TOTAL QUALITY MANAGEMENT INFLUENCE THE LOGISTICS PEROFRMANCE OF PHARMACEUTICAL INDUSTRY IN CHINA

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ABSTRACT

One of key issues of china pharmaceutical industry is inefficient logistics. Logistics plays an important role in organization operating. Therefore, organization requires seeking the method to improve logistics performance. The purpose of this study was to investigate the relationship between total quality management and logistics performance in pharmaceutical industry in china. The sample of this study was the 121 employees of Furen pharmaceutical industry in Henan province, China. For this purpose survey method was used by questionnaire as instrument for data collection. In this study, regression analysis method and correlation analysis method are used to analysis the correlation between independent variables and dependent variable. The research results have shown that Furen pharmaceutical industry has high implementation in total quality management at current stage. Meanwhile, employee involvement, customer focus, leadership and continuous improvement as items of total quality management are significantly influence logistics performance. The study faced several limitations such as time constraints and budget constraints which limited this study only have one pharmaceutical industry. The finding of this study has some contributions for future research and organization's logistics development.

Keywords: Total quality management; Logistics performance; Pharmaceutical industry; China

ABSTRAK

Salah satu isu utama dalam industri farmasi di negara China adalah ketidakcekapan logistik. Logistik memainkan peranan yang penting dalam operasi sesebuah organisasi. Oleh itu, organisasi perlu mencari kaedah untuk meningkatkan prestasi logistik. Tujuan kajian ini adalah untuk mengkaji perhubungan diantara pengurusan kualiti menyeluruh dengan prestasi logistik dalam industri farmasi di negara China. Sampel untuk kajian ini adalah 121 orang pekerja di Furen iaitu industri farmasi di wilayah Henan,China. Instrumen yang digunakan untuk mengumpul data dalam kajian ini adalah kaedah soal selidik. Dalam kajian ini, kaedah analisis regresi dan kaedah analisis korelasi telah digunakan untuk analisis korelasi antara pembolehubah bebas dan pembolehubah bersandar. Hasil daripada kajian ini menunjukkan bahawa industri farmasi Furen mempunyai pelaksanaan yang tinggi dalam pengurusan kualiti menyeluruh pada peringkat semasa. Oleh itu, penglibatan pekerja , pelanggan fokus, kepimpinan dan penambahbaikan yang berterusan adalah pembolehubah pengurusan kualiti menyeluruh yang mempengaruhi prestasi logistik secara ketara. Perlaksanaan kajian ini menghadapi beberapa batasan seperti kekangan masa dan bajet yang terhad telah menyebabkan kajian ini hanya tertumpu pada satu industri farmasi sahaja.Hasil daripada kajian ini telah membuat beberapa sumbangan untuk penyelidikan masa depan dan pembangunan logistik organisasi.

Kata kunci: Pengurusan kualiti menyeluruh; Prestasi logistik; Industri farmasi; China

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LIST OF ABBREVIATIONS

EI	Employee Involvement
MBNOQ	Malcolm Baldrige National Quality Award
QC	Quality Control
QI	Quality Inspection
QM	Quality Management
RMB	Chinese Yuan
R&D	Research and Development
SPSS	Statistical Package for the Social Sciences
TQM	Total Qualtiy Management

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

In today competitive world, enterprises need to rapidly realize customer needs and fulfill the customer demands, as well as logistics industry needs to efficiency carry the material and product. Manufacturer need to receive material from supplier and send the finished goods to customer. There is no longer of manufacturing and marketing independently existed of each other (Ngwainbi, 2008). Therefore, to reduce operation cost and improve the customer satisfaction as important functions of logistics management. Nowadays, both locally and globally manufacturing industry and service industry were implementing quality management system (Adnerson, Jerman & Crum, 1998). Because the quality of product comes from customer demand and end with customer satisfaction. On the other hands, leadership as main aspect of quality management program, leaders provide the direction of the organization; therefore, good relationship is significantly to enhance quality through organization.

Quality as one of most signification factors to effect enterprises development, Currently, total quality management practices has been received a great amount of attention in business management and total quality management was widely discussed issues and studied in improving logistics performance (Chang,2004;Adnerson,Jerman,Crum,1998). In an extreme competitive business environment not only international enterprise but also local enterprise are attempting to identify ways on total quality management to influence logistics performance.

1.2 Overview of China Pharmaceutical Industry

The pharmaceutical industry is significant to society in China (Danzon, 2006).Although current global financial crisis, but China economic growth still running as fastest economy in the world. Meanwhile pharmaceutical industry has contributed around 5% of china Gross Domestic Product in 2011(Pharma China, 2011);Right now, China local pharmaceutical pay more and more attention to innovate medicine, meanwhile China government decide to invest much capital to build the relevant logistics system to corporate with local pharmaceutical industry development. Pharmaceutical manufacturing logistics has developed rapidly with high cost. the research Industry News (2011) show that China's pharmaceutical logistics industry amount to 919.17 billion Yuan in 2009, compare with last year logistic growth of 20.5%, pharmaceutical logistics industry occupy 11 percents of total logistics industry in china. (1 Ringgit= 2.1 Yuan).

1.3 Overview of Furen Medicines Group

Furen Medicines Group is the top 20 pharmaceutical group in China, Furen Medicines Group composed of six manufacturing factories and two marketing companies. It has been engaged in pharmaceutical research and development (R&D), producing and marketing all the time. Products include antibiotic, analgesics, et al. All of manufacturing pharmaceutical formulations confirming to the highest level of quality. R&D Centre is committed to innovate through discovering novel molecules and formulating unique therapeutic approaches, and strives to be the most productive Research and Development Centre. From logistics perspective, Furen has four distribution centers and warehouse area achieved 35600 square meters. Within five years, FuRen will build world-class pharmaceutical distribution center

1.4 Problem Statement

At present, China has 1.4 billion populations around 20% of world, but only holds 1.5% of the global medicine market (KMPG,2011).For the reason that China pharmaceutical industry still at developing phase, it cannot fulfill all the population demand. Consequently, with the China economic developing rapidly, Chinese people will pay attention to healthy issues. In order to balance between high medicine demand and lack numbers of pharmaceutical industry, in the near future, numerous pharmaceutical industries will spring up in mainland of China. Currently the main challenge for pharmaceutical is not only the availability of raw material supply, but also pharmaceutical logistics costs high and rapidly to increase (Zhan, 2011; Industry report, 2008). Hence, the real problem for pharmaceutical industry is how to improve the logistics performance to make sure logistics operation at lower cost to get higher customer satisfaction level. Improve logistics performance become one of key research areas in pharmaceutical industry. Despite previous study indicated that reducing high logistics operation cost and improving logistics performance has association with pharmaceutical industry development. Researcher (Li, 2012 Shao, 2006) in the field of logistics management suggests numerous empirical investigations need to be carried out to ensure and justify their findings. The results of these researches significantly to demonstrate logistics problem occur all of the world, but especially in China. Currently, empirical research of pharmaceutical logistics is rare. Besides, inefficiency logistics and supply chain network not only

raising the cost but also implicating the quality of medicine and safety of patients (Beeny, 2012).As Tompkin (2010) stated pharmacy has about 3% of medicine already expired before sold. Because of pharmaceutical product is different from other physical product. It will direct influence healthy of people. Such as pharmaceutical product need temperature-control warehouse and transport instrument to make sure the quality of medicine suitable for patients. If medicine has been expired, normally the pharmacy had thrown them as garbage; it cost billions of Yuan in China every year. The reason of capital waste is come from pharmaceutical industry does not have effective logistics system.

The pharmaceutical industry plays important sector in society, to make sure health care system running smoothly (Ahmed et. al, 2005).As pharmaceutical product was manufactured by pharmaceutical industry, which has responsibility to ensure the quality of medicine. Currently, pharmaceutical waste cost billions of dollars every year with lack of efficiency logistics. Consequently, implementing total quality management is very important to pharmaceutical industry to produce quality product and make sure the operation cost at lower level. Hence, many pharmaceutical industries had a serious problem to solve which is how to improve logistics performance.

On the other side, the country's logistics costs remain high in china, the efficient distribution of goods and finished products is one of the biggest challenges associated with China's rapid growth. KMPG (2013) state that almost one in every

five dollars of China's gross domestic product (GDP) was spend on transporting goods in 2012. It means the logistics cost as proportion of GDP is around 18% in china, the corresponding period in US is only 8.7%. This is high compared with other developed countries, where logistics costs are typically below 10% of GDP. The current growth challenges for china's logistics: logistics management, transport and operation and regulation.

Table1.1: Logistics cost as proportion in GDP (Country)

China	18%
US	8.5%
Japan	8.7%
Germany	8.3%
India	13%
Thailand	20%

Source: China transport ministry report (2013)

From the table 1.1 to show that logistics cost as proportion in GDP in most of developing countries are from 13%-20%, meanwhile in developed country, it is from 8%-9%. It indicated that the developed country has efficiency logistics management; Moreover, to improve logistics performance and reduce the logistics cost is one of important way to reduce the gap between developing country and developed country.

1.5 Research Questions

This research was conducted to evaluate the relationship between total quality management (TQM). Leadership, employee involvement, customer focuses, and continuous improvement as TQM practices. For the depend variable which is logistics performance. Based on the facts and issues from the problem statement, this study has structured several research questions:

1. What is the level of total quality management practices in Furen pharmaceutical company?

2. Is there relationship between total quality management and logistics performances in Furen pharmaceutical company?

3. Which is critical factor of total quality management on logistics performances in Furen pharmaceutical company?

1.6 Research Objectives

Consistent with the above research questions, the general objective of this research to indentify the influence of total quality management on logistic performance in Furen pharmaceutical company. The specific research objectives are as following:

1. To identify the level of total quality management practices in Furen pharmaceutical company.

2. To identify the relationship between total quality management and logistics performance in Furen pharmaceutical company.

3. To identify the critical factor of total quality management practice on logistics performances in Furen pharmaceutical company.

1.7 Scope of Research

In order to achieve the research objectives, this study conducted through questionnaire among the logistics employees of Furen Company Self-report and statistics report measures will be use to gather data on the variables under study. Meanwhile to make sure the accurately of information, personal observation also will be used in this study.

This study aim to find whether leadership, employee involvement, customer focuses, and continuous improvement has direct relationship with logistics performance in pharmaceutical industry. This study was concern with implication of total quality management in logistics system. The sample will selected among logistics employees of Furen company base on certain criteria. There are 196 employees who working in logistics department in Furen, base on Krejcie and Morgan (1970) matrix, the sample of this study should be 129 employees. In order to collecting data, the researcher used questionnaire which adopted from Aboyasin et.al.(2011), Talib et. al. (2011) and Fu et.al.(2010).

1.8 Significant of Study

This study looks into the category of total quality management and their influence on logistics performance in pharmaceutical company. The reason why this research is significant, which can be answered from three aspects：Firstly, logistics costs occupy large percentage of total cost in pharmaceutical industry and lack of researchers to do the empirical research on pharmaceutical industry (Li & Zhong, 2008). From this study can investigate how the total quality management to influence logistics performance. It will be significant in encouraging company to use total quality management system to improving logistics performance, thereby making sure logistic system running efficiency meanwhile to help company reduce unnecessary cost. Secondly, through the result of this study, it beneficial to the top management and operation managers in logistics performance development, such as improving employee communication to reduce misunderstanding to crated high performance in logistics department and coordinate company strategic planning to reduce the logistics cost and strong focus on logistics performance requirement. Moreover, this study provides the recommendation on how to assess the logistics performance base on total quality management criteria. It in favor of not only Furen Company but also benefit for china pharmaceutical industry rapidly to build much systematic logistics management to enhances the international competitiveness with foreign pharmaceutical logistics company.

1.9 Structure of Thesis

This chapter describes background of this study. Starting from presenting the function of total quality management and current limitation during implementing total quality management in organization especially for pharmaceutical industry. Next, introduce the condition of china pharmaceutical industry and this research target industry (Furen Medicine Group). This chapter stated the importance of pharmaceutical industry and current problems happened in china pharmaceutical industry and the gap with international company. Based on problem statement to created research questions and objectives. Meanwhile, the significant of this study is providing empirical study for pharmaceutical industry to use.

The thesis organized as follow: chapter 1: introduce the background of this research and current existed problems. Chapter 2: provide the relate literature in total quality management and pharmaceutical logistics. Chapter 3: provide the research method of this study. Chapter 4: to analysis data and state the result of data information. Chapter 5: base on data analysis results to provide recommendation and conclusion.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Chapter 2 consist current literature, which focus on the variable of total quality management and logistics performance. This chapter examines the concept of total quality management and logistics performance; meanwhile review the literature on relationship between total quality management and logistics performance that have been done before by other researchers. Total quality management will be measure by leadership, employee involvement, customer focuses, and continuous improvement.

2.2 Total Quality Management Origins and Development

With the fierce competition level increased day by day, quality becomes the very important factor to improve enterprise competition level. Consequently, total quality management becomes one of the most important issues in management (Martínez, Dewhurst & Dale, 1998). Although, total quality management widely used in many filed, but until now it does not have consisted framework for quality assessment (Adnerson, Jerman & Crum, 1998). TQM was first introduced by Feigenbaum in

2003, he define the TQM as‘ *An effective system for integrating the quality development, quality maintenance and quality improvement efforts of the various groups in an organization so as to enable production and service at the most economical levels which allow for full customer satisfaction’* However some researchers think the philosophy of Feigenbaum is only cover total quality control, compare with total quality management without supplier relationship management and others (Martínez, Dewhurst & Dale, 1998). Therefore, normally Total Quality Management philosophy is giving the credit to Deming who created 14 points for improving quality. Deming (1982) stated that quality management is strategic management and start from top management. Similarly, there are some research give their opinion about quality management, such as Juran(1989) “fit for use”; Taguchi（1986）“ statistical methods of quality control”；Crosby（1979）“zero defect level”. Until to Malcolm baldrige national quality award to combine the ideas both from academics and practitioners to setup criteria for total quality management. The criteria was divided into seven (7) categories which leadership, strategic planning et al (Martínez, Dewhurst & Dale, 1998; Adnerson, Jerman & Crum, 1998).

