (2000)	Support
TQM and patient outcomes	Positive	Shortell et al. (1995)	Support
	No	Barsness et al. (1993); Carman et al. (1996); Chen (1999); Davis & Taylor (1997); James et al. (1997); Goldstein & Schweikhart (2002)	No
TQM and financial outcomes	Positive	Barsness et al. (1993); Chen (1999); Maldonado et al. (2001)	Support
	No	Carman et al. (1996); Goldstein & Schweikhar (2002); Shortell et al. (1995)	No
TQM and employee outcomes	Positive	Barsness et al. (1993); Goldstein & Schweikhart (2002); Maldonado et al. (1999); Maldonado et al. (2001); MacDowell (1994); Meyer & Collier (2001); Shortell et al. (1995)	Support
TQM and hospital effectiveness	Positive	Barsness et al. (1993); Carman et al. (1996); Goldstein & Schweikhart (2002); Shortell et al. (1995)	Support

The result of this study agrees with the studies conducted by Meyer and Collier (2001) and Goldstein and Schweikhart (2002). They advocate that the MBNQA has a causal link with hospital performance, and has a significant impact on hospital performance. This result also supports the position of Hakes (1996) and Kueng (2000) who conclude that self-assessment can provide a powerful tool for hospitals' performance improvement. It is conclusive that the model of health care criteria of the MBNQA is well documented and is suitable for health care sectors to improve their performance. The six TQM elements not only contribute to the result individually, but can also contribute collectively.

A Relationship Exists between TQM and Patient Outcomes

The relationship ($R^2 = 0.36$) between TQM elements and patient outcomes in the present study is in agreement with Shortell et al. (1995a), who report that TQM is associated with the length of stay and charges for patients. However, the finding differs from the studies of Barsness et al. (1994); Carman et al. (1996); Chen (1999); Davis and Taylor-Vaisey-Vaisey (1997); Goldstein and Schweikhart (2002); James, Cowan, Graham and Majeroni (1997); Maldonado et al. (2001). These researchers argue that TQM does not affect residents' care outcomes. The arguments of Davis and Taylor-Vaisey (1997) and James et al. (1997) are that, while quality management systems in hospitals are expanding to include practices that directly influence clinical care decisions, these clinical management practices are in the early stages of adoption and practice challenges persist. Goldstein and Schweikhart (2002) emphasise that, even with the advent of more direct management actions in the clinical area, there will be a lag between initial practice and improved clinical outcomes.

Relationship Exists between TQM and Financial Outcomes

The present study finds that TQM practice explains 32 percent of the variance of financial performance. Hence TQM has a positive impact on hospital financial outcomes. This finding is consistent with Barsness et al. (1993), and Maldonado et al. (2001), who both report that there is a significant relationship between TQM and a hospital's financial performance. However, the result does not support the report by Carman et al. (1996); Goldstein and Schweikhart (2002) and Shortell et al. (1995a). These researchers maintain that there is no association between TQM and a hospital's financial performance.

The structure of the hospital marketplace is different from the manufacturing market. The population of the hospital and the health status of residents can both influence a

hospital's function. The relationship between TQM practice and financial outcomes is influenced by external factors such as insurers, managed care organisations, referring physicians, and also by internal factors, for instance, the hospital's function, its size, culture and quality initiatives. These factors all play intermediate roles that affect the financial outcomes of hospitals.

Hence, there is conflicting evidence on whether TQM practice improves financial performance. In the manufacturing sectors, Douglas and Judge (2001); Handsfield and Gosh (1995); Hansson and Eriksson (2002); Reed et al. (2000); Tena et al. (2001); Wrolstad and Krueger (2001) report a strong relationship between TQM and financial performance. On the other hand, Bergquist and Ramsing (1999) argue that it is difficult to establish a relationship between TQM and organisational financial performance. Based on Eskildson's (1994) survey, many organisations do not succeed with their TQM efforts. In the health care industries, Barsness et al. (1993) report there are positive influences on hospital profitability and cost saving in TQM hospitals. A study conducted by Chen (1999) in Taiwan hospitals indicates that TQM practice is significantly different with regard to medical costs. However, Shortell et al. (1995a) report there is no significant relationship between quality improvement practice and perceived financial outcomes. Goldstein and Schweikhart (2002) examine the health care criteria of MBNQA and reach the same conclusion as Shortell et al. (1995a).

Strong Relationship Exists between TQM and Employee Outcomes

TQM has a strong influence on employee outcomes, measured by educational hours, productivity, employees' satisfaction and turnover rate. This result is compatible with the survey by Goldstein and Schweikhart (2002). They prove that a quality culture is associated with greater staff involvement and satisfaction in health care organisations. The finding also supports the studies of Barsness et al. (1993); Graves and MacDowell (1994); Maldonado, et

al. (1999); Maldonado, et al. (2001); Meyer and Collier (2001) and Shortell et al. (1995a) in hospitals. They report a positive association between TQM practice and performance in the area of human resource development. The finding is also in agreement with the studies of Ahire, Golhar and Waller (1996); Flynn et al. (1995); Samson and Terziovski (1999); Wilson and Collier (2000) in manufacturing sectors. They conclude that human resource development is closely affected by quality program practice. Moreover, Chase (1981) argues that a well-trained and quality-driven staff is a critical element of health care and other high contact service organisations. Heskett, Jones, Loveman, Sasser, and Schlesinger (1994) emphasise that in the service profit chain, employee satisfaction is tied to increased organisational profit. The MBNQA criteria advocate that attention to job design and training result in an increase in staff satisfaction, in turn leading to increasing productivity and a decrease in turnover rate. This study offers evidence that TQM practice increases staff productivity and decreases their turnover rate.

Strong Relationship Exists between TQM and Hospital Efficiency and Effectiveness

Another strong relationship is identified between TQM practice and hospital efficiency and effectiveness, as measured by outpatients, in-patients, and numbers of patients undergoing major surgery and occupancy rate. This result is consistent with the findings of Goldstein and Schweikhart (2002), who maintain that TQM practice is associated with timelines, availability and appropriateness of services. This finding also supports the studies of Barsness et al. (1993, 1994); Carman et al. (1996) and Shortell et al. (1995a). Shortell et al. report that TQM adopters experience greater clinical efficiency in terms of lower charges and length of stay. Carman et al. (1996) demonstrate that an improvement in process results in the improvement of hospital efficiency, while process improvement and an empowered work force contribute to customer satisfaction and an improvement in the efficiency of hospitals.

Three Predictors of Hospital Performance

The results of regression analysis identify that with regard to the predictability of hospital performance, process management is ranked first, informational analysis is ranked second, and strategic planning is ranked third. The MBNQA framework and TQM theory emphasises the need for continuous processes improvement and design quality in operational processes. This study provides evidence that focusing on process management, informational analysis and strategic planning will lead to an improvement in hospital performance.

However, this predictive ranking differs from the results of Wilson and Collier (2000), who report that leadership is the most important driver of system performance. Informational analysis is statistically the second most important category in manufacturing sectors. The finding does not support the reports of Samson and Terziovski (1999). They argue that leadership, people management and a customer focus have a significantly positive effect, but the other three categories are less significant in their survey result. Samson and Terziovski (1999) rank people management as the most important category, leadership as the second and customer focus as the third most important category.

The probable factors contributing to the differences between this study and previous research are that the sample in this study is drawn from a hospital, while the samples of Samson and Terziovski (1999); Wilson and Collier (2000) are gathered from manufacturing companies. Obviously, the features of a hospital are different from those of manufacturing sectors. Unlike the manufacturing sectors, in the processes of medical care, a patient is not only a participant but also a product (Greene et al., 1976). As such, the patient's behaviour, the health status and the patient's case mix all affect the quality of hospital outcomes. For this reason, process management is a crucial determinant of a hospital's outcome. This could explain why the effect of process management on hospital performance is ranked highest.

The Situation of the Practice of TQM in Hospital A

Question five: “What are the benefits and difficulties while the TQM program is being implemented in the hospital?” will be answered as follows.

The Major Factors Causing the Practice of TQM

Environmental and organisational factors are two factors causing the practice of TQM in Hospital A. There are two concepts pertaining to the environmental factor. They are the introduction of the National Health Insurance (NHI) and the competitive health care market. The practice of NHI in Taiwan enables patients to freely choose the hospital in which to be cared for. This change causes public hospitals to face a gradual loss of their competitive advantage and market share. Consequently, public hospitals start to implement TQM. This finding coincides with those of similar studies conducted by Ramirez and Loney (1993); Sun (1999) and Shea and Gobeli (1995).

Hospital A has a rigid structure, inflexible personnel and a rigid salary system. These factors place Hospital A in a difficult position because it is unable to respond to environmental change. Moreover, government funding decreases year by year, and in order to survive, Hospital A has to improve its service quality, efficiency and performance through the practice of TQM. These factors experienced by Hospital A are consistent with the studies of Ennis and Harrington (1999); Ramirez and Loney (1993); Shea and Gobeli (1995); Sun (1999).

The Causal Conditions of the Practice of TQM

The study finds that the reasons for Hospital A to introduce TQM practice are based on three categories: a wish to respond customer initiation, including internal customers and

external customers, an organizational initiation and a reaction to competition. Three concepts together form the category of customer initiation. The first concept is to improve health care quality. Ennis and Harrington (1999); Marchington et al. (1993); Monks et al. (1996); Ramirez and Loney (1993); Shea and Gobeli (1995) also state a similar motivation in their studies. The second and third motivating concepts are to meet customer needs and to increase customer satisfaction. The results are close to the findings of Ennis and Harrington (1999); Ovretveit (2000); Shea and Gobeli (1995); Taylor (1995).

The three concepts of organisational initiation revealed through this study are also consistent with previous research. The first concept is to enhance efficiency (Ennis & Harrington, 1999; Ramirez & Loney, 1993). The second and third organisationally initiated concepts from the current study are reduced cost and increased profit, and these findings are in agreement with the studies of Ennis and Harrington (1999); Ovretveit (2000); Ramirez and Loney (1993); Sun (1999). Finally, this study shows that three concepts under the 'reaction to competition' category are also consistent with previous research. The first concept is to gain competitive advantage (Ramirez & Loney, 1993; Sun, 1999); the second concept is an increased survival rate (Ramirez & Loney, 1993; Shea & Gobeli, 1995; Sun, 1999); and the third is to avoid being privatised (Ramirez & Loney, 1993).

The Advantages and Disadvantages of the Practice of TQM

After TQM practice has been implemented, it is shown that there are many advantages for the hospital and for the employees' individually. However, it is acknowledged that there are also disadvantages for employees, patients and hospital efficiency and effectiveness as well as the hospital's financial outcome. The advantages of TQM practice in the hospital are firstly for employees. TQM practice allows employees the acquisition of relevant knowledge and skills, the increasing of solidarity and conscientiousness, as well as the promotion of

self-esteem among employees. The training hours and productivity of employees have increased and the turnover rate decreased. The second advantage is for patients. TQM practice provides patients with a high quality service and better care. The third advantage for the hospital from the TQM program is that it establishes standardised processes and enhances hospital efficiency while finally lowering costs and raising revenue for the hospital.

Advantages and disadvantages for employees.

The study reveals that there are positive outcomes as a result of TQM practice at Hospital A. These findings support the research of Cruz (1996), who claims that TQM practice enables employees to break down compartmentalised departments so that cross-functional teams can solve problems. The lower turnover rate of employees indicated by this research is consistent with Nelson's (1996) study. The benefits noted of adopting TQM practice are also similar to Luzan's (1993) study. Luzan reports that the development of a quality culture, improved training and improved labour productivity are the three main positive effects achieved by introducing TQM practice. The research notes that employee teamwork and communications are considerably improved as a result of the TQM program at Hospital A. This finding is consistent with the research of Cruz, (1996); Ennis and Harrington (1999); Morgan and Everett (1990); Nelson (1996).

Boerstler et al. (1996); Cruz (1996); Ennis and Harrington (1999); Mann and Kehoe (1994); Morgan and Everett (1990); Nelson (1996); Struebing (1996) point out that the adoption of TQM could enhance involvement, employees' morale, and employees' satisfaction. The perspectives of the employees of Hospital A are not consistent with the previous research cited above. Their experiences suggest that TQM practice occupies too much time, causes pressure and burdens, and increases the workload. Most employees are not satisfied with the practice of TQM, and they complain that TQM practice results in a

greater workload. This finding is consistent with the comments of Luzan (1993). He argues that even though some businesses experience success in implementing TQM, TQM practice is not a guarantee for success. He claims that the introduction of TQM practice involves venturing into a complex environment, and this is not an easy step for many businesses to take. The hospital employees claim that the TQM principles are difficult to carry out. These claims are supported by the findings of Krumweide, Sheu, and Lavelle (1998). They argue that notwithstanding the popularity of TQM practice, some companies find it difficult to successfully implement this program. An examination of the literature suggests that only one-third to one-half of organisations have observed significant improvements through TQM programs (Burdett, 1994; Grant, Shani & Krishnan, 1994; Tata et al., 1999).

