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NAME: Miss Kulwadee Bumrungkhet

THIS THESIS HAS BEEN ACCEPTED BY

THESIS ADVISOR

(Associate Professor Kongkiti Phusavat, Ph.D.)

THESIS CO-ADVISOR

(Mr. Punnamee Sachakamol, Ph.D.)

DEPARTMENT HEAD

(Associate Professor Anan Mungwattana, Ph.D.)

APPROVED BY THE GRADUATE SCHOOL ON _____

DEAN

(Associate Professor Gunjana Theeragool, D.Agr.)

THESIS

SUCCESSFUL FIRM CHARACTERISTICS GUIDANCE FOR NEW THAILAND QUALITY AWARD APPLICANTS: LESSON LEARNED FROM SOUTHEAST ASIA PAST WINNERS

KULWADEE BUMRUNGKHET

A Thesis Submitted in Partial Fulfillment of
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This thesis aims to provide the primary roadmap to success TQA and also investigate the successful firm characteristics of Thailand Quality Award (TQA) past winners to represent the guidance for new Thailand Quality Award (TQA) applicants that desire to achieve this award.

The data were collected from the past winners in the past until year 2012 throughout Southeast Asia which those countries have adopted their National Quality Award criteria from Malcolm Baldridge National Quality Award (MBNQA) of the U.S.A. as same as Thailand Quality Award. The data of past winners were gathered from six countries which were Thailand, Singapore, Malaysia, Vietnam, Indonesia, and Philippines. There were totally sixty past winner representatives for statistical analyzing. There were nine hypotheses prepared for investigation and analyze the common firm characteristics that influence TQA as well as the TQA primary roadmap. Data analyzing were performed by using statistical software for hypothesis testing.

The statistical analysis results revealed that almost characteristics were independent from the length of time spent for preparing TQA. There were workforce focus recognitions and the age of company that related to TQA success but correlated at medium and low level of correlation accordingly. The length of time used for preparing for TQA could reflect the ability of the companies so those related factor might influence TQA success. The primary approach for TQA successful has been conducted as the useful guideline. The leaders can head forward for TQA directly without effort to achieve any other award recognitions before applying TQA program. Because those award might irrelevant to TQA success and the proposed practices mentioned in this research should be applied especially Leadership responsibility, Quality Management, Workforce focus. However the award recognitions were one of the indicators for only a particular successful in particular period, it cannot use for indicate that the company will be excellence everlasting. The key is how the companies lead and keep maintain their excellence in the future.

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Student's signature Thesis Advisor's signature

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Kulwadee Bumrungkhet
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LIST OF ABBREVIATIONS

AEC	=	ASEAN Economic Community
APQC	=	American Productivity and Quality Center
DTI	=	Department of Trade and Industry
EFQM	=	European Foundation for Quality Management
FTPI	=	Foundation for Thailand Productivity Institute
IQA	=	Indonesia Quality Award
IQAF	=	Indonesia Quality Award Foundation
ISO	=	International Organization for Standardization
MBNQA	=	Malcolm Baldridge National Quality Award
MNC	=	Multinational Company
MPC	=	Malaysia Productivity Corporation
NQA	=	National Quality Award
PQA	=	Philippine Quality Award
QMEA	=	Quality Management Excellence Award
R & D	=	Research and Development
SPRING	=	The Standards, Productivity and Innovation Board
SQA	=	Singapore Quality Award
STAMEQ	=	Directorate for Standards, Metrology and Quality
TQA	=	Thailand Quality Award
TQM	=	Total Quality Management
VQA	=	Vietnam Quality Award

SUCCESSFUL FIRM CHARACTERISTICS GUIDANCE FOR NEW THAILAND QUALITY AWARD APPLICANTS: LESSON LEARNED FROM SOUTHEAST ASIA PAST WINNERS

INTRODUCTION

National Quality Award (NQA) is the highest level of national recognition for performance excellence that has been established in various countries to promote Total Quality Management (TQM). It is a reward program in business excellence which awards to the organization that meets award excellence level. In addition, this reward program is catalyst and motivation to the organizations to improve their performance and achieve the award. The excellence framework can be used as an approach for award preparation to achieve the business excellence award or NQA. NQA reward programs in many countries have been adopted from Malcolm Baldridge National Quality Award (MBNQA) of the U.S. so NQA are considered to the world class recognition due to MBNQA has been used and accepted worldwide. Obtaining the award is not only gaining the reputation but also gaining the benefit from using business excellence approach towards effective competition in the market. National Quality award has been set up by many countries around the globe and the objectives were similar among nations; to motivate the awareness of quality toward performance excellence also publish the winner's best practices for distribute the knowledge to other organizations. The award recipients were considered as the successful companies because receiving the award indicated high ability to successfully compete in the market. Quality was the key issue of running the business because delivering good quality of products or services that satisfied to customer wants and needs at excellence level hence influenced customer loyalty and lead for sustainable competitive.

The customer satisfaction is the target of any organizations and once the customers satisfied so the company will get continuous support as long as they served the expected satisfaction or beyond satisfaction to the customers. The supports from

customers are the key factor to contribute the company to survive in the market. Due to customer demands change over the time so the company have to handle with this situation and pay more attention to compete with other competitors. Existing in the high competitive market tends to motivate the company to automatically improve their capability and keep work harder to accomplish the customer satisfaction. Customer satisfaction is a result of performance excellence and influence customer loyalty which impact to profitability (Roger, 1996). Good quality influences customer satisfaction and hence good economic returns (Eugene *et al*., 1994). According to the customer reflection is related to profit therefore it is clear that the company must retain their excellence for customer satisfaction. More loyal customers mean more money return and long term survive possibility in the market.

Total Quality Management (TQM) is a powerful tool to enhance management performance. Cristina and Maria (2006) suggested that the systematic development of TQM helps contributing innovative processes towards business excellence. The difficulty of TQM implementation initiative varies among different types of firm but the results were always positive after applied it. Actually TQM have been originated for long time, almost a century by the American, W. Edwards Deming in the early 1950's and further developed in Japan in the 1960's led by quality experts, such as Deming, Juran and Feigenbaum and finally become more popular since the early 1970's.TQM concept focuses on quality of products or services also quality issues which suppose to be carried out by everyone within an organization. As the word "total" means everyone at all level of each unit and process within the organization should get involve for quality creation at any time. "Quality" means the product or service that qualify the customer expectation also customer wants and needs. "Management" means systematic process control led by the top management to create a team work culture and emphasize on consistent development. According to the international standard definition, TQM means the management approach which emphasize on quality carried out by everyone those who are involved within the organization. This approach is a long term goal of create the customer satisfaction as much as possible; moreover, create benefits to all member and society. Due to fast demand shift from the customer, continuous improvement is necessary responsibility

for this scenario to retain the customer. Review the problem and past mistakes is required for using as a lesson learned in order to determine the better work for the future. So implement TQM in a proper way always result in positive impact.

Due to the logical concept of TQM, NQA approach and its criteria were defined based on TQM principal. TQM has been widely applied to many company's strategy to sustain competitive advantage. Refer to the TQM concept, the consistent of quality improvement was recognized as long term survival possibility. Quality was recognized as a main subject that leads the organization to success in business. However quality itself was an intangible characteristic, it could be transformed to tangible by the number of quality awards received. In addition, quality award achievements from the standard institute recognition could guarantee and indicated the maturity of Total Quality Management (TQM) implementation. Since the quality award reward was considered as a catalyst, it motivated the company to develop and improve the quality performance and gain the reputation and benefits after winning the award eventually.

Many countries throughout the world fasten this motivation and established their own Business Excellence models or National Quality Award (NQA) based on TQM philosophy in order to enhance their nation economics and stimulate the organizations to response for quality improvement to sustain competitive with other countries as well as create wellbeing to nation society. NQA business excellence award reward program in each country has been operated by government organization which contained the strategy in the Nation Development plan for nation productivity improvement. The objective of National Quality Award in many countries aims to stimulate the quality awareness and find out the best practice from the successful organization then distribute the best practices to the other organizations. In the past several decades, many award reward programs have been founded by more than 70 countries around the world including Asia, and Europe. For example, Malcolm Baldridge National Quality Award (MBNQA) of the United States since 1987, European Quality Award (EQA) since 1991, Canada awards for Excellence since 1992, Singapore Quality Award (SQA) since 1993, Japan Quality Award since 1995

etc. The Baldrige Criteria was used as a standard for assessment of performance excellence organization in many countries. As mentioned earlier NQA achievement was considered as a highest level of national recognition for exemplary organizational performance. In other words, it was a world class achievement that influenced the organization a chance to entrance into the global market and gained the advantages. Therefore, the organization can use the award winning as a target or motivation to improve the performance by applying all award criteria in order to get both award achievement and also the better capability.

Thailand was one of the countries that established its own NQA program called Thailand Quality Award (TQA). However, there were not many organizations in Thailand that obtained the award since the program has been launched for only a decade and has less experience with TQA program. Thus, this research aims to study from TQA past winners and analyze successful firm characteristics from TQA past recipients. Since there were few TQA past winners so the past NQA winners from throughout Southeast Asia should be will be analyzed. Because all countries throughout Southeast Asia has adopted the criteria from MBNQA as shown in table 1. This commonality was the reason for using as the group past winners representative. There were seven countries in Southeast Asia that have launched their own National Quality Award reward program; Indonesia, Singapore, Malaysia, Thailand, Vietnam, Philippines, and Brunei.

Table 1 Summary of the national quality awards in Southeast Asia

Country	Award name	Year founded	Responsible organization	Model used
Malaysia	Quality Management Excellence Award(QMEA)	1990	Malaysia Productivity Corporation (MPC)	Malcolm Baldrige and Deming Prize
Singapore	Singapore Quality Award(SQA)	1994	The Standards, Productivity and Innovation Board (SPRING)	Malcolm Baldrige
Vietnam	Vietnam Quality Award(VQA)	1996	Directorate for Standards, Metrology and Quality (STAMEQ)	Malcolm Baldrige
Philippines	Philippine Quality Award(PQA)	1997	Department of Trade and Industry (DTI) and Development Academy of the Philippines	Malcolm Baldrige
Thailand	Thailand Quality Award(TQA)	2002	Foundation for Thailand Productivity Institute (FTPI)	Malcolm Baldrige

Table 1 (Continued)

Country	Award name	Year founded	Responsible organization	Model used
Indonesia	Indonesia Quality Award(IQA)	2005	Indonesian Quality Award Foundation (IQAF)	Malcolm Baldrige
Brunei	Brunei Civil Service Excellence Award	N/A	Brunei Darussalam's Civil Service	N/A

According to any quality certifications earned were the signals of effective quality also reliability. It attributed customer attention and influenced positive impacts such as financial improvement etc. These positive impacts motivated the organizations to eager for any certifications achievement that provided the reputation also the performance improvement. Many Thai applicants applied for TQA last decade since Thailand Quality Award application has been established. It was undeniable that almost the applicants desired to obtain the award but finally there were some applicants achieved it and some applicants did not. So this is the motivation for this research to determine and distribute the significant common successful characteristics among the past winners that influences the award achievement. Some hypothesis was set up base on the award criteria that might be the key factors to win the award.

Due to many companies would like to know how many years of preparation will be used until success TQA. This study analyzed the relationship between the particular successful firm characteristics and duration spent for award preparing until the award achievement. The year of receiving ISO 9000 was used as a reference point

so duration in this case was number of years spent to raise company maturity from ISO 9000 level to TQA achievement. ISO 9000 itself was a representative of the beginning in quality management maturity. Both ISO 9000 series and business excellence models are based on TQM philosophy but there was a big gap of maturity level between them (B.G. Dale *et al*., 2000). ISO 9000 standards mainly concerned of effective documentation; the quality policy, standardization of procedures, defect identification and elimination, system for corrective and preventive action to improve profit margin. The excellence models focused on the improvement for all activities and the goal was customer satisfaction receiving, so excellence model was broader than ISO 9000 series. Thus, ISO 9000 series were the primary indicator of TQM maturity initiative. George and Katerina (1996) concluded that ISO 9000 standards have relation to the target of total quality management. An organization should follow ISO 9000 standards first and then implement TQM practices to improve the profit margin and customer retention (Ron Kurtus, 2001).Dale *et al*. (2000) also concluded that organizations need some practices and experiences with TQM before being able to effectively use self-assessment against an excellence model. However there were some past winners did not receive any ISO 9000 series certifications before received NQA.

However the number of years spent after receiving ISO 9000 until NQA varied among organizations. The duration spent might reflect the difficulty of driving organization towards NQA achievement. Less time spent might refer to less difficult to manage and have more capability to success NQA but using more time means there might be more difficulty to improve performance within organization. For the characteristics that influenced obtaining NQA in short period of time were considered as the successful characteristics. Those characteristics were the answers that the TQA applicants might like to know if there were any relationship between the characteristics and duration for TQA preparation and also the TQA roadmap.