Historically, concept of TQM evolution has four stages: quality inspection, quality control, quality assurance until to total quality management According Garvin (1988) from 1910s Ford Motor created mass production line. With the mass production line develop, formal inspection become necessary. In that time amount of labor lack of skill, with this reason, it causes raw material and time waste, besides the

production cannot meet customer satisfaction level. For this reason, Ford Motor decides to implement quality inspection. Base on Garvin (1988) the first time quality inspection academically link with quality control in 1922, with the publication of G.S.Radford's The *Control of Quality in Manufacturing.* Since organization implied quality inspection to found out that many problems cannot be solved by quality inspection. With organization continuous discover new approach to control quality, since from 1924s quality control was used by some organizations.

The second stage of TQM is statistical quality control. According to Garvin (1988), philosophy of quality control is come from W. A. Shewhart's who working at Bell Telephone Laboratories. Firstly, quality control was from process control, base on the organization requirement to increase the usage of raw material, level of labor skill and equipment efficiency. Hence, Shewhart's for achieve these objectives; he developed simple statistical technique for determining limits. Even now, a large of organization still using process control chart. Process control chart was massive used during Second World War, it extremely improve military operation speed,. After Second World War finished, process control chart was used by many business organization to improve customer satisfaction level. However, it cannot fulfill all business organization requirement, then next stage of TQM it is quality assurance.

During quality assurance era, the concept of quality from narrow to wide, it not only limits in manufacturing organization, but also expands in business organization management. Problem prevention became the primary objective of quality assurance.

Quality Inspection 1910s	Ford Motor company start use employee to test product Quality, It is cover production process and distribution
Function of quality Inspection	Reduce error, salvage, and sorting, corrective action
Quality Control 1924s-1941s	During second world war, statistic quality control was Used. The process help product meet for customer need at high quality
Function of quality control	Performance data, self-inspection, production testing Quality planning, use of statistic
Quality assurance 1950s	This stage covers all pervious functions in order to Improve customer satisfy level
Function of quality assurance	Quality control, process control, quality auditing, Quality manuals ,quality cost
Total quality management 1980s-	Implied quality management principle to all filed of Business activities
Function of total quality management	Customer focus, quality work, strategic planning, continuous quality improvement, employee involvement, teamwork and leadership.

Figure 2.1
The origin and Evolution of Total Quality Management
Sources: Angel R. Martínez-Lorente, Frank Dewhurst, Barrie G. Dale, (1998)

Based on (Evans & Dean, 2002), the philosophy of Deming's is according to product and service improvement, during second world war quality control help military to reduce error. However, Japanese company was first introduce quality control into business develop. Deming stated that higher quality product and service could promote higher productivity. Thereby the product with high quality and lower price has competitive advantage to capture market. Juran also as one of pioneers in total quality management filed. The philosophy of Juran just after Deming, Juran was focus on using strategic planning to minimize risk of rejection. In Juran philosophy, quality means "fitness for use".

	DEMING	JURAN	CROSBY	ISHIKAWA	FEIGENBAUM
Methodology	14- point	10 step to quality control	14 step for Quality improvement	15 effects of company-wide Quality Control	4 Categories of Quality Cost
Key concepts	PDCA Cycle	Project Management	Zero Defects- do it right first time	Cause and Effect	Total Quality Control
Philosophy	Customer focused	Management Responsibility- quality and cost	Cost of Quality	Continuous Improvement from management responsibility	Cost of Non-conformance
Quality Definitions	Meeting the customer needs	Fitness for use	Conformance to requirements	Continuous Improvement	Customer satisfaction
Approach	Use of data analysis tools	Planning Control action	Company-wide	Quality Circles	Systems Management

Figure2.2

The Comparison of Total Quality Management Philosophy

Currently, many researchers and organizations defined principles of total quality management. Total Quality Engineering (2010) summarized the TQM principle based on the pioneer in quality management, Deming, Juran, Crosby, Ishikawa, Feigebaum into five principles customer Focus, Total Participation, Process Improvement , Planning Process , Process Management. Kurtus (2001) described basic principle of total quality management divided three parts. Satisfy the customer, Satisfy the supplier, and continuous improvement. Due to the main aspect of total quality management is customer focus, then organization need to have good relationship with supplier to make sure organization material keep at significant level and through continuous improvement to improve organization performance. Saylor (1992) stated that there are six total quality management principle, top management leadership, continuous improvement, customer satisfaction, employee involvement, training and education, reward and recognition.

2.3 Total Quality Management in Pharmaceutical Industry

Rana et al. (2009) has done one study to investigate the role of quality management in pharmaceutical industry. This study to investigated quality management influence pharmaceutical performance; in addition, to assess the role of employee and employee's perception in total quality management The sample consists of 5 different pharmaceutical industries in Pakistan; number of respondents is 158 employees. The result showed that employee's perceptions has positive relationship with total quality management. Meanwhile, quality process and teamwork are significant factor in total quality management. These two factors have influence to pharmaceutical organization performance. On the other hand, this study indicated some problem during organization applying total quality management. Such as lack of trust, misunderstand total quality management practices and not suitable for organization culture. At last, these problems are not only happen in pharmaceutical industry but also in other industries. If the organization really wants to imply total quality management philosophy, it needs to base on their own condition to choose relevant TQM practice using in their organization.

Poongothai, Ilavarasan and Arul (2011) conducted another study showed similar direction of relationship. The study is to investigate the effect of total quality management in pharmaceutical industry. The sample of this study is 100 pharmaceutical industry employees were selected from two pharmaceutical manufacture companies in India. In this study, person's correlation was use to

analysis data which from questionnaire. Using data analysis result to test hypotheses. The result showed that (1) employee training is significant associate with reduce numbers of defects. (2) Improving information share system will direct enhancing the relationship with supplier. (3) This study also showed that good supplier relationship has significant with reduce manufacturing cost in pharmaceutical industry. Finally, the study concluded since pharmaceutical industry applies quality management, rework reduction nearly to 0. It means implementation of quality management can improve organization performance and improve employee participant. Meanwhile researcher stated lower quality service will loss around 30% profit, but it not including some customer not come back again due to product or service quality.

Furthermore, another study on total quality management in pharmaceutical wholesale distribution companies in Pakistan which conducted by Awan et al. (2009). This study to examine the key factors of TQM practices. There are 90 pharmaceutical industry was involved. The objective of this study to investigate critical factors contributes implementing total quality management in pharmaceutical wholesale distribution. In this study, there are many variables will analysis, such as top management support, process design, employee training and involvement and so on. The result showed process design is critical factor contributes TQM in pharmaceutical wholesale distribution in Pakistan.

2.4 Logistics Origin and Development

"Logistic" was original from French *logistique* in late 19th century. In the beginning of logistics was used in military activity, it is start from military logistics during World War Ⅱ, that time the function of logistics was transferred soldier and munitions to the battlefield on time. After the World War Ⅱ, America take the logistics advantage to develop their international business, American Malcolm P. McLean invent sea container as the business logistics founder in 1956 (Container History, 2007). With the economic booming in 21th century, at present market value global logistics is around $ 3.7 trillion. In 2009, the percentage of logistics market value almost 9.3% of global GDP (Data Monitor, 2010). The data showed that currently logistics plays important factor in global economy development.

1950s	**Initial Stage**
1960s-1980s	**Development Stage**
1981s-2000s	**Rapid Expansion**
2001s-	**Booming stage**

Figure2.3

Historical Development of Logistics Management

Source: Muhcina Silvia (2007) "Physical distribution, logistics, supplies chain management

2.5 Pharmaceutical Industry logistics

At present, lacks of researchers doing empirical research on pharmaceutical logistics in China. Most of the researchers are still at academic stage (Li, 2008). Consequently, Li (2008) conducted an empirical research on pharmaceutical logistics activities and capabilities. This study to investigate Pharmaceutical logistics was influenced by logistics activities and capabilities. The sample consist 500 pharmacies where locate in Chang-Zhu-Tan region in China. This study indicated in current competitive environment, logistics capacities became key factor to get competitive advantage in pharmaceutical industry. The result of this research showed logistics activities has positive relationship with cost & service and capacity of delivery.

In a related study, Zhang (2011) indentified the significant of integrated logistics model in pharmaceutical industry in China. The study stated pharmaceutical logistics is transfer pharmaceutical product from pharmaceutical manufacturers to customers. At present pharmaceutical logistics in china at the primary stage, inefficiency logistics cause waste to pharmaceutical industry. In order to increase operation efficiency and reduce the waste, it needs to enhance the collaboration between company and company. Meanwhile pharmaceutical industry needs to improve the communication between supplier and customer. Finally, this study showed integrated logistics approach could change situation of current pharmaceutical industry logistics.

According to Beerens (2012) compare with pioneering sectors such as retail and electronics, the pharmaceutical industry is behind when it comes to logistics developments like distribution network optimization and sales planning. Currently, pharmaceutical industry is making various logistics development. Such as reduction in logistics costs, in order to reduce logistics cost, current pharmaceutical industry focusing on outsourcing their logistics activities and centralizing their warehouse operation for various countries. Second, from wholesale supplies to 'end customer' deliveries. Especially, in smaller sales markets, the pharmaceutical industry send their product to wholesalers rather than directly to customers (hospitals, pharmacies, retailers), this strategy is fit for low sales of pharmaceutical industry. Third to reduce the inventory of finished product. However, it is not easy task in pharmaceutical industry. The high stock levels are caused primarily by the labour-intensive administrative procedures related to production batch registration and release. The last points is power struggle over who manages logistics in pharma supply chain, currently, pharmaceutical industry in order to protect their own market position, they are looking for the ways to reduce the power of wholesalers' position through logistics. Meanwhile pharmaceutical industries also are afraid of damaging the relationship with wholesalers by cancelling the logistics contract.

Malik (2013) conducted a study about reverse logistics in pharmaceutical industry, the study looks into the problems of reverse logistics in pharmaceutical industry. as the study show the reverse logistics in pharmaceutical industry is

different from other industry, because in other industries the products returned to industries, it can be repaired or resold. However, for pharmaceutical industry it should be destroy the product. During the product reverse process; there are many considerations to be taken into account such as: cold chain requirements, proper storage and disposal and so on. Finally, the study suggests the pharmaceutical industry focus on reverse logistics effectively to reduce the logistics cost.

Merrill (2012) conducted one study to show the navigating pharma logistics, as pharmaceutical product is different from other products. Companies move or store pharmaceutical products must meet similar demand. Many medicines are extremely sensitive to temperature, without temperature control some medicines could expire immediately. Therefore, for pharmaceutical logistics need to concentrate on temperature control that direct effect the pharmaceutical safe. On the other side, temperature control warehouse should cost huge capital, with this reason, a lot of companies choose to outsource their logistics service to third party logistics (3PL) service providers.

Tiwari (2007) conducted a study about the value of logistics for a large pharmaceutical firm. This study want to show the factors to impact of drug technologies on logistics activities; second objective want to analysis for large pharmaceutical industry should outsourcing their logistics activities or not. In the end of study, the impact of dominant drug technologies on logistics functions in the pharmaceutical industry. Indeed, it found that business and competitive needs lead

company to develop different types of drug technologies. Second, based on the research, the study recommends that supply chain play an important role in maximum value out of its huge investment in drug development and marketing. Therefore, the logistics activities outsourcing should be done after the company analyzing how different drug technology categories will affect operation metric requirement of logistics activities.

Zhan (2011) conducted a study to show integrated logistics model design in china pharmaceutical industry. this study to indentify the current developing situation and existed problems of pharma logistics. The study focuses on the point of view of integrated development in the pharma logistics, indeed to designs the integrated logistics model for china pharmaceutical industry. This study show three type of advance logistics model for pharmaceutical that are integrated pharmaceutical logistics model with major business of pharmaceutical manufacturing enterprise; second is major business of pharmaceutical wholesale enterprise; third is a major business of retail chain and third-party logistics. Finally, the study stated that integrated medical logistics model is important on logistics development in pharmaceutical industry. Indeed, base on the company self-condition to choose the relevant logistics model.

Industry Canada Report (2006) to show the key performance indicators (KPI) analysis on logistics and supply chain management of pharmaceutical industry in Canada and US. This report indicated that currently, in order to improve logistics

efficiency and reduce the order cycle time, the industry using the KPI in Just-In-Time (JIT), Supply chain agility and inventory turns. Finally, the report indicated that in order to benefit from the productivity of logistics and SCM. The pharmaceutical industry must develop their own KPI based on their company operation.

2.6 Total Quality Management Practices

Many literatures had done by researcher Deming (1982); Serafimovska and Ristova (2011); Lakshman 2006); Dean and Bowen(1994); Prajogo and Sohal, (2004).(Gaudreau et al. 1994) stated that "*total quality management is a strategic, integrated management system that is focused on customer satisfaction and involves everyone in the organization using quantitative measurement tools to continuously improve the organization's services and products*" Furthermore, the principle of TQM is customer focus (Jablonski, 1992). According to Clark (1996), the major Japanese manufacturing companies have practiced Total quality management for the last 40 years. Because total quality management can make sure the companies continuous to improve their quality to capture both local and global market share. Currently, organization face fierce competition, TQM as one of most useful tools apply by organization to have competitive advantage. Evans & Dean, (2000) described that total quality management is customer focus system. Through continuous improve quality to achieve customer satisfaction level. Besides, in this study stated that the base elements of total quality management are: (1) Leadership, (2) Employee involvement, (3) Continuous improvement, (4). Customer focus.