The reluctance of physicians to be involved in the practice of TQM at Hospital A makes it difficult to improve performance. This finding supports the research of McLaughlin and Kaluzny (1990); Shortell et al. (1995b) who maintain that TQM practice confuse physicians. Physicians are relatively inexperienced or unwilling to work as members of a team. They also lack time, and they believe that they are already doing quality work.

Advantages and disadvantages for patients.

The current study finds that the advantages of TQM practice are that TQM provides patients with a high quality service and better care, and improves customer relationships. This finding is consistent with the arguments of Boerstler et al. (1996); Chow-Chua and Goh (2000); Deming (1986); Ennis and Harrington (1999); Goldstein and Schweikhart (2002); Juran (1989); Maldonado et al. (2001); Mann and Kehoe (1994). These writers note that customer focus is central to TQM principles and this concept is also reflected in the criteria of the MBNQA. Therefore, it is not unexpected that TQM improves the quality of health care delivery to patients. Manufacturing studies of TQM practice report similarly significant

customer satisfaction findings (Samson & Terziovski, 1999; Wilson & Collier, 2000). Most of the participants of focus group interviews' experience TQM practice as providing patients with high quality care and better care service. However, the patient outcomes of Hospital A do not improve, even though employees claim that they have provided better quality care. The main disadvantages when implementing TQM are that patients are not well cared for when nurses take part in TQM activities.

Advantages and disadvantages for the effectiveness of Hospital A.

The advantages apparent in Hospital A as outlined in this study, (the improvement of processes and productivity) are reflected in the survey conducted by Boerstler et al. (1996); Chow-Chua and Goh (2000); Ennis and Harrington (1999); Goldstein and Schweikhart (2002); Maldonado et al. (2001); Mann and Kehoe (1994); Morgan and Everett (1990). Due to the improvement of processes or services within organisations, it can be concluded that TQM practice increases organisational efficiency and performance (Chow-Chua & Goh, 2000; Morgan & Everett, 1990; Nelson, 1996). Hospital A has experienced similar benefits from the introduction of a TQM program and therefore supports the above conclusions.

However, Hospital A has not undergone a dramatic improvement in performance, particularly in patients' outcomes where there is no progress at all. As a result, we could not claim that the hospital gets a competitive advantage following TQM practice. This finding is in agreement with the study of Luzan, (1993), who notes that TQM practice does not guarantee performance progress. This finding, however, is in contrast with the studies of previous research (Carmen et al., 1996; Douglas & judge, 2001; Flynn et al., 1995; Powell, 1995; Shortell et al., 1995a; Westphal et al., 1997; Yasin & Alivi, 1999), in which it is claimed that TQM practice enables organisations to gain a competitive advantage, due to the focus on customers, market and continuous processes improvement.

Advantages and disadvantages for financial outcomes.

Government funding for Hospital A has decreased from 42.5 percent to 22.6 percent. This result can be considered as an advantage of TQM practice. Both total revenue of Hospital A and total expenditure of Hospital A have increased from 1997 to 2001. These are highest in 2001, while the ratio of profit decreased from 1998 to 2001, and is lowest in 2001. This outcome does not support the research of Barsness et al. (1993); Chow-Chua and Goh (2000) and Maldonado et al. (2001), who argue that the profitability of TQM hospitals surpasses the non-TQM hospitals in U.S.A. They also note that the overall cost is lower than non-TQM hospitals as well. Chow-Chua and Goh (2000) using Singapore hospitals as samples, also point out that there are advantages of cost reduction in TQM adoption hospitals. Maldonado et al. (2001) report that nursing facilities with more extensive TQM practice and those where teams report quality improvement results experienced better financial outcomes. However, much research (Ennis & Harrington, 1999; McAdam & McKeown, 1999; Ovretveit, 2000; Shortell et al., 1995a; Wilkinnson, et al., 1997) argues that one of the first difficulties for hospitals in implementing TQM is the cost of the investment of time, effort and resources.

The Obstacles to the Practice of TQM

From the focus group interviews, the study reveals that three major obstacles make it difficult for Hospital A to implement TQM successfully. These are governmental limitations, a hierarchical and bureaucratic culture and difficulties in carrying out the six TQM elements.

Obstacles from governmental limitations.

It is apparent that public hospitals operate within the missions and constraints of government. This makes it difficult for hospitals to not compete with private hospitals which operate health care organisations within explicitly business management models. For example, the service charge of public hospitals enacted by the Central Government is too low to cover their costs, and the administration fee is free when patients are administered in public hospitals. In addition to this, public hospitals cannot take the price difference of drugs administered or gain profit in any way. This may be a contributing factor to the lower income and profit of public hospitals. As Stolzenberg (2000) points out “...Effective governance of public hospitals requires that the board be vested with sufficient authority to determine the course of hospital operations and policy, that it be focused on the interests of the hospital, and that it be as free as possible from political intervention” (p. 348). He also notes that the public hospitals of tomorrow will evolve around a model that is free of operational constraints and will include “...a corporate structure free of government controls; extraction from the body politic, and financial management autonomy” (p. 348). Only through financial and operational autonomy, can public hospitals change management succeed and have high performance. In recognition of the need for change, the Taiwan Government has set the goal of the autonomy of public hospitals by 2005 (Tsay et al., 2000).

Obstacles to have a hierarchical structure and bureaucratic culture.

For Hospital A, the hierarchical structure and bureaucratic culture also create barriers to the successful practice of TQM. These findings are close to the documentation of Ennis and Harrington (1999); Ovretveit (2000); Redman et al. (1995); Shortell et al. (1995a) and Wilkinson et al. (1997). Hospital A has a very mechanistic organisational structure before and after its attempt to implement TQM. Due to the hierarchical, vertical patterns of interacting and communicating, Hospital A is not able to react quickly to change. This result

is also consistent with the reports of Hubiak and O'Donnell (1996); Reinertsen (1995). Hospital A's culture is a hybrid, born of government lineage and aged care over generations. In a centralised, bureaucratic culture, quality management does not work, thus, presenting a difficulty for the successful practice without changing the culture (Kizer, 1995). This position is in agreement with McNabb and Sepic (1995); Shin et al. (1998); Shortell et al. (1995a); Vermeulen (1997). They have argued that successful TQM practice is dependent on the existence of a total quality culture among all personnel. Such an argument is also supported in the finding of Tata et al. (1999), where they note that, "the lack of significant success may not be a failure of the TQM concept, but a failure to pay sufficient attention to the organisational context of TQM, ...such as organisational culture, market structure and organisational structure (pp. 440-441)."

Difficulties to carry out the six TQM elements.

The internal factors to inhibit the practice of TQM are the difficulties in the practice of its six elements. These are leadership, strategic planning, focus on customers, informational analysis staff focus and process management.

Leadership: An obstacle in Hospital A is a lack of senior executives' commitment to organising the TQM activities, and the continuing avoidance of leaders when it comes to taking certain responsibilities. There are no TQM practice standards or guidelines for middle managers or employees to follow. Thus middle managers are required to take on all TQM activities, even typing and report writing. This makes them feel very weary and burned out. These obstacles experienced at Hospital A are consistent with the findings of Tatikonda and Tatikonda (1996). They point out that the major barrier identified consists of a lack of management commitment to the TQM concept, where top management often shifts responsibility to middle management for the solution of core business problems. Hospital A also lacks an empowering innovative environment. The policies of Hospital A are made by

the superintendent and a few senior managers. Employees never participate in the processes of decision making. This situation is similar to those described by Ennis and Harrington (1999); Masters (1996); Shortell et al (1995) as well as Tatikonda and Tatikonda (1996). They maintain that in health-care organisations, leadership styles are based on command and control and hero/heroine models, rather than empowerment models. This has resulted in middle managers perceiving TQM practice as a threat, and they are often reluctant to implement it. There is neither a reward system in Hospital A to encourage the employees to participate in TQM activities, nor a recognition system for high performance employees, so that employees see TQM as an extra task instead of an incentive, and they lack the motivation to take part in the TQM program or to pursue high performance activities.

These findings are in agreement with the arguments of Carman (1996); Hackman and Wageman (1995); Ovretveit (2000); Shortell et al. (1995) and Snell and Dean (1992) who conclude that successful TQM practice requires attention to the reward system. The finding is also supported by the result of an empirical study conducted by Allen and Kilmann (2001). They prove that TQM could be more effective if supported by the proper type of reward practice.

Strategic planning: The study find that the obstacle to the practice of strategic planning is the problem of policy and hospital alliance implications. There is a nine-year alliance contract between Hospital A and Clinic B. However, there are different cultures and functional systems in the two hospitals, so conflicts between the two systems are inevitable. There is no TQM manager or TQM expert within Hospital A, so that Hospital A has to hire consultants from outside to assist with the practice of TQM. Hospital A changes the consultant company every year. This is due to the purchasing constraints for public hospitals. Inconsistencies flowing from this yearly change over of consultant companies often make employees confused. These results are similar to the statements of Glover (1993) who

maintains that the system of TQM practice must eventually be transferred to the people in the hospital. “The longer one waits to accept responsibility for TQM, the greater the potential for problems and even failure” (Glover, 1993, p. 56).

Patient focus and market expansion: The research reveals that Hospital A has not aggregated or analysed the customers' complaints and so the basic reasons for customer complaints can not be solved, nor are the customers satisfied with the services of the hospital. The research shows that Hospital A does not compare customer satisfaction information with its competitors or similar providers, due to the difficulties in obtaining the survey results of competitors or similar providers. Consequently, they cannot appreciate the strengths and weaknesses of customer satisfaction existing in Hospital A. Moreover, there has been no focus on market promotion, due in part to the lack of resources, such as the insufficiency of vehicles and drivers to pick patients to be cared for. These findings support those of Ennis and Harrington (1999), McAdam and McKeown (1999), Ovretveit (2000), Shortell et al. (1995), and Wilkinson et al. (1994), who find that cost constraints and lack of resources are barriers to the successful practice of TQM.

Informational analysis: One of the largest obstructions to TQM practice in Hospital A is the lack of informational analysis and the absence of effective communication across departments. Hospital A does not have a comprehensive performance measurement system to evaluate TQM progress and hospital performance, but also most of the evaluation results are not communicated to work groups or at functional operations levels. There is a poor communication channel between and within departments at Hospital A. Some survey results are not announced, and analysis reports are not transmitted to the relevant levels. Hence, there is no opportunity for employees to improve performance. This study supports the viewpoint of Reinertsen (1995) when he emphasises that for hospitals to successfully carry out change through TQM practice, good quality communication must permeate every area of

the organisation, connecting and influencing every goal, strategy, tactic and every person.

Employees Focus: This study demonstrates that the one-size education and training course in Hospital A is not appropriate for all staff, because variations between employees are commonplace in the hospital, so education and training courses need to be well classified and evaluated, according to the requirements of employees by the personnel department. Moreover, one or two sessions of training are not effective in change management interventions. Continual education and training is necessary so that employees can gain knowledge and required skills. This practice leads employees in Hospital A to conclude that the TQM concepts are not effectively disseminated. This is consistent with the positions of Ennis and Harrington (1999); Ovretveit (2000) and Reinertsen (1995).

Process Management: Regular meetings of management inspection are requested by ISO 9000 regulations. Hospital A gained ISO 9002 accreditation, so the hospital should have been following the regulations of ISO 9002 in order to review and discuss the results of practical performance and drawbacks, and initiate the correction activities necessary when the process does not conform to the standard. The records should have been presented in the ISO 9000 operational manual, so that process improvement could be made, and the performance increase could be seen. However, until now, Hospital A has never had a performance measurement system to track the progress of daily activities. There is a lack of integrated mechanisms to measure TQM progress and also an absence of lateral connections in Hospital A. Although the ISO certification has been awarded to the hospital, the regular process or performance measurement still has not been carried out. Hospital A does not evaluate its progress periodically, nor does it they have a hospital performance measurement system to assess the TQM achievements. This demonstrates that organisational change through a TQM project would not be likely to succeed completely without performance measurement. The study supports the viewpoints of Dixon et al. (1990); Hackman and

Wageman (1995) and Sinclair and Zairi (1995) when they note that most organisations using TQM practice modify their performance measurement to assess their goal achievement.

