BEYOND CERTIFICATION: THE MAINTENANCE OF ISO 9000 IN MALAYSIAN SERVICE ORGANISATIONS

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Abstract

This research is an in-depth study of the quality management systems of two Malaysian “government-linked companies” (GLCs) classified as being in the service industry. Both are mature holders of ISO 9000 certification and the research focuses on how they have gone about maintaining and improving their quality management system (QMS), the extent to which they have succeeded, and what management and employees of the companies feel have been critical success factors and problems to be overcome.

A case study approach is used for this study. The study has been comprehensive in its data collection with 30 individual face-to-face interviews with top management, middle management, lower management in charge of operations and quality, and the management representative responsible for the implementation of ISO 9000 in the case companies being conducted, 300 questionnaires being distributed to employees of both companies, and a thorough review of ISO 9000 and other quality documents carried out.

The results of the study showed that the two companies maintain their ISO 9000 based on the requirements of the standard. However, to support the technical requirements and in order to maintain the quality system more effectively and strive for excellence, the study highlights the need for integrating the human resource aspects of quality management into the quality system.

Critical success factors of ISO 9000 maintenance identified are top management commitment, employee involvement, recognition and reward, teamwork, continuous improvement, and quality culture. The main problems associated with maintaining ISO 9000 faced by the companies are lack of cooperation and commitment from people, lack of knowledge and training, lack of communication, and lack of awareness and understanding on ISO 9000. Measures outlined to overcome the problems include closer interaction between people, training of management and employees on ISO 9000 and related subjects, skill and competency, and better communication.

The study has identified lessons to be drawn by similar companies facing similar challenges and those striving for excellence. It has provided insights into the improvements and changes brought by the continued maintenance of the ISO

9000 after certification. It has also added to the knowledge on aspects of organisational development for service companies and casting new light on various theories put forward in the quality management literature. Further, the development of a framework for effective ISO 9000 maintenance in service organisations will enable it to be tested and compared with other industry frameworks in future studies.

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List of Abbreviations

AAM	Approving Authority Manual
ABE	Australian Business Excellence
ACC	Advanced Cargo Centre
ACT	Air Cargo Tariff
ATC	Air Traffic Controller
B2B	Business to Business
CEO	Chief Executive Officer
CAR	Corrective Action Request
CI	Continual Improvement
CMMS	Computerised Maintenance Management System
CPR	Contractors'Performance Review
CTS	Central Technical Support
DCA	Department of Civil Aviation
EFQM	European Foundation of Quality Management
EMS	Environmental Management System
GLC	Government-Linked Companies
HOD	Head of Department
HR	Human Resource
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
ICC	Initiative and Creative Circle
ISO	International Organisation for Standardisation
KLIA	Kuala Lumpur International Airport
KOPI	Key Operational Performance Index
KRA	Key Result Area
MBNQA	Malcolm Baldrige National Quality Award
MD	Managing Director
MEE	Mechanical, Electrical and Electronic Works
MHA	Malaysian Highway Authority
MOD	Maintenance Operations Department
MR	Management Representative
MS	Malaysian Standard
NCR	Non-Comformity /Non-Compliance Report
NOD	Notice of Defect
NSE	North South Expressway
OHSAS	Occupational Health and Safety Management System
OSH	Occupational Safety and Health
PDCA	Plan-Do-Check-Act
PMS	Performance Measurement System
SIRIM	Standards Industrial & Research Institute of Malaysia
SLA	Service Level Agreement
SOP	Standard Operating Procedures
TQM	Total Quality Management
ULD	Unit Load Device
QA	Quality Assurance
QM	Quality Management
QMS	Quality Management System

CHAPTER 1 – INTRODUCTION

1.1 Introduction

The ISO 9000 series of international standards was adopted from BS5750 without changes in 1988 with the formation of a technical committee with participants from 20 countries. The purpose of the ISO 9000 standards is to facilitate the multinational exchange of products and services by providing a clear set of quality systems requirements (Chang and Lo, 2005). The standards provide a baseline against which an organisation's quality system can be judged. The generic nature of the standards allows interested companies to determine the specifics of how the standards apply to its organisation. Many companies use ISO 9000 as a platform for their continual improvement efforts. The purpose of the ISO 9000:2000 series is to assist organisations of all sectors and sizes to implement and operate an effective quality management system (QMS). In 2008, there were at least 982,832 ISO 9001:2000 and ISO 9001:2008 valid certificates issued to 176 countries and economies worldwide (ISO Survey, 2009). Service providers accounted for 40% of all ISO 9001 certificates.