2.6.1 Leadership

Deming (1982) stated that quality management is kinds of strategic management and start from top management. Therefore top management leadership is the basic to build suitable organization culture. The organization culture situation will directly influence the organization performance. The famous leadership model to correspondent with total quality management is PDCA leadership, which includes Plan, Do, Check and act (Serafimovska & Ristova, 2011). Besides, Juran (1989) stated that top management of organization as quality council, at present lots of organization has a small group people to control the quality of organization. Similarly Crosby (1979) also have the idea about quality improvement team, Total quality management principle stated that organization use TQM program can improve all the levels of employee to continuously achieve project objective. However, top management requires set up the rational organization culture to support total quality management (Serafimovska & Ristova, 2011). Hence, without good top management, total quality management program cannot run smoothly. Organization leader ability and behavior can direct influence organization successful or failure.

According to Wisegeek (2011), the study stated that total quality leadership means top management of enterprise has duty to apply TQM to meet customer requirement. In order to achieve organization objective, top management need to create the organization mission, vision. Moreover, organization needs to ensure

their employee to understand and follow organization culture to increase productivity. This study also stated that all the organization sector development has relationship with top management. Thus, top management as the brain of organization has responsibility to take care of their employees and customers.

Lakshman (2006) conducted a study about leadership theory using in total quality management. As the researcher stated that responsibility of top manager is not focus on every product quality. Because of test product quality is belong to product quality manager. Role of top management is to manage total quality of organization operation. This study chooses 15 criteria to evaluate leader ability in total quality management, such as communication, participation, self-managing teams and so on. The result stated 15 factors all has influence to implementation of total quality management.

Many researchers (Deming, 1982; Lakshman, 2006; Crosby, 1979) consider main factor to successful quality management is start from top management. As Dean and Bowen (1994) stated core principle of total quality management is customer focus, employee participation and continuously improvement. This study suggested top management set up their responsibility for improving customer satisfaction level, encouraging all levels of employee have same goal to achieve company mission. The result of this study stated that top management leader has positive significant relationship with total quality management.

According to Evans and Dean (2000), product or service quality is the top management responsibility, top management need to have long period to set up goal for organization development. Quality leadership is one of significant factors for organization to carry out total quality management (Clark, 1996, Gaudreau et al. 1994). Because organization top management has responsibility to take care about their customer, employee, supply and so on. Consequently, top management good or not can direct influence organization successful or fail.

Goetsch and Davis (2003) state that quality of leadership is according to the approach that top management used to improve product quality, continuous quality improvement, productivity of employees, ROI of organization and so on. In current organization, trust is a barrier between manager and employee on implying total quality management. Most of manager does not believe their employee ability. Similarly, employee only care about their salary, they are not care about development of organization. Hence, top management need to strengthen communication to their employee, to understand employee idea and improve employee job satisfaction. In this study also described different organization has different types of leadership, leadership was decided by organization culture, good leadership is relevant to their organization culture develop. Therefore, flexible apply total quality management for top management is chance and challenge, if they can apply TQM well, it will take better tomorrow of organization.

The quality of pharmaceutical product will direct to influence the people health at assurance level. For this reason, in pharmaceutical industry every employee has responsibility for product quality, especially for management level and board of director of the company. Besterfield et al. (2003) further outlined the role of leadership in total quality management in the company. In this study indicated that senior management has responsibilities for the product quality, senior management should not only working in office but also need to get out office to salute their staffs, workers, supplier, and so on. To understand what their staff needs, and what kind of product that customer need wants. This process makes sure the leader of company can get accurate information in first time. On the other hand, this process makes staff to know manager level think for them, it can mobilize all the positive factors of employees to produce high quality product. The viewpoint of this study believes that leadership is main factor in total quality management. Mustafa and Bon (2012) conducted a study to review the role and impact of leadership on total quality management in service organization in Malaysia. In this study, the conceptual framework is come from 15 related studies, which has done by other researchers. From the preceding review, it can conclude that the ability of top management can direct effect organization develop. Meanwhile this study indicated that it is difficult to find out how leadership important in organization and how it linked to other TQM factor.

Darling (1992) has contributed to analysis role of leadership in total quality management through a study, which defined the importance of leadership in total quality management. In this study, researcher stated in total quality management, leader is a person who encourages the follower to complete task. Research identifying the keys factor of leadership: attention through vision; meaning through communication; trust through positioning and confidence through respect. This study stated four factors are good at for other leader who wants study total quality management.

Oakland (2011) study shows that leadership is backbone of total quality management. For this reason, this study considers TQM must start from top management level where serious obsession and commitment to quality and leadership needs to demonstrate. Besides middle management level, also need to demonstrate their ability to enhance communication between top management and staff. The result show that TQM is not regard as “wholly-mind” to run an organization, it needs the leader to have specific guidance and a carefully planned and fully integrated strategy derived from the vision. On the other hand, one of most important benefit in leadership is to enhance overall performance of organization. Moreover, leader is direction of organization, the ability of leader will direct influence organization performance. If the organization has good leader it may take glorious future of organization. On the contrast, if the organization has bad leader, it is disaster to organization, it guide organization move towards death.

Oriaku (2008) conducted a study to investigate the effect of total quality management on leadership in Nigeria. This study consider that current African country face the fierce international competition, other the other hand, currently many African enterprise facing poor leadership. In this study, research find current problems happen in African enterprise leaders. Such as lack of leadership skill, lack of teamwork, lack of communication to their employees and so on. In addition, the way to solve poor leadership problem is to apply total quality management, Nigeria organization need to apply total quality management approach to produce high quality product at lower cost level and improve service quality. For the sake of preferably apply TQM approach in organization; leadership skill is one of important factors that organization needs to care. This study seeks and find current leadership problem in TQM. Moreover, researcher tries to find the approach to solve leadership problem in order to make Nigeria become one of the top ten countries by using total quality management. Effective leadership and total quality management is not only good at Nigeria but also good at African development.

Joiner and Scholtes (1998) further to analysis the differences between total quality management and management by control. Currently, the most common philosophy of management in America is management by control. Therefore, in this study to explain total quality management is a new way and better way than management by control. This study indicated a few negative aspect of using

management by control. Such as management by control is system control without flexibility; system control without long-term plan, it will direct influence the future of organization. However, the total quality leadership is better alternative to replace management by control. Total quality leadership is focus on giving the value to customer through building excellent relationship between top management and their customer. Top management give the value to customer, customer also can feedback the useful information to top management. Therefore apply leadership can create win-win situation; it is not only benefit to organization but also to customer.

Chih and Lin (2009) conducted a study to investigate the implementation of leadership styles in total quality management. The sample consist 376 TQM participants, who come from different high-tech industries such as electronics, semiconductor, biotechnology, and pharmaceutical industries in Taiwan. Questionnaires survey was used in this study to gather data from respondent. Researcher used correlation statistics and regression statistics to analysis data. The data analysis results showed that leadership has strong positive relationship among total quality management and organization commitment. Besides, this study concludes that not only leadership but also continuous improvement, customer focus, and teamwork supported the significant of total quality management application. These have same ability to influence total quality management. Therefore, if the organization wants to have good future, it need to

take care all these factors. Finally, this research has contribution for Taiwan high-tech industry to implement total quality management and organization commitment to improve industry competency.

Meanwhile, Chen (1997) also conducted another study in Taiwan, which is from HRM and leadership perspective to investigate influence of HRM on total quality management. Especially this study focus on US subsidiary, Japan subsidiary and Taiwan firm. To compare different viewpoint total quality management. In order to get accurate data, questionnaire and person interview was used. The sample of this study consists of 170-manufacture industry and services organization, which selected from top 1000 manufacture industry and top 300 services organization in Taiwan. The sample consists four types of industry which private Taiwanese, state-owned Taiwanese, Japanese subsidiaries and US subsidiaries. This study used Malcolm Baldrige National Quality Award (MBNQA) criteria to assess organizational leadership quality and HRM quality. The data analysis result showed if the company has good leadership and HRM, it will increase revenue of company, employee job satisfaction and relationship with customer and supplier. Moreover, on implementation of total quality management, Us and Japan subsidiaries are superior than local company. Therefore, if local companies want to compete with international companies, they needs flexible apply TQM practices as soon as possible. At last, this study stated that according to organization their own condition to establish relevant benchmarks for quality

improvement is necessary especially for large organizations and small medium enterprises (SME).

Nwankow and Richardson (1996) explain quality management through visionary leadership. The study showed the importance of leadership to active industry quality culture. Meanwhile it indicated currently, quality management could improve many aspects of organization performance. To improve organization quality management, organization try several methods, strategy leadership is one of most important factors to improve company quality management. In addition, different kinds of leaders suitable for different job, through leader special working skill to improve them filed quality. Finally, research stated that today is era of quality management; organization without quality management cannot survive for long time. Certainly, during organization apply quality management will face many challenges.

At present, quality management was widely used in many countries. Laohavichien et al. (2011) conducted a study about leadership and quality management practices in Thailand. This study is focus on to investigate leadership effects on quality management and quality performance in manufacturing industry in Thailand. In total 20 quality managers was selected in this research, where, some of local quality manager and some international quality manager. Finally, this study showed that leadership is very important to apply quality management in manufacturing industry. In addition, compare with international quality

management, they are pay more attention to study leadership skill in order to enhance company quality management. Therefore, these studies suggest quality manager to study leadership skill to implement the quality practice.

2.6.2 Employee Involvement

The means of employee involvement is the employee who working in organization need to participate the organization activates to achieve organization goals. There are many researchers has done the effect of employee involvement (Lakshman, 2006; Chiu, 1999). As stated by Chiu (1999), all employee involvement will quickly to help organization to solve problem and to accomplish comprehensive decision-making. Because of, if all employees can take their responsibility to solve problem, even the huge problem can solve by all employee as soon as possible. Chiu (1999) to investigate the participation of employee involvement among organization total quality management conducted a study. Data collect from six companies in Hong Kong. The study shows that employee involvement has relationship with total quality management. Nevertheless, in this study still find some problem of employee involvement in Chinese organization. Such as total quality management is not fully applied by Chinese and the attitude of employee as the biggest problem for employee involvement.

In the related study was done by Mendes (2012) that to identify the between employees' involvement and quality improvement in manufacturing industry. This study stated that employees' involvement at all the level of employees is important to have competitive advantage and achieve the objective of total quality management. Similarly, one previous study conducted by Collision et al.

(1998). The study examined the influence of employee involvement in total quality management especially foe employee attitude. The sample consist 280 employees who came from six organizations in US. Questionnaire and formal interview survey method was used. This study aims to assess the strengths and weakness in TQM; base on data information to provide systematic information in total quality management, meanwhile to find the factors can success imply TQM practices. The results of this study to show that employee quality awareness can influence organization performance, more than 3/4 respondents consider quality of product for their organization as vital issues. Employee involvement has positive relationship with problem solving, 2/3 employees felt that employees participate organization decision-making; it will increase organization-working efficiency. Employee training can increase organization productivity, 3/4 of respondents stated at least they have one-week training in previous years. Moreover, 72% respondents considered that communication still is weakness during implying total quality management. Therefore, managers need to increase the frequency of communication to their employees, which face-to-face communication was accepted by most of employees. Finally, the study stated that if all organizational employees to share responsibility and give rational suggestion to organization, the quality of organization can be perfectly.

Furthermore, Eironline (1997) to discover that 4/5 employees who working in manufacture factory are consider quality as the most significant factor to influence organization performance. The result of study also reported that for employees, more stress they have, and higher level of contribution can done. Meanwhile, employee involvement increases the job satisfaction of employees. It make employees has perception of affiliation to motivate them hard working for organization. Therefore, employee involvement is vital important to have efficiency organization. Moreover, this study report that levels of trust between management and worker were higher than in organizations with TQM initiatives.

Employee involvement in total quality management it means the employees needs working as a group not individually (Gaudreau et al. 1994). If the employees can work together, it will increase working efficiency because employee working together can base on current product or service to share their opinion, thereby organization can base on employees suggestion to establish rational strategy meet customer requirement; meanwhile it can improve product or service quality, organization quality and competitive advantage.

Eironline (1997) defined employee involvement as one of most important factors in total quality management. This study has pointed some critical questions about employee involvement in total quality management. It investigates which TQM practice that employees concerned; the criteria of TQM practice that employee used. This research found that three-fourths organizations

in Britain believe that to improve employee interesting and understand the requirement of employee can increase employee production enthusiasm, thereby to contribute the organization goal. In this study, 72% participants consider that commutation is the best way to improve employee enthusiasm. It was direct, face-to-face, communication, which employees most valued. Finally, this study concluded that there are two aspects of employee involvement in total quality management. From the employee view, manager need give them enough trust in the organization. In addition, from manager view, they need to reinforce the communication to their employee.

Lawler (1992) further outlined the significant of employee involvement in total quality management. Through empirical research to show under certain situation if employee involves committing organization decision which can help the organization to make better decision. Although employees cannot understand all organization operation, but they are good at their own operating field. Hence, if enterprise gather all employee idea, it means gather all resource of organization, it will be good for organization decision-making and problem solving. Second, if employee involves organization decision making it will improve employee production enthusiasm and job satisfaction. In this study showed that sometimes employees has better understanding about organization that top management, because of them always works at lowest level to implement top management decision and complete part of organization’s work

process. Thereby, employees can from their view to judge top management decision right or wrong.