The next barrier at Hospital A that is encountered in process management practice is that TQM principles are not designed into the routine processes. In contrast, data collection is carried out on every part of the process of QCC. This is wasteful and expensive; time is wasted as well as employees' efforts and money. This experience of excessive data collection at Hospital A is consistent with the experience of Gordon et al. (1996) who noted that when all employees are trained in Statistical Process Control (SPC) or TQM principles or employees focused on collecting data, routine care suffers because TQM practice takes all employees away from their tasks, and wastes resources in the hospital. The finding is also consistent with the work of Glover (1993) who noted that ineffective practice causes the failure of TQM practice and TQM practice then becomes to be an extra workload instead of a new way of doing things.

Implications from Focus Group Interviews

The findings from focus group interviews indicate that, for Hospital A, effective TQM practice would be accomplished through incremental organisational change. For example, Hospital A has to have autonomy of financial and operating from government, have an effective leadership with empowerment, and a reward and recognition system for high performance employees. The change strategies for effective practice of TQM are presented in Table 7.7.

Table 7. 7

Change for Effective Practice of TQM

Change strategies	Consistent with previous researches
Solving governmental limitations	Financial and operational autonomy: Stolzenberg (2000)
Enhancing top committee	Management Committee: Tatikonda and Tatikonda (1996)
Empowering employees	Use empowerment model rather than command and control model: Ennis and Harrington (1999); Masters (1996); Tatikonda and Tatikonda (1996) and Shortell et al (1995)
Building a reward /recognition system	Reward system: Allen & Kilmann (2001); Carman (1996); Hackman and Wageman (1995); Ovretveit (2000); Shortell et al. (1995a) and Snell and Dean (1992)
Adding cost concept and market promotion	Cost constraint and lack of resources are barriers to successful practice of TQM: Ennis and Harrington (1999); McAdam and McKeown (1999); Ovretveit (2000); Shortell et al. (1995) and Wilkinson et al. (1994)
Good communication	Good communication: Reinertsen (1995)
Never-ending training	Continual education and training: Ennis and Harrington (1999); Ovretveit (2000) and Reinertsen (1995)
Measuring performance	Performance measurement system: Dixon et al. (1990); Hackman and Wageman (1995) and Sinclair and Zairi (1995)
Establishing an organic structure	Flexible structure: Ennis and Harrington (1999); Hubiak and O'Donnell (1996); Ovretveit (2000); Redman et al. (1995); Reinertsen (1995); Shortell et al. (1995a) and Wilkinson et al. (1997)

Hospital Performance Undergoes an Incremental Improvement as a Result of TQM

Practice

The results of TQM practice are used to answer research question six: 'Does the hospital performance change after the TQM practice?' This question is answered from three kinds of data, employees' perspectives (responds of questionnaire and focus group interviews), the

documentation of Government Annual Report, and a comparison with performance of selected public hospitals.

No Improvement in Patient Outcome

First, the researcher explored the performance change in Hospital A by using focus group interviews. She found that more than half the participants describe that employees are frustrated seeing no progress in hospital performance. They argued that the principles of TQM are difficult to carry out. The results of questionnaires show that 56.1 percent of respondents agree that the patient outcomes of Hospital A have increased after the TQM practice. In contrast, according to Government Annual Reports, there is no improvement in patient outcomes, in terms of mortality and length of stay.

The possible causes contributing to no improvement in patient outcomes are that the patient outcomes are affected by a variety of factors, including the patient case mix, patients' health situation, and also by physician related factors such as professional autonomy, physicians' experience and medical staff leadership (McLaughlin & Kaluzny, 1990). Clinical guidelines and clinical pathways, order entry information system and drug usage also affect clinical outcomes (Goldstein & Schweikhart, 2002). It is probable that the second cause is due to the distinctive nature of the health care services. The success of most TQM programs has been limited to administrative and other supportive functions in most hospitals (Shortell et al., 1995), and Hospital A is no exception. The third possible cause is the shortage and under involvement in TQM of physicians in Hospital A. Some physicians do not feel concerned about TQM activities and are reluctant to attend TQM meetings and QCC activities. They feel that TQM practice is not applicable to their job, and that they are already doing quality work in their clinic. Finally due to the poor communication within departments; the analysis reports from the Taiwan Quality Indicator Project (TQIP) or from Central

Taiwan Office are not effectively transmitted to the relevant physicians; staff have no opportunity to reflect on their achievements. These factors contribute to the non-improvement in patients' outcomes after 5-years of TQM practice.

Partial Improvement in Financial Outcomes

More than half of the participants (57.9 %) of questionnaires were unsure about the improvement in financial improvement. The Government Annual Reports showed that Hospital A appears to have a lower trend in government funding than that of ASPH. The ratio of revenue to expenditure of Hospital A was lower than that of ASPH from 1997 to 1999. However, in 2000, Hospital A has a higher ratio of revenue to expenditure than ASPH. The revenue and expenditure of Hospital A raised and was ranked the highest in 2001. The total amount of profit of Hospital A in 2001 was also the highest. However, the ratio of revenue to expenditure has decreased. The possible reasons for lower ratio of revenue to expenditure are the results of no reduction in expenditures and the decrease of government funding year by year.

There is a "medical material stock problem" in Hospital A, which contributes to the difficulties of cash flow. This problem at Hospital A results in the high turnover rate of physicians' and preferences for using different medicines between physicians. Usually the old medicines are still in stock when replacement medicines have already arrived. The government has decreased the funding by NTD 2.7 million per year since 1998, and the funding will continue to be decreased year by year.

Partial Improvement in Hospital Effectiveness

More than half of the participants (51.8 %) are unsure about the improvement in hospital effectiveness. According to Government Annual Reports, the hospital effectiveness

of Hospital A, measured by outpatient and in-patient number, decreased from 1997 to 1999. However, the number dramatically increased in 2000. To compare with ASPH, the numbers of in-patients were less than ASPH from 1997 to 1999. In contrast, the numbers were more than ASPH in 2000. This was the fourth year of the TQM practice. The occupancy rate and numbers of patients undergoing major surgery appeared an unstable trend.

Improvement in Employee Outcomes

There are 61.4 percent of participants who agree that Hospital A has a better performance in employee outcomes after TQM practice. Similarly, the Government Annual Reports show that the productivity and hours employees spent in education and training have increased. Hospital A had a lower productivity compared with ASPH, although the productivity of Hospital A had increased since 1997. There is improvement in employee outcomes in the turnover rate of employees as well.

Partial Improvement in Total Hospital Performance

There are 71.8 percent of participants who are uncertain about changes in hospital performance. From the focus group interviews, the study explores that many factors individually and collectively contribute to the partial improvement of hospital performance after a five year TQM practice at Hospital A. They are the hierarchical and mechanistic structure of Hospital A, the bureaucratic attitude of employees, no effective leaders nor comprehensive measurement performance systems and the resistance to change of employees.

The following section will give an analysis of strengths and weaknesses related to the practice of TQM in Hospital A.

Analysis of Strengths and Weaknesses in the Practice of TQM

Strengths

During the five years of TQM practice, the hospital had been accredited by ISO-9002 in 1999 and ISO 17025 in 2001, and was awarded a bronze medal in the QCC competition in 2001. The descriptive statistics showed that two TQM elements in terms of leadership and focus on customers had a higher score of practice. However, the element of staff focus had a lowest score. From the results of TQM practice in Hospital A, it can be seen that there are satisfactory results in the employees' results only, including hours spent in education and training, productivity per employee and turnover rate. The numbers of in-patients and outpatients have significantly increased four years after the TQM practice. Moreover, the total revenue had obviously been enhanced, and government funding had decreased after the 4 years of TQM practice. The findings support the studies of Barsness et al. (1993 & 1994); Carman et al. (1996) and Weiner et al. (1997), who argue that there is a significant affect after four years' TQM practice.

The regression analysis shows that the three TQM elements are able to predict hospital performance: process management, informational analysis and strategic planning. This study proves that focusing on strategic planning, continuous process improvement, and using information analysis to measure the progress of the practice of TQM can achieve high performance. According to the criteria of MBNQA, the six TQM elements individually and collectively affect hospital performance. However, the assessment results indicate that five of the six elements have a significant impact on total hospital performance. This result implies that there are weaknesses and obstacles to implementing the TQM program.

Weaknesses

It seems disappointing that, although there is a strong relationship between TQM practice and patients' outcomes, the patients' outcomes of Hospital A, when measured by mortality, patients' satisfaction, length of stay and re-admission rate within 24 hours, have shown no significant progress as a result of the TQM practice. Although Shortell et al. (1995a) argue that TQM adopters experience a shorter length of stay, the length of stay in Hospital A has not significantly decreased after the TQM practice. Even though the total revenue and expenditure have increased and government funding has dropped, the profit has decreased year by year. The first possible reason is the decrease of government funding year by year. Hospital A also has to become responsible for this reduction of funding. The second reason for no progress can be noted in the requirement that all public hospitals have to pay the insurance fees of employees without government funding. The third cause can be noted in that although revenue increases, expenditure increases as well, and the ratio of revenue to expenditure has changed little. This implies that there is no cost reduction after the five years' of TQM practice. These reasons could all have contributed to the decrease in profit of Hospital A.

The weaknesses of the TQM practice in Hospital A are discussed using within the six TQM elements. When the new superintendent came on board, he placed emphasis on performance. However, Hospital A has never had a comprehensive performance measurement to review performance in order to find opportunities for improvement before, and consequently senior managers do not regularly review key performance measurements, nor translate performance review findings into priorities for improvement and innovation. The strategic planning practice of TQM practice in Hospital A suffers from an absence of strategic objectives, a lack of comprehensive strategic planning processes, in addition to this, the hospital strategy is not well communicated to employees. The Hospital has no set target

for potential customers and market segments of health care. However, when the new superintendent comes on board this year, he places a strong focus on market promotion. In addition, the hospital has not aggregated or analysed the customers' complaints for the opportunities these offer for improvement. There are no key performance measurements for tracking progress relative to actions and daily operations. The staff in the hospital do not know whether the data and information is integral and accurate or not. Hospital A does not organise work time and job flexibility, nor does Hospital A regularly measure the staff's satisfaction, nor align organisational performance to identify priorities for improving the environment and supportive climate, nor consider knowledge management for business growth and success. The of staff's knowledge and skill requirements are not well evaluated by the personnel department. Hospital A has no effective methods for assessing performance in order to improve service delivery processes. Nor do they regularly audit processes and performance to minimise costs associated with inspections and tests.

Development of a Theoretical Model of TQM Practice

The theoretical model of TQM practice developed based on grounded theory includes phenomena, the context, causal conditions, consequences of TQM practice, and recommended strategies, as shown in Figure 7.1.