The findings from this research will be useful for Thai companies also the companies those have established their own National Quality Award (NQA) based on MBNQA and are looking for their home National Quality Award (NQA). The reason

that the company desires to obtain the award is to get practices and to improve the performance in long run in order to serve the customer wants and needs at the high level of satisfaction. These research findings will be useful for any applicants that desire to apply the NQA program to improve their capability and intend to obtain the award recognition. The key successful characteristics that have positive relationship with NQA will be determined in this study and the lesson learned from Southeast Asia past winners will be discussed. This research will assist the senior and leader to draw a decision of effective plan for improvement and award preparing to achieve NQA.

Background

Below was the summary of national quality awards throughout Southeast Asia. Thailand and Singapore have not defined the type of business categories but the other nations specified the eligible categories for the applicants as follow.

Philippines

1. Private Sector
   1.1 Small and Medium Companies
   1.2 Big Companies
2. Public Sector
3. Subsidiaries

Indonesia

1. Big companies amounted to USD 95 million (Employees greater than 1,000; revenue greater than 1 trillion; coverage greater than 10 branches)
2. Medium Companies amounted to USD 70 million (Employees up to 1000 people; revenue to 1 trillion)
3. Health institutions amounted to USD 70 million
4. Education Institutions amounted to Rp. 50 million

5. Public Sector

Vietnam

1. Big production companies
2. Small and medium production companies
3. Big service companies
4. Small and medium service companies

Malaysia

1. Local company with annual sales turnover not exceeding RM10 million
2. Local company with annual sales turnover between RM10 million to RM25 million
3. Local company with annual sales turnover between RM25 million to RM100 million
4. Local company or Multinational Company (MNC) with annual sales turnover exceeding RM100 million

According to table 1, unavailable to access the information of Brunei past winners so Brunei past winners were unfortunately neglected from this study. As shown in table 1, NQA program was relatively new for Southeast Asia which has the average years of experience at only a decade, especially Thailand and Indonesia that have the lowest experience with NQA program. In other words, Southeast Asia was currently at the early stage of developing NQA.

As of the original model; Malcolm Baldrige National Quality Award (MBNQA), it was an annual award given by the president of the United States. At the early stage, MBNQA was raised and spearhead by American Productivity & Quality Center (APQC). The award established in 1987 and name honors Baldrige who served as United States Secretary of Commerce during U.S. president Ronald Reagan administration as well as a proponent of quality management. The first awards were

presented in 1988 and it was administered by the Baldrige Performance Excellence Program, which was managed by the National Institute of Standards and Technology (NIST), an agency of the U.S. Department of Commerce. NIST also established the award criteria assessment.

The award criteria were separated into seven criteria and the Baldridge performance excellence framework was shown as figure below.

Figure 1 Baldrige Criteria for Performance Excellence Framework

Source: U.S. Department of Commerce National Institute of Standards and Technology (2013)

Organizational profile defined the context for the operation, environment, relationship, challenges and strategic advantage approach framework for operation result management system. This framework was separated into two aspects.

1. System operation

The operation system was separated into two groups as Leadership group which was the box number 1-3 and Result group which was the box number 5-7. For Leadership group, box 1-3 were grouped together to emphasize that leadership should focus on strategies and customers. The company leaders should define the

organization direction and looking for future business opportunities. For result group, employee and operation were the key factors to complete operation and lead to operation result of company overall.

2. System basis: Box number 4.

All operation heads to the outcomes which composed of the product and process outcomes, customer-focused outcomes, workforce-focused outcomes, leadership and governance outcomes, financial and market outcomes. The horizontal arrow was the link between leadership group and result group. The vertical was the link between box number 4; Measurement, analysis, and knowledge management and the link of leadership group with result group. The bi-directional arrows demonstrated the effective feedback to operation result management system.

For the scoring system, all together the criteria were added up to 1,000 points. The details were shown in table 2.

Table 2 MBNQA Criteria 2011-2012

Number	Categories	Category points
1	Leadership	**120**
	1.1 Senior Leadership	70
	1.2 Governance and Societal Responsibilities	50
2	Strategic planning	**85**
	2.1 Strategy Development	40
	2.2 Strategy Implementation	45
3	Customer focus	**85**
	3.1 Voice of the Customer	45
	3.2 Customer Engagement	40

Table 2 (Continued)

Number	Categories	Category points
4	Measurement, analysis, and knowledge management	**90**
	4.1 Measurement, Analysis, and Improvement of Organizational Performance	45
	4.2 Management of Information, Knowledge, and Information Technology	45
5	Workforce focus	**85**
	5.1 Workforce Environment	40
	5.2 Workforce Engagement	45
6	Operation focus(formerly known as Process management)	**85**
	6.1 Work Systems	45
	6.2 Work Processes	40
7	Results (Performance outcomes)	**450**
	7.1 Product and Process Outcomes	120
	7.2 Customer-Focused Outcomes	90
	7.3 Workforce-Focused Outcomes	80
	7.4 Leadership and Governance Outcomes	80
	7.5 Financial and Market Outcomes	80
	Total points	**1,000**

Source: U.S. Department of Commerce National Institute of Standards and Technology (2012)

The award was given across six categories as follow:

1. Manufacturing
2. Service

3. Small business
4. Education
5. Healthcare
6. Nonprofit/Government

The MBNQA was given to U.S. organizations that have exemplary achievements across seven categories below:

1. Leadership which referred to the ability of top management, how they lead the organization vision and goals.

2. Strategic Planning which referred to how well the process of strategy was formulated and mapped also transferred to all employees.

3. Customer and Market focus which referred to how well the company focused on customer wants or needs and also customer loyalty.

4. Performance Measurement which referred to evaluation of the progress with how well the company analysis and improved the operation results.

5. People Focus which referred to how well attend against quality human resource development including creation of friendly environment in the organization and harmony among employees.

6. Process Management which referred to focus on how well the company designed and improved major work process and led to have the same approach throughout the organization.

7. Result which referred to focus on the operation and improvement results for all aspect and compare to the competitors.

The Baldrige criteria have been modified every two years to update and review the possible criteria that appropriate for the current situation. The current criteria in year 2011-2012 remained the same total score of each criterion when compare to the last criteria in 2009-2010 but difference in detail of sub criteria. As shown in table 3 was the last updated from NIST for year 2011-2012 criteria. The winners have to meet minimum total score at least 700 points for the award.

Thailand has identical adopted all the criteria from MBNQA but slightly different score weighting but TQA winners have to meet the minimum total score at least 650 points.

Table 3 TQA Criteria 2012-2013

Number	Categories	Category points
1	Leadership	**110**
	1.1 Senior Leadership	60
	1.2 Governance and Societal Responsibilities	50
2	Strategic planning	**90**
	2.1 Strategy Development	40
	2.2 Strategy Implementation	50
3	Customer focus	**100**
	3.1 Voice of the Customer	50
	3.2 Customer Engagement	50
4	Measurement, analysis, and knowledge management	**90**
	4.1 Measurement, Analysis, and Improvement of Organizational Performance	50
	4.2 Management of Information, Knowledge, and Information Technology	40

Table 3 (Continued)

Number	Categories	Category points
5	Workforce focus	**100**
	5.1 Workforce Environment	45
	5.2 Workforce Engagement	55
6	Operation focus(formerly known as Process management)	**110**
	6.1 Work Systems	60
	6.2 Work Processes	50
7	Results (Performance outcomes)	**400**
	7.1 Product and Process Outcomes	130
	7.2 Customer-Focused Outcomes	75
	7.3 Workforce-Focused Outcomes	65
	7.4 Leadership and Governance Outcomes	65
	7.5 Financial and Market Outcomes	65
	Total points	**1,000**

Source: The Foundation for Thailand Productivity Institute (2012)

As shown in table 4 criteria and scoring system were almost adopted from MBNQA model. The criteria were focus on Result and Leadership while the remaining criteria were almost equally likely score rating.

Table 4 Criteria Assessment and scoring system comparison in SEA representatives

Categories	Country					
	ID	PH	VN	TH	SG	MY
1.Leadership	120	120	120	110	120	150
2.Strategic planning	85	85	85	90	70	120
3.Customer focus	85	85	85	100	100	110
4.Measurement, analysis, and knowledge management	90	90	90	90	70	90
5.Workforce focus	85	85	85	100	100	90
6. Operation focus	85	85	85	110	90	90
7.Results (Performance outcomes)	450	450	450	400	450	350
Total	1,000	1,000	1,000	1,000	1,000	1,000

Note ID = Indonesia, PH = Philippines, VN = Vietnam, TH = Thailand, SG = Singapore, MY = Malaysia

As data shown in table 4, each country used different score rating but except Indonesia, Philippines, and Vietnam that used identically the same rating as MBNQA criteria. All country was significantly focused on performance outcomes and secondary on leadership.

The award applicants in each country have to meet the minimum score as described in table 5 in order to obtain the award. There were only four countries which were Thailand, Vietnam, Singapore, and Malaysia that separated the prize into two levels; award level which was highest level and certification level which was lower level. For example, Thailand set the award criteria of Thailand Quality Award(TQA) at more than 650 points for TQA winners and for above 350 points but less than 650 was considered as Thailand Quality Class(TQC) or certification level. For Singapore scoring system and Malaysia were used the same scoring system which

was more than 700 points for award achievement and for the certification level was more than 400 points but less than 700 points. For Vietnam, there was only award level without certification level. Vietnam Quality Award was set at more than 600 points but if the company reaches more than 800 points will be served with Gold Prize award.

Table 5 Scoring system for Thailand, Vietnam, Singapore, and Malaysia

Country	Award name	Score
Thailand	- Thailand Quality Award(TQA)	> 650
	- Thailand Quality Class(TQC)	350-649
Vietnam	- Vietnam Quality Award with Gold Prize	> 800
	- Vietnam Quality Award(VQA)	600-799
Singapore	- Singapore Quality Award(SQA)	> 700
	- Singapore Quality Class(SQC)	400-699
Malaysia	- Quality Management Excellence Award(QMEA)	> 700
	- Malaysia Productivity and Innovation Class(MPIC)	400-699

However Indonesia and Philippines have distinct criteria, they did not separate the level of the prize. For Indonesia Quality Award, all of the participants that attended the program will be awarded at any total points but different level as shown in table 6. The scoring system of Indonesia was separated into 7 levels as shown in table 6 below. For the company that reached above Industry Leader level will be called as Performance Excellence Growth Achievement with gold, silver, and bronze. In addition, for the highest score among participants will be awarded as platinum award. For this study, the company that reached over Emerging Industry Leader level

will be counted as a group representative because the total score at this level was equal to the total score for award level of Thailand, Singapore, Malaysia, and Vietnam

Table 6 Scoring system for Indonesia Quality Award

Recognition	Score
World Class Leader	876 - 1000
Benchmark Leader	776 - 875
Industry Leader	676 - 775
Emerging Industry Leader	576 - 675
Good Performance	476 - 575
Early Improvement	376 - 475
Early Result	276 - 375
Early Development	0 - 275

Source: Krakatau Steel Company Limited, Indonesia (2012)

Philippines also separated their award into four levels which started to award the participants that reached over 200 points onward as shown in table 7. For the winners that reached at least level 3; Mastery in Quality Management will be counted as an award level for this research.

Table 7 Philippines scoring system

Award	Level 1: Commitment to Quality management (points)	Level 2: Recognition for Proficiency in Quality management (points)	Level 3: Mastery in Quality Management (points)	Level 4: Performance excellence (points)
Philippine Quality Award	200-399	400-599	≥600	≥700

Source: Department of Trade and Industry (DTI) and Development Academy of the Philippines (2012)

OBJECTIVES

The objectives of this research are to provide the primary roadmap to success TQA also determine the successful firm characteristics from the past winners that associated to the length of time in order to achieve TQA. The results will be useful as the primary guidance or approach for any companies that desire to achieve TQA not only for Thai companies but also any companies in other countries that used MBNQA as the award criteria.

LITERATURE REVIEW

Since many countries in Southeast Asia have launched their own National Quality Award reward programs based on MBNQA for short period so there were not many researchers have studied about this subject. Almost research about National Quality Award program have studied about the impacts after earned the award and stated that there was always gain positive results.