Sun et al. (2000) conducted a study to investigate the relationship between employee involvement and quality management through empirical data. The sample consist 363 quality managers who come from 186 manufacturing companies in Norway with Norwegian Quality Association (NFK) supported. The results showed that employee involvement positively related to total quality management. Moreover, this result also showed other situations. First, employee involvement has improved the implementation of total quality management and business performance. Second, total quality management can offer opportunities to employee to make sure employee has motive power work for their organization. Finally, the study suggest organization need to focus on employee training, because of with employee skill improving, it can enhance employee involvement. Furthermore, organization need continuous change their management philosophy base on the employee suggestion.

Ree (1999) examined level of employee involvement in total quality management at two private services organization in Britain. The sample comes from two organizations. New bank is major financial service institution in Britain. Second organization is Hotel Co, one of most famous hotel organizations in Britain. The results showed that numbers of New Bank employees reported through employee involvement could help them to acquire

new skill and responsibilities. On the other hand, Hotel Co employee reported that employee involvement did accurate themselves ability as working in organization. Team working enhances their responsibilities and develops new working skill in organization. Moreover, with employee involvement in organization, it can reduce problem-solving time.

Chiu (1999) studied various factors that cause the failure of total quality management programs in Chinese firm in Hong Kong. The sample consist six companies in Hong Kong, three multinational company and three Chinese companies to investigate implementation of employee involvement in total quality management. Through the research to find that there are many factors lead to TQM program fail. One of most important factors is passivity attitude of Chinese employees because failure of TQM, meanwhile lack of trust and honest from management level lead to Chinese negative attitude. Moreover, (a) incorrect motivation for implementing a TQM program, (b) mismatching of management style (c) uncommitted teamwork also lead to failure of total quality management. The study suggested that in order to implement TQM program, management level need to enhance commitment with their employee. Meanwhile employee needs to improve their working attitude and skill to improve organization performance.

Yeh (2003) conducted study to indentify the main factor to improve employee involvement in TQM program. The sample consist 848 respondents from city government in USA. In this study, there are three variables (use of information, quality management and customer satisfaction) were selected as criteria to assess employee participation in total quality management. For the data collection, questionnaire survey was used to collect data. Meanwhile use correlation analysis method and regression method to analysis data. The result demonstrated that training is most significant factor to empower employee in total quality management. Moreover, this study found training did grate contribute to employees' perception of how capable they are in total quality management skill. In a related study to show same results, Garcia-Lorenzo et al. (2000) described training as the main factor to enhance employee involvement of total quality management in SMEs. The research data collect from automotive parts industry in the northwest of Spain.

2.6.3 Continuous Improvement

The means of continuous improvement can be described as continues improve organization process in order to provide products/services meet customer expectation (Shortell, Bennett, Byck, 1998). In other words innovation may be part of continues improvement (Irani, Beskese, Love, 2004). Because of in order to fulfill customer satisfaction, organization need continues innovate new product and services. Continuous improvement and innovation as the foundation of organization, both of them can direct influence organization total quality management.

Evans and Dean (2002) described continuous improvement (Kaizen in Japanese) to continue provide quality product and services in order to improve customer satisfaction level, it is the foundation to practices total quality management. Beside, this study stated that organization culture is most significant element in continuous quality improvement. Because organization culture is different to fully understand by every organization employee. Meanwhile Plan-Do-Study-Act (PDSA) cycle provide the basic process for organization continuous improvement.

Karia and Asaari (2003) conducted one study to investigate the influence of continuous improvement on organization employee and the existed problem during implementing total quality management. This study consist 200

organization employees who current working in different companies in Penang, Malaysia. In this study the independent variable is total quality management practices, especially for continuous improvement, the dependent variable is organization performance such as job satisfaction, employ participation and organization commitment. The result of analysis to find continuous improvement has positive relationship with job involvement, job satisfaction, carrier satisfaction, and organization commitment. Hence, this study suggestion the top management need to implemented TQM practice in organization to achieve organization goal, meanwhile the human resource department and quality assessment department need use TQM system to analysis and find the factor of continues improvement to improve employee job satisfaction level in order to realize organization performance. Therefore the fully understand continue improvement of TQM is signification for organization development.

Further, Qefalia and Koxhaj (2011) indicated TQM is concentrate on enhance quality in all sectors of company, but continues improvement is concentrate on the specifically or single sectors in the company. The study indicated Albania university use TQM practices in their activity. The study sample consist 141 respondents through 9 Albanian public universities. The result of this study show current implication of TQM and continues improvement still face many problems such as lack of training on continues improvement. On the other hand, those the universities implied continues improvement practice, it can improve the process

efficiency, increase the competitiveness and provide significant quality knowledge to students.

Chang (2004) discovered that performance measurement techniques as the foundation for developing reward in total quality management in Taiwanese organizations. There are 70 performance factors and 35 continuous improvement areas was analysis in this study. Continues improvement include customer demand, fulfill customer demand, measure the process, and continues to innovate the new product and service to improve customer satisfaction level. The study found continues improvement can positive influence organization performance.

Wild (1995) described that continuous improvement normally was used in manufacturing industry, but TQM can be practices in any organization, because total quality management is kind of philosophy of management to control all sectors working efficiency in the organization. This study showed continuous improvement used in university. The result of this study discovered since university use TQM, from top management until normally, from lecture until student, all of them have improved their motivation, and working process was reduce time as well as improve the quality.

According to Goetsch and Davis (2003), continuous improvement is one of most significant element for organization practice total quality management. Because with continuous improvement organization can innovate new product,

use new technique and imply advance strategic management approach to get competitive advantage. Meanwhile, the researcher indicates continuous improvement is not only to solve current problem, but also to see future requirement of organization.

2.6.4 Customer Focus

Jablonski (1992) stated that customer focus is cornerstone of total quality management. Because quality improvement is base on the customer requirement in order to meet customer requirement, organization need focus on customer demand to continuous improve quality. Quality is start and over decided by customer satisfaction level. Meanwhile pervious study about customer focus among total quality management, many total quality management fathers (Feigenbaum, Deming, Lakshman, Crosby) also consider customer focus as the foundation of total quality management. Therefore, for the organization that wants to practice TQM, it need always act customer on first.

Wood (1997) conducted the study to show different opinions about customer in total quality management. This study stated that theoretically, Customer focus in the first place in total quality management. However, in really business, profit is the most interesting factor of organization. Customer is the factor to help organization to earn profit. Wood (1997) stated that different customers has different interest, organization cannot focus on all customer. Therefore, organization need to more concentrated on the product quality and organization profit. This study stated that as long as organization has good quality product, the consumer would buy it.

Asaari et al. (2004) conducted one study to investigate strategic planning and customer focus to improve small medium enterprise business performance. Currently, Malaysia SMEs are lack of resource and knowledge to implement TQM practices in their organization. The sample consist 211 companies that located in Penang, Kedah, Perak and Perlis, Malaysia. The result of this study to show that strategic planning and customer focus has positive relationship with business performance of small medium enterprises. Meanwhile through this study to suggest organizations to apply TQM practice in their business to improve their working efficiency to meet customer requirement.

Ooi et al. (2009) conducted one study to examine customer satisfaction and service quality among total quality management in Malaysia Small services enterprise. The study consist 108 managers who come from 108 small enterprises in Malaysia. The result of this study to show TQM has positive relationship with customer satisfaction and service quality in small enterprise of Malaysia. Finally, this study stated that Small services enterprise in order to attract the customer to buy their product or enjoy their service, the manager need to implement total quality management to improve their service level and improve customer satisfaction.

According to Evans and Dean (2002), customer and supplier are an independent part of total quality management. Because every organization is customer to its supplier, meanwhile organization can be supplier to supply their

customer. On the other hand, customer is buyer; through customer buy, the product can increase organization profit. Consequently, the level of customer satisfaction can influence company profit. The high level of customer satisfaction, organization can earn higher profit.

The key of organization to establish customer focus is making organization employee changes their mind, put them as customer to know customer requirement in order to achieve customer satisfaction level (Goetsch & Davis, 2003). In this study, Goetsch and Davis (2003) divided customer as two part which internal customer and external customer. If organization wants to practice total quality management, it need to focus on both internal customer and external customer.

The primary purpose of any organization is to satisfy customers' needs and expectations" any organization without customer support cannot be existed. Customer satisfaction is the most important factor of the total quality management process. Base on Besterfield et al. (2002) viewpoint, without customer focus, the concept of total quality management cannot existed; because of customers is one of most important factor to decide the development of organization, customer satisfaction is the focus of total quality management. In this study to indicate that customer focus in total quality management is to concern about total customer satisfaction. The primary concern is improving product or service quality to satisfy current customer and potential customer. Meanwhile this study shows how

to apply customer focus in modern organization. Customer focus is to know your customers, first organization need to indentify who is your target customer, once the target customers indentified, customer needs and wants must be determined. At same time, organization needs continuous improvement to satisfy different customer requirement.

Subsequently, Mehra and Ranganthan (2008) conducted a study to investigate the role of total quality management to improving customer satisfaction. This study stated that customer satisfaction is most important for the organization. Therefore, currently, organizations try to use many ways to enhance customer satisfaction level. To implement total quality management is one of useful method to focus on customer demand and to fulfill their demand. In this study he sample consist 255 customers who randomly select in many place. At last, base on the research, this study showed if company successful to implement total quality management has positively improve customer satisfaction level. Therefore, the research suggests the service organization try to use total quality system philosophy to enhance their business.

Mehrabi et al. (2008) conducted a study to investigate customer focus is one of key factors of total quality management in social security hospitals in Tehran province in Iran. In addition, to access hospital customer focus after the organization applies total quality management. In this study, the population involves quality improvement section, administrators, and nurses in Tehran social

security hospitals. However, in this study, without sampling was carried out. All the sampling was selected randomly. The result of study showed customer focus is most important factor in total quality management in Tehran province.

Govender (2013) conducted a study to investigate the effect of customer focus on total quality management in service organization in South Africa. This study chooses three level managerial levels; respectively are normal employees, middle managerial level, and top management. The result showed customer focus in service organization is key factor to increase organization revenue. In addition, research also stated in South Africa service organization usually focus on external customer is greater than internal customers.

2.7 Total Quality Management on Logistics

Many researchers (Tompkin, 2010; Smith, 2002) investigated this status as important issues. Total quality management as one efficiency management tools may improve the logistics performances. Therefore total quality management on improving logistics performance has economic significant. This study aims to clarify relationship between total quality management and logistics performance in pharmaceutical industry.

Rahman (2008) conducted a study to investigate the status of quality management practices in logistics; to compares the extent of quality practice between logistics companies and manufacturing companies in Australia. The sample consists 500 companies and the companies enlisted as member of Logistics Association Australia. The study show that the most significant factor to indentify the quality of logistics is “on time delivery”. The limitation of companies implement quality management is “changing corporate culture” and “training and education of employee”. Finally, the study indicate that to implement quality management in manufacturing companies is more extensive than the logistics firm.

Lai (2004) conducted a study about quality management in the logistics industry. This study to investigate the factors that encourage Hong Kong’s logistics industry to implement quality management. There are three factors used to evaluate that are awareness of quality, rising customer expectation and the improvement mechanism.

In this study, the sample consists 184 permanent staff who are the employees of Oriental Logistics Company. In order to implement the quality management, the company develops ten steps process, which starts from management commitment, quality improvement team, quality measurement, quality awareness, manager& supervisor training, goal setting, effort cause removal, corrective actions and recognition- award, continuous improvement. The study indicated since Oriental Logistics using quality management system to set up the standard and procedures, it integrate the different department at same standard, it is easy for employee management. Meanwhile, quality management system to make sure every aspect of work process conforms to customer requirement and meets the expectation of customer.

Sohail et al. (2003) conducted a study to investigate the importance of quality management using to increase logistics performance. The target population selected from 800 companies, which are listed on the Kuala Lumpur Stock Exchange (KLSE) .The sample consists 113 Malaysian companies that are has significant logistics requirement. In this study, the measurement was selected from four areas: process for performance measures, customer expectations issues, tools for measuring customer expectations, satisfaction with current results. The result showed many of Malaysia company have implemented quality program in their logistics functions. It is around 70% of total sample. Other 30% companies also has plan in next three years to implement total quality management. Meanwhile, most of company

considers quality management as long time planning, because the availability of funds was the greatest obstacle faced by managers. Finally, this study indicated the sample size is an apparent limitation.

Zhao, Flynn, and Roth (2006) to do a research on business issues in china are becoming increasingly important to be global economy. The objective of this study to investigate current status, opportunities and proposition in supply chain management, logistics, and quality management in china. the study show current china logistics barriers and challenges. The barrier is undeveloped logistics infrastructure. Meanwhile, the study show the quality management implement in china company that are introduce from western country. But the vast differences between china and western countries. Therefore, researcher suggests china's company need to base on the company status to implement total quality management to improve their logistics performance and supply chain performance.

In recent years, numerous approaches have been proposed to improve operation performance. There are three method that are just in time, supply chain management and quality management. According to Kannan and Tan (2005) to show how just in time, supply chain management and quality management correlate and how they influences business performance. The sample consist 556 employees which from senior operations and materials managers in North America and Europe. The result showed all correlations within Just in time, SCM and TQM were significant.

2.8 Summary

This chapter presented a review of literature review that total quality management, leadership, customer focus, employee involvement, continues improvement. The study will examine the influence of TQM practice toward logistics performance.