For the past fifteen years, many studies have been conducted on the implementation of ISO 9000 in small, medium, and large size companies both in the manufacturing (Bhuiyan and Alam, 2005; Lipovatz et al., 1999; Beattie and Sohal, 1999) and service sectors (Poksinska et al., 2006; Karim et al., 2005; Efstratiadis et al, 2000; Sarkar, 1998; Mo et al., 1997; Carlsson and Carlsson, 1996; Motwani et al., 1996).

A comparative study has also been done on ISO 9000 standards on manufacturing and service organisations in terms of levels of resources required, motivations for implementation, difficulties faced, benefits gained and management practices applied in the implementation of the ISO 9000 standard (Singh et al., 2006) and within the same industries but different countries (Ahmed et al., 2005). Aspects of implementation such as the critical success factors (Shariff, 2004; Li and Gurnani, 1997) for and barriers (Quazi et al., 2002; Bin Srinidhi, 1998; Samson, 1997) to the implementation and certification have also been well researched.

Likewise, numerous studies have been done on the reasons for obtaining ISO 9000 certification (Awan and Bhatti, 2003; Santos and Escanciano, 2002; Wiele et al., 2001; Fuentes et al., 2000; Van der Wiele and Brown, 1997), the impact of improvements generated (Calisir et al., 2005), and the benefits of ISO 9000 on companies (Sharif, 2004; Burzacca and Lunghi, 2003; Casadesus et al., 2001; Yahya and Goh, 2001; Casadesus and Gimenez, 2000). Also studied were the business value of ISO certification and its impact on the companies' business performance (Costa and Lorente, 2007; Saizarbitoria et al., 2006; Terziovski et al., 1997).

However, not much literature is found on the maintenance of ISO 9000 certification or the post-certification period. A few studies have been carried out on the critical maintenance issues of the ISO 9000 system in Hong Kong electronics manufacturing companies (Chin et al., 2000) and on construction companies in Singapore (Low and Omar, 1997). A study has also been done on an integrated framework for post ISO 9000 quality development (Najmi and Kehoe, 2000). Apart from the above mentioned studies, no study has been conducted specifically on the maintenance of ISO 9000 in service companies so far.

Accordin to Berry (1980), services are acts, deeds, or performances. Services are generally described in terms of four unique characteristics; intangibility, inseparability, heterogeneity/variability, and perishability (Haksever et al., 2000). With about 20% of ISO 9000-certified companies in Malaysia being classified as services, there is a great need to investigate how ISO 9000 QMS is maintained by these companies.

For this study, maintaining ISO 9000 would mean not only keeping the certification by complying with the requirements of the standard but also embracing the principles and values that are embedded within. Therefore, the meaning of maintenance in relation to ISO 9000 can be divided into two levels. First, 'maintenance' refers to strictly following the requirements of the standard. Second, on the deeper level, it relates to the embedding of principles that underpin the ISO 9000 standard. This maintenance of ISO 9000 is said to be effective when firms fully comply with the technical requirements of the standard and improvements are carried out continually by applying the ISO 9000

principles. Effective maintenance of ISO 9000 is important to the firm to achieve its objectives of certification to the standard and to strive for excellence.

In addition, although past research has suggested that top management commitment is crucial for successful ISO 9000 implementation and maintenance (Chin et al., 2000), and that a lack of top management involvement and understanding of the ISO requirements, and lack of effective internal corrective measures (McCullough and Laurie, 1995; Dzus and Sykes, 1993) are barriers to successful maintenance, there has been no exhaustive effort to study the role and the extent of top management commitment and its impact on the maintenance of the ISO 9000 standards.

1.2 The Importance of ISO 9000 Maintenance

Low and Omar (1997) stressed that although the number of companies that are certified to the ISO 9000 standards is escalating, it does not necessarily indicate that the significance and importance of an effective QMS is clearly understood.

Van de Water (2000) argued that the maintenance of the total quality management system of an organisation is a necessary activity as it prevents stagnation of the process of quality management and its translation into concrete activities on all levels of the organisation. The QMS must be constantly dynamic in order to improve the quality of both the company's internal and external services. For this to be so would require proper maintenance of the QMS which includes constant monitoring, controlling, assessing and improving through both the technical and non-technical/socio-cultural approaches (Stewart, 1995).