Abby and Hong Seng Woo (1996) researched on the benefit of four major quality awards which were Deming, European Quality Award, Malcolm Baldrige National Quality Award, and Australian Quality Award. They concluded that the self-assessment and taking part in the award process was beneficial. Participating national quality award process offered opportunities for improvement. The relationship between total quality management practices and operational performance received much national and international attention. Each award has its unique characteristics however they all attempt to propagate quality management practices. Garvin (1991) argued that the Baldrige Award was a strong predictor of long-term survival and a leading indicator of future profitability. There were researchers that studied about the relationship between TQM and customer satisfaction, for example, Mile (2006) confirmed that quality management practices have positive impact to customer satisfaction and productivity improvement.

Kevin and Vinod (2000) have extended research on TQM and financial performance by examining how the impact of TQM on financial performance was moderated by various firm characteristics. They studied the characteristics of the firms that have the effective in TQM that related change in operating income based on five hypotheses ; Firm size, Capital intensity of the firm, Firm diversification, Maturity of the TQM implementation, Timing of effective TQM implementation. Single-factor analysis of variance (ANOVA) technique was used for testing the hypotheses. The results emerged that all of the investigated companies have financial improvement but vary among firms characteristics. The evidence showed that small

firms did better than large firms. Less Capital intensity firms did better than more Capital intensity firms. Less diversified firms did better more diversified firms. Firms that have won awards from independent award (more maturity) givers did better than the supplier award winners. Finally, there was no difference between the performance of earlier and later implementation of effective TQM. From Kevin and Vinod research showed an example of characteristics that influence improvement of financial performance successful after implement effective TQM. The financial improvement referred to improvement in customer satisfaction.

1. Firm size

According to Kevin and Vinod research showed financial performance result was varied among the difference characteristics. There were many research investigated the difference of firm characteristics and competitive advantage, for example the firm size. Chen and Donald (1994), researched on how competitive behavior of small firms differ from large firms. The small firms were the faster implementors for their competitive actions and also quickly respond in execute actions due to their simple structure in contrast to the large firms which have more complex organization structure. Thus the size of the company may be a characteristic that relevant to the length of time the company spent after received ISO 9000 until TQA achievement. So the first hypothesis was that

Hypothesis 1*: There is relationship between size of company and the length of time spent to achieve TQA.*

2. Firm type (Private firm/Public agency)

George (2002) researched about the difference between public and private management by investigated from various researches. He found evidences that made public and private different; Emma and Crow (1988) have found that private firms more focus on commercial objectives while public firms concern about public needs. For the difference in structures of public and private agencies, there was strong

support by Bretschneider's (1990) that public agencies took longer decisions making regarding to more red tape exist. There were six studies strong supported that public organizations were more bureaucratic; Emmert and Crow (1988), Holdaway *et al.* (1975), Lan and Rainey (1992), Rainey (1983), Scott and Falcone (1998), Zeffane (1994). However Buchanan's (1975) argued that the rules and regulations were stronger in private firms. So different structural in private firm and public agency might lead the company spent the different length of time spent for achieve TQA. This perspectives influenced hypothesis number two that

Hypothesis 2*: There is relationship between types of company (Private firm/Public agency) and the length of time spent to achieve TQA.*

3. Firm type (Manufacturer/Service company)

From Nicholas *et al.* (1997) questionnaire survey showed that manufacturers use more quality management practices. So the quality practices might different among manufacturer and service companies also lead to spend the different length of time spent for achieve TQA. Therefore, hypothesis number three was that

Hypothesis 3*: There is relationship between types of company (Manufacturer/Service provider) and the length of time spent to achieve TQA.*

4. Firm type (Parent/Subsidiary)

As the roles of subsidiaries were mandated under its parent company, so their growth and performance were rely on the successful of its parent as well. The reason was that parent company hold the share over 50% in its subsidiaries and considered as major shareholder so their competences were said to be under their parent rules. Some subsidiaries have their own top management board without sharing with their parent. John and Ram (2005) stated about the relationship between parent company that almost subsidiaries were that multinational enterprises (MNEs) which located Research and Development (R&D) in their subsidiaries abroad mainly for the

purposes of the products development also adaption of processes for their parent. They found R&D at subsidiaries rose in competence-creating but it failed to competence-exploiting at subsidiaries themselves so this led the disadvantages to subsidiaries. To control and manage MNE subsidiaries, the knowledge transfer was a crucial part for parent company. The subsidiaries functions almost depend on their parent strategies that made them dependent. The knowledge transfer from the parent companies was an important part indicated the performance to survive in the future. However subsidiaries were considered as an assistant of parent companies to improve performance but these executions seem worthless to their site due to different organization structure. So different management structure in parent company and subsidiary might lead the company spent the different length of time spent for achieve TQA. Therefore, hypothesis number four was that

Hypothesis 4*: There is relationship between types of company (Parent/Subsidiary) and the length of time spent to achieve TQA.*

5. Firm type (Foreign owned company/Domestic owned company)

Horwitz and Darren (1998) investigated about comparing the human resource management in domestic-owned companies and foreign-owned companies in South Africa. They supported that temporary employees or part time employees were significantly hired in foreign-owned company. Also the use of contractors or consultants was greater in foreign-owned compared to domestic-owned company for non-core business. This process influenced lower labor cost to foreign-owned company than domestic-owned company. The proportion of temporary employment in foreign-owned companies was higher than domestic-owned and they always used temporary agencies when encountered with additional short-term demand. Thus, from M. Horwitz and Darren A. Smith research could be concluded that foreign-owned companies have flexible practices in human resource management than domestic-owned. José and Pedro (2002) researched about patterns of entry, post-entry growth, and survival of domestic and foreign-owned firms. They discovered that the number of foreign-owned entrants were lower than domestic firms but enter with larger size in

form of acquisition rather than green field mode. The reasons of enter as large business with acquisition mode due to they have financial support from their parent company and have less financial constraints than domestic companies. Another advantage of acquisition the local companies at the economic depress period was that hence advantage to foreign firms because of they have less to learn from being in the new market in the local environment. For the other strengths of foreign-owned companies that José and Pedro have found was higher college and school degrees employees than domestic firm as well as employ more and more people as they mature. For the survival rate after the enter into the market for seven years, it was found that foreign-owned companies have higher survival rate and lower hazard rate than domestic company. In other words, domestic companies have high potential to exit the market in almost all period of observation. For post-entry growth observation after five years survival showed that both domestic and foreign companies have grown in size over their lives but faster rate in foreign firms. So these evidences showed that the different between foreign owned company and domestic owned company exist. Thus, this support influenced hypothesis number five that

Hypothesis 5*: There is relationship between types of company (Foreign owned company/Domestic owned company) and the length of time spent to achieve TQA.*

6. Quality award

For the companies that received any quality awards prior NQA achievement were considered as having TQM maturity initiative. This quality acquisition was more likely to influence business excellence award or NQA easier than the companies which have not started implement TQM or do not have any quality certifications yet. Kelvin and Vinod (1997) supported that the winning of quality award was recognized to have effective TQM implementation. The evidence showed there was changing in operating performance for the firms that have won quality awards such as operating income also do better on sales growth. So the quality award might be the indicator of TQA successful and the length of time might different among the company that have or have not quality award prior TQA obtaining. Thus, hypothesis number six was that

Hypothesis 6*: Quality award status relates to the length of time spent to achieve TQA.*

7. ISO 14001

Commitment to environmental protection might be a factor to get sustainable competitive advantage in long run. Goh *et al.* (2006) provided that some empirical evidences of ISO 14001 certification have a positive impact on company performance, specifically on perceived economic and environmental impact as well as perceived customer satisfaction. Notification of ISO 14001 to customer influenced purchase and resulted to high returns and indicated that the company response for the social and environmental. ISO 14001 was more likely related to TQA criteria number 1.2 that talking about social responsibility and this notification might related to the length of time. Thus, hypothesis number seven was that

Hypothesis 7: *ISO 14001 certification status relates to the length of time spent to achieve TQA.*

8. Employee focus award

Employee focus was related to one of the TQA criteria number 5; Workforce focus. It was one factor that the company should practice with outstanding attention to manage and enhance the performance of employees in order to obtain TQA. The result of Gedaliahu and Shay (1999) indicated that there was a positive correlation among several HRM activities. There was a strong and significant relationship between employees training and firm performance also the employee selection. Selecting those candidates that fit the needs of the job influenced the organization performance. In addition, receiving any HRM certification was considered as an indicator that reflected the maturity of HRM that could enhance the company performance and obtain TQA eventually but the length of time might be different among the company which have or have no employee focus award prior TQA obtaining. Thus, hypothesis number eight was that

Hypothesis 8*: Employee focus award status relates to the length of time spent to achieve TQA.*

9. Company Age

Kevin and Vinod (2000) suggested that it was never too late to invest TQM. Rhee's (1995) model showed that the company which adopted TQM earlier could earn positive return earlier than the competitors which implemented TQM later. Therefore, the earlier implementors have more chance to acquire the customer loyalty earlier than the late implementors which will be the advantage at the early day. So this research also commented that the companies which entered into the market earlier were considered to have more maturity in TQM practices also having better performance than other younger companies. Therefore the length of time might be different among the older company and younger company. Thus, hypothesis number nine was that

Hypothesis 9*: Age relates to the length of time spent to achieve TQA*

MATERIALS AND METHODS

Materials

The materials for this research were categorized into two groups as follow,

1. Hardware

A personal computer, Intel core i3, 2.53 GHz and Ram 4.00 GB, was used to collect the raw data, analyze and determine the statistic results.

2. Software

2.1 The Microsoft Word 2007 was used for generate all research document.

2.2 The Microsoft Excel 2007 was used for testing Correlation analysis.

2.3 Minitab 15 was used for testing Chi-Square test.

2.4 SPSS 16 was used for determine correlation coefficient.

Methods

Due to Thailand have only four past winners for TQA then Southeast Asia past winners were selected as a group representative for data analysis. The winners which obtained their home award at the award level will be investigated excluding class level. This research intended to investigate from the winners which reached the total score at the award level because they were presumed to have more maturity and considered as a best practice model. Investigation from the maturity model provided more clear implication of successful than study from whom at the beginning of maturity. In summary, there were the past winners from six countries; Thailand, Singapore, Malaysia, Vietnam, Indonesia, and Philippines to be analyzed. Due to Indonesia and Philippines have not separate their NQA into award level and class level so the Indonesia past winners which obtained at least Emerging Industry Leader level and Philippines past winners that reached at least level 3; Mastery in Quality Management will be included as the winners at the award level representatives in this research. This was because of the score points at Emerging Industry Leader level of

Indonesia Quality Award (IQA) and level 3; Mastery in Quality Management of Philippine Quality Award (PQA) were similar to the average of others countries at award level which approximately 600 total points.

There were total 60 past winners throughout Southeast Asia to be analyzed for this research. All the past winners referred to the past award recipients which received their home National Quality Award (NQA) in the past. The data were collected between the first years of NQA establishment of those countries until year 2012. All of hypotheses were set up based on the tangible results of quality practices, for example, the award including trophy or certifications received and some of hypotheses were set up based on MBNQA criteria excellence framework. To test all hypotheses, Correlation analysis and Chi-Square testing were the methods used for data analyzing. Regarding to hypotheses, Correlation analysis and Chi-Square testing were the methods for testing the correlation between variables however it cannot answer which variable was better. The correlation coefficient (r) will be determined to confirm the relationship between the variables of any hypothesis whose result showed there was association between the variables by using correlation coefficient (r) to present the level of dependence.

Correlation Analysis

Correlation analysis was a statistic method for testing hypothesis number 9; Age relates to the length of time spent to achieve TQA. The hypotheses were stated below.

H_0 : Age of firm and the length of time are independent.

H_1 : Age of firm and the length of time are related.

Correlation analysis was a statistical method for testing the level of dependence between two variables those were represented in numbers using correlation coefficient(r) as an to indicator of the dependence level which varied between -1 to 1 by the minus sign represented contrast relationship and the positive

sign represented positive relationship between variables.

r = 0.50 to 1.00 or r = -0.5 to -1.00 There was high association between two variables.

r = 0.30 to 0.50 or r = -0.30 to -0.50 There was moderate association between two variables.

r = 0.10 to 0.30 or r = -0.10 to -0.30 There was low association between two variables.

r = 0 to 0.09 or r = -0.09 to 0 Two variables were independence.

Table 8 Correlation coefficient(r) range

Correlation	Negative	Positive
None	−0.09 to 0.0	0.0 to 0.09
Small	−0.3 to −0.1	0.1 to 0.3
Medium	−0.5 to −0.3	0.3 to 0.5
Strong	−1.0 to −0.5	0.5 to 1.0

Source: Hinkle D. E. (1998)

According to the unavailable of the year founded for some companies so there were total 54 representatives remaining for this test. The age of company was the number of year difference between the year of receiving NQA and company's year founded. For the definition of another variable, the length of award preparation was the year difference between the year of receiving NQA and the year receiving ISO 9000 series.