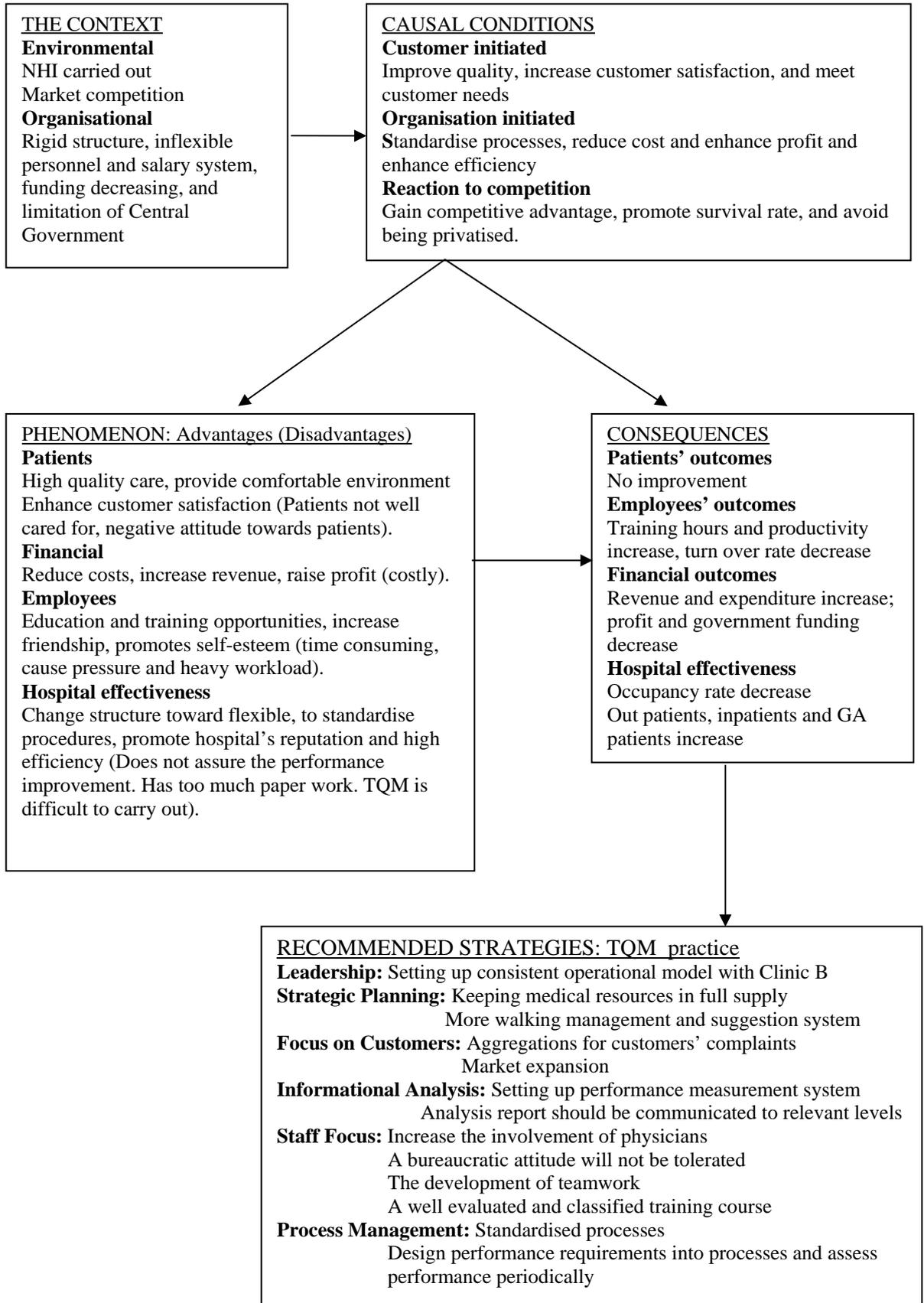


Figure 7. 1: Theoretical model for the practice of TQM in hospitals

Summary

This chapter presented the findings, including the influences of employees' characteristics on the TQM practice and on hospital performance, as well as the assessment of the relationships between TQM practice and hospital performance. This is followed by a comparison of the results with previous research, and a discussion of the reasons for these differences. Results for Hospital A after features of the TQM practice compared with those of ASPH are discussed. The advantages, disadvantages, and obstacles when TQM is being implemented at Hospital A are then discussed. The possible reason for Hospital A's not being able to implement TQM successfully is also analysed.

The next and final chapter discusses the contributions made by this study, the managerial implications, recommendations for the case study hospital to implement TQM effectively and the limitations of this study. The chapter closes with the overall conclusions of the dissertation.

CHAPTER EIGHT

CONCLUSIONS AND RECOMMENDATIONS

The previous chapters presented results and findings from data collection and data analysis to answer the six research questions. The objectives of this final chapter are to highlight the contributions that have been made by this study. Those contributions include recommendations to Hospital A regarding the successful implementation of TQM and significant findings for researchers interested in TQM implementation and change management in hospitals, particularly in public hospitals.

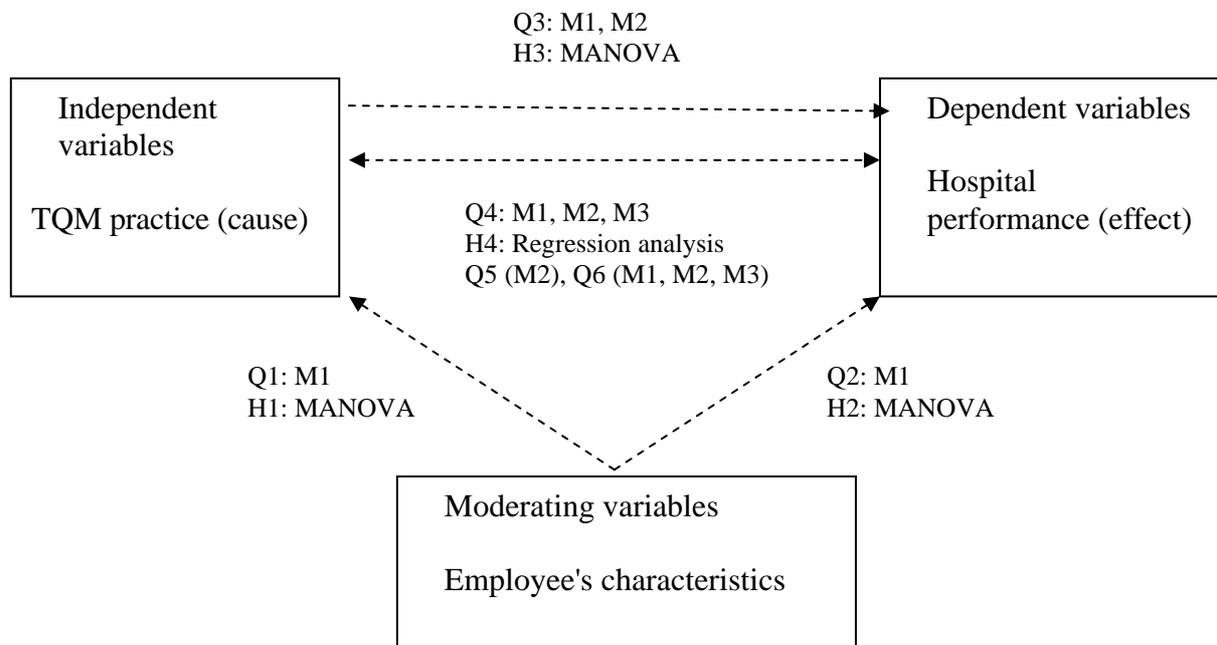
The chapter begins with the rationale of the present research by examining research questions with data collection methods and data analysis techniques. Next, the contributions that this thesis makes to TQM practice, and hospital performance will be addressed. The managerial and the limitations of the research will follow. Some recommendations for further research directions based on those conclusions were submitted.

Rationale of the Present Research

The thesis commenced with the origins of the research, the problem statement and the research objectives. Here the point was made that the principal concern of this thesis was how to use a theoretical framework to evaluate TQM implementation and hospital performance change through a five year TQM implementation process in a Taiwan public hospital. The study revealed the key factors influencing TQM implementation and hospital performance. It also investigated how TQM implementation impacts on performance. Furthermore, the advantages and disadvantages of TQM implementation as well as the weaknesses and obstacles when TQM was being implemented in the public hospital were

reviewed, then, in turn, a theoretical model of TQM implementation was developed from grounded theory (Strauss & Corbin, 1990).

Recommendations for Hospital A regarding the successful implementation of TQM were offered. Following this, a comparison and analysis of these results with previous research and a provision of explanation for unexpected outcomes were offered. We will now turn to the contributions that this dissertation has made to the hospital performance change and TQM implementation literature. There is also an outline of the limitations of the study and recommendations for future research. A summary of the research questions, research methods and hypotheses testing of this study is shown in Figure 8.1.



Note: Q1: Research question one, ...Q6: Research question six.
M1: Questionnaire, M2: Focus group interview, M3: Documentation analysis
H₁: Hypothesis 1, ...H₄: Hypothesis 4

Figure 8. 1: Overview of the study

Contributions of the Study

As outlined in chapter one, this thesis seeks to achieve three principal research objectives. The first objective of this study is to utilise a theoretical framework of MBNQA excellence model to investigate the practice of TQM in a public hospital, to uncover the influential factors of TQM practice and the factors that impact on hospital performance, and also to examine whether there are hospital performance changes after the practice of TQM. The second objective is to examine the relationships between the six TQM elements and hospital performance. The significant aspects of TQM that impact on hospital performance are identified as well. The third objective is to explore the situation of TQM practice and to identify the strengths, weaknesses and possible obstacles when TQM was being implemented in Hospital A. The contribution of this study will be explained from both academic and practice based perspectives.

Academic Contributions

This research makes a contribution to the body of knowledge on at least three major points. The first contribution is significant in that this is, to the author's knowledge, the first piece of research to study the relationship between TQM practice and public hospital performance in Taiwan using the MBNQA model in health care organizations (2001). The TQM program could be seen as an important determinant for enhancing hospital performance, as TQM has had a worthwhile impact on the performance of Hospital A. Furthermore it indicates that the TQM philosophy is not culturally bound. It has previously been proven to work well in many Western countries including the United States, and the United Kingdom. This research supports the findings in Western countries and shows that TQM practice can be applied as effectively in a culturally different like Taiwan. This thesis

has helped to reduce the gap and hopefully will provide a stimulus to other researchers to investigate the nature of TQM practice in a variety of hospitals in different countries.

The second contribution involves the link between TQM practice and the organisational performance in a hospital. The origins of this research began when we realised that, despite the comparatively large volume of literature on TQM practice and the large volume on performance literature, the relationship between TQM practice and performance had been inadequately investigated, the majority of the research emphasising the importance of TQM practice. Thus far, there has been little research on the impact of a TQM practice on hospital performance, particularly in public hospitals. As a result, our understanding about how TQM practice can apply to the hospital's daily work and how it impacts on hospital performance is still limited.

The third contribution is to develop a theoretical model of TQM practice based on grounded theory, in which includes the context, causal conditions, phenomena, consequences and recommendations for successful practice of TQM. This model will reduce the lack of TQM theory based on in-depth qualitative studies (Carr & Littman, 1990) and avoid TQM being perceived as an "a theoretical black box" (Leonard & McAdam, 2001).

Practical Contributions

In practice, the instrument developed in this study can be useful for a snapshot view of what may be facilitating or inhibiting features of a TQM practice. The successful practice of TQM depends on continuous self-assessment to identify the opportunities for improvement. This study found that a Taiwan hospital had experienced organisational change and increased the hospital's performance by engaging in TQM activities, for there was a positive impact on employees and financial outcomes as well as hospital effectiveness. Likewise, Taiwan hospitals that are providing a quality caring service should consider TQM practice as a

strategy that will help them to become more successful providers of quality in health care. Moreover, the present study identified that process management, information analysis and strategic planning were three predictors of hospital performance. This will be useful to provide quality managers of hospitals with information to assist them to allocate limited resources to the three elements that have a significant impact on quality performance.

The second contribution to practice is in regards to the identification of the strengths, weaknesses and obstacles of Hospital A when TQM was being implemented. Although many more disadvantages than advantages were reported, the inverse of most disadvantages could be considered advantages of TQM adoption. The advantages consist of providing high quality care, enhancing customer satisfaction and increasing revenue, offering education and training, promoting the self-esteem of employees, as well as increasing hospital efficiency. This study indicated that some strengths do exist, for example, the hours spent on education and training, and the productivity of employees. However, much still needs to be done to pave the way for a successful TQM practice. The obstacles encountered in performing TQM were categorised from seven major themes, governmental obstacles (eg. limitation of government regulations), and six organisational obstacles (relevant concepts, such as the lack of resources and a reward system, and the under involvement of physicians, the absence of performance measurement systems). This research also elicits the employees' opinions relevant to the ways of implementing TQM effectively and in turn enhancing hospital performance. Some short-term recommendations related to the overcoming of barriers to TQM practice and strengthening the weaknesses are provided in this study. Long term recommendations through a systematic approach, including strategy, culture, structure, leadership and process change is also suggested for organisational transformation and hence enabling a potentially superior competitive advantage. We can now also consider the managerial implication of the results and recommendations for further research.

Managerial Implications

The results of the present study provide some insight into how a hospital managed changes through the TQM practice and enhanced its hospital performance, how hospitals can implement TQM activities effectively, and what are the root reasons why change management was not completely successful in this particular public hospital, Hospital A.

This study suggests that the efforts in process management, informational analysis and strategic planning are more likely to be fruitful than efforts in improving leadership, focusing on patients or focusing on staff. However, it is important to keep in mind that we can not say that for a hospital, elements of leadership, focus on patients, customers and market, and staff focus should not be the focus of improvement, because they are not related to performance, nor that a better customer focus in a hospital leads to worse performance. For example, the focus on patients and customers did not remain in the stepwise regression and yet there is widespread agreement that the focus on patients and customers is central to TQM principles and theory (Deming, 1986; Juran, 1989). Nor can we directly say that the MBNQA systems are “wrong” because some of the TQM elements do not contribute positively to an explanation of performance variance in a multiple regression. Our study is a case study in a public hospital at a given time, whereas the MBNQA are being used to measure and suggest dimensions of improvement in order to enhance a hospital’s TQM practice and its performance. The MBNQA framework is often used to fully interpret a set of values through which to pursue improvement for a given organisation longitudinally.