In first section, the theoretical evidence to show the total quality management origins and development, based on the theoretical study to state the independent variables of this study. Meanwhile, describe the logistics development and the circumstances of china pharmaceutical industry logistics.

In section 2.5, the empirical evidence to show the previous literature about total quality management practices. The literature covers all of world country and region. Such as Africa, Europe, Asia and North American. Total quality management was widely used in many organizations. In addition, through empirical evidence to show the function of leadership, employee involvement, continuous improvement and customer focus. Chapter three (3) will discuss the research method of this study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is very important which during research process, it can guide researcher according to their objectives to do relevant research to accomplish their objective on time .This chapter presents a description of the methodology used in this study. In order to accomplish research objective, questionnaire was used as data collecting instrument in logistics department of Furen pharmaceutical industry in china. This chapter also will provide an overview of the research study, research framework, and hypothesis development, measurement and instrument, data collection method, population sampling, and data analysis techniques.

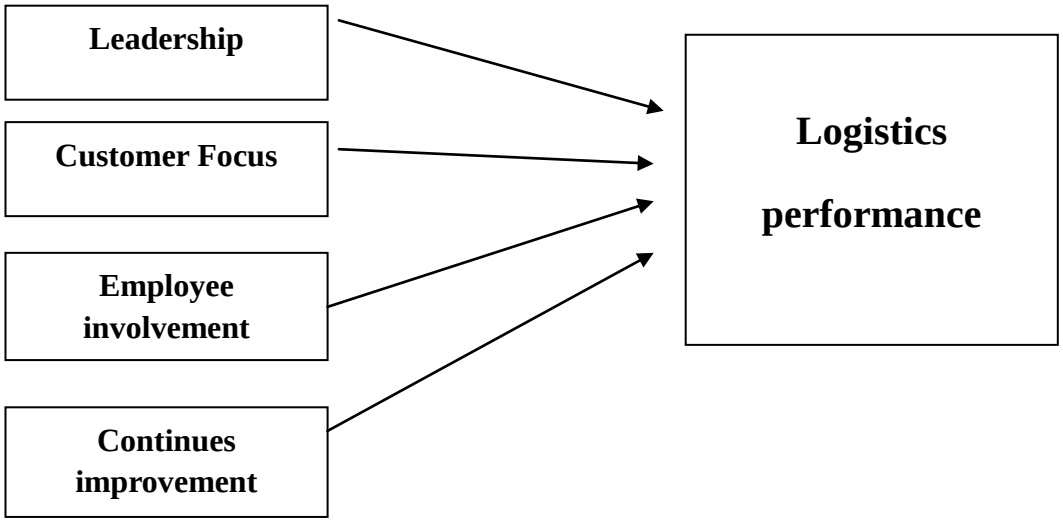
3.2 Research Framework

The diagram of the proposed study was depicted in Figure 3.1. Research framework was developed base on the problem statement and literature review. Research framework was developed to illustrate the relationship between independent variable, and dependent variable. The independent variables are leadership, employee involvement, customer focuses, and continuous improvement. The dependent variable is logistic performance in pharmaceutical industry in china; the research framework is show in figure below:

Figure3.1: **Research Framework**

Independent Variable: **Dependent Variable:**

TQM practices Logistics performance



There are four (4) items as variables in total quality management practices which are independent variable. In addition, dependent variable which is logistics performance.

3.3 Research Design

This part discussed on the research approach and the methods to be used in the research. This study base on decsriptive research, The key factor of use descriptive reasearch is can provide accurate and vaild variables which relevant to the reasearch question. Quantitive data collection and analysis used in this study.

The purpose of this study is to investigate the relationship between Leadership, customer focus, employee involvement, and continues improvement toward logistics performance in parmaceutical industry. The study also will to clarify the critical factor which infulence logistic performance. These purpose will be accomplished by questionnairs. There are two types resource of data used in this study which is primary data and second data.

Primary data which means the data are collected for particulare problem, and using research tools analysis data to solve reaserch problem (Hox and Boeije, 2005). In this study primary data will collect from top management ,qulity manager and empolyees. During primary data collecting process, there are many types of method can be used, such as questionnairs, personal interview. For the business data collection among these instruments, questionnairs is most common way to collect primary data. Because questionnairs can be cover all of employee who working in the orgainzation, therefor questionnair is one of most accuracy instruments to collect primary data in currect bussiness.

3.4 Hypotheses Development

Fierce competition was existed in various sectors including logistics sector. Currently, in order to develop logistic sector in pharmaceutical industry. Management need to find suitable method to support their logistic service. In addition, total quality management (TQM) system is one of methods to improve pharmaceutical industry logistics services at local and global level. In pharmaceutical industry, total quality management plays an important role in achieving value addition and customer satisfaction (Rahman& Qureshi, 2012). As not all total quality management practices are suiting for organization, Therefore different industry need base on their needs to choose appropriate TQM practices. This study also intends to study TQM practices applied in Furen pharmaceutical industry to indentify the level of TQM practices in logistics department. The effect is always dependent on the organization culture. This study would like to examine existed practices contribute the most to the logistics development. The objective of this study is to investigate the relationship between total quality management practice and logistics performance in Furen pharmaceutical industry in china. Therefore, the research framework was formulated based on relevant literature. Consequently, according to research framework, for research hypotheses was estimated for empirical investigation.

i. Relationship between leadership towards logistics performance

This part focuses on the human side of logistics management, addressing both the internal and external relationships that allow logistics performance develop. Thus, multiple elements as independent variable may influence dependent variable (logistics performance). Hence, it hypothesized that:

H1: There is a significant relationship between leadership and logistics performance in Furen Pharmaceutical Industry

ii. Relationship between customer focus and logistics performance

'Customer always right "or "customer is king" was used in all the business field, it also including logistics field. Nowadays in order to keep good relationship with customer. Many logistics companies base on customer requirement to provide different kind of services. Customer focus comprise customer significant, customer requirement and so on. All elements of customer focus may influence logistics performance. Thus, it is hypothesized that:

H2: there is a significant relationship between customer focus and logistics performance in Furen Pharmaceutical Industry

iii. Relationship between employee involvement and logistics performance

Employee involvement in the organization is not a goal nor is it a tool. But it was applied in many organizations. It is kind of management phiosophy encouage employee to particapicant organization management, to contribute to continuous improvement and ongoing success of their work organization.This management philosophy increase employee ownship concept, meanwhile employee involvement encourage the organization decision making speed and accurate. Because employee always stay in the first line of organization, sometime they are better than top management in understanding organization problem. Thus, it is hypothesized that:

H3: there is a significant relationship between employee involovement towards logistics performance in Furen Pharmaceutical Industry

iv. Relationship between continuous improvement and logistics performance

Organizations are always changing management method due to the social development. Nowadays, organization always face competition from their competitor, with the challenge increasing day by day, organization are looking forward to have competitive advantage. Hence, organization through improving quality of product, customer satisfaction, employee job satisfaction to increase the competitive strength.. Because it seeks to

improve products, services or processes to improve competitive position. This can achieve by improving quality, efficiency, innovation or any component that is vital to any system. This is a remorseless process of continually identifying problems, prioritizing these problems by assigning them to the appropriate people to ensure they are removing from the system. Therefore due to continue improvement process, there are many elements need to be care such as product quality, service quality, advanced management philosophy and so on. These elements may influence organization logistics performance. Thus, it is hypothesized that:

H4: there is a significant relationship between continues improvement towards logistics performance in Fu Ren Pharmaceutical Industry

3.5 Operational Definition and Measurement

The operational definition of independent variable and dependement variable is base on research framework;Research questionnairs established was based on the operational measurement.The questions were measured based on five points like as style: 1= strongly disagree, 2= disagree, 3= not sure or natural, 4= agree, 5= strongly agree. The rating scale is shown in the table below:

Table 3.1: **Five-Point Respondant Format**

Strong disagree	Disagree	Moderate	Agree	Strong agree
1	2	3	4	5

Interpretation of variables Section A cover demographic data of the respondants. It can understange background of employees and current working status of employees.this section cover 8 questions. Section B is about total quality management system. It measure the level of total quality management practise in the organization which especially,foucs on leadership, customer focus, employee involovement,continuous improvement.it comprise 28 questions. Section C is about logistics performance. It evlaute the performce of the organization, such as the customer relationship, speed of carry, insurance of transportation and so on. This section cover 13 questions.

Figure 3. 2.:**Layout of Questionnair**

Section	Item	No.of Questions
A	**Demographic**	8
	• Gender	
	• Marital status	
	• Age	
	• Level of education	
	• Length of service	
	• Grade/Position	
B	**Total quality management practises**	28
	•Awarness of TQM program in company	8
	•Leadership	5
	•Customer focus	4
	•Employee involovement	6
	•Continues improvement	5
C	**Logistics performance**	13

There are three measures in this study were adapted from three existed sources. Total quality management practises were adapted from Aboyassin, Alnsour and Alkloub (2011); and logistics performance measurement was adapted from Fu chin chin, Jung-Han Bae and Gwi Ok Kim(2010) which they original had done by Kee-Hung Lai and T.C.E.Cheng (2004). For the demographics information was adapted from Arasd (2012).

Figure 3.3: Independent Variables Measurement

Variables	**Conceptual Definitions**	**No. of Items**	**Scales**	**Sources**	**Items Question**
Total quality management	In this study total quality management practises	4	Five point likert	Aboyassin, Alnsour and Alkloub (2011)	

Variables	Conceptual Definitions	No. of Items	Scales	Sources	Items Question
practises	comprises of leadership,customer focus, employee involovement,continues improvement		scale (1-5)		
Leadership		5			1.Top management considers quality is a real slogan not abandoned and basis for action. 2. Top Management believes that application of total quality principles

Variables	Conceptual Definitions	No. of Items	Scales	Sources	Items Question
					leads to maintaining the competitive position and profitability in case of slow growth economy.
					3.Top management maintains a clear evidence of the quality policy that contains all necessary instructions and standards for measuring and tracking quality
					4.Top management provides necessary means for change in the culture of the organization to implement quality programs.
					5.Top management takes decisions based on facts,information and knowledge supported by employees and customers' recommendations.

Variables	Conceptual Definitions	No. of Items	Scales	Sources	Items Question
Customer focus		4			1.Company strives to organize periodic meeting to strength ties with customers. 2.The company's competitive strategies are based on achieving high value to customers. 3.Surveys are conducted periodically to indentify the customer's needs,desires and their future expectations. 4.Company focuses on feedback through special system for proposals made by customers to cover deficiencies in service delivery.

Variables	Conceptual Definitions	No. of Items	Scales	Sources	Items Question
Continuous improvement		5			1.Company is keen to develop and provide new services regularly and continuously. 2.The company provides relatively a sophisticated infrastructure that would increase the level of service quality. 3.The company constantly strives to reduce the inequality gap between customer expectations and actual service rendered. 4.Company has an organized research and development department that focuses on continuous improvement of services. 5.Company strives that continuous improvement should be

Variables	Conceptual Definitions	No. of Items	Scales	Sources	Items Question
					responsibility of all management levels.
Employee involvement					1.Subordinates participate in developing the strategic plan of company's comprehensive quality.
					2.Company uses a specific mechanism of material inventives.
					3.The company employs encouragement, reinforcement and continuous motivation of employee so that they correct themselves.
					4.The company belives in the need to strengthen the confidence of workers as an essential condition for implementing the strategy of comprehensive quality.

Variable	Conceptual definition	No.of items	Scales	Sources	Items question
					5.Senior management is keen to reward its inventor's staff in implementing total quality strategy. 6.Operating systems is in the company delegate authority to lower adminstrative levels to increase their skills and solve their problems by themselves.

Sources:Aboyassin, Alnsour and Alkloub (2011)

Variable	Conception Definition	No. of items	Scales	Sources	Items of question
Awarness of TQM		8	Five point scales	Talib et al.(2011)	1. Familiarity with TQM concepts and practices 2. TQM is a guiding philosophy in the company 3. The company has trained most of its employees in TQM concepts 4. TQM is a way of guaranteeing high-quality products and services 5. TQM program is practiced throughout the company 6. TQM in your company is successful 7. Familiarity with continuous quality improvement and innovation program 8. Usage of any TQM model in the company

Source:

Figure 3.4:Logistics Performance Measurement

Variable	No. of items	scales	sources	Items of questions
Logistics performance	13	Five point scales (1-5)	Fu,C, C. Bae, J,H Kim,G.O (2010)	1. Helping customer to solve cargo transportation dispute. 2. Making efforts to help in emergencies. 3. Giving pre-alert notices of delivery problems. 4. Providing emergency services. 5. Responding to customer requests in a flexible manner. 6. Handing customer complaints patiently. 7. Adjusting operations in a flexible manner to meet unforeseen customer needs. 8. Handing Changes efficiency

Variable	No. of items	Scales	Sources	Items of questions
				9. Recommending alternative actions when unforeseen problems arise.
				10. Helping customer contact with insurance company to claim for compensation.
				11. Advising customers of potential problems in meeting their needs.
				12. Helping customers in value analysis, cost reductions,problem solving etc.
				13. Providing performance reports periodically.

Sources: Fu, C.C. Bae, J,H,Kim,G.O (2010)

3.6 Research Population

A research population is normally a large collection of individual that is research want to analysis(Uma and Roger, 2009). In this study, to achieve the research objective, a survey was carried out amongst employees who working in logistics department of Furen Pharmaceutical Group. The population for this study is the logistics department employees of Furen, there are approximately 196 logistics employees.