Chi-Square test of association

For the rest of other hypothesis were tested by using Chi-Square test. Chi-Square test was used for the test of independence among the pair of variables which was quality data based on hypothesis as follow;

H_0 : The two variables are independent.

H_1 : The two variables are related.

If H_1 (alternative hypothesis) is accepted that is the two variables are related. The level of dependence between the pair of variables can be determined by using Contingency Coefficient(C). Typically there are two famous method called Pearson and Cramer's Phi.

Pearson Method

$$C = \sqrt{\frac{\chi^2}{\chi^2 + n}}$$

C = Contingency Coefficient (not exceed 1.00)

n =Total observations (exceed 0)

χ^2 = Chi-Square value

There is no relationship between the variables if $C = 0$. There is high level of dependence between variables if the value of C is high accordingly. For 2x2 table, the value of C should not be exceed 0.707 and 0.816 for 3x3 table by the maximum value of C can be determined from the equation below;

$$C_{max} = \sqrt{\frac{(k-1)}{k}}$$

C_{max} = The maximum value of contingency coefficient

k = The minimum number of rows or columns, whichever is less

The 2x3 tables (2 rows, 3 columns) with pairing variables was conducted with one of the variable was the company characteristics based on each hypothesis and another variable was the length of time for award preparation. For the length of award preparation was divided into three types; less than or equal to 6 years as using less time , 7 to 12 years as using moderate time, and more than 13 years as long time. To make a decision whether reject or accept the null hypothesis, p-value will be calculated for making decision. If p-value is less than or equal to 0.05 the null hypothesis will be rejected (two variables are related) otherwise accepted (two variables are independent). The 2x3 tables were shown below to represent the frequency of amount of companies which fell into the following criteria contained in the table.

Hypothesis 1

There is relationship between size of company and the length of time spent to achieve TQA.

Chi-square hypothesis:

H_0 : Size and the length of time are independent.

H_1 : Size and the length of time are related.

The size of company was categorized by using number of full time employees. The cutoff point of this research was 500 people employing according to MBNQA definition as small business that have less than 500 employees and large business that have more than 500 employees.

The 2x3 table for Chi-Square test was designed as follow.

Table 9 Chi-Square table for hypothesis number 1

Size	Time duration spent			Total(companies)
	Less	Moderate	Long	
Big	32	8	6	46
Small	9	2	3	14
Total(companies)	41	10	9	60

Hypothesis 2

There is relationship between types of company (Private firm/Public agency) and the length of time spent to achieve TQA.

Chi-square hypothesis:
H_0 : Type of firm(public/private) and the length of time are independent.
H_1 : Type of firm(public/private) and the length of time are related.

For this research, public agency means non profit or profit organization that established by the government and provided the service for the public including public sector, state enterprise.

The 2x3 table for Chi-Square test was designed as follow.

Table 10 Chi-Square table for hypothesis number 2

Type	Time duration spent			Total(companies)
	Less	Moderate	Long	
Private	34	7	7	48
Public	7	3	2	12
Total(companies)	41	10	9	60

Hypothesis 3

There is relationship between types of company (Manufacturer/Service companies) and the length of time spent to achieve TQA.

Chi-square hypothesis:

H_0 : Type of firm (manufacturer/service companies) and the length of time are independent.

H_1 : Type of firm (manufacturer/service companies) and the length of time are related.

The 2x3 table for Chi-Square test was designed as follow.

Table 11 Chi-Square table for hypothesis number 3

Type	Time duration spent			Total(companies)
	Less	Moderate	Long	
Manufacturing	26	8	4	38
Service	15	2	5	22
Total(companies)	41	10	9	60

Hypothesis 4

There is relationship between types of company (Parent/Subsidiary) and the length of time spent to achieve TQA.

Chi-square hypothesis:
H_0 : Type of firm (parent/subsidiary) and the length of time are independent.
H_1 : Type of firm (parent/subsidiary) and the length of time are related.

Parent company was the shareholder that holds more than 50% of shares in another company and having the right to control that company. For the company that was under the parent called subsidiary. In this research, parent company also referred to the independence company that has no its subsidiary to control and no any other company control it.

The 2x3 table for Chi-Square test was designed as follow

Table 12 Chi-Square table for hypothesis number 4

Type	Time duration spent			Total(companies)
	Less	Moderate	Long	
Parent	20	4	3	27
Subsidiary	21	6	6	33
Total(companies)	41	10	9	60

Hypothesis 5

There is relationship between types of company (Foreign owned company/Domestic owned company) and the length of time spent to achieve TQA.

Chi-square hypothesis:
H_0 : Type of firm (foreign owned/Domestic owned) and the length of time are independent.
H_1 : Type of firm (foreign owned/Domestic owned) and the length of time are related.

Foreign owned company was fully or partially owned as well as joint venture by foreign shareholders that hold more than 50% of shares. It was also referred to Multinational companies (MNCs) and International companies. In opposite with domestic owned company has less than 50% of foreign shareholders or fully owned by domestic shareholders. Sometimes the foreign owned company has the status of subsidiary.

The 2x3 table for Chi-Square test was designed as follow.

Table 13 Chi-Square table for hypothesis number 5

Type	Time duration spent			Total(companies)
	Less	Moderate	Long	
Foreign	10	2	2	14
Domestic	31	2	7	40
Total(companies)	41	4	9	54

Hypothesis 6:

Quality award status relates to the length of time spent to achieve TQA.

Chi-square hypothesis:

H_0 : Quality status and the length of time are independent.

H_1 : Quality status and the length of time are related.

Quality award in this case means any award that the company received regarding to their excellence quality services or products.

The 2x3 table for Chi-Square test was designed as follow.

Table 14 Chi-Square table for hypothesis number 6

Quality status	Time duration spent			Total(companies)
	Less	Moderate	Long	
With QA	30	8	8	46
Without QA	11	2	1	14
Total(companies)	41	10	9	60

Hypothesis 7

ISO 14001 certification status relates to the length of time spent to achieve TQA.

Chi-square hypothesis:

H_0 : ISO 14001 status and the length of time are independent.

H_1 : ISO 14001 status and the length of time are related.

The 2x3 table for Chi-Square test was designed as follow.

Table 15 Chi-Square table for hypothesis number 7

ISO 14001 status	Time duration spent			Total(companies)
	Less	Moderate	Long	
With ISO 14001	20	7	7	20
Without ISO 14001	21	3	2	21
Total(companies)	41	10	9	41

Hypothesis 8

Employee focus award status relates to the length of time spent to achieve TQA.

Chi-square hypothesis:

H_0 : Employee focus award status and the length of time are independent.

H_1 : Employee focus award status and the length of time are related.

Employee focus award refers to the excellence approach of managing people through the people system not only focusing on training but also employee well-being.

The 2x3 table for Chi-Square test was designed as follow.

Table 16 Chi-Square table for hypothesis number 8

Employee focus award status	Time duration spent			Total(companies)
	Less	Moderate	Long	
With award	7	3	6	16
Without award	34	7	3	44
Total(companies)	41	10	9	60

RESULTS AND DISCUSSION

Results

The results of Chi-Square test for hypothesis number 1 to 8 were described as the following. As mentioned earlier in Methodology part, H_0 was rejected if p-value less than 0.05 otherwise accepted. The significant level was set at 0.05. The summary results were shown below.

Table 17 Chi-Square summary results for hypothesis number 1 to 8

Hypothesis	Characteristics	P-value	Reject/Accept H_0
1	Size (small/big)	0.737	Accepted
2	Public/Private	0.657	Accepted
3	Manufacturing/Service	0.275	Accepted
4	Parent/Subsidiary	0.659	Accepted
5	Foreign/Domestic owned company	0.516	Accepted
6	Quality award	0.579	Accepted
7	ISO 14001 certification	0.183	Accepted
8	Employee focus award	0.009	Rejected

In summary, H_0 was accepted for hypothesis number 1 to 7 in other words the characteristics of hypothesis number 1 to 7were independent or there was no any relationship with the length of time spent for TQA preparation. There was only one hypothesis number 8 that showed the employee focus award associate to length of time spent to achieve TQA at the medium level of correlation coefficient(r) of 0.367

The result of Correlation analysis for hypothesis number 9 was described as below.

Hypothesis 9

Age relates to the length of time spent to achieve TQA

Table 18 Correlation Coefficient (r) output from excel for hypothesis number 9

	Column 1	Column 2
Column 1	1	
Column 2	0.2498	1

From table 18 the correlation coefficient(r) equals to 0.2498. The scattering plot was another method to determine the correlation coefficient(r) and the output was shown as the figure 2 below.

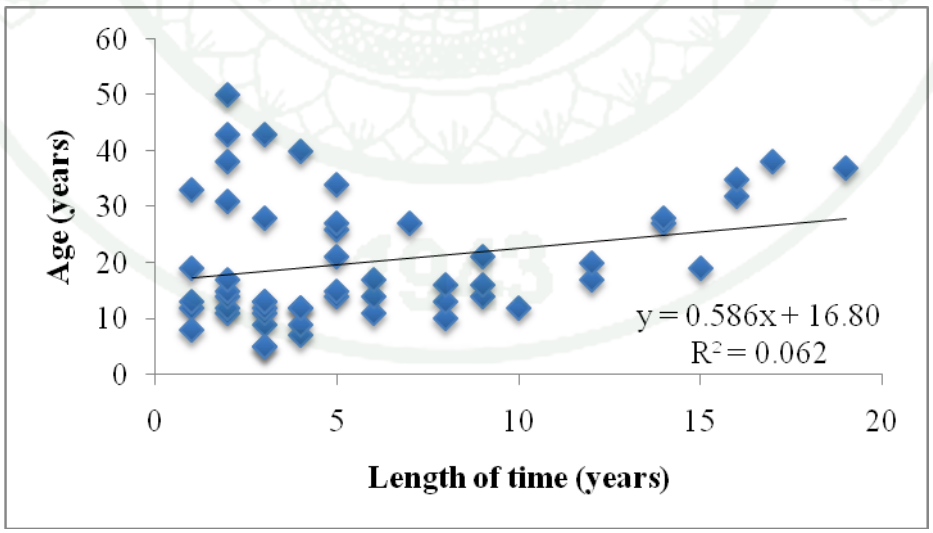

Figure 2 Scattering plot of the correlation between age and the length of time for NQA preparation.

According to the scattering plot, the coefficient of determination (r^2)was equal to 0.0624 and the scattering data set was more likely spread away from the linear line. The coefficient of correlation (r) was equal to square root of r^2, thus r was equal to 0.2498 and approximately the same as in table 18 which represented the low level of correlation between the age and the length of time.

As mentioned earlier in Literature review part that (1995) suggested the companies which entered into the market earlier were relatively have more maturity that the younger companies that just entered the market recently and have low experience of running the business. Also according to Rhee's (1995) suggestions, the aging companies might used less time than the younger companies however Figure 2 shown that there were some high aging companies used less time than the younger companies but at the same time there were some younger companies that used less time as well. Moreover there were a few high aging companies that used longer time and these companies might be the error group. Therefore those groups were eliminated and the new scattering plot was revised as below result.

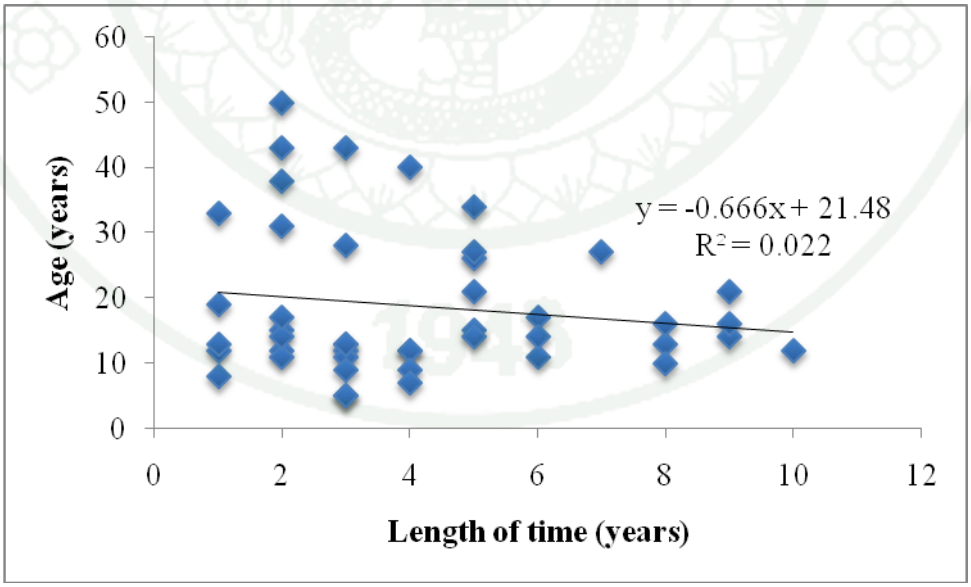

Figure 3 Scattering plot of the correlation between age and the length of time for NQA preparation after eliminate error.