The QMS should be continually maintained mainly because it provides the possibility of quick and flexible anticipation of the ever-changing requirements of the environment. Furthermore, it is a necessary condition to keep the quality initiative within an organisation alive (Van de Water, 2000). Other reasons for maintaining the QMS are demand for quality and value for money, change and innovation, to maintain benefits of ISO 9000, and to avoid withdrawal of ISO 9000 certification (Low and Omar, 1997). Continuous maintenance is essential to satisfy the surveillance visits by registrars, and to monitor and improve the system (Chin et al., 2000).

1.3 ISO 9000 and the Malaysian Scenario

Malaysia is a developing nation and its fast-developing economies make it crucial for organisations to learn as much and as quickly as possible. According to Ab. Rahman and Tannock (2005), Malaysia may be considered as a middle-ranking developing nation in quality management terms, being more developed than for example, Indonesia or the Philippines. In addition, Malaysia is placed above India and the Philippines as Malaysia has a more mature national quality award system.

Mandal et al. (2000) observe that in developing countries where the economies are primarily regulated by government policies and the scope of competition is limited, the position has been distinctly different from that of the western economies. The difference lies in the fact that developing economies have not given the same emphasis to quality practices, as the developed nations. However, with market globalisation and the growing interdependence of economies, many developing countries have embraced quality management concepts in order to improve their productivity and competitiveness in international markets (Adam et al., 1996).

Since the introduction of the ISO 9000 standards in Malaysia in the late 1980s, some very significant developments have taken place. According to Ali (1994), the introduction of these standards has taken the movement for quality in Malaysian industry to a higher plane and there is a developing pool of quality consultants and trainers in the country. Ali (1994) concluded that the rapid increase in third party registration activity has improved quality in Malaysian industry. Hence, it is to be expected that since then there has been a rapid increase in the number of Malaysian companies seeking and obtaining certification to the ISO 9000 standards.

In mid 1996, the then Prime Minister, Dr. Mahathir Mohamed, announced that the government was serious in its effort to increase the efficiency and effectiveness of the public services and government bodies. The government issued circulars encouraging its departments and agencies to seek ISO 9000 certification within the next 3-4 years (Nation, 1996). Although it has been more than ten years since the directive was issued, ISO 9000 quality management systems are still quite a new and challenging management tool for companies in Malaysia. It is popular in Malaysia as the government and the business organisations view it as

one of the tools that can improve efficiency and effectiveness of both the public and private sectors. Statistics provided by the 10 top certification bodies in Malaysia show there are about 6800 ISO 9001:2000 registered companies in Malaysia as at 31st of December 2007. Out of this figure, about 20% are service companies. The Standards Industrial and Research Institute of Malaysia (SIRIM) has the largest number of companies certified to the standards. Many government agencies and departments are certified against the ISO 9000 standards including local authorities (Mohd Ali et al., 2007).

1.4 Research Problem

ISO 9000 is a series of international standards for quality management system. According to the ISO 8402 standard, a quality management system is a management system to direct and control an organisation with regard to quality. Companies can only be certified to the ISO 9001:2008 which is the current standard for certification in the series. This research is conducted based on the previous ISO 9001:2000 version.

The government of Malaysia in its effort to improve efficiency and effectiveness of its departments has spent millions of ringgits in getting its departments registered to the ISO 9000 standards. The same could be said for business organisations in Malaysia in both the service and manufacturing sectors. Compared to the literature on the implementation of ISO 9000, very few are written on the maintenance or the post-certification phase of the quality management system (QMS). Although there are many service organisations certified to ISO 9001:2000 in Malaysia, researchers have not investigated how these organisations maintain their quality management system in order to sustain their certification, therefore making it critical to investigate and study the maintenance phase of ISO 9001:2000 in Malaysian service organisations. In addition, this study is a necessity as it is also to ensure that the money spent by these organisations on getting certified is worth it and the benefits of certification to ISO 9001: 2000 quality system can be fully realised.

In order to reap the benefits of certification such as improved efficiency and effectiveness, improved process, better management control, and as a platform for continual improvement effort, ISO 9000-certified organisations must be able to maintain their quality management systems that would lead to the continuity of the certification. Otherwise, certification to ISO 9001:2000 quality system will just

be superficial and a farce. The organisations then will not obtain any real long term benefits.

The ISO 9001:2000 and now the ISO 9001:2008 emphasise continual improvement. To exercise and demonstrate continual improvement efforts, there must be continuity in the system. Due to this reason, the importance of post certification maintenance cannot be understated.