3.7 Sampling Data

In statistics method, sampling group can be defined as part of group population. Normally in research group population is huge number, to investigate all the popultion is diffcult or impossible.Therefore, choose sampling group to replace group population in research. The common sampling method is simple random-sampling, this method can be famous used in many researches, for the reason of every member of population has same chance to be choosed as sampling group (Paula and Justo, 2001). Meanwhile identify that the sampling is the process of selecting a sufficient number of elements from the population and the reason for using a sample in the population are due to fairly obvious. Base on krejcie and morgan (1970) matrix, Furen Pharmaceutical Group has 196 logistics employees, therefore the sample size for this study will be 129 respondents. In order to has high return rate and get accurate record, the researcher to distribute 135 questionnaires. However during data collecting process only 121 respondent was returned back.

There are 14 research questionnair was incomplete or has mistake, therefore in order to get reliablity of data, during data analysis process these 14 questionnaires was not calculated.

3.8 Data Analysis Methods

Data analysis is most impotant body of research metholody. Through data analysis can transform unorganize or unfinish data to useful information to help researcher to get facts, observe patterns, formulate explanations and try out hypotheses. In other word, the data analysis can help researcher to change the data to chart graph, it can deeply to understand fact, thereby, research through data analysis get corret answer to solve relevant questiones. During data analysis method, correlation analysis and regression analysis used widely in many field. Because it can audio-visual demostrate the data information in the chart. It better to understand what research needwants. All the data collection for this study will be processed through the usage of StatisticalPackage for the Social Sciences (SPSS) version 19.0. Normally the data analysis include descriptive statistic and inferential statistic. In order to get actual result, some of data analysis method was used in this study, it can be conclude involoving statistical means, percentage, standard deviations, piolt test.correlation coefficient and regression analysis.

3.8.1 Descriptive Statistics

Descriptive statistics was used to describe the basic feature of data which provide the simple summaries about the sample and measurement. For descrpitive analysis, normally to analysis three charateristics of the vairbale, such as distribution, centeral tendency and dispersion. For distribution, one of the most famous way to describe the variable is using frequency distribution. For centeral tendency, there are three main parts of that which is mean, median and mode. For dispersion, standard deviation is the common way to show the relation of data.

In this study, frequency distribution, mean and standard deviation was used. Frequency disribution use to analysis the demographic information, use table to show the basic infromation of Furen logistics employees. To use mean analysis the employee satisfaction level of implementing TQM practises. The higher mean, it means the high employee satisfaction level. Standard deviation use to check the data accuartely. The higher standerd deviation. It means the data has lower accurate. According to Each aspect of the determinants were being categorised into 3 levels which are high level, moderate level and low level.

Table 3.2: Mean level

Value	The Most Domain Factors
3.68-5.00	High
2.34-3.67	Moderate
1.0-2.33	Low

Source: Azizi bin Hj Yahaya (2008)

3.8.2 Correlation Analysis

Correlation is the mesurement to analysis how well the two aviables relate. Currently, the most famous correlation measurement in statistics is person correlation. It clearly showed linear relationship between two variables. Correlation coefficients analysis is utilized to examine the data and test the hypothesis. The scale is used to describe the intensity of relationships between the dependent variables and independent variables of the study. The correlation coefficient's value indicates the strength of the relationship which can be from -1 to +1. The sign (- or +) indicates the direction of the relationship. As result is -1 it means there is prefect negative relationship between two variables. In constract, if the result is +1 it means there is prefect positive relationship between two variables. In addition, if the result is 0. It means totally there is no relationship between two variables. Meanwhile, there are many condition occur during reseach such as:very high correction(0.7-1.0 or-0.7－-1.0) high correlation (0.5－0.7 or -0.5－-0.7); low correlation(0.3－0.5 or-0.3－-0.5) and very low correlation(0.0－-0.3 or 0.0－0.3).

Table 3.3:**The Strength of Correlation**

Value of correlation	**Relationship between two varibles**
0.7-1.0 or-0.7－-1.0	very high correlation
0.5－0.7 or -0.5－-0.7	high correlation
0.3－0.5 or-0.3－-0.5	low correlation
0.0－-0.3 or 0.0－0.3	very low correlation

Sources: "Guilford Rule of Thumb" (Guilford, 1956) the strength of correlation

3.8.3 Regression analysis

On the other hand, Regression analysis is other statistical techniques in social and behavioral sciences as well as in physical sciences. Its main objective is to explore the relationship between a dependent variable and one or more independent variables. In the sample linear regression analysis, the result only showed relationship between a single dependent variable and a single independent variable. In this study multiple regression analysis used to decide the relationship between indenpend varialbe and dependent varialbe. because there are four independent variables and one dependent variable in this study. For regression analysis, p-value for each items is to tests the null hyphthesis.if the coefficient is equal to 0, that means independent variable cannot influence depend variable. In addition, if the p-value below 0.05, that means the null

hypotheis canbe rejected. In other word, if the p-value greater 0.05, that means the independent does not has significant with dependent variable. On the other hands, Beta also decide relationship between independent variale and dependent variable. If the beta score higher,which means independent variable stronger effect dependent variable. If Beta=0. That means independent variable cannot effect dependent variable. Finally, no matter correlation analysis and regression analysis can be explain as cause-and effect relationship.

3.9 Summary

This chapter discibe the methodology of this research. The main aspect of this chapter is describee the research method to evaluate the relationship between independent vairables and depend variable. This chapter detailly descibe function of two type of research method, which descriptive statistics and correlation statistics. In addition, this chapter describe research framework, rearch design, and questionnair development. Base on research questiones and research objectives to develop hypothese.

For data collection method, base on Krejcie and Morgan (1970) matrix.There are 121 respondents was selected as sample. Questionnair survey was used, which include 30 questionnair. It was gave respondents two weeks to complete this questionnair.

For data analysis method, there are descriptive statistics and correlation statistics. In descriptive statistics method, mean ,standard deviation, frequency was used to analysis the level of TQM practices in Furen logistics department. in correlation statistics method, correlation analysis and regression analysis was used. In correlation analysis using Cronbach’s alpha and person correlation to analysis relationship betweeen variabes. In regression analysis, R-square, Beta and significant level was used.

CHAPTER 4
RESULTS AND FINDING

4.1 Introduction

This chapter is discussing the finding of data, which come from the questionnaire survey. All the data will be analysis by statistical package for the social sciences (SPSS) version 19.0. This chapter can divide into three sections, first section to collected from survey questionnaire. Based on collected data, use pilot test method to test the reliability of questionnaire. Second section, through frequency to analysis the respondents' demographic information, Such as, gender, age, year of working, position and so on. Third section, the descriptive analysis was used to analysis level of total quality management practices in Furen pharmaceutical industry. Meanwhile, person correlation coefficient analysis was used to access the relationship between total quality management practice and logistics performance. In addition, regression analysis to access critical factor of total quality management practices to influence logistics performance.

4.2 Pilot Test Analysis

Reliability was defined as degree of consistency of a measure. In this study, Cronbach's Alpha uses to measure the internal consistency of questionnaire (Cortina, 1993). Normally the value of alpha is 0.7 or above during research pilot test, it means the questionnaire has high reliability, the research can continue use questionnaire to do research. If the alpha value is lower than 0.7, the research need to delete items and try to get high reliability of questionnaire (Nunnaly, 1978). In this part, the reliability analysis was conducted by 30 samples questionnaire, which randomly select selected from respondents.

Table 4.1: **Value of Alpha**

Cronbach's alpha	**Internal consistency**
$\alpha \geq 0.9$	Excellent (High-Stakes testing)
$0.7 \leq \alpha < 0.9$	Good (Low-Stakes testing)
$0.6 \leq \alpha < 0.7$	Acceptable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Source: Cortina, J.M. (1993).

In the intitial part of the research, a pilot test was conducted to ensure the relibality of this research. Because in research, nonsampling survey may cause some problem with interviewer, consequenlty, it affect entrie research relibality. In the survey, use pilot test can indentify potential problem to reduce nonsampling measurement error produced by the survey (Rothgeb,2008). Pilot test was conducted,who include a small group 30 employees working in logistics department. It is randomly seleted from the research population to make sure every employee has same chance to be seleted during this research. For the reason to get back questionnaires to do pilot testing, these 30 questionnairs are distribute to employees, thus 30 questionnaires was complete collected in the pilot testing. After the pilot testing result come out, this 30 questionnaires was again used by group itself. It means after the pilot testing ,the research only need to distribute other 105 questionnaires. Because the total sample is 135. The results of the reliability analysis in the pilot test showed as below:

Table 4.2: **The Results of Pilot Test**

Variable	Cronbach's alpha	No. of items
Total quality management	0.822	28
Logistics performance	0.710	13

4.2.1 The reliability of Total quality management practices (pilot test)

First, the reliability test on the items of total quality management practices. There are 28 items in total quality management practices. For the Cronbach's alpha value of TQM practices is 0.822, it is greater than 0.7. It means the items of total quality management practices are acceptable.

Table 4.3: **The Reliability Statistics of TQM Practices**

Reliability Statistics

Cronbach's Alpha	N of Items
.822	28

4.2.1.1 The reliability of Leadership (pilot test)

The reliability test on the items of leadership was calculated in this part. There are 5 items in leadership management. For the Cronbach's alpha value of leadership management is 0.731. It is greater than 0.7. It means the items of total quality management practices are acceptable.

Table 4.4: **The reliability Analysis of Leadership**

Reliability Statistics

Cronbach's Alpha	N of Items
.731	5

4.2.1.2 The reliability analysis of customer focus (pilot test)

Here the reliability analysis to evaluate the items of customer focuses. There are 4 items in customer focus practices. For the Cronbach's alpha value of customer focus is 0.755. It is greater than 0.7. It means the items of total quality management practices are acceptable.

Table 4.5: **The Reliability Analysis of Customer Focus**

Reliability Statistics

Cronbach's Alpha	N of Items
.755	4

4.2.1.3 The reliability analysis of employee involvement (pilot test)

Here the reliability tests on the items of employee involvements. There are 6 items in employee involvement practices. For the Cronbach's alpha value of employee involvement practices is 0.724. It is greater than 0.7. It means the items of employee involvement are acceptable.

Table 4.6: **The Reliability Analysis of Employee Involvement**

Reliability Statistics

Cronbach's Alpha	N of Items
.724	6

4.2.1.4 The reliability analysis of continuous improvement (pilot test)

Here the reliability tests on the items of continuous improvement. There are 5 items in continuous improvement practices. For the Cronbach's alpha value of employee involvement practices is 0.732. It is greater than 0.7. It means the items of employee involvement are acceptable.

Table 4.7: **The Reliability Analysis of Continuous Improvement**

Reliability Statistics

Cronbach's Alpha	N of Items
.732	5

4.2.1.5 The reliability analysis of awareness of TQM (pilot test)

Here the reliability tests on the items of awareness of TQM. There are 8 items in awareness of TQM practices. For the Cronbach's alpha value of

awareness of TQM practices is 0.791. It is greater than 0.7. It means the items of employee involvement are acceptable.

Table 4.8**: The Reliability Analysis of Awareness of TQM**

Reliability Statistics

Cronbach's Alpha	N of Items
.791	8

4.2.2 The reliability analysis of Logistics performance (pilot test)

Here the reliability tests on the items of Logistics performance. There are 13 items in logistics performance practices. For the Cronbach's alpha value of awareness of Logistics performance practices is 0.710. It is greater than 0.7. It means the items of logistics performance are acceptable.

Table 4.9**: The Reliability Analysis of Logistics Performance**

Reliability Statistics

Cronbach's Alpha	N of Items
.710	13

4.3 Overview of Data Collected

First, the researcher asks the permission from Furen pharmaceutical industry headquarters to do the survey in their logistics department about total quality management. After the application was approved, the researcher goes to Furen logistics department to do the survey, first to send 30 questionnaires to their employees at randomly, in order to test the reliability of researcher's questionnaire. The researcher was waiting the employees' whole day in their office; wish to take back questionnaire without missing. Finally, as the researcher wishes, the researcher recovers 30 questionnaires, and checks the questionnaire one by one on the spot to minimize the mistake. The researcher use two weeks to test the reliability of instrument, the test result showed questionnaire is acceptable. Then researcher sends other 105 questionnaires to Furen logistics department. The logistics department chairperson help researcher to distribute questionnaire, and given employees two weeks to completed the questionnaire. Unfortunately, this time only 91 questionnaires was collected, still has 14 questionnaires was missed.

4.3.1 Response Rate

Response rate also known as return rate in survey, it is according to how many people answer the questions and return it (Hair et al., 1984). During business research, response rate of questionnaire was conducted as an important indicator of research quality. The higher response rate to get higher accurate result during research. In this study, the researcher totally distributes 135

questionnaires and 121 questionnaires were returned back. The response rate is around 86%. According to Richardson (2005) stated in face-to-face survey 80%-85% is good. Therefore, in this study 86% of respond rate is acceptable.

Figure 4.1: Respond rate:

Mail: 50% adequate, 60% good, 70% very good
Phone: 80% good
Email: 40% average, 50% good, 60% very good
Online: 30% average
Face-to-face: 80-85% good

Source: Richardson, J.T.E. (2005)

4.4. Reliability Analysis

Reliability analysis is to assess coefficient of internal consistency. Normally use cronbach's alpha value to test it. In this study, the result of reliability test is state at below:

Table 4.10: **The Reliability of Dependent Variable and Independent Variable**

Reliability Statistics

Cronbach's Alpha	N of Items
.870	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
leadership	19.4679	4.022	.633	.854
Customer focus	19.4369	4.100	.586	.862
Continue improvement	19.5026	3.981	.620	.857
employee involvement	19.6346	3.821	.665	.849
logistics performance	19.4660	3.971	.796	.830
Awareness of TQM	19.5009	3.804	.744	.834

First, in this study, there are six variables include dependent variable and independent variable. The cronbach's alpha for six variable is 0.870 which is greater than 0.7. It means there are six variables are acceptable in this study. For the logistics performance (dependent variable), the crobach's alpha is 0.830 that is higher than 0.7. Therefore, the reliability is acceptable. Cronbach's alpha of independent variable also higher than 0.7. Therefore, reliability of IV is acceptable.