After eliminated the error group the new correlation coefficient (r) was -0.1493 as shown in Figure 3. The negative sign of correlation coefficient (r) represented the opposite relation between the age of company and length of time. In other words, this new scattering plot confirmed that aging companies might used less time but younger companies spent longer time. Even though the error group was eliminated but the correlation coefficient (r) still represented at low level of association between age and length of time. In addition figure 3 showed there were some amounts of younger companies that used less time as same as the aging companies. In summary these findings represented there was relatively low correlation between age and length of time or it might be independent from each other.

Pearson correlation coefficient (r) output from SPSS program was shown as below figure.

Correlations

		Age of company	Length of time
Age of company	Pearson Correlation	1.000	.250
	Sig. (2-tailed)		.069
	N	54.000	54
Length of time	Pearson Correlation	.250	1.000
	Sig. (2-tailed)	.069	
	N	54	54.000

Figure 4 Pearson Correlation output for hypothesis number 9

SPSS program showed the Pearson Correlation value of 0.25. In summary, the level of dependence between the age of company and the length of time for award preparing from all three experiments presented the value of approximately as 0.25 which could be concluded that there was low level of association between age of company and the length of time for NQA preparation.

The length of times that the past winners representatives throughout Southeast Asia spent for preparing their NQA after received ISO 9000 varied among the representatives. Table 19 represented the descriptive statistics of overall average length of times of all representatives.

Table 19 Descriptive Statistics for the length of time for NQA preparation from past winners representatives throughout Southeast Asia

Descriptive Statistics	Value
Mean	6.0333
Standard Error	0.6284
Median	4
Mode	2
Standard Deviation	4.8676
Sample Variance	23.6938
Kurtosis	0.1716
Skewness	1.1247
Range	18
Minimum	1
Maximum	19
Sum	362
Count	60
Confidence Level (95.0%)	1.2574

From the descriptive statistics results as shown in table 19 showed that the past winners representatives throughout Southeast Asia spent the length of time for preparing their home NQA at average of 6 years with standard deviation of 4.87 years. So the average length of time was almost range from 1 year to approximately 11 years. The minimum length of time for NQA preparing was only 1 year and the maximum length of time was 19 years. The highest frequency that almost representatives spent for NQA preparing was 2 years and the bar chart of the time

used by each representative was shown below.

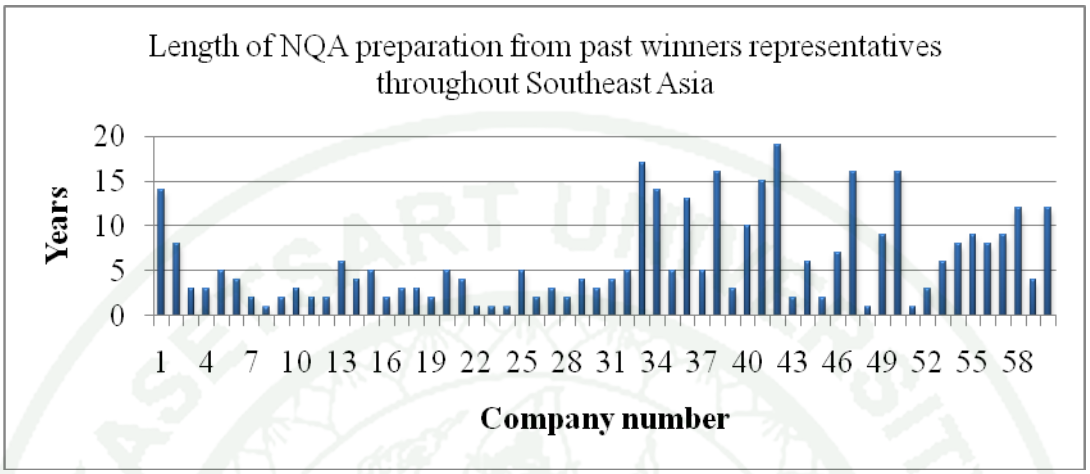

Figure 5 Bar chart to represent the time used by each representative throughout Southeast Asia

In summary, there were only two hypotheses results which were hypotheses number 8 and 9 showed their characteristics related to the length of time. However there were no any strong supported that those two hypotheses were strongly associated with the length of time due to they were related at low level of correlation and medium level of correlation. For the result of hypothesis number 8 revealed that the employee focus award status and the length of NQA preparation was related with the correlation coefficient of 0.36 which referred to medium level of dependence between the workforce focus award and the length of time. Also hypothesis number 9 revealed that the age was related with the length of NQA preparation with the correlation coefficient (r) of 0.25 that referred to there was low level of dependence. In contrast with the rest results of other hypotheses indicated the all characteristics were independent with the length of time.

Discussion

The results showed that almost characteristics stated in each hypothesis were independent from the length of times. However some hypotheses such as hypothesis number 8 (Employee focus award status) and 9 (Age) resulted that there were related to the length of time but related at low and medium level of correlation accordingly. For all hypotheses were set up based on the tangible characteristics and the results showed that these tangible characteristics were independent from the length of time. So they might be other intangible characteristics related such as leadership etc. which were the factors that should be focus on for further business improvement. In this research the author would like to clarify only for the leadership aspect because it was the starting point of all activity in the MBNQA framework as shown in Figure 1, without leadership initiatives other activities could not happen and might resulted unsuccessful TQA. To support this argument, there were the researchers Tipparat and Lawrence (2008) who researched about how effective leadership behavior affected the company performance by investigate the effects of leadership on quality management (QM) infrastructure practices of manufacturing companies in Thailand. They found that leadership behaviors supported human resource management which was one of infrastructure practice, which in turn supported statistical process control that was one core QM practice. The core practices significantly itself affected three quality performance measures which were product returns, product rework and scrap levels. From Tipparat and Lawrence research, it could be concluded that the leadership was the important factor to improve the company performance.

Secondly after reviewed and analyzed the top 50 brand value companies year 2013 it was found almost of them have no any NQA achievements. Table 20 below represented the global top 50 brand value companies list of year 2013. These 50 companies were the big global companies that were categorized by their brand value. John (2005) supported the Brand value reflected the quality perceived by the customers to the brand also the performance of the firms.

Table 20 Global top 50 brand value 2013

Rank	Logo	Company	Country	Business Type	Brand Value(USD millions)
1		Apple	USA	Mfg.	87,304
2	SAMSUNG	Samsung	Korea	Mfg.	58,771
3	Google	Google	USA	Service	52,132
4	Microsoft	Microsoft	USA	Service	45,535
5	Walmart	Walmart	USA	Service	42,303
6	IBM	IBM	USA	Service	37,721
7		GE	USA	Mfg.	37,161
8	amazon.com	Amazon.com	USA	Service	36,788
9	Coca-Cola	Coca-Cola	USA	Mfg.	34,205
10	verizon	Verizon	USA	Service	30,729
11		AT&T	USA	Service	30,406
12		Shell	Netherlands	Mfg.	29,752
13	vodafone	Vodafone	UK	Service	27,009
14	WELLS FARGO	Wells Fargo	USA	Service	26,044
15	TOYOTA	Toyota	Japan	Mfg.	25,979
16	NTT	NTT Group	Japan	Service	25,602
17		Volkswagen	Germany	Mfg.	23,666
18		The Home Depot	USA	Service	23,423
19	CHASE	CHASE Bank	USA	Service	23,408
20	中国移动通信 CHINA MOBILE	China Mobile	Hong Kong	Service	23,296
21		BMW	Germany	Mfg.	23,236
22	HSBC	HSBC	UK	Service	22,865

Table 20 (Continued)

Rank	Logo	Company	Country	Business Type	Brand Value(USD millions)
23		Bank of America	USA	Service	22,397
24		Citi	USA	Service	21,677
25		McDonald's	USA	Service	21,642
26		Intel	USA	Mfg.	21,139
27		Walt Disney company	USA	Service	20,548
28		Mercedes-Benz	Germany	Mfg.	20,298
29		Santander	Spain	Service	20,119
30		Hyundai	Korea	Mfg.	19,906
31		ICBC	China	Service	19,820
32		Mitsubishi	Japan	Mfg.	19,723
33		Siemens	Germany	Mfg.	19,647
34		Ford	USA	Mfg.	19,623
35		American Express	USA	Service	19,004
36		Pepsi	USA	Mfg.	18,701
37		BNP Paribas	France	Service	18,573
38		ExxonMobil	USA	Mfg.	18,302
39		Tata	India	Mfg.	18,169
40		Nestlé	Switzerland	Mfg.	18,075

Table 20 (Continued)

Rank	Logo	Company	Country	Business Type	Brand Value(USD millions)
41		Tesco	UK	Service	17,918
42		Nissan	Japan	Mfg.	17,646
43		Chevron	USA	Mfg.	17,579
44		Target	USA	Service	17,460
45		Mitsui	Japan	Service	17,358
46		China Construction Bank	China	Service	16,949
47		GDF Suez	France	Mfg.	16,686
48		Hitachi	Japan	Mfg.	16,588
49		UPS United Parcel Service	USA	Service	16,572
50		IKEA	Sweden	Service	16,570

Source: Brandirectory (2012)

Almost companies have not received NQA before but there were only 10% of them were awarded with their home NQA. The list of the top 50 brand value companies that have received their home NQA was shown in table 21 below.

Table 21 List of the top 50 brand value companies which were awarded NQA.

Number	Company	Country	Year
1	Tata Motor	India	2002
2	Toyota Motor	Japan	
	- Toyota Vista Kochi Small Business (Service)		2002
	- Toyota Transportation Big Business (Service)		2005
3	SAMSUNG	Korea	2000
4	Verizon Information Services (formerly GTE Directories Corporation)	USA	1994
5	AT&T	USA	
	- AT&T Network Systems Group Transmission Systems Business Unit		1992
	- AT&T Universal Card Services		1992
	- AT&T Consumer Communications Services		1994

This could be confirmed that NQA achievement might mean nothing to the top brand value companies due to those big and successful companies have their own way or approach of running the business towards the business excellence. For example, Toyota created their managerial approach called Toyota way which has been created since 2001 as the approach of philosophy, behaviorism, and organization culture for the entire organization that emphasized on continuous improvement. This was the key that led Toyota succeeded up to present. However there were still many companies desired to obtain their home NQA while many companies tried to improve their business performance without any intention to apply and achieve NQA throughout

their business life as the example of the top 50 brand value companies of year 2013 that be able success without NQA achievement.

From table 20 it was found that 44% of 50 brand value companies were the manufacturing firms and 56% were the service firms. In other words, the number of each type was approximately equal proportion. So it could be supported the findings hypothesis number 3 that the capability of both manufacturing and service firms was not different in order to succeed in the market. From these research findings revealed that the length of time spent to achieve NQA was not difference between manufacturing and service firms. The length of time reflected the ability of the companies by short time referred to the companies have high capability and long time referred to low capability to achieve NQA. Daniel (2005) researched on the difference TQM practices and its relationship with quality performance between manufacturing and service firms he supported that there was no significant difference in the level of TQM practices and quality performance between the two sectors. The quality performance could lead NQA achievement. From this perspective it could be concluded that either manufacturing or service firms have equal chance to accomplish every company's goal easily depended on the leadership including the intention and management performance of the company's leader.

Another aspect was that the average length of time of each characteristic have no significant different as shown in table 22.

Table 22 The average length of times of each firm characteristic.

Hypothesis number	Characteristics	Average length of time (years)	S.D. (years)
1	Small firm	6.93	5.73
	Big firm	5.76	4.61
2	Private firm	5.81	5.06
	Public agency	6.92	4.10
3	Manufacturer	5.76	4.55
	Service provider	6.50	5.45
4	Parent	5.04	4.59
	Subsidiary	6.85	5.01
5	Foreign owned	8.13	5.08
	Domestic owned	5.33	4.64
6	With quality award	6.70	4.98
	Without quality award	3.86	3.88
7	With ISO 14001 certification	6.97	5.37
	Without ISO 14001 certification	4.81	3.89
8	With employee focus award	9.31	5.62
	Without employee focus award	4.84	4.01
9	Old	7.55	6.05
	Young	5.00	3.59

As shown in table 22 the average length of times of all past winner representative was approximately to 6.77 or 7 years which was approximately the same with the length of time in each characteristic. The average length of times used

by each firm characteristic did not significant different to each other with only 1 or 2 years different but except the characteristics of employee focus award status that was 4 years different between its status and another three characteristics which belonged to hypothesis 5,6,9 was 3 years different among itself. The minimum average of time was 3.86 years which belonged to the firms without quality award while the firms with quality award spent longer time to achieve NQA with about 7 years. Generally the firms with quality award tend to have higher performance and might used less time than the firms without quality award. However the findings from table 22 showed that the firms without quality award used less time than the firms with quality award. This might be because of the firms without quality award which using less time have high performance in quality management but they ignored to apply for the quality reward program. Thus, as mentioned earlier that the quality award might reflected the quality performance of the firms and the quality award might related to the successful of NQA even though the chi-square results showed quality award status was independent from the length of time. Quality award reflected the effective of TQM implementation this was also supported by Kevin and Vinod (1997) that the firms which won quality award have better sale growth than the firm without the quality award.