We can claim that the relative strength and significance of the regression coefficients are instructive in understanding the extent of TQM elements in hospital performance. A managerial insight, which can be deduced from this study, is that the improvement of hospital performance should concentrate on process management, strategic planning and

information analysis. This is not to say that the other three elements of TQM, leadership, focus on patients, other customers and market, and staff focus should be ignored but rather that to note that in this case study, these weaker elements did not powerfully distinguish the impacts, while the first three elements are clearly differentiated. These elements as a whole, and collectively, contribute to the results. If a company implemented only one or a few of the elements, the result would not guarantee improvement, which is why the quality program is called total quality management. The key of TQM is its totality. The term 'total' refers to both the contents (i.e. all the elements) and the extent (i.e. fully implemented company-wide).

The study found that Hospital A had no dramatic change in performance after a five year TQM practice. Some factors were identified, including limitations from governmental regulations, a lack of clear mission, hospital goals, and steering committee, high turn over rate of superintendents, a hierarchical organisational structure, an absence of team work culture, periodical performance measurement system and a reward system for high performance teams or individuals, poor communication, and the bureaucratic attitude of employees. These were the reasons, which resulted in Hospital A having no dramatic improvement.

TQM practice requires that organisations have a relatively high degree of organisational autonomy, and can choose directions, strategic action plans, and even their external environments. Therefore, Hospital A may have experienced better performance levels if it had had relatively higher levels of organisational autonomy compared to private hospitals. TQM practice also involves leadership and a responsible senior committee committed to their principles over an extended period of time. High superintendent turnover rate in public hospitals, particularly at the senior executive level, is commonplace. Many worthwhile systems have been dismantled as new superintendents take control of all or part of the hospital without recognising the valuable asset they have in an existing TQM. This

may contribute to the difficulty of implementing hospital strategies and continuing in a TQM program.

TQM is a comprehensive management approach, and the elements of TQM are interdependent and influence one another. In search of TQM success, it has been suggested that a systematic perspective is necessary. However, Hospital A almost fully focused on changes in process, lacking the power to deal adequately with other dimensions, such as culture, structure or strategic planning. The value of TQM in process improvement may be negated by structural, cultural and strategic constraints.

The Recommendations for Successful TQM Practice

From the focus group interviews, the study found weaknesses and obstacles in implementing TQM at Hospital A. The recommendations that emerged from this study for Hospital A to more successfully implement TQM are divided into two steps, short term and long term suggestions. The short-term recommendations could be executed in a short time, and their purposes is to strengthen the weakness of TQM practice at Hospital A, while the long-term suggestions could take a long time to achieve, probably more than 5 years. The aim of the long-term recommendation is to conduct a systematic approach, including structure, strategy, culture, leadership and process change in order to obtain a dramatic performance improvement.

Short-Term Recommendations

Some weaknesses in implementing TQM at Hospital A were identified from the focus group interviews. This indicates that Hospital A may have been successful in its TQM program if it had been able to make more effort in the TQM components, such as with a

responsible senior committee, empowerment, encouragement and reward of employees, effective communication and training. However, the focus of TQM is on continuous improvement through the feedback of self-assessment, thus it is never too late for Hospital A to improve its TQM adoption. The short-term recommendations are addressed below.

First, Hospital A has to organise a steering committee to implement TQM. As TQM is a top down form of management, establishing a steering committee is necessary. The committee should be responsible for the TQM practice and regular evaluation of its progress and performance. The steering committee could be formed by the superintendent and include senior managers. The superintendent could act as an engine and all of the staff as peripheral services, both cooperating together to maintain and run the hospital. In a similar way, in clinical care service, physicians could act as engines, and supporting technicians act as peripheral services, both working together to care for patients.

The second of the short-term recommendations is that standardised processes with a performance measurement system to track the progress of TQM practice have to be established. Managers of Hospital A should establish TQM practice standards or guidelines for employees to follow up. The purposes of the practice of standardised processes could minimise the cost of nonconforming processes, thus increasing hospital efficiency. In the meantime, the hospital should be required to set up a comprehensive hospital performance measurement to align measures of daily operations, to track progress relative to health care actions and to evaluate the TQM achievements. The performance analyses need to align with the senior leader's performance review and the hospital's strategic planning.

The third recommendation is that a reward and recognition system has to be set up. It is necessary for Hospital A to have a recognition and reward system to encourage employees to participate in the TQM activities and recognition for high performance employees. When employees present appropriate strategy suggestions or quality activities, it is essential that the

management committee offer praise and reinforcement to motivate employees and thus increase their satisfaction and self-esteem. Without the change in management evaluation and reward policy, TQM will never really be taken seriously.

The fourth recommendation is that TQM education and training need to be effectively classified and evaluated. The education and training courses have to be well classified by the personnel department and they should be evaluated according to the requirements of employees. To do this ensures all of the employees are effective in disseminating the TQM concepts, principles and the steps of practice.

Recommendation five is based on the insight that an effective leadership is necessary for Hospital A to develop a supporting, empowerment and reward environment that facilitates involvement and development of employees. The leader of Hospital A should design work processes that empower the worker and give him or her a sense of pride and ownership in the organisation. With empowerment and reward, the staff in the hospital feel that they are a valued part of the organisation, and they are willing to participate in making the organisation better because they have pride in their work and in their abilities.

Finally, Hospital A has to maintain an efficiently operating communication system. Effective communication between and within departments at Hospital A is necessary. At first, the hospital's policies, strategies and goals require that they be communicated to all staff to ensure each staff member keeps these in mind, and makes an effort towards the hospital's goals. Second, the survey results ought to be announced, and analysis reports transmitted to the relevant functional level operations for employees to improve their performance.

Long-Term Recommendations

Although the result indicates that the TQM practice at Hospital A is partially successful, the hospital performance after TQM practice has not dramatically changed, particularly with

regard to patients' outcomes. The main problem is the lack of organisational change, especially of cultural change (Glover, 1993). Only 20 percent of the TQM programs in the United States and the Europe have achieved significant or tangible improvement after practice (Higginson & Waxler, 1994). Such programs fail to understand that they must lead the way towards cultural change. They also fail to transform the organisation into an integrated system that focuses on customer satisfaction. Improvements are made along functional lines with no attempt to institute centralised, organised process improvement efforts, thus process improvement efforts remain confined to functional areas. Incremental improvements were made, but without functional integration, dramatic improvements remained elusive. In order for a hospital to embrace TQM, it must go through organisational change; the lack of organisational change, the root problems of the public hospital will be not eliminated. TQM will succeed if it is implemented as major organisational change and long-term paradigm shift, not a quick fix (Benson, 1993). Therefore, the long-term recommendation for Hospital A is that an effective TQM practice should be accomplished by organisational change, then the dramatic performance change required would be achieved. The long-term recommendations for Hospital A to successfully implement TQM are illustrated below.

First is the recommendation that in order to be successful in TQM practice, there must be a strategic plan that identifies the goal. Strategic actions and resources management are necessary to attain those goals, and the infrastructure to initiate, guide and evaluate actions. This plan must reflect a system approach that optimises the performance of the entire organisation, not individual sections. This plan also involves a long-term endeavour to create and sustain a new culture, where effective leaders lead to establish an environment where staff will actively participate in the transformation process.

Next, there is a need to use the concept of systems approach which promotes

interdependency, holism and synergy, necessary ingredients for dramatic process improvement. Leaders have to look at their organisations not as individual functions, but as an unified, collective whole. The TQM practice approach needs to integrate itself as a collection of directions, divisions, departments, and units, with each designing its own process improvement plan. Hospital A will not develop interventions to promote interdepartmental unity and teamwork without a systems thinking approach.

A further recommendation is that Hospital A needs to develop an organic structure supportive of rapid response. Hospital A can no longer rely on the bureaucratic structure of the past; it needs to develop an organic structure capable of adapting to the changing environment. With an organic structure, interactions and communications patterns are both vertical and horizontal. Authority is decentralised and decisions are made at the lowest level by people who are the most knowledgeable about a particular process. Without this structure, it is impossible to sustain dramatic quality improvement efforts.

The next recommendation is to create a new culture, which is fulfilled with the sense of shared values, organisational trust, teamwork, and the necessary ingredients in continuously improving organisational systems and processes. The total quality culture must be supported by teamwork and cooperation, which could promote harmony, and empowerment. Collaboration and teamwork build a new level of capability, a new strength that the hospital can harness to increase its customer satisfaction. Moreover, employee participation in vertical, horizontal and cross-functional teams have proved to be most effective in continuously improving worker performance (Krebs, 1992; McKee, 1992).

The final recommendation states that Hospital A has to create an environment of empowerment, innovation and organisational learning. TQM practice requires a facilitating and empowering rather than a controlling style of manager. A facilitating manager leads his staff with the change of the basic values, beliefs, and attitudes so that they are willing to

perform beyond the minimum levels specified by the organisation. As Glover (1993) argued, in regard to TQM practice, managers need to change traditional performance appraisal to a new evaluation approach, that is evaluations are dependent on having high levels of quality, satisfied staff and customers, and successful TQM practice in their areas of responsibility. This change enables an increase in the ability of doctors and other employees to take control of quality in teams.

Limitations and Further Research

When interpreting the findings, the limitations of this research should be kept in mind. These limitations, however, provide opportunities or areas of study for future researchers to consider.

The limitations of this study can be divided into four areas. The first set of limitations concerns potential bias in the sample population and sample size. The second set concerns research design, research methods and data analysis technique. Another shortcoming of this research involves the measures used. Last but not least, the importance of the current situation of the sample hospital during the survey should be considered as a limitation as well.

Sample Population and Sample Size

The sample population used in this study may not represent all hospitals in Taiwan. The sample was drawn from a public hospital in Taiwan. Firstly, TQM originated from Western countries and there are differences in the Health Care Insurance System and health care providers between Taiwan and Western countries. Secondly, even though public hospitals are recognised as playing a critical role in Taiwan people's health, the organisational culture and employees' attitudes are different from those of private hospitals.

Future research, therefore, should incorporate public hospitals and private hospitals in their samples. Moreover, research could compare hospitals of Western and Asian countries.

Another limitation relates to the sample size. The results of this study cannot be generalised, but they can be transferred to similar situations if the results are de-contextualised and re-contextualised to the current context (Sundin, Norberg, & Jansson, 2001). This study used a qualitative approach, as the researcher mentioned previously, focus group interviews is a more cost effective approach than individual interviews. However, nine focus group interviews were held and a total of one hundred employees took part in the study, thus it could be considered as a costly technique, the expenditure included text records, video recorder, meeting fees, refreshments and preparations. While the study adopted the quantitative approach, and the sample size (114) in the case study is adequate, larger samples expanded to the whole hospital would provide for more confidence in the results. However, this would be more costly. Methods such as a face-to-face interviews, or follow-up to complete the questionnaires would have ensured the accuracy of responses; or uses of in depth interviews instead of focus group interviews would have ensured less bias. However, all these activities involve greater expense and additional resources that were not available for this particular study.

Research Design, Research Methods and Data Analysis Technique

The research instruments employed both questionnaires and focus group interviews, where the data were collected at a public hospital at a designated point in time. A self-assessment method by questionnaire provided a measurement and proved effects of variables. A survey detected how hospital demographic information influenced TQM practice and how TQM practice influenced hospital performance. The limitation of this study is that in this process the self-assessment method used can easily produce bias because personal perception

is a subjective viewpoint. Another limitation of this study is the reliance on individual employees and senior managers to provide their views on the TQM practice, while they did not fully know the meanings, nor have access to all the experiences of the whole field. Due to the respondents' tendency to central tendency in their responses, the researcher suggests that in the future a four or six respondent-scale could be used to minimise the bias of answering questions, and a field observation is needed to reduce the bias of self-assessment.