Throughout the thesis, the terms 'continuous improvement' and 'continual improvement' are used interchangeably to reflect the same meaning. The inconsistency in the use of the terminology was the result of various uses of the terms in the literature by different authors.

The researcher through her experience as the developer of quality system and internal auditor for a service organisation which has been awarded the ISO 9001:2000 certificate, observed some interesting occurrences in the organisation. Having achieved certification to a certain extent would mean that everyone in the organisation are clear about the purpose of certification as they have worked hard to achieve it. It is also taken for granted that relevant procedures were in place and were communicated to staff during the implementation of the quality system. However, every time before surveillance audits took place, reminders have to be issued to remind people to comply with the procedures. Furthermore, although internal audit reports and previous third party audit reports had pointed out the weaknesses or areas for improvement in the system, still some of the issues that can be considered major which can contribute to the collapse of the QMS were either not appropriately addressed or took too long to be addressed. So why are these things happening? What makes some people reluctant to keep the certification going? Is it because they are not interested in reaping the benefits that drove them to work hard to achieve certification? If so why? Or is there no visible commitment and support from top management to motivate the people of the organisation to participate in the maintenance of ISO 9000? Or is it because the recognition and reward system are not linked to the performance of staff who had contributed to the exercise?

Furthermore, considerable training has been conducted for both management and staff on the awareness, documentation, internal audit, and also on the organisation ISO 9001: 2000 requirements. Were they not enough? What went

wrong? What makes post certification maintenance so difficult? What are the issues that need to be identified and addressed so that post certification maintenance would be effective and therefore more fruitful and hassle-free for certified service organisations so that they could concentrate on continual improvement activities instead? How should these issues be addressed so that successful maintenance of ISO 9001:2000 in service organisations can be achieved? There seems to be a big question mark in terms of what happens after organisations obtain their certification especially as services are now the largest contributor to the gross domestic product in Malaysia. These questions need to be answered so that the above problems could be solved, hence the need for this research.

1.5 The Research Outline

1.5.1 Aims

This research aims to investigate and to understand how Malaysian service organisations maintain their ISO 9000 quality management system. This includes examining the critical success factors and problems associated with ISO 9000 maintenance and the changes and improvements brought by maintaining the quality system.

1.5.2 Objectives

Based on the above aim, this research:

a. Investigates how the ISO 9000 is maintained by service organisations in terms of approach used and other factors that are closely associated with it.
b. Identifies critical success factors for ISO 9000 maintenance in service companies based on top management's and employees' views.
c. Identifies problems associated with maintaining the ISO 9000 certification in the service organisations.
d. Identifies the changes and improvements made as a result of ISO 9000 maintenance in the organisations.
e. Developes a theoretical framework for effective ISO 9000 maintenance in service organisations.

1.5.3 Methodology

This research comprises two stages. Stage 1 involved conducting a literature review on quality management, quality management systems, ISO 9000 and its maintenance, and the impact of ISO 9000 certification on performance and service quality. Stage 2 involved conducting case studies at two service organisations in Malaysia which have been certified to the ISO 9001:2000 for at least three years. Methods for data collection were interviews, survey, and document review.

1.5.3.1 Literature Review – Stage 1

Literature review from articles, books and other materials on quality management, quality management systems, quality management practices applied together with ISO 9000 implementation, ISO 9000 maintenance in service organisations, and the impact of ISO 9000 maintenance on performance and service quality was conducted to find out what has been established in these areas. Review of literature also serves to identify gaps in previous research and literature on top management commitment in the maintenance of ISO 9000, and ISO 9000 maintenance in service organisations.

1.5.3.2 Case Studies – Stage 2

Studies were conducted on two service organisations in Malaysia. The service organisations are a cargo handling and transportation company, and a highway maintenance company. These two service organisations were chosen because they have been certified to the ISO9001:2000 for more than three years, therefore they can show their maintenance of the QMS.

1.6 Significance of the Study

The academic literature of empirical studies on ISO 9000 is extensive. However, this research seeks to discover what is going on with respect to the maintenance of ISO 9000 QMS in Malaysian service organisations particularly on top management's role and commitment, the strategy used for maintenance, critical success factors, problems in maintaining the QMS and improvements gained as the results of maintaining the quality system. The intention of this study is to contribute to the enrichment of knowledge on the maintenance of ISO 9000 in Malaysian service organisations. Therefore, this study is significant in several ways; firstly, it contributes to new knowledge by filling and reducing the gap that

exists in the current literature on ISO 9000 QMS maintenance and also on the quality management in the service literature.