Meanwhile the maximum average of time was 9.31 years which belonged to the firm with employee focus award status. The average of times of the firm with employee focus award conflicted with the award received that reflected the capability of their excellence workforce management. Basically the company with employee focus award was supposed to use less time than the company without employee focus award. From table 22 showed that the companies without workforce focus award used less time than the companies that certified with workforce focus award. This might be because of the workforce focus achievement was depended on intention of the leadership to acquire the workforce focus award. Some companies have excellence management about workforce focus but have no any willing to apply the workforce award reward program. So this study results suggested that workforce focus award status could not be an indicator of ability to manage the workforce. Even though the companies that have no any awards related to employee focus before received NQA it

did not mean that the companies have low performance in workforce management. Mark (1995) supported that high performance work practices affected to the firm performance including financial performance and productivity.

Furthermore, the workforce focus award in this research mean the award about human resource management operated by the company focused on enhancement the workforce ability in order to get company higher performance and employee well-being. For example, knowledge training to the employee, creation of livable work environment etc. such as the Outstanding Award of Employee Welfare launched by The Ministry of Labor and Social Welfare of Thailand. This award aimed to motivate the good relationship between the employers and employees that emphasized on employee's welfare also safety work environment that could lead to the effective and happy collaboration between employers and employees.

In addition, the evidence of the standard deviation value of each characteristic showed big number, meaning that there was a lot of variability. The variability of the length of time might be varied by the leadership due to the leaders of each company have different their own vision and practices to lead the organization. It might depend on the leader vision about how urgent the leaders desired to apply for any awards.

Due to TQA criteria provided only an approach but not defined the exact practices. So this research intended to define those practices that influence TQA success. The following flow charts were the sequence of recommended practices that the company should implement before applying TQA program in order to success TQA or TQC influential. There were two versions of flow charts; data from past winner representatives and interview with past winner company executive (CP Retailink Co., Ltd. TQC 2010). After reviewed NQA practices from the past winners across Southeast Asia, the successful approach was summarized and sequenced as figure 6 and. For figure 7 was the flow chart that included the manager perspective. But there were a few changes from figure 6 to figure 7 and the main contents were almost the same.

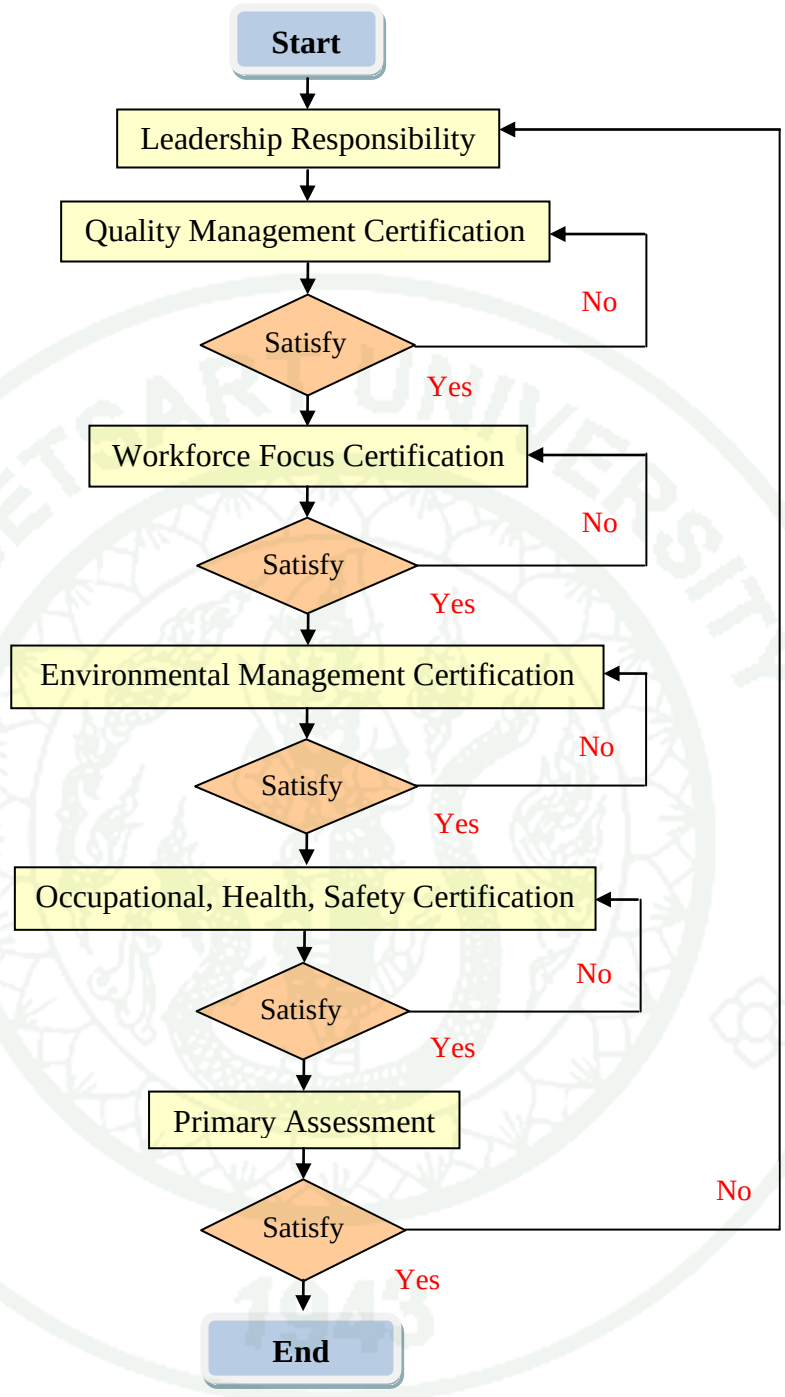

Figure 6 Primary Roadmap to success TQA from past winners information

Figure 6 represented the sequence of activities before success TQA by stating that the award recognition of each activity represent the maturity proof and lead TQA success. In order to achieve TQA the company should be recognized multiple quality

related awards before applying for TQA program. Because the company can gain more practices and experiences from applying any award programs in addition the company should attempt to achieve those awards first. The more company practice was the more company will be better. Applying for the quality related award provided the company an assessment of how good the company was. Then the companies can perceive their weakness and strength of that practice and hence performance improvement eventually.

Leadership Responsibility was the starting point. The leader was the key person who responses for define the policy then communicate the policy to staffs and create the organizational culture towards the process implement. The most important thing was how well of understanding about TQA the leader was. The leader should be a person who understood TQA the most and attempt to transfer the intention to everybody involved within the organization. TQA achievement was set as the target and the following activities were the main activities that could influence TQA.

Quality Management certification was the next chapter that should be concerned after the quality policy has been made. The example of Quality Management certification was ISO 9000 series which was the basic standard recognition that the company should earned for the first recognition. The Quality certification in this case could be referred to other certifications or award recognitions that recognized for products or services excellence for example, Thailand Trusted Quality award offered by Department of International Trade Promotion (DITP) of Thailand etc. There was 70% of available past winner companies through Southeast Asia that obtained ISO 9000 series prior their NQA and 74% that earned Quality Management award before achieve their NQA. These percentile numbers might represented that the past winners concerned about achieving quality certifications/awards before heading to the NQA. Quality certification/award can be used as an indicator for quality performance and once it satisfied then companies can move on to manage the human resource subject which was the crucial path to improve company performance. This included knowledge training to develop workforce capability.

Workforce was the principal for moving the organization towards the excellence. Paying attention to the staffs was the fundamental of organization successful. Workforce focus was one of criteria of MBNQA. The example of workforce focus certification was People Excellence (PE) award of Singapore that recognized upon outstanding people management capability that contributed significantly to business excellence. In addition the statistical result supported that there was relationship between workforce focus award and the length of time preparing for TQA success.

These were the three main practices for TQA preparation; Leadership Responsibility, Quality Management, Workforce Focus. The company should satisfied for the certification or award of all of those main practices first then go further to other secondary practices, for example, Environmental Management and Occupational, Health, Safety.

Even though Environmental Management was not a core factor but this practice was a proportion of 5% of TQA total score. However the company should follow this approach for better business performance since environmental responsibility represented conscious of social and environmental responsibility that contained in TQA criteria 1.2 stated about Environmental and Corporate Social Responsibility. In addition there was 54% of past winners that obtained ISO 14000 series before winning NQA. Therefore the company can apply this approach and seek for ISO 14000 series certification to demonstrate the maturity of Environmental Management performance. The company can also follow Corporate Social Responsibility approach either, for example, ISO 26000 which exist as guidance document rather than requirements. Once the company has been certified ISO 14000 series so they can move to Occupational Health and Safety (OHS) certification.

Occupational Health and Safety (OHS) certification was the standard that represented the management of minimize hazardous work that caused harmful to employees and loss of property. Since this approach was not a core factor as same as Environmental Management but it could supported workforce focus practice by

support the employee well-being and work environment. OHSAS 18000 series was a certification of Occupational Health and Safety management System and its approach can be used for practicing and achieving the OHS certification.

The last step before applying TQA it was the primary assessment to all main activity regarding to the flow chart as well as all 7 criteria of TQA referred to table 3 to verify that there was a trend of improvement. The company has to show up the continuous trend of improvement in last 3 years and how was better of each year in.

Figure 7 was the flow chart that included the manager's perspective. All activity was remained the same as Figure 6 but the sequence was different. Flow chart in Figure 7 recommended to implement all activity but there was unnecessary to achieve those all for the certifications. The company can strength forward but should be confident that the company has implemented all those approach and has been consistently improved. Leadership Responsibility was the starting point as same as in figure 6 but Quality Management and Workforce focus could be parallel focused. As mention earlier they were both significant subjects and in reality the manager suggested that it could be parallel implemented. Once the quality policy has been launched then leader deliver the ideal to all staffs and attempt to educate the understanding about quality fundamental first. It might start from the basic one such as 5S or other QC tools that can be applied either Manufacturing or Service companies. Generally manufacturing company should concern more about Environmental Management because manufacturing was directly related to environmental impact due to its production plant that always released the waste and pollution. In contrast service companies work to provide a good service to satisfy the customer need that always contact to the client directly with less relevant to environment and surroundings. However the past winner company executive suggested that the service company should follow Environmental Management approach such as ISO 14000 series even though they work less related to environment impact for example CP Retailink Co., Ltd. the past winner of TQC year 2010 which was a service company has not been certified any ISO 14000 but the manager confirmed that ISO 14000 approach has been applied to the company. If the results of

primary assessment were not satisfy it turn to leader responsibility to rethink about each practice and verify step by step and try to improve until it meet the trend of improvement for overall results along 3 years.