Focus group interviews collected the interviewees' view relevant to TQM practice and hospital performance through group discussion of each topic, where interaction among group members produces mutual stimulation for thought and recall of feelings and experiences. In this sense, the focus group interview is a robust method of gathering information. Focus group interviews can provide several insights through a brief view of a hospital. However, people from different positions may view things differently. Thus different professional focus groups (for instance, administrators, physicians, nurses, supporting technicians), could be utilised in future studies to better explore the phenomena, and could identify the gaps in viewpoints between various professions. Such studies need also to consider not only response from internal customers (employees), but also external customers (patients). It would not be enough to conduct a quantitative study only, when the research questions related to both attributes of quality problem and abstract concept of people perception, a multiple research approach is recommended to explore the reality from different perspectives.

Multiple-regression was one of the major data analysis techniques used in this study. Although this technique is suitable for these types of research questions and hypotheses in this study, it has some weaknesses. It can only examine a single relationship at a time. This problem can be solved using a more comprehensive technique, such as Structural Equation Modelling (SEM). SEM is an extension of several multivariate techniques and is especially useful when a dependent variable becomes an independent variable in subsequent

dependence relationships. In other words, it allows interrelated dependence relationships, SEM also allows for the representation of unobserved concepts or latent variables in structural relationships (Hair et al. 1998). There is an opportunity for future research to employ SEM as a data analysis technique and to compare results with previous research that has mainly used the multiple regression analysis technique.

Time of Measurement

TQM philosophy itself emphasises the notion of continuous improvement. The limitation of this study is that it was carried out only at one designated point in time, a limitation to understanding and interpreting the phenomena, which are formed through a long time period. However this study does not address the continual process that occurs in the practice of the TQM process. We were unable to test and account for the time lags between the existence of practice and performance changes. Further research could set longitudinal studies that would measure TQM elements across a four to five year period, examine the relationships and their development through time. Another way could be to measure the achievement of TQM goals based on how far the TQM process has moved in the appropriate direction, rather than where the process is at a single point in time.

The Hospital's Current Situation

The research was conducted in a special public hospital, which has a strategic alliance with a private clinic. Hence, the finding may not reflect the “normal” public hospital environment. An opportunity therefore exists to conduct research at a more “normal” hospital to confirm the results reported here. That said, to the extent that the strategic alliance affected the TQM practice, one can still determine with reasonable confidence the effect of varying levels of TQM practice.

Conclusions

This study offers reliable and valid instruments for a hospital to examine the extent of its TQM practice and its comprehensive performance change. The instrument is a self-assessment questionnaire, derived from the health care criterion of MBNQA. For hospitals intending to investigate their TQM practice and performance, this would be the most suitable tool. Focus group interviews also provide the opportunity to identify weaknesses for improvement and possible obstacles to be overcome; and realise the strengths to enable action for competitive advantages. As Contis' (1997) argument claims, self-assessment according to MBNQA provides a systematic and comprehensive evaluation of the TQM program and organisational performance. Additionally, focus group interviews offer the best understanding of the phenomena, context and cause-effect of TQM practice.

Our overall findings are consistent with other research from different parts of the world that show the importance of TQM practice to be proven to help hospitals in other countries improve their hospital performance. In the same way, it also helps Hospital A to improve its hospital performance.

Our research provides additional support for the insight that TQM practice is not only suitable in the manufacturing sector but also adoptable in a Taiwanese publicly owned hospital. This research also offers support for the position that TQM adoption contributes to the enhancing of the hospital's performance after four years of TQM practice.

The research finds that the demographic information of employees, gender, profession, numbers of years work as hospital employee, and whether they were a supervisor or not, all had no significant impact on the TQM practice, and on the hospital performance. Our findings reveal that TQM practice is likely to have a greater impact on the hospital's overall performance, financial result, employees' education training and productivity. Although our findings do not capture the relationship between TQM practice and patients' outcome (such

as mortality, length of stay, re-admission rate within 24 hours), we argue that this is due to a lag effect between TQM practice and patients' performance. The efforts to develop a TQM practice take some time to yield rewards and it is possible that a designated time study may not be able to capture accurately the patients' outcome regarding TQM practice. This study also implies that the employees of the hospital should not be frustrated at the slow showing of benefits at the early stage of TQM practice, because the focus of TQM is on continuous quality improvement, not only the achievement of fixed goals.

The study finds that the TQM adoption contributes to the increase of productivity of employees, hospital financial performance and hospital efficiency and effectiveness to a certain extent; process management, information analysis and strategic planning are at the top in terms of contribution. Thus, this study will be useful to provide quality managers of hospitals with information to assist them to allocate limited resources to the elements that have a significant impact on quality performance.

Short-term recommendations for implementing TQM are suggested. They are to establish standards and measurement of TQM; to set up a reward and recognition system; to effectively classify and evaluate the TQM education and training courses; to organise a steering committee and to maintain an effective leadership and communication system. Long-term recommendations to implement TQM successfully are to have a change strategy plan, to use systems approach and build an organic structure, to create a continuous improvement culture as well as the training of transformational leaders.

Finally, it should be noted that this study raises a number of questions, which should be emphasised in future studies, first, that the sample population used in this study may not represent all hospitals in Taiwan. The sample for this study was drawn from a public hospital in Taiwan. The results of our hypotheses might have been different if public hospitals and private hospitals had been incorporated. Second, even though the study revealed that the

impact of process management on hospital performance is ranked first, and informational analysis is ranked second, and strategic planning is ranked third, this does not mean that the other three elements, focus on patients, staff focus and leadership have no influence on hospital performance. A quality management program must be total or complete in terms of all the six TQM elements, full employees' involvement, company-wide, and with the six TQM elements contributing to the hospital performance collectively. Third, this study does not address the continual process that occurs in the practice of TQM practice. We were unable to test and account for the lags between the existence of practice and performance changes, nor were we able to trace the progress of the hospital. The results of our hypotheses might be different if further research could set longitudinal studies to measure TQM elements across a four to five year period, examine the relationships and their development through time. Finally, although the study found that the financial performance of Hospital A has increased, including an increase of total revenue and expenditure, as well as a decrease of government funding, this may be caused by economic growth, or by an insurance payment system, or by the strategic alliance with Clinic B. Further studies may incorporate the environmental and economic factors into the variables to examine their impacts on hospital performance. Furthermore, the strategic alliance also provides a salient topic to examine, in particular whether the strategic alliance has a positive effect on hospital performance. Alternatively, further research may investigate the link between these three factors.

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APPENDICES

APPENDIX A

ETHICS APPROVAL FROM THE HUMAN RESEARCH ETHICS COMMITTEE

APPENDIX B
CONSENT FORM



Australian Catholic University

(LETTERHEAD)

TITLE OF RESEARCH PROJECT: An investigation into the relationship between total quality management practice and performance in a Taiwan public hospital

.....
(block letters)

NAMES OF RESEARCHERS (if students) : Mei-Chiao Lai

I (the participant) have read (or, where appropriate, have had read to me) and understood the information provided in the Letter to the Participants and any questions I have asked have been answered to my satisfaction. I agree to participate in this activity, realizing that I can withdraw at any time (or stipulate the deadline by when the participant may withdraw). I agree that research data collected for the study may be published or provided to other researchers in a form that does not identify me in any way.

NAME OF PARTICIPANT
(block letters)

SIGNATUREDATE.....

*NAME OF AUTHORISED REPRESENTATIVE
(block letters)

SIGNATUREDATE.....

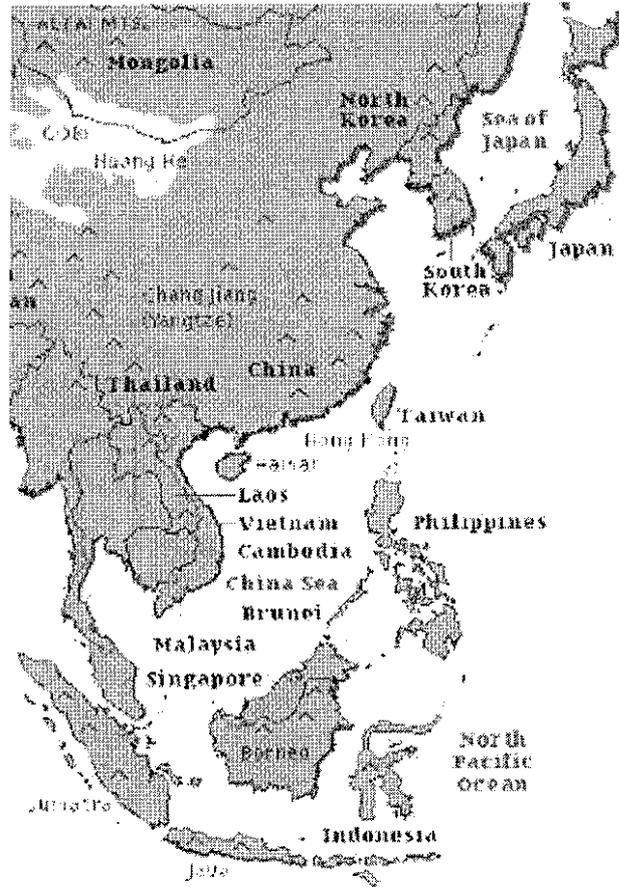
NAME OF RESEARCHER (if student):Mei-Chiao Lai

SIGNATUREDATE.....

APPENDIX C

LOCATION OF TAIWAN AND HOSPITAL A

Location of Taiwan



Location of Hospital A



APPENDIX D

QUESTIONNAIRE

(ENGLISH AND MADARIN VERSION)

QUESTIONNAIRE (ENGLISH VERSION)

Ladies and Gentlemen:

This is an academic research questionnaire developed from the seven criteria of Malcolm Baldrige National Quality Award. The purpose of this questionnaire is to examine the performance of TQM implementation in your hospital.

All information gained from this questionnaire will be strictly confidential. The questionnaire will in no way identify you. When results are reported they will be based on groups of individuals and inter-hospitals comparisons will be made. This research project has been approved by the Australian Catholic University Human Research Ethics Committee.

Please answer the questions freely according to your perception; there is no right or wrong response. The success of this research will depend on your support, so please fill out the questions carefully.

Thank you very much.

Best Regards,

Mei-Chiao Lai
PhD student of Business School
Australian Catholic University

Part A : Demographic Information of Employees

1. Gender
 1. Male
 2. Female

2. Profession
 1. Physician
 2. Nurse
 3. Pharmacist
 4. Supporting technician
 5. Administration staff

3. How many years had you worked in PTH
 1. Less than 5 years
 2. 5-10 years
 3. 11-15 years
 4. 16-20 years
 5. More than 20 years

4. Whether you are a supervisor 1. Yes 2. No

Part B. The deployment of Total Quality Activities

On the following pages there are a series of statements regarding TQM implementation. Read each statement and then use the five-point response scale to indicate the extent to which you agree or disagree with each statement at the present time. Try to avoid leaving any items blank. If you don't have an opinion on a statement or you don't understand what it means, circle the number 3 ("Unsure").