4.5 Demographic Analysis

4.5.1 Gender

In this study, the sample respondents cover 121 employees which from Furen pharmaceutical industry. Sample consist 101 males and 20 females. The analysis result showed there are 83.5% of sample respondents are males, and 16.5% of sample respondents are female. From resulted to show in Furen logistic department, males employee is occur high percentage.

Table 4.11: **The Frequency Gender of Respondents**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	101	83.5	83.5	83.5
	Female	20	16.5	16.5	100.0
	Total	121	100.0	100.0	

4.5.2 Age

According to the research result, in Furen logistics department 31-36 years old has 42 respondents at highest percentage is 34.7%. 25 years- 30 years and 37-42 years have same 26 respondents and the percentages are 21.5%. The following are 19 years-24 years is 12.4%, 43 years-48 years is 8.3%. In addition, other respondents' age has 1.7%.

Table 4.12: **The Frequency Age of Respondents**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	19 years-24 years	15	12.4	12.4	12.4
	25 years-30 years	26	21.5	21.5	33.9
	31 years-36 years	42	34.7	34.7	68.6
	37 years-42 years	26	21.5	21.5	90.1
	43 years-48 years	10	8.3	8.3	98.3
	Others	2	1.7	1.7	100.0
	Total	121	100.0	100.0	

4.5.3 Marital status

In term of marital status in table 4.13, there are 94 respondents had gotten married, it is 77.7% of total respondents; 27 respondents are single and occupy 23.3% of total respondents. In this cases stated in Furen logistics department, married employees have higher percentage than single employees.

Table 4.13:**The Frequency Marital Status of Respondents**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	94	77.7	77.7	77.7
	Single	27	22.3	22.3	100.0
	Total	121	100.0	100.0	

4.5.4 Length of Service

Based on the table 4.14, to state in Furen logistics department, the highest percentage of length of service is 38%, it is belong to 3 years- 5 years. In

additional, 3 years -10 years totally has 79 respondents, it is around 65% of total respondents. Meanwhile, there are 20 respondents working more than 10 years. Theses can share their experience to the employee who working below 2 years.

Table 4.14**: The Frequency Length of Service**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 years - 2 years	22	18.2	18.2	18.2
	3 years -5 years	46	38.0	38.0	56.2
	6 years -10 years	33	27.3	27.3	83.5
	above 10 years	20	16.5	16.5	100.0
	Total	121	100.0	100.0	

4.5.5 Education Level

Regarding to the analysis which show in table 4.15. The highest education level is master in Furen logistics department. There are 21 respondents have master degree. It is occupy around 17.4 percentage of total respondent. In current logistics company, it is very high percentage, meanwhile to approve Furen logistics department has high professional knowledge level. Degree education level has 39 respondents at highest percentage. Master and degree are the backbone force of logistics department. Because master and degree occupy around 50% of respondents, and most of them are knowledgeable. Due to high percentage of knowledgeable, Furen logistics department has many ideas to improve their performance. In additional, the following by diploma 21.5%, Senior high school 19.0%, Secondary school 9.9%.

Table 4.15:**The Frequency of Education Level**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Master	21	17.4	17.4	17.4
	Degree	39	32.2	32.2	49.6
	Diploma	26	21.5	21.5	71.1
	senior high school	23	19.0	19.0	90.1
	secondary school	12	9.9	9.9	100.0
	Total	121	100.0	100.0	

4.5.6 Position

It terms of table 4.16 frequency of position level. Normally staff has 47.1 percentages at highest percentage. Following as clerk 27.3%, officer 18.2% and manager 7.4%.

Table 4.16:**The Frequency of position level**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	manager	9	7.4	7.4	7.4
	officer	22	18.2	18.2	25.6
	clerk	33	27.3	27.3	52.9
	staff	57	47.1	47.1	100.0
	Total	121	100.0	100.0	

4.6 Mean and Standard Deviation Analysis

Mean is average value of items, Standard deviation is the average distance numbers lie from the mean. It means if the standard deviation has large number that it cannot perform data very well. In this study, the mean of leadership is 3.9, it means most of respondent accept current leadership. However, the gap between minimum score and maximum score is higher, the range from 1.6 to 4.8. In case, normally, the employees have different perspective on leadership. Therefore, the standard deviation also can acceptable. The mean of customer focus almost same with leadership is 3.9. This result represents around 80% employee was agreed company leadership strategy. Mean of Continuous improvement is 3.9. Employee involvement mean is 3.8. The highest mean value is customer focus; it means most of employees are significant with organization customer strategy

Table 4.17:**Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
leadership	121	1.60	4.80	3.9339	.50026
Customer focus	121	2.50	5.00	3.9649	.50240
Awareness of TQM	121	1.63	5.00	3.9008	.51003
logistics performance	121	2.23	4.85	3.9358	.43597
employee involvement	121	1.83	4.83	3.7672	.54750
Continue improvement	121	2.00	5.00	3.8992	.52162
Valid N (list wise)	121				

Low: 1.0-2.33 Moderate: 2.34-3.67 High: 3.68-5.00

4.7 Correlation Analysis

The correlation coefficient is measure strength of linear association between two variables. Currently, the most comment method is to test correlation is person correlation. It is determine by correlation coefficient ρ, which is rang from "-1 to +1". "0" means there is no relationship between two variables. "-1" means there is strong negative relationship between two variables."+1" means there is strong positive relationship between two variables.

Table 4.18**: Correlation between IV and DV**

	IV	**DV(Logistics performance)**
Person	Leadership	0.602
Correlation	Continuous improvement	0.564
Sig.(2-tail)	Customer focus	0.594
N=121	Employee involvement	0.627

In this study, there are four independent variables and one dependent variable. In term of table 4.18, the result showed, these four variables are having relationship with logistics performance. According to (Guilford) 1956," the strength of correlation",

The results of Pearson Correlation Analysis showed the correlation between TQM practices and logistics performance. The correlation value for leadership and logistics performance is r=0.602 ($p \leqslant 0.01$), it means leadership has positive high correlation with logistics performance. The correlation value for continuous

improvement and logistics performance is r=0.564 (p≤0.01), it means continuous improvement has positive high correlation with logistics performance. The correlation value for customer focus and logistics performance is r=0.597 (p≤0.01), it means customer focus has positive high relationship with logistics performance, At last, the correlations value for employee involvement and logistics performance is r=0.627 (p≤0.01), it means employee involvement has high positive relationship with logistics performance.

4.7.1 TQM Practices and Logistics Performance

In terms of *table 4.19*, to analysis the correlations between TQM practices and logistics performance. The result show that r=0.796 (p≤0.01). It means TQM practices have very strong positive relationship with logistics performance.

Table4.19:**Correlations between TQM practices and logistics performance**

		logistics performance	TQM
logistics performance	Pearson Correlation	1	.796**
	Sig. (2-tailed)		.000
	N	121	121
TQM	Pearson Correlation	.796**	1
	Sig. (2-tailed)	.000	
	N	121	121

**. Correlation is significant at the 0.01 level (2-tailed).

4.8 Regression Analysis

Regression analysis was used in a situation where one or more metrics independent variable(s) are hypothesized to affect a metric dependent variable. In this section, the researcher provide multiple regression relationship between independent variables (leadership, customer focus, continuous improvement and employee involvement) and dependent variable (logistics performance)

4.8.1 Regression Analysis on Coefficient of Determination(R Square)

Table 4.20**:Model Summary(R Square)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.779[a]	.607	.594	.27785

a. Predictors: (Constant), leadership, Continue improvement, Customer focus, employee involvement

b. dependent variable: logistics performance

Coefficient of determination(R square) is a statistical method that measure or indicated the percentage of variance in one variable can be explain or predicted by its relationship with another variable.

According to table 4.20: model summary, R=0.779, in linear regression analysis, if the R score more than 0.5, it can be consider as critical, in this study, R=0.779 which is greater than 0.5. Therefore, it can describe, as there is relationship between independent variable and dependent variable. For the R

Square value equal to 0.607. It means 60% of four independent variable(employee involvement, continuous improvement, customer focus and leadership) has impact on dependent variable. In other word, 60 percent of variance in logistics performance can explain by independent variable, there are 40 percent cannot be explaining by regression analysis.

4.8.2 Regression Analysis of Coefficient

Regression analysis of coefficient test is use to test the coefficient between independent variables and dependent variable. Beta indicates which independent variable has most contribute to dependent variable. In coefficient, if Beta=1, that means the independent variable has huge effect on dependent variable. If the significant level is below 0.05 which means the variable is significant.

Table 4.21:**Regression analysis of Coefficients**[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.632	.251		2.514	.013
	employee involvement	.252	.058	.316	4.341	.000
	Continue improvement	.172	.059	.206	2.905	.004
	Customer focus	.249	.062	.287	3.992	.000
	leadership	.177	.066	.203	2.661	.009

a. Dependent Variable: logistics performance

Based on the result of regression analysis on coefficient, these four independent variables are significantly influence logistics performance. Because

the p value of employee involvement is (0.000), continuous improvement is (0.004), customer focus is (0.000) and leadership is (0.009). The p values of these four independent variables are below 0.05. Therefore, they are all significantly influence logistics performance.

Moreover, table 4.21 showed that total quality management practices which are employee involvement (β =0.316, $p < 0.05$), continuous improvement ($\beta = 0.206$, $p < 0.05$), Customer focus ($\beta = 0.287$, $p < 0.05$) and leadership ($\beta = 0.203$, $p < 0.05$). It means these four dimensions of TQM practices are significantly with logistics performance. Within four dimensions, employee involvement has high beta value at 0.316, which indicate that attitude is the most important factor in influence logistics performance. It can conclude that employee involvement is the critical factor in total quality management on logistics performance. It means when the employee involvement increase one units, it will increase 0.316 unit of logistics performance.

4.9 Hypotheses Testing

There are four hypothesis was formulated in this research. In this section, research use analysis result to test hypothesis.

4.9.1. Hypotheses 1: There is a significant relationship between leadership and logistics performance in Furen pharmaceutical industry

The result from correlation analysis and multiple regression analysis indicate there is positive and significant relationship between leadership and logistics performance in Furen pharmaceutical industry. Because the person correlation value is 0.602, and (B=0.203). In this study, the model reach statistics significant ($p=0.009<0.05$). According to correlation value and Beta value to show that leadership has effect logistics performance. Hence, the hypothesis is accepted.

4.9.2 Hypotheses 2: there is a significant relationship between customer focus and logistics performance in Furen pharmaceutical industry

The result from correlation analysis and multiple regression analysis indicate there is positive and significant relationship between customer focus and logistics performance in Furen pharmaceutical industry. Because the person correlation value is 0.594, and (B=0.287). In this study, the model reach statistics significant ($p=0.000<0.05$). According to correlation value and Beta

value to show that customer focus has effect logistics performance.

4.9.3 Hypotheses 3: there is a significant relationship between employee involvement towards logistics performance in Fu Ren Pharmaceutical Industry

The result from correlation analysis and multiple regression analysis indicate there is positive and significant relationship between employee involvement and logistics performance in Furen pharmaceutical industry. Because the person correlation value is 0.627, and (B=0.316). In this study, the model reach statistics significant ($p=0.000<0.05$). According to correlation value and Beta value to show that employee involvement has effect logistics performance. Hence, the hypothesis is accepted.

4.9.4 Hypotheses 4:there is a significant relationship between continuous improvement towards logistics performance in Furen pharmaceutical industry

The result from correlation analysis and multiple regression analysis indicate there is positive and significant relationship between continues improvement and logistics performance in Furen pharmaceutical industry. Because the person correlation value is 0.564 and (B=0.206). In this study, the model reach statistics significant ($p=0.004<0.05$). According to p value and Beta value to show that continues improvement has effect logistics performance.

4.10 Summary Hypotheses Results

Figure 4.2: **Hypotheses Results**

Hypothesis	Result
Hypotheses 1: There is a significant relationship between leadership and logistics performance in Fu Ren Pharmaceutical Industry	**Accepted**
Hypotheses 2: There is a significant relationship between customer focus and logistics performance in Fu Ren Pharmaceutical Industry	**Accepted**
Hypotheses 3: There is a significant relationship between employee involvement towards logistics performance in Fu Ren Pharmaceutical Industry	**Accepted**
Hypotheses 4: There is a significant relationship between continues improvement towards logistics performance in Fu Ren Pharmaceutical Industry	**Accepted**

4.11 Summary

Chapter 4 presented the finding and data analyzing. In this chapter, the data information was collected through questionnaire from 121 respondents who working in logistics department of Furen pharmaceutical industry which is top 20 pharmaceutical industry in China.

For descriptive statistics perspective, mean, standard deviation and frequency was used to explain first objective. Mean of TQM practices range from 3.767-3.9649. Based on range from 3.68-5.00 belong to high level. Therefore, all the variables of TQM are in high level rang. It means Furen pharmaceutical industry has high level of total quality management.