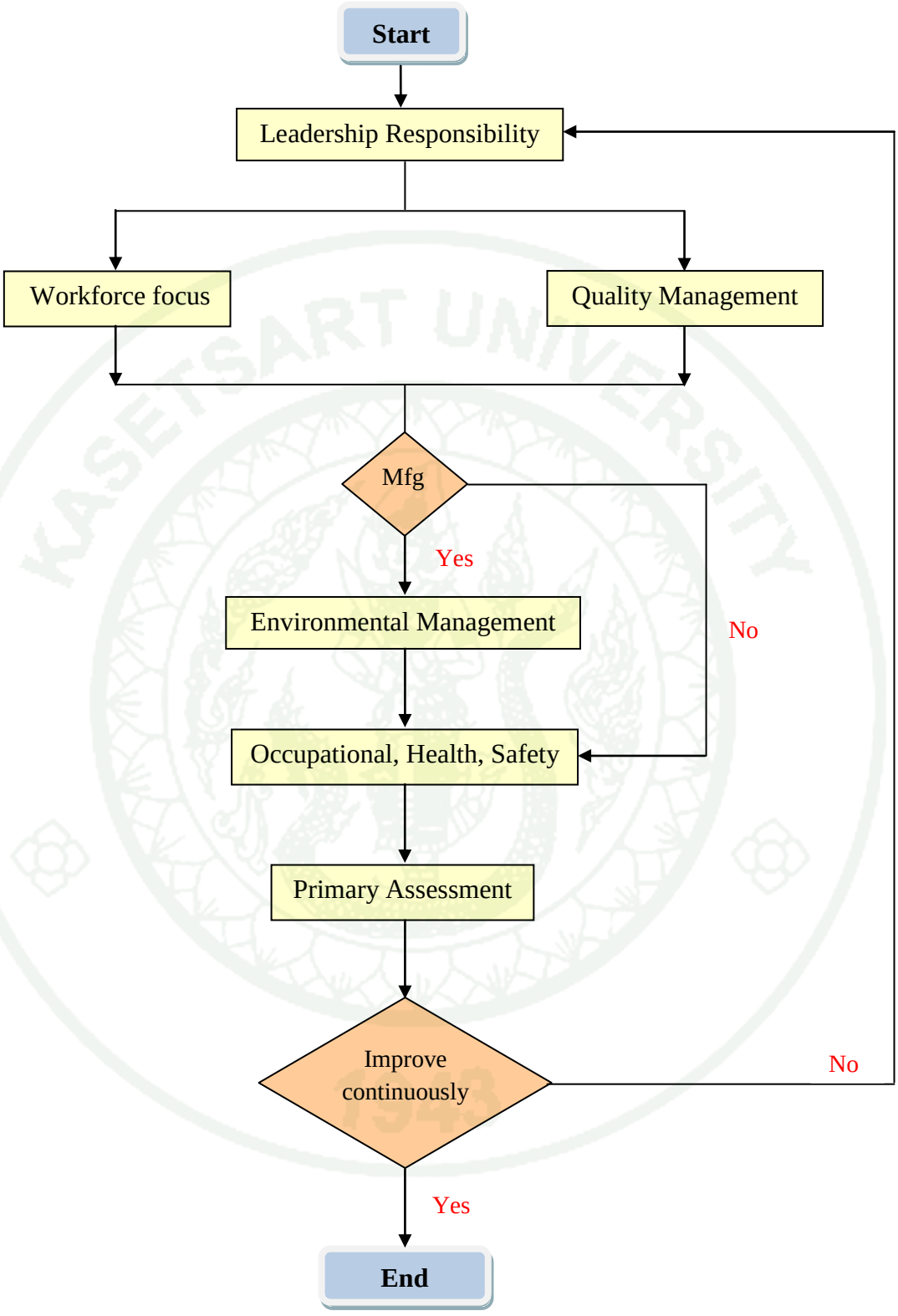

Figure 7 Primary Roadmap to success TQA from interview with executive

The last aspect to be discussed was about ASEAN Economic Community (AEC) 2015. Since AEC will be launched in 2015 and all member countries will be merged to become one community and compete with other regions. There were 10 member countries of AEC 2015 as shown in table 23 below.

Table 23 Member countries of AEC 2015

Number	Country	National Quality Award(NQA)
1	Cambodia	N/A
2	Laos	N/A
3	Myanmar	N/A
4	Indonesia	Indonesia Quality Award (IQA)
5	Malaysia	Quality Management Excellence Award (QMEA)
6	Brunei Darussalam	Brunei Civil Service Excellence Award
7	Philippines	Philippine Quality Award (PQA)
8	Singapore	Singapore Quality Award (SQA)
9	Vietnam	Vietnam Quality Award (VQA)
10	Thailand	Thailand Quality Award (TQA)

Recently AEC 2015 has been widely promoted throughout Southeast Asia and almost companies among the community have been alerted by AEC 2015 and resulted the members attempt to improve their competitive performance. According to the free trade area policy led the member countries can invest in other member countries easier and caused the increasing number of foreign competitors and become high competitive among the member countries. Competition with the foreign competitors will be the challenge that should be concerned. In order to improve the business performance the companies can use NQA approach as the guideline and compete with the other foreign competitors. From this research findings revealed that there was no significant different between any characteristics regarding to the length of time to achieve NQA. In other words, any companies have chance to success independently

from its characteristics. Repeatedly the success was depended on the leadership about how to lead the organization to succeed any targets. Therefore, any firm sizes or business types might have effective performance depended on the effective leadership and employee participation.

CONCLUSION AND RECOMMENDATION

Conclusion

The statistical analysis results revealed that almost characteristics were independent from the length of time which referred to the time duration spent between the year of receiving ISO 9000 and the year of TQA or NQA achievement. Even though the results stated in hypothesis number 8 and 9 that they were dependent to the length of time but they were related at low and medium level of correlation accordingly without strong correlation appeared. The characteristics were divided into two groups which were the award status and physical characteristics. The award status group referred to the quality award, HRM award, ISO 14001 and the physical characteristics group referred to the types of company that could be a factor of success. In summary, almost characteristics for both groups were unassociated to the length of time to achieve TQA except workforce focus award and age of the company.

These findings can be used as the guideline to the leaders of the companies that desire to obtain TQA to understand about how to achieve TQA. Since the results showed that almost representative characteristics were independent from the length of time which those times duration spent reflected the capability to achieve TQA. For the quality related award it can be suggested that the leader can improve the company performance by implement the quality practices directly and heading forward for TQA success without the effort to achieve any quality award. Because achieving quality award before TQA did not support the company to achieve TQA faster but the quality practices. Also for the physical characteristics or the types of company did not contribute achieving TQA. This research suggested that the TQA success might depended on the leadership not the firm characteristics. Finally, they might be other characteristics else that the leader should concern in order to define the plan and the operation approach.

Lastly the flow chart shown in Figure 7 was a primary approach for TQA success that can be used as a guideline for improvement and preparing for TQA. However it was a primary approach that contained only the main practices and sequences but the company can add other subjects in to the chart or changes the sequences depended appropriation of each company. In reality there was unnecessary to achieve all practices for the certifications or awards and this was supported by the statistic results of hypothesis 6 that the quality award was independent from TQA success. In contrast, human resource management award associated the TQA success but from the representative past winners revealed that there was only 27% of company that achieved workforce focus certifications or awards before NQA winning. So these results supported that workforce focus certifications or awards were less associated with TQA success but workforce focus practices still be the significant subject that the company should concern and implement because this can lead the company for TQA success. For other factor that supported TQA success was the age of company as mentioned in hypothesis 9 that older companies might have more capability and ability than younger company to succeed. However all recommended approaches and factors related to TQA success were not the significant subjects rather than the effort of the company leader to consistent improve for business excellence. The award recognitions were one of the indicators for only a particular successful in particular period but not indicate that the company will be excellence forever. The key was how the company leaders lead and maintain the business excellence forever.

Recommendation

For further research, the number of representative past winners could be collected in the later years for the statistic testing due to there will be more numbers of the winners in the future and the statistic results will be more precise. In addition other tangible characteristics could be tested to see if there are other characteristics correlated to the length of time. Beyond that the intangible characteristics could be studied especially on the impacts of the leadership towards TQA achievement.

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APPENDICES

Appendix A

Raw Data from past winner representatives

Appendix Table A1 List of past winner representatives throughout Southeast Asia

Number	Country	Company	Size	Type				QA status	ISO 14001 status	Workforce status
1	Thailand	Thai Paper Co., Ltd. (TPC)	Big	Mfg.	Subsidiary	Private	Domestic	Without	With	With
2	Thailand	Thai Acrylic Fibre Co., Ltd.	Big	Mfg.	Subsidiary	Private	Foreign	Without	With	Without
3	Vietnam	Vedan Vietnam Joint -stock Co., Ltd.	Big	Mfg.	Subsidiary	Private	Foreign	With	With	Without
4	Vietnam	Vinh Long Food and Foodstuff Company	Big	Service	Parent	Private	Domestic	With	With	Without
5	Vietnam	Thong Nhat Rubber Company	Big	Mfg.	Parent	Private	Domestic	With	With	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type			QA status	ISO 14001 status	Workforce status
6	Vietnam	Binh Dinh Sugar Joint -stock Company- Bisuco	Big	Mfg.	Subsidiary	Private	Domestic	With	With	Without
7	Vietnam	Habeco (Hanoi Alcohol Beer and Beverage Company)	Big	Mfg.	Parent	Private	Domestic	With	Without	Without
8	Vietnam	Branch of Bat Trang Pottery and Porcelain Export Co., Ltd.	Big	Mfg.	Parent	Private	Domestic	Without	With	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type				QA status	ISO 14001 status	Workforce status
9	Vietnam	Truong Thanh Wood Processing Enterprise	Big	Mfg.	Subsidiary	Private	Domestic	Without	Without	Without
10	Vietnam	VINAKYOEI Steel Company	Big	Mfg.	Subsidiary	Private	Foreign	With	Without	Without
11	Vietnam	Vietnam HOLCIM Cement J.V.C	Big	Mfg.	Subsidiary	Private	Foreign	With	With	Without
12	Vietnam	Electrical Instrument Company J.S.C No. 1 (VINAKIP)	Big	Mfg.	Subsidiary	Private	Domestic	Without	With	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type			QA status	ISO 14001 status	Workforce status
13	Vietnam	VSC-POSCO Steel Company	Big	Mfg.	Subsidiary	Private	Foreign	With	Without	Without
14	Vietnam	The Northern Kinh Do Foodstuff Processing J.S.C	Big	Mfg.	Subsidiary	Private	Domestic	With	With	Without
15	Vietnam	Khanh Hoa Mineral Water Company	Small	Mfg.	Subsidiary	Private	Domestic	With	Without	Without
16	Vietnam	Lam Dong Foodstuff J.S.C	Big	Mfg.	Parent	Private	Domestic	With	Without	Without
17	Vietnam	Lamthao fertilizers &chemicals.,JSC (LAFCHEMICO)	Big	Mfg.	Subsidiary	Private	Domestic	With	Without	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type			QA status	ISO 14001 status	Workforce status
18	Vietnam	Saigon Beverage Joint Stock Company (TRIBECO)	Big	Mfg.	Parent	Private	Domestic	With	Without	Without
19	Vietnam	Sufat Vietnam Co., LTD	Small	Mfg.	Parent	Private	Foreign	With	Without	Without
20	Vietnam	DatHoa Plastics Company	Small	Mfg.	Parent	Private	Domestic	With	Without	Without
21	Vietnam	Mai Linh J.S.C	Big	Service	Parent	Private	Domestic	With	Without	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type			QA status	ISO 14001 status	Workforce status
22	Vietnam	TienDat Mechanical Production Co., LTD	Small	Mfg.	Parent	Private	Domestic	Without	Without	Without
23	Vietnam	Xanh Ha General Trading Company	Small	Mfg.	Parent	Private	Domestic	Without	Without	Without
24	Vietnam	Nam Khoa Trading and Services Co., LTD	Big	Service	Parent	Private	Domestic	Without	With	Without
25	Vietnam	Container Vietnam J.S.C	Big	Service	Parent	Private	Domestic	Without	With	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type			QA status	ISO 14001 status	Workforce status
26	Vietnam	Materials-Petroleum Joint Stock Company (COMECO)	Big	Service	Parent	Private	Domestic	Without	With	Without
27	Vietnam	Soc Trang Fisheries J.S.C (STAPIMEX)	Big	Mfg.	Parent	Private	Domestic	With	Without	Without
28	Singapore	Inland Revenue Authority of Singapore	Big	Service	Subsidiary	Public	Domestic	With	Without	With
29	Singapore	National Library Board	Big	Service	Subsidiary	Public	Domestic	With	Without	With

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type				QA status	ISO 14001 status	Workforce status
30	Singapore	Institute of Technical Education	Big	Service	Subsidiary	Public	Domestic	With	Without	With
31	Singapore	Systems on Silicon Manufacturing Company Pte Ltd	Big	Mfg.	Subsidiary	Private	Foreign	With	With	With
32	Singapore	Subordinate Courts of Singapore	Big	Service	Subsidiary	Public	Domestic	With	With	With
33	Singapore	Teckwah Industrial Corporation Ltd	Big	Service	Parent	Private	Domestic	With	Without	With

Appendix Table A1 (Continued)

Number	Country	Company	Size		Type			QA status	ISO 14001 status	Workforce status
34	Singapore	Avi-Tech Electronics Limited	Small	Mfg.	Parent	Private	Domestic	With	With	Without
35	Singapore	Urban Redevelopment Authority	Big	Service	Subsidiary	Public	Domestic	With	With	With
36	Singapore	Immigration & Checkpoints Authority	Big	Service	Subsidiary	Public	Domestic	With	Without	With
37	Singapore	Land Transport Authority	Big	Service	Subsidiary	Public	Domestic	With	Without	With
38	Singapore	Tru-Marine Pte Ltd	Small	Service	Parent	Private	Domestic	With	With	With