	5	4	3	2	1
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
The senior managers sated in the following statements are the superintendent, vice-superintendent, and the directors or executers of departments/quality programs					
1. Senior managers have set hospital value, short and long term directions, and performance expectation.	<input type="checkbox"/>				
2. Senior managers have established an environment for empowerment, innovation and organisational learning.	<input type="checkbox"/>				
3. Senior managers regularly review key performance measurement to find the opportunities of improvement.	<input type="checkbox"/>				
4. Senior managers translated performance review findings into priorities for improvement and innovation.	<input type="checkbox"/>				
5. Senior managers deployed performance review findings throughout the whole hospital, and suppliers/partners, where appropriate.	<input type="checkbox"/>				
6. Senior managers use performances review findings to improve the leadership system and its effectiveness.	<input type="checkbox"/>				
7. We address the processes and targets for regulatory requirements, and for accreditation.	<input type="checkbox"/>				
8. We proactive anticipate public concerns with current and future services.	<input type="checkbox"/>				
9. All of us are actively involved and support the actions of community health.	<input type="checkbox"/>				
10. Senior managers regularly review the performance of community development to find the opportunities of improvement.	<input type="checkbox"/>				

	5	4	3	2	1
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
11. We have a comprehensive strategic planning process, including steps, participants and short and long-term planning time.	<input type="checkbox"/>				
12. Our strategic planning processes are effectively aligned with customer needs/health care market expectations.	<input type="checkbox"/>				
13. Our strategic planning processes are well associated with competitive environmental change.	<input type="checkbox"/>				
14. Our strategic planning processes are successfully related with the strengths and weaknesses of staff/alliance partners.	<input type="checkbox"/>				
15. We have set our hospital's strategic objectives.	<input type="checkbox"/>				
16. Our strategic objectives are balanced according to the needs of patients/suppliers/stakeholders.	<input type="checkbox"/>				
17. We have set timetable for achieving our strategic objectives.	<input type="checkbox"/>				
18. We have established human resource action plans derived from our strategic objectives and action plans.	<input type="checkbox"/>				
19. We have key performance measurement for tracking progress relative to our action.	<input type="checkbox"/>				
20. We have performance projects to compare with past performance / competitors / similar providers.	<input type="checkbox"/>				
21. We have set the target, potential customers and market segments of health care.	<input type="checkbox"/>				
22. We listen and learn from customers to recognize their requirements.	<input type="checkbox"/>				
23. We have fostered the satisfaction and loyalty of customers.	<input type="checkbox"/>				
24. The requirements of patients/ other customers are effectively disseminated throughout the hospital.	<input type="checkbox"/>				
25. We have effective management processes for resolving customers' complaints.	<input type="checkbox"/>				
26. We have aggregated and analysed the customers' complaints for the opportunities of improvement.	<input type="checkbox"/>				
27. We systematically and regularly measure the extent of customer satisfaction/dissatisfaction.	<input type="checkbox"/>				
28. We regularly follow up the health care service of patients with feedback.	<input type="checkbox"/>				
29. We compare the customer satisfaction information with competitors/ similar providers.	<input type="checkbox"/>				
30. We regularly examine the measuring methods of customers' satisfaction to match the current health care needs.	<input type="checkbox"/>				

	5	4	3	2	1
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
31. We have a comprehensive system to gather and integrate information for decision making.	<input type="checkbox"/>				
32. We effectively use comparative data and information to analyse performance.	<input type="checkbox"/>				
33. We use the analyse results to act as the basis for improvement and benchmarking.	<input type="checkbox"/>				
34. We have a comprehensive system to align measures of daily operations and hospital performance.	<input type="checkbox"/>				
35. Our performance analysis is aligned with senior leader's performance review and our strategic planning.	<input type="checkbox"/>				
36. We communicate the analysis results to work group/ functional level operations.	<input type="checkbox"/>				
37. We ensure performance measurement systems match the current health care service needs.	<input type="checkbox"/>				
38. We ensure the needed data and information available to staff, suppliers, and customers, as appropriate.	<input type="checkbox"/>				
39. We ensure the data and information integrity and accuracy.	<input type="checkbox"/>				
40. We ensure the data and information match the current directions of health care services.	<input type="checkbox"/>				
41. We regularly check hardware to make sure they are reliable and meet current health care needs.	<input type="checkbox"/>				
42. We regularly check software to ensure they are reliable and match the current health care needs.	<input type="checkbox"/>				
43. We organise work and job flexibility.	<input type="checkbox"/>				
44. We work together by cooperation and team- work	<input type="checkbox"/>				
45. We regularly communicate and share knowledge/skill through seminar or on-site information.	<input type="checkbox"/>				
46. We have a comprehensive system to motivate staff, and help them attain career development.	<input type="checkbox"/>				
47. We have a well-developed staff performance management system to reward high performance.	<input type="checkbox"/>				
48. The requirements of knowledge and skill of staff are well evaluated by the personnel department.	<input type="checkbox"/>				
49. The processes of recruitment, hiring and retaining of new staff are well evaluated by the personnel department.	<input type="checkbox"/>				
50. The results of education and training are well evaluated by the personnel department to achieve organisational objectives.	<input type="checkbox"/>				

	5	4	3	2	1
	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
51. We emphasise and make sure of the occupation safety and health of staff's work place.	<input type="checkbox"/>				
52. We regularly review the environment of hospital with customers and their relatives.	<input type="checkbox"/>				
53. We regularly measure the staff's satisfaction.	<input type="checkbox"/>				
54. We align organisational performance to identify priorities for improving the environment and staff support climate.	<input type="checkbox"/>				
55. We have an established process to design the health care delivery system and related processes.	<input type="checkbox"/>				
56. We incorporate changing customer/market requirements and new-technology into related processes.	<input type="checkbox"/>				
57. We regularly review the performance of referred process from practitioners	<input type="checkbox"/>				
58. We address the quality factors of health care service in design processes.	<input type="checkbox"/>				
59. We address the effectiveness factors of health care service in design processes.	<input type="checkbox"/>				
60. We address the efficiency factors of health care service in design processes.	<input type="checkbox"/>				
61. We have addressed the operational performance requirements in the design processes.	<input type="checkbox"/>				
62. We have effective methods to assess the performance to improve our service delivery processes.	<input type="checkbox"/>				
63. We regularly audit processes and performance to minimise costs associated with inspections and tests.	<input type="checkbox"/>				
64. We consider knowledge management for business growth and success.	<input type="checkbox"/>				
65. We have a standardised and documented operating procedure to support daily operations.	<input type="checkbox"/>				
66. We regularly examine support processes to meet the health care service needs.	<input type="checkbox"/>				

Part C : Hospital Performance Results (Outcomes).

How would you rate the following: In the case of implementing the TQM program in your hospital, please indicate the progress rate in your judgment, comparing the current performance level with before TQM.

	5	4	3	2	1
	Strongly agree	Agree	Unsure	Disagree	Strongly disagree
(I).Patient Results					
1. General mortality rate decrease latest 1 year	<input type="checkbox"/>				
2. Outpatients' satisfaction increase latest 1 year	<input type="checkbox"/>				
3. Readmission Rate within 24 hours in emergency department decrease latest 1 year	<input type="checkbox"/>				
4. Length of stay decrease latest 1 year	<input type="checkbox"/>				
(II) Financial and Market Results					
1. Total income increase	<input type="checkbox"/>				
2. Total expenditure decrease	<input type="checkbox"/>				
3. Government funding decrease	<input type="checkbox"/>				
4. Growth of profit increase	<input type="checkbox"/>				
(III).Staff and Work System Results					
1. Employees hours spent in education and training increase	<input type="checkbox"/>				
2. The productivity of per employee per month increase	<input type="checkbox"/>				
3. Employees' satisfaction increase	<input type="checkbox"/>				
4. Turn over rate of employees decrease	<input type="checkbox"/>				
(IV).Hospital Efficiency and Effectiveness Results					
1. Numbers of outpatients increase	<input type="checkbox"/>				
2. Numbers of inpatients increase	<input type="checkbox"/>				
3. Numbers of general anesthesia surgery increase	<input type="checkbox"/>				
4. General occupancy rate increase	<input type="checkbox"/>				

Thank you for your participation in this most important activity

Please return this questionnaire to researcher

QUESTIONNAIRE (MADARIN VERSION)

醫院績效自我評估表

親愛的夥伴們：您好！

這是一份根據美國國家品質獎 2001 年醫療照護品質追求卓越模式的六個項目及績效平衡計分卡，專門針對貴院之需求所設計發展出來的醫院績效自我評估表，主要用來檢核貴院的整體醫療活動與評估貴院績效，希望能藉此自我評估活動，了解貴院自我的優勢與缺失，作為醫院決策之參考，以及活動流程改善之依據，使貴院的業務與績效能蒸蒸日上。

有鑒於唯有您最了解貴醫院，因此唯有藉助各位夥伴有效且嚴謹的評估，才能精確的了解貴院的長處與不足，作為日後貴院努力的方向。所以各位夥伴請您仔細的回答下列每一個評估項目，不要留下空白。

您所填之自我評估表是專為貴院而設計的，敬請依實際狀況填答，而這些評估表將被妥善保存。謝謝您的支持，百忙之中抽空填寫此評估表，謹此衷心感謝！並 祝

身體健康 萬事如意

賴美嬌 博士候選人敬上 2002/5/20

第一部分：員工基本資料

- 1.性別 男 女
- 2.專業 醫師
 護理師
 藥師
 醫療技術人員
 行政人員
- 3.你在醫院的年資 5 年以下
 5-10 年
 11-15 年

4. 16-20 年

5. 超過 20 年

4. 你是否擔任主管職位

1. 是

2. 不是

第二部分：醫療品質活動量表，下列問題請依您的觀點，在適切的 打「√」

	5 非 常 同 意	4 同 意	3 不 確 定	2 不 同 意	1 非 常 不 同 意
以下所謂高階主管係指貴院的院長、副院長或者醫療品質活動的主管					
1. 貴院高階主管有設定醫院的短期目標及長期方針	<input type="checkbox"/>				
2. 貴院高階主管有塑造一個組織學習、授權及創意的環境	<input type="checkbox"/>				
3. 貴院高階主管定期檢討實際績效的衡量結果，以發現改善機會	<input type="checkbox"/>				
4. 貴院高階主管有將績效檢視結果轉成解決問題和創意的優先次序	<input type="checkbox"/>				
5. 貴院高階主管有將績效檢視結果傳達給全院同仁及相關供應商或夥伴	<input type="checkbox"/>				
6. 貴院高階主管運用績效檢視結果來改善領導統御及提升效能	<input type="checkbox"/>				
7. 院有設定日常作業流程與目標，以供平時需求及評鑑用	<input type="checkbox"/>				
8. 貴院主動參與攸關公共健康的醫療照護及預防保健	<input type="checkbox"/>				
9. 貴院同仁主動參與並支持社區健康營造活動	<input type="checkbox"/>				
10. 貴院定期的檢覈社區總體營造之成效與缺失	<input type="checkbox"/>				
11. 貴院有一個全面性的策略計劃包括實施步驟、參與人員、及短期和長期的時程	<input type="checkbox"/>				
12. 貴院的策略計劃能有效地結合病患需求及健康照護市場期望	<input type="checkbox"/>				
13. 貴院的策略計劃能有效地連結日漸改變的競爭環境	<input type="checkbox"/>				
14. 貴院的策略計劃能成功地聯繫著員工 / 聯盟夥伴強勢及弱勢	<input type="checkbox"/>				
15. 貴院有設定醫院的策略目標	<input type="checkbox"/>				
16. 貴院的策略目標考量病患 / 藥品醫療器材供應商 / 利益關係人三者間的平衡	<input type="checkbox"/>				
17. 貴院有擬訂全面性的短期、中長期作業規畫以達成該院的策略目標	<input type="checkbox"/>				
18. 貴院有根據策略目標及作業規畫建立人力資源管理計畫	<input type="checkbox"/>				
19. 貴院有依據主要績效衡量的結果來追蹤相關作業之進行狀況	<input type="checkbox"/>				
20. 貴院有比較過去的績效以及與競爭者 / 同性質的醫療提供者作比較	<input type="checkbox"/>				
21. 貴院有以主要目標病患及潛在病患作一個醫療市場區隔	<input type="checkbox"/>				
22. 貴院有傾聽病患的心聲及從病患處得知他們的需求	<input type="checkbox"/>				
23. 貴院致力於病患的滿意度及忠誠度的提昇	<input type="checkbox"/>				
24. 貴院病患或其他顧客需求能有效地傳達至醫院相關人員	<input type="checkbox"/>				

25. 貴院有制訂有效的管理作業以解決病患的抱怨

下列問題請依您的觀點，在適切的 打「√」(續)

	5 非 常 同 意	4 同 意	3 不 確 定	2 不 同 意	1 非 常 不 同 意
26.貴院對於病患的抱怨，能加以整合分析，尋求改善的對策	<input type="checkbox"/>				
27.貴院有定期且系統地衡量病患的滿意度 / 不滿意度	<input type="checkbox"/>				
28.貴院有定期地追蹤病人對於健康照護服務的反應情況	<input type="checkbox"/>				
29.貴院有比較競爭者及同性質醫療院所之病患滿意度的差異	<input type="checkbox"/>				
30.貴院定期地檢視病患滿意度的衡量方法以符合現在醫療照護的需求	<input type="checkbox"/>				
31.貴院有一套系統來收集及整合資訊，作為經營管理決策之用	<input type="checkbox"/>				
32.貴院有效地運用數據及資訊來比較、分析績效	<input type="checkbox"/>				
33.貴院將績效分析的結果作為改善和標準的依據	<input type="checkbox"/>				
34.貴院有一個整合的系統來收集日常的實務資訊和績效	<input type="checkbox"/>				
35.貴院的績效分析與高層主管期望及醫院的策略計劃緊密連結	<input type="checkbox"/>				
36.貴院將資訊分析結果傳達到部門別及專案工作小組	<input type="checkbox"/>				
37.貴院確保績效衡量系統符合現在醫療照護的需求	<input type="checkbox"/>				
38.貴院確保員工、供應商和客戶能方便取得所需的數據及資訊	<input type="checkbox"/>				
39.貴院確保所提供數據及資訊的整體性及準確性	<input type="checkbox"/>				
40.貴院確保所提數據及資訊符合現代醫療照護的趨勢	<input type="checkbox"/>				
41.貴院定期的檢測「硬體設備」以確保其可信度並符合現代醫療照護所需	<input type="checkbox"/>				
42.貴院定期的檢測「軟體設備」以確保其可信度並符合現代醫療照護所需	<input type="checkbox"/>				
43.貴院組織分工、員工配置、工作分配、調度是富有彈性的	<input type="checkbox"/>				
44.貴院依特別任務組成團隊，以小組作業一起分工合作的方式進行	<input type="checkbox"/>				
45.貴院藉由研討會或網站資訊定期的溝通及分享知識 / 技能	<input type="checkbox"/>				
46.貴院有一個整合的系統來激勵員工並幫助他們規劃生涯發展	<input type="checkbox"/>				
47.貴院有一套考績 / 獎勵制度來獎勵高績效員工	<input type="checkbox"/>				
48.貴院人事部門能夠良好的評估員工知識及技能的需求程度	<input type="checkbox"/>				
49.貴院人事部門能評估員工招募、僱用及確保的過程	<input type="checkbox"/>				
50.貴院人事部門能評估員工教育訓練的結果以達成組織的目標	<input type="checkbox"/>				