For correlation statistics perspective, correlation analysis method and regression analysis method was used in this chapter. Correlation analysis using person's correlation method to analysis relationship between independent variables and dependent variables. From personal correlation viewpoint, the p value of all TQM practices are above 0.5. Therefore, the result shows all variables of TQM have positive relationship with logistics performance. In order to get accurately result, this study also use regression analysis, R-square, Beta and significant level was use to evaluate IV and DV. The R-square is 0.779 and Beta of TQM practice is 0.632. These two result are high than 0.5. In addition, significant level of four variables are

lower than 0.05, it means all variables are significant. Final, the result showed TQM practices has significant relationship with logistics performance.

CHAPTER 5

DISCUSSION, RECOMMENDATION AND CONCLUSION

5.1 Introduction

The previous chapter presents the result of data and intends to test the hypotheses. In this chapter focus on the discussion about hypotheses result, based on hypotheses result to present some recommendations for future organization apply total quality management. At last of this chapter indicate the limitation and conclusion of the study.

5.2 Discussion

This study investigated the influence of total quality management on logistics performance in pharmaceutical industry in china. Total quality management (TQM) as pervasive part business thinking as quarterly financial results, and yet TQM as competitive advantage widely used by many organizations (Powell, 1995). specially, this study assess four items of total quality management, which are leadership, continuous improvement, employee involvement and customer focus on logistics

performance in Furen pharmaceutical industry. The data analysis results showed that total quality management has positive relationship with logistics performance, because leadership, continuous improvement, employee involvement and customer focus are positively influence logistics performance in pharmaceutical industry. In these four items, employee involvement as the critical factor to influence logistics performance.

In this study, questionnaires were distributed to 135 respondents who working in logistics department of Furen pharmaceutical industry, China. Moreover, 121 questionnaires were taken back. The respondent rate is around 89% which is quite acceptable, according to Richardson (2005) stated in academic survey 80%-85% is high respondent rate. For this study, the respondent rate even higher than 85%.

Based on Gender, there were 101(83.5%) male and 20(16.5%) female of respondents. Base on length of service and education level to analysis employee's job satisfaction. Because if the length of service and education level is longer and higher. It means employees intend to stay in this organization. In this study most of employees (46, 38%) working between 3 years and 5 years. The highest frequency of employee is Bachelor's degree that occupies 39 employees and 32.2% of total employees. It indicated in Furen pharmaceutical industry has a lot of high professional knowledge; it is good at implying new management model. A majority of the respondents were got married with 77.7%, While 23.3% of respondents are single.

For the leadership perspective, the minimum value of leadership practices is 1.60 and the maximum value is 4.8. The mean value of leadership is 3.93. This result details indicate most of employees are satisfy with company leadership strategy. As the satisfaction level mention that 1.0-2.33 is low level, 2.34-3.67 is moderate level and 3.68-5.00 is high level. In leadership category, 1(0.8%) employee at low level, 36 (29.8%) employees at moderate level and other 84(69.4%) employees are at high satisfaction level. However still has 30.6% employee are below satisfaction of organization leadership strategy. Hence, for top management need to improve their leadership strategy and reinforce their communication with their employees.

For the customer focus category, the minimum value is 2.50 while maximum value is 5.00; the mean value of customer focus is 3.96. In this study, 121 respondents were included. There are 2 (1.7%) employees choose strong disagree with customer focus strategy. Between 5% and 20.7% of respondents are choose disagree and moderate. Meanwhile between 47.9% and 95% of respondents are choose agree and strong agree. It indicated that most of respondents are agree with customer focus strategy. For several reasons, there are 25 employees are not agree with organization customer focus strategy. Therefore, the organization requires to seriously collect employees suggestions from non agree employees. The employees' suggestion may take new ideas to strength the relationship between organization and customer.

From continue improvement perspective, the minimum value is 2.00 while maximum value is 5.00. The mean value of continue improvement is 3.89. Compare with mean value of leadership and customer focus, mean value of continue improvement is a bit lower. Even though employees have high satisfaction level, but it is lower than leadership and customer focus. Managers may more concern about continuous improvement practices. There are 5 (4.1%) employees strongly disagree or disagree with continuous improvement practices. Between 4% and 27.3% of respondent are moderate. The other respondents are agree or strongly agree with continuous improvement practices. For continuous improvement is important for organization development. Therefore, Furen logistics managers require finding the way to improve employees' awareness of continuous improvement.

For employee involvement practices, the minimum value is 1.83 while the maximum value is 4.83; the mean value of employee involvement is 3.76 that the lowest mean value among independent variables. The mean value indicated that employee involvement is the most unsatisfied items among independent variable. Some employees have several complain about employee involvement, especially for low-level employee. It is around 9.9% of respondents disagree or strongly disagree with employee involvement practices. Although most of employees are agree with organization employee involvement practices. However, for low-level employee who always works at first line, the manager need to improve the employee

participant on organization decision making and problem solving.

5.3 Discuss on Research Objectives

5.3.1 Research Objective 1: To identify level of total quality management practice in Furen pharmaceutical company.

In this study, there are four (4) aspects of total quality management, which is leadership, customer focus, continuous improvement and employee involvement. Through the mean and standard deviation result showed that, the minimum score for mean score is 3.76, and the maximum score for mean score is 3.96. Hence, the value can divide into three levels low level: low level (1-2.33); moderate level (2.34 – 3.67) and high level (3.68 – 5.00) respectively. In this study, in terms of table 4.17 analysis result, it can be seen that all the variable of total quality management in Furen logistics department are greater than 3.68, in addition, the awareness of TQM is 3.9, it also greater than 3.68.

Consequently, from these results can be concluded that, Furen has high level implementation of total quality management, Because all the variables are in high level range (3.68-5.00). In addition, customer focus is key factor in total quality management, which mean is 3.96. According to descending order, the following factor is leadership (3.93), continuous improvement (3.89) and employee involvement (3.76).

5.3.2 Research Objective 2: To identify the relationship between TQM practices and logistics performance

In this study, there are four independent variables and one dependent variable. The data analysis result showed that total quality management has positive significant relationship with logistics performance in Furen pharmaceutical industry. According to table 4.19, to show the Person Correlation value between total quality management and logistics performance is 0.796. In terms of "Guilford Rule of Thumb"(1956), r=0.796 means there is very high correlation relationship between independent variable and dependent variable.

Furthermore, as total quality management has several items in this study which are leadership, continuous improvement, customer focus and employee involvement. The data analysis also showed all these variables are related to logistics performance. As the Person Correlation value between leadership and logistics performance is 0.602 which showed there is positive relationship with logistics performance. For other three variables got same result with leadership, to show continuous improvement, customer focus and employee involvement are have relationship with logistics performance. Because, Person Correlation value for variables are 0.564, 0.594 and 0.627. All Person value higher than 0.5, which show all independents variables are, have high relationship with logistics performance.

5.3.3 Objective 3: To identify the critical factor of TQM practices on logistics performance.

To indentify the critical factor of TQM that significantly improves logistics performance. Since total quality management practices was comprised by several items. However, not all the items are influence logistics performance. To find the critical factor to improve logistics performance is efficiency and reduces the unnecessary cost for organization. In this study, as correlation analysis result showed four independents variables are having relationship with logistics performance. Therefore, this study uses regression analysis of coefficient that can test the coefficient between several independent variables and several dependent variables.

In this study, according to table 4.21, Beta value of employee involvement is higher than other three independent variables. The beta value of employee involvement is 0.316. Employee involvement has significant relationship with logistics performance, because the coefficient is positive 0.316 and significant at level 1% if employee involvement increase one unit, the logistics performance will increase 0.316 unit. In this study employee involvement score the highest beta, which indicated employee involvement is the most important factor in influence logistics performance. Hence, in this study, employee involvement is the critical factor in TQM practices on logistics performance.

5.4 Limitation of Study

As all studies have limitations, this study same with other studies has several limitations which are internal limitations and external limitations. Several limitations were stated as below:

In this study, questionnaire instrument was used for collecting data. Questionnaire use 5-point Likert Scale where the respondents only answer the question by strongly disagree, Disagree, Moderate, Agree and strongly disagree. Although the answer can represent parts of ideas of respondents, but without respondents' subjective answer, it cannot accurate to represent whole ideas of respondents. Such as in this study, some of respondents like to choose "3" which means moderate. For the respondents who may not understand the mean of question, then just choose"3". For the researcher, it is quite difficult to check one by one about the question answer, whether the respondents understand questions or not.

During data collecting process, quantitative research was used in this study. However, questionnaire has their own limitation that is how to transfer respondents' perception to numbers. For this research, the questionnaire only has 41 questions to cover four independent variables and one dependent variable. Therefore, these 41 questions cannot represent all the respondents' perception about total quality practices and logistics performance. There are huge questions can evaluate the

relationship between total quality management and logistics performance. It is good for choosing both quantitative and qualitative research to get accurately results.

Lack of population and sample size, for the reason of time and budget, this study only choose one organization as research target which is Furen pharmaceutical industry. Although, Furen is top 20 pharmaceutical industries in China. However, it cannot represent the whole status of pharmaceutical industries. To conduct a wide range research about total quality management in china pharmaceutical industry, it will cost long time and huge capital which maybe done in future.

Lack of variables which only four total quality management practices were chosen in this study. However, four variables cannot represent total quality management. Actually, total quality management includes many variables that are not mention in this research, such as ethics, trust, and communication and so on. Therefore, data result may not exactly indicate the relationship between total quality management and logistics performance.

At last, lack of literature about total quality management on logistics performance. Researchers have been done several total quality management research. However, most of researches only stay in academic level that lack of empirical study on total quality management.

5.5 Suggestion for Future Study

Based on the limitation of this study, the researcher give several suggestions for future researchers who want to investigate the relationship between total quality management and logistics performance in china pharmaceutical industry.

The scope of this study only focuses on Furen pharmaceutical industry. In future, the researchers can extent the number of organizations. The much organizations to choose, the research result more accurate. Meanwhile, for future researchers can investigate the total quality management in other industry. Because, total quality management practices was used in different industries. Beside, the researcher can choose both quantitative research and qualitative research.

Future more, future study can choose other variables of total quality managements. To investigate the other variables of total quality management can influence logistics performance or not. In addition, the future researcher can investigate total quality management influence organization performance, such as finance performance, marketing performance, human resource performance and so on.

5.6 Recommendation

The objective of this study is to investigate the level and relationship of total quality management and logistics performance in pharmaceutical industry. In addition, data analysis result can guide the manager to know the advantage and disadvantage of company. The following recommendation for Furen or other relevant industries base on the purpose of this study to establish.

Firstly, the result shows total quality management positive influence logistics performance. Therefore, strongly implementing total quality management has high correlate with logistics performance. Meanwhile, base on some literatures (Anderson, 1998. Irani, 2004), total quality management not only influence logistics performance but also organization performance. In this study, the result shows that total quality management at high-level implementation in Furen, but still has the gap with some international company. For this reason, the manager needs more focus on total quality management implementation, with the high level apply total quality management to improve organization performance. However, in study only state four variables, in future the organization may choose other variables of total quality management.

Secondly, according to correlation analysis to show that employee involvement

has highest correlation value among these four independents variables. For this reason, the researcher considers the organization need continuous to focus on employee involvement in Furen pharmaceutical industry. As employee involvement has high correlation with logistics performance, with improve employee involvement that can quickly to increase logistics performance. For other three variables, they also have strong correlation with logistics performance, but just a bit weak compare with employee involvement. Similarly, managers need to understand the importance of leadership, continuous improvement and customer focus. Because the good leadership can influence the organization staff has positive attitude to work for company. Continuous improvement can continue fulfill the demand of customer to gain the competitive advantage. Customer focus strategy was used in many organizations; customer can create revenue and profit of organization. Hence, these four variables of total quality management are importation for organization development. In addition, there are several variables of total quality management, the organization need continuous coordinate their total quality management to suit for organization development.

Last but not the least, organization want to improve the logistics performance, at present implements total quality management really takes the benefit for improving logistics performance. However, there are many types of management methods can be use to improve logistics performance even organization performance. Therefore, the researcher suggest organization's manager continue look for advance management philosophy to suit for society development.

5.7 Conclusion

The main objective of the study to investigate the relationship between total quality management and logistics performance of pharmaceutical industry in China. This study is using random sampling whereby information was gathered from the sample of 121 persons in Furen medical group. Questionnaire survey was used to collecting data and analyzed by using SPSS software. The result obtained from these statistical approaches showed that all independent variables have significant relationship with the dependent variable. According to the Reliability Test, the Cronbach's Alpha reliability coefficient of all independent variable(leadership, customer focus, continuous improvement, employee involvement) and dependent variable (logistics performance) were obtained. The closer the reliability gets to 1.0 is better, in general ,reliability less the 0.65 are consider to be poor, those 0.7 ranges are acceptable, and those over 0.8 is good (Razak et al. 2013). For this questionnaire, the value of Cronbach's Alpha is 0.870, it can be concluded that Cronbach's Alpha for these questionnaires is classified as excellent relationship.

Data analysis tools that used to determine the first objective of the study is descriptive statistic. Base on analysis, it shows the level of total quality management in Furen is high among respondents. Because table 4.17 show all the independent

variables are at high level since the lowest mean of independent is 3.76. meanwhile, the researcher using person correlation coefficient in order to achieve second objective, we can see it from table 4.18 to show every independent variables are has high correlation with dependent variable, meanwhile from table 4.19 to show total quality management has strong relationship with logistics performance, since the r=0.796. Another method, the researcher used multiple regression to approve the third objective, the objective it to find the critical factor in total quality management that influences logistics performance. Researcher used stepwise regression method to find most dominant factors. From table 4.21, the researcher can conclude that the most dominant factor that influences logistics performance is employee involvement, since it has the highest beta value, which is 0.316.

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