Appendix Table A1 (Continued)

Number	Country	Company	Size		Type			QA status	ISO 14001 status	Workforce status
39	Singapore	Hwa Chong Institution	Big	Service	Parent	Private	Domestic	Without	Without	Without
40	Singapore	Ministry of Manpower (MOM)	Big	Service	Parent	Public	Domestic	With	Without	With
41	Singapore	Nanyang Polytechnic	Big	Service	Subsidiary	Public	Domestic	With	With	With
42	Singapore	Yokogawa Electric Asia Pte Ltd(YAS)	Small	Mfg.	Subsidiary	Private	Foreign	With	With	With
43	Malaysia	CMC Engineering SDN BHD	Big	Service	Parent	Private	Domestic	Without	Without	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type			QA status	ISO 14001 status	Workforce status
44	Malaysia	Salutary Avenue Manufacturing Services SDN BHD	Small	Mfg.	Subsidiary	Private	Domestic	With	With	Without
45	Malaysia	YTL Power Services SDN BHD	Small	Service	Subsidiary	Private	Domestic	With	With	Without
46	Malaysia	Proton Holdings Berhad	Big	Mfg.	Parent	Private	Domestic	With	With	Without
47	Malaysia	Sime Darby Property Berhad	Big	Service	Subsidiary	Private	Domestic	With	With	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type				QA status	ISO 14001 status	Workforce status
48	Malaysia	Universiti Tenaga Nasional	Big	Service	Parent	Private	Domestic	With	Without	Without
49	Malaysia	Tenaga Switchgear SDN BHD	Small	Mfg.	Subsidiary	Private	Foreign	With	Without	Without
50	Malaysia	Motorola Technology	Big	Mfg.	Subsidiary	Private	Foreign	With	With	Without
51	Malaysia	PHN Industry SDN BHD	Big	Mfg.	Subsidiary	Private	Domestic	With	With	Without
52	Malaysia	Penchem Industries SDN BHD	Small	Mfg.	Parent	Private	Domestic	Without	With	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size		Type			QA status	ISO 14001 status	Workforce status
53	Malaysia	Asturi Metal Builder(M) SDN BHD	Small	Mfg.	Parent	Private	Domestic	With	Without	Without
54	Philippines	NYK-FIL ship management Inc	Big	Service	Subsidiary	Public	Foreign	Without	Without	With
55	Philippines	First Sumiden Circuits, Inc.	Big	Mfg.	Subsidiary	Private	Foreign	With	With	Without
56	Philippines	Integrated Microelectronics, Inc.	Big	Mfg.	Parent	Private	Foreign	With	With	Without

Appendix Table A1 (Continued)

Number	Country	Company	Size	Type				QA status	ISO 14001 status	Workforce status
57	Indonesia	PT Astra Daihatsu Motor	Big	Mfg.	Subsidiary	Private	Foreign	With	With	Without
58	Indonesia	PT Petrokimia Gresik	Big	Mfg.	Subsidiary	Public	Domestic	With	With	Without
59	Indonesia	PT PembangkitanJawa Bali	Big	Mfg.	Subsidiary	Private	Foreign	With	With	Without
60	Indonesia	PT Perkebunan Nusantara III (Persero)	Small	Mfg.	Parent	Public	Domestic	With	With	With

Appendix Table A2 List of past winner representatives for hypothesis number 9 testing

Number	Award Recipients	Country	Age (years)	Length of time (years)
1	Habeco (Hanoi Alcohol Beer and Beverage Company)	Vietnam	50	2
2	Lamthao fertilizers &chemicals.,JSC (LAFCHEMICO)	Vietnam	43	3
3	Inland Revenue Authority of Singapore	Singapore	43	2
4	PT Petrokimia Gresik	Indonesia	40	4
5	Electrical Instrument Company J.S.C No. 1 (VINAKIP)	Vietnam	38	2
6	Teckwah Industrial Corporation Ltd	Singapore	38	17
7	Yokogawa Electric Asia Pte Ltd(YAS)	Singapore	37	19
8	MOTOROLA TECHNOLOGY	Malaysia	35	16
9	Urban Redevelopment Authority	Singapore	34	5
10	UNIVERSITI TENAGA NASIONAL	Malaysia	33	1
11	Tru-Marine Pte Ltd	Singapore	32	16
12	Materials-Petroleum Joint Stock Company (COMECO)	Vietnam	31	2
13	Thai Paper Co., Ltd. (TPC)	Thailand	28	14
14	Soc Trang Fisheries J.S.C (STAPIMEX)	Vietnam	28	3

Appendix Table A2 (Continued)

Number	Award Recipients	Country	Age (years)	Length of time (years)
15	Dat Hoa Plastics Company	Vietnam	27	5
16	Avi-Tech Electronics Limited	Singapore	27	14
17	PROTON HOLDINGS BERHAD	Malaysia	27	7
18	Thong Nhat Rubber Company	Vietnam	26	5
19	Container Vietnam J.S.C	Vietnam	21	5
20	Integrated Microelectronics, Inc.	Philippines	21	9
21	PT Astra Daihatsu Motor	Indonesia	20	12
22	Nanyang Polytechnic	Singapore	19	15
23	PHN INDUSTRY SDN BHD	Malaysia	19	1
24	SALUTARY AVENUE MANUFACTURING SERVICES SDN BHD	Malaysia	17	6
25	YTL POWER SERVICES SDN BHD	Malaysia	17	2
26	PT Pembangkitan Jawa Bali/ PT Power Jawa Bali	Indonesia	17	12

Appendix Table A2 (Continued)

Number	Award Recipients	Country	Age (years)	Length of time (years)
27	PT Perkebunan Nusantara III (Persero)	Indonesia	16	8
28	NYK-FIL ship management Inc	Philippines	16	9
29	Khanh Hoa Mineral Water Company	Vietnam	15	5
30	Lam Dong Foodstuff J.S.C	Vietnam	15	2
31	Land Transport Authority	Singapore	14	5
32	CMC ENGINEERING SDN. BHD.	Malaysia	14	2
33	TENAGA SWITCHGEAR SDN BHD	Malaysia	14	9
34	ASTURI METAL BUILDER (M) SDN BHD	Malaysia	14	6
35	Thai Acrylic Fibre Co., Ltd.	Thailand	13	8
36	Saigon Beverage Joint Stock Company (TRIBECO)	Vietnam	13	3
37	Xanh Ha General Trading Company	Vietnam	13	1
38	Institute of Technical Education	Singapore	13	3
39	Vedan Vietnam Joint -stock Co., Ltd.	Vietnam	12	3

Appendix Table A2 (Continued)

Number	Award Recipients	Country	Age (years)	Length of time (years)
40	Branch of Bat Trang Pottery and Porcelain Export Co., Ltd.	Vietnam	12	1
41	Truong Thanh Wood Processing Enterprise	Vietnam	12	2
42	The Northern Kinh Do Foodstuff Processing J.S.C	Vietnam	12	4
43	Mai Linh J.S.C	Vietnam	12	4
44	Ministry of Manpower (MOM)	Singapore	12	10
45	VINAKYOEI Steel Company	Vietnam	11	3
46	Vietnam HOLCIM Cement J.V.C	Vietnam	11	2
47	VSC-POSCO Steel Company	Vietnam	11	6
48	First Sumiden Circuits, Inc.	Philippines	10	8
49	National Library Board	Singapore	9	4
50	PENCHEM INDUSTRIES SDN BHD	Malaysia	9	3
51	Tien Dat Mechanical Production Co., LTD	Vietnam	8	1
52	Systems on Silicon Manufacturing Company Pte Ltd	Singapore	7	4
53	Vinh Long Food and Foodstuff Company	Vietnam	5	3

Appendix Table A2 (Continued)

Number	Award Recipients	Country	Age (years)	Length of time (years)
54	Hwa Chong Institution	Singapore	5	3

Note

- Age equals to the length of time from the year of company establishment to the year of NQA received.
- Length of time means the length of time from the year of ISO 9000 received to the year of NQA received.

Appendix B

Results of Chi-Square from Minitab

Appendix Table B1 Chi-Square analysis for hypothesis 1: Firm sizes

Chi-Square Test: 1to6, 7to12, 13upward

Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

	1to6	7to12	13upward	Total
1	32	8	6	46
	31.43	7.67	6.90	
	0.010	0.014	0.117	
2	9	2	3	14
	9.57	2.33	2.10	
	0.034	0.048	0.386	
Total	41	10	9	60

Chi-Sq = 0.609, DF = 2, P-Value = 0.737
2 cells with expected counts less than 5.

Appendix Table B2 Chi-Square analysis for hypothesis 2: Public/Private

Chi-Square Test: 1to6, 7to12, 13upward

Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

	1to6	7to12	13upward	Total
1	34	7	7	48
	32.80	8.00	7.20	
	0.044	0.125	0.006	
2	7	3	2	12
	8.20	2.00	1.80	
	0.176	0.500	0.022	
Total	41	10	9	60

Chi-Sq = 0.872, DF = 2, P-Value = 0.647
2 cells with expected counts less than 5.

Appendix Table B3 Chi-Square analysis for hypothesis 3: Manufacturing/Service

Chi-Square Test: 1to6, 7to12, 13upward

Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

	1to6	7to12	13upward	Total
1	26	8	4	38
	25.97	6.33	5.70	
	0.000	0.439	0.507	
2	15	2	5	22
	15.03	3.67	3.30	
	0.000	0.758	0.876	
Total	41	10	9	60

Chi-Sq = 2.579, DF = 2, P-Value = 0.275
2 cells with expected counts less than 5.

Appendix Table B4 Chi-Square analysis for hypothesis 4: Parent/Subsidiary

Chi-Square Test: 1to6, 7to12, 13upward

```
Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

1to6  7to12  13upward  Total
    1     20       4         3     27
       18.45   4.50      4.05
0.130  0.056     0.272

    2     21       6         6     33
       22.55   5.50      4.95
0.107  0.045     0.223

Total     41      10         9     60

Chi-Sq = 0.833, DF = 2, P-Value = 0.659
3 cells with expected counts less than 5.
```

Appendix Table B5 Chi-Square analysis for hypothesis 5: Foreign/Domestic

Chi-Square Test: 1to6, 7to12, 13upward

Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

	1to6	7to12	13upward	Total
1	10	2	2	14
	10.63	1.04	2.33	
	0.037	0.894	0.048	
2	31	2	7	40
	30.37	2.96	6.67	
	0.013	0.313	0.017	
Total	41	4	9	54

Chi-Sq = 1.322, DF = 2, P-Value = 0.516
3 cells with expected counts less than 5.

Appendix Table B6 Chi-Square analysis for hypothesis 6: Quality award status

Chi-Square Test: 1to6, 7to12, 13upward

```
Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

1to6  7to12  13upward  Total
    1     30       8          8     46
       31.43   7.67       6.90
0.065  0.014     0.175

    2     11       2          1     14
        9.57   2.33       2.10
0.215  0.048     0.576

Total     41      10          9     60

Chi-Sq = 1.094, DF = 2, P-Value = 0.579
2 cells with expected counts less than 5.
```

Appendix Table B7 Chi-Square analysis for hypothesis 7: ISO 14001 status

Chi-Square Test: 1to6, 7to12, 13upward

Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

	1to6	7to12	13upward	Total
1	20	7	7	34
	23.23	5.67	5.10	
	0.450	0.314	0.708	
2	21	3	2	26
	17.77	4.33	3.90	
	0.588	0.410	0.926	
Total	41	10	9	60

Chi-Sq = 3.396, DF = 2, P-Value = 0.183
2 cells with expected counts less than 5.

Appendix Table B8 Chi-Square analysis for hypothesis 8: Workforce focus award status

Chi-Square Test: 1to6, 7to12, 13upward

Expected counts are printed below observed counts
Chi-Square contributions are printed below expected counts

	1to6	7to12	13upward	Total
1	7	3	6	16
	10.93	2.67	2.40	
	1.415	0.042	5.400	
2	34	7	3	44
	30.07	7.33	6.60	
	0.515	0.015	1.964	
Total	41	10	9	60

Chi-Sq = 9.350, DF = 2, P-Value = 0.009
2 cells with expected counts less than 5.

CURRICULUM VITAE

NAME : Ms. Kulwadee Bumrungkhet

BIRTH DATE : November 19, 1987

BIRTH PLACE : Chonburi, Thailand

EDUCATION :

YEAR	**INSTITUTE**	**DEGREE/DIPLOMA**
2010	SIIT Thammasat Univ.	B.Eng. (Telecommunications)

SCHOLARSHIP/AWARDS : International Graduate Program in Industrial Engineering, Kasetsart University Scholarship academic year 2012