下列問題請依您的觀點，在適切的 打「√」

	5 非 常 同 意	4 同 意	3 不 確 定	2 不 同 意	1 非 常 不 同 意
51. 貴院重視並且確保員工的健康和工作場所的職業安全	<input type="checkbox"/>				
52. 貴院定期的與家屬及其病患檢討醫院綠美化之情況	<input type="checkbox"/>				
53. 貴院定期的測量員工對其工作滿意度	<input type="checkbox"/>				
54. 貴院利用組織績效的評估，優先改善員工工作環境及塑造支持員工的氣氛	<input type="checkbox"/>				
55. 貴院已經建立健康照護服務系統及其相關流程之設計	<input type="checkbox"/>				
56. 貴院有將客戶及市場需求變化和新科技併入相關服務流程中	<input type="checkbox"/>				
57. 貴院定期的檢討基層診所醫師指定轉診到本院之情況	<input type="checkbox"/>				
58. 貴院有將健康照護服務的品質因素列入流程設計中	<input type="checkbox"/>				
59. 貴院有將健康照護服務的效能因素列入流程設計中	<input type="checkbox"/>				
60. 貴院有將健康照護服務的效率因素列入流程設計中	<input type="checkbox"/>				
61. 貴院有將工作績效需求列入流程設計中	<input type="checkbox"/>				
62. 貴院有制度來檢測績效，以改善院內的服務流程	<input type="checkbox"/>				
63. 貴院定期的稽核流程和績效以減少檢查及測試之成本	<input type="checkbox"/>				
64. 追求成長與卓越績效，貴院考慮使用知識管理	<input type="checkbox"/>				
65. 貴院依據標準化及書面化的操作程序來推動日常的作業	<input type="checkbox"/>				
66. 貴院定期的檢驗支援流程，使符合現在醫療照護所需	<input type="checkbox"/>				

第三部份：醫院組織績效量表

請您就貴院推動品質管理活動後，品質績效之改善情形，在適切的 打「√」

	非 常 同 意	同 意	不 確 定	不 同 意	非 常 不 同 意
(1) 病患相關指標	5	4	3	2	1
1. 全院平均死亡率降低	<input type="checkbox"/>				
2. 門診病患滿意度提昇	<input type="checkbox"/>				
3. 全院平均住院天數縮短	<input type="checkbox"/>				
4. 病患 24 小時內重返急診率降低	<input type="checkbox"/>				
(2) 財務及市場相關指標	5	4	3	2	1
1. 全院總收入增加	<input type="checkbox"/>				
2. 全院總支出減少	<input type="checkbox"/>				
3. 醫療市場佔有率提高	<input type="checkbox"/>				
4. 全院經營利潤提昇	<input type="checkbox"/>				
(3) 員工及學習成長相關指標	5	4	3	2	1
1. 員工教育、學習時數增加	<input type="checkbox"/>				
2. 工作流程效率提昇	<input type="checkbox"/>				
3. 員工對工作與組織滿意度提昇	<input type="checkbox"/>				
4. 員工離職率降低	<input type="checkbox"/>				
(4) 醫院效能相關指標	5	4	3	2	1
1. 門診數量增加	<input type="checkbox"/>				
2. 住院病患量增加	<input type="checkbox"/>				
3. 全身麻醉開刀數增加	<input type="checkbox"/>				
4. 全院平均佔床率增加	<input type="checkbox"/>				

本評估表到此結束，感謝您的填答，謝謝！

APPENDIX E

GUIDELINE OF FOCUS GROUP INTERVIEW

(ENGLISH AND MADARIN VERSION)

GUIDELINE OF FOCUS GROUP INTERVIEW (ENGLISH VERSION)

Ladies and Gentlemen:

In order to commitment the Government's policy, you have launched the TQM project for 5 years since 1997. This section is to utilise focus group interview to examine your perceptions of TQM adoption, the benefits and barriers of TQM practice in your hospital, hospital performance as well as the ways to improve hospital performance.

Please don't hesitate to express your opinions, they would be very useful for hospital to improve TQM implementation and therefore enhance the performance of hospital. Thank you very much.

The following questions are guidelines for focus group interview.

1. What factors causing hospitals to implement TQM programme?
2. Why did this hospital implement TQM programme?
3. What has been the advantage to you and the hospital as a result of implementing the TQM program?
4. What has been the disadvantage of the TQM implementation, for you as an employee, and for your hospital?
5. What obstacles do you think inhibited the implementation of TQM?
6. How do effectively implement TQM and then increase the performance of hospital?

Low Scoring Answers

The following questions have low scoring answers in the questionnaires, so that they are necessary to be realized the reasons why they do not be implemented well.

(I) Leadership

1. Senior managers have set hospital value, short and long term directions, and performance expectation.
2. Senior managers have established an environment for empowerment, innovation and organisational learning.
3. Senior managers translated performance review findings into priorities for improvement and innovation.
4. Senior managers deployed performance review findings throughout the whole hospital, and suppliers/partners, where appropriate.

(II) Strategy planning

1. Our strategic planning processes are successfully related with the strengths and weaknesses of staff/alliance partners.
2. Our strategic objectives are balanced according to the needs of patients/suppliers/stakeholders.
3. We have established human resource action plans derived from our strategic objectives and action plans.
4. We have key performance measurement for tracking progress relative to our action.

(III) Customer focus

1. We have set the target, potential customers and market segments of health care.
2. We have aggregated and analysed the customers' complaints for the opportunities of improvement.
3. We regularly follow up the health care service of patients with feedback.
4. We compare the customer satisfaction information with competitors/ similar providers.
5. We regularly examine the measuring methods of customers' satisfaction to match the current health care needs.

(VI) Information and analysis

1. We have a comprehensive system to align measures of daily operations and hospital performance.
2. Our performance analysis is aligned with senior leader's performance review and our strategic planning.
3. We communicate the analysis results to work group/ functional level operations.
4. We ensure the needed data and information available to staff, suppliers, and customers, as appropriate.
5. We regularly check software to ensure they are reliable and match the current health care needs.

(V) Staff focus

1. We have a comprehensive system to motivate staff, and help them attain career development.
2. We have a well-developed staff performance management system to reward

high performance.

3. The results of education and training are well evaluated by the personnel department to achieve organisational objectives.
4. We regularly measure the staff's satisfaction.
5. We align organisational performance to identify priorities for improving the environment and staff support climate.

(VI) Process management

1. We incorporate changing customer/market requirements and new-technology into related processes.
2. We regularly review the performance of referred process from practitioners.
3. We have addressed the operational performance requirements in the design processes.
4. We regularly audit processes and performance to minimise costs associated with inspections and tests.
5. We consider knowledge management for business growth and success.

GUIDELINE OF FOCUS GROUP INTERVIEW (MADARIN VERSION)**影響 TQM 實施與醫院組織績效之焦點團體訪談大綱 (一)**

主題：實施 TQM 專案計畫與醫院組織績效的關聯性

訪談內容之依據：本院從民國 86 年起配合行政院衛生署政策，推行有關全面品管活動的專案計畫，至今歷經五年期間，究竟實行 TQM 後的績效如何？以及個人對 TQM 的認知、感受與實行 TQM 後的經驗如何？欲利用焦點團體訪談法，將貴院實際執行情況及績效，藉由不同部門、不同團體、針對下列議題發表個人心聲或意見，謝謝您的參與。

訪談大綱：

1. 您所了解醫院推行有關全面品管活動的專案計畫的背景如何？
2. 您所了解貴院推行有關全面品管活動的專案計畫的理由如何？
3. 您認為實施 TQM 之後對醫院、員工產生的益處？請舉例說明之。
4. 您認為實施 TQM 之後對醫院、員工產生的壞處？請舉例說明之。
5. 您認為貴院實施 TQM 的困難（障礙）為何？請舉例說明之。
6. 如何有效的實施 TQM 以提昇醫院的績效？請舉例說明之。

影響 TQM 實施與醫院組織績效 之焦點團體訪談大綱 (二)

主題：實施 TQM 專案計畫與醫院組織績效的關聯性

大綱內容之根據：本院曾於九十一年五月作問卷調查，調查針對實施 TQM 專案計畫與醫院組織績效的關聯性及影響 TQM 實施與醫院組織績效的情形。該問卷量表中包含六個因素，共六十六個題目。其調查結果經由 SPSS 軟體的統計，從六個因素中選出平均數較低者的題目，進一步利用焦點團體訪談法，將貴院實際執行情況及績效，藉由不同部門、不同團體別，針對下列相同議題發表個人心聲或意見，以了解 TQM 施行上的困難及其改善方案，以達到提昇績效的目的，謝謝您的熱心參與。

下列問題填答的結果，發現其平均值偏低，請就其可能發生的原因，及其施行之障礙所在，發表你個人的觀點。

一、領導統御

1. 貴院高階主管有設定醫院的短期目標及長期方針
2. 貴院高階主管有塑造一個組織學習、授權及創意的環境
3. 貴院高階主管有將績效檢視結果轉成解決問題和創意的優先次序
4. 貴院高階主管有將績效檢視結果傳達給全院同仁及相關供應商或夥伴

伴

二、策略規劃

1. 貴院的策略計劃能成功地聯繫著員工 / 聯盟夥伴強勢及弱勢

2. 貴院的策略目標考量病患 / 藥品醫療器材供應商 / 利益關係人三者間的平衡
3. 貴院有根據策略目標及作業規畫建立人力資源管理計畫
4. 貴院有依據主要績效衡量的結果來追蹤相關作業之進行狀況

三、顧客關係管理

1. 貴院有以主要目標病患及潛在病患作一個醫療市場區隔
2. 貴院對於病患的抱怨，能加以整合分析，尋求改善的對策
3. 貴院有定期地追蹤病人對於健康照護服務的反應情況
4. 貴院有比較競爭者及同性質醫療院所之病患滿意度的差異
5. 貴院定期地檢視病患滿意度的衡量方法以符合現在醫療照護的需求

四、資訊與分析

1. 貴院有一個整合的系統來收集日常的實務資訊和績效
2. 貴院的績效分析與高層主管期望及醫院的策略計劃緊密連結
3. 貴院將資訊分析結果傳達到部門別及專案工作小組
4. 貴院確保員工、供應商和客戶能方便取得所需的數據及資訊
5. 貴院定期的檢測「軟體設備」以確保其可信度並符合現代醫療照護所需

五、支持員工

1. 貴院有一個整合的系統來激勵員工並幫助他們規劃生涯發展
2. 貴院有一套考績 / 獎勵制度來獎勵高績效員工
3. 貴院人事部門能夠良好的評估員工知識及技能的需求程度
4. 貴院定期的測量員工對其工作滿意度
5. 貴院利用組織績效的評估，優先改善員工工作環境及塑造支持員工的氣氛

六、過程管理

1. 貴院有將客戶及市場需求變化和新科技併入相關服務流程中
2. 貴院定期的檢討基層診所醫師指定轉診到本院之情況
3. 貴院有將工作績效需求列入流程設計中
4. 貴院定期的稽核流程和績效以減少檢查及測試之成本
5. 追求成長與卓越績效，貴院考慮使用知識管理

APPENDIX F

FIGURES OF THE PERFORMANCE OF HOSPITAL A