Secondly, the outcome of this research will help organisations contemplating and in the process of applying for certification to think about the implications that come along with obtaining ISO.

Thirdly, the findings of the study would also help provide a blueprint for successful maintenance of ISO 9000 and enhancement of continual improvement in order to strive for excellence in quality and business.

1.7 Structure of the Thesis

This thesis is divided into nine chapters. Chapter 1 introduces the study and briefly describes what the study is all about and how it was conducted. Chapter 2 reviews the relevant literature on the theory underpinning this research, quality management, quality management systems, factors associated with ISO 9000 maintenance in service organisations, and the impact of effective ISO 9000 maintenance on performance and service quality. Next, Chapter 3 outlines the methodology of the research. It discusses the issue related to research paradigms and philosophies, and design and justifies the rationale and reason for choosing the qualitative case study strategy triangulated with document reviews and survey questionnaire. Then Chapter 4 gives a detailed description and profile of the case study companies chosen for this research. Chapter 5 presents the interview findings of the study supported by document review. Chapter 6 provides the findings from the questionnaire survey that would support the findings in Chapter 5. Chapter 7 summarises the results of Chapter 5 and 6. Chapter 8 discusses the results of the research, proposes a new framework for effective ISO 9000 maintenance in service, presents its managerial implications and compares them with the literature. Lastly, Chapter 9 finishes by presenting the conclusion of this study and recommendation for future research.

CHAPTER 2 - LITERATURE REVIEW

2.1 Introduction

The aim of the literature review is to locate and evaluate the current knowledge in the area of ISO 9000 quality management systems and related areas within the context of service organisations in Malaysia. The purpose of this chapter is to help the researcher and the reader understand how the researcher generated and refined the research ideas. The literature review also has aided the identification of gaps in the previous literature and research and these gaps were then used to facilitate the development of the research questions for this study.

2.2 Concepts and Definitions of Quality

Quality is a broad concept and defining quality can be quite difficult. There is no one universal definition of quality. Some people say that quality is like beauty; it is in the eyes of the beholder. In short, it is subjective. Nevertheless, there are several ways quality can be defined.

Dr. Joseph Juran (1988) defined quality as “fitness for use”. Quality is defined by the customer as it is concerned with the utility and satisfaction of the customer. Quality is achieved when the requirements of the customer are met. It is also associated with the reliability of the product where product use is ongoing. This definition is more inclined towards the customer’s perspective as it has a strong orientation towards meeting customers’ expectations.

Deming (1986) defined quality as “a predictable degree of uniformity and dependability at low cost and suited to the market”. Like Juran, Deming saw quality from the customer’s perspective. He stressed the importance of consumer research to determine customer needs and the use of statistical tools to ensure that every process is effective and efficient. He believed that if statistical tools are used then uniformity, lower cost and suitability can be achieved. According to him, poor quality or quality problems are 85 percent caused by the systems developed by management and only 15 percent caused by the workers. To improve the system, Deming encouraged the use of the Plan-Do-Check-Act cycle which he believed will enable management to improve its production and services continuously.

On the other hand, Crosby (1984) looks at quality from the producer or service provider's point of view. Quality according to him is conformance to requirements or specifications. He argues that since no one can agree on what is considered good or excellent, quality is therefore not goodness, luxury, or excellence. Thus, quality is better defined as integrity which means providing what is promised.

The ISO 8402 standard defines quality as the degree to which a set of inherent characteristics fulfils requirement. Requirement is a need or expectation that is stated, generally implied or obligatory. Evans and Lindsay (2005) suggest that another way quality can be defined is based on the role one plays in the organisation's production-marketing value chain. According to them, the differing criteria to view quality outlined by Garvin (1984) can be applied and they are as follows:

Judgmental Criteria It is often used by consumers. It emphasises the goodness of a product that is synonymous with superiority and excellence. Quality is both absolute and universally recognisable, a mark of uncompromising standards and high achievement. It is often loosely related to a comparison of features and characteristics of products and promulgated by marketing efforts aimed at development of quality as an image variable in the minds of consumers. For examples Rolex watches, Mercedes Benz cars, and Selberan diamond.

Product-Based Criteria Quality is a function of a specific, measurable variable and that differences in quality reflect differences in quality of some product attribute. This implies that higher levels and amounts of product characteristics are equivalent to higher quality. It also relates quality to price; the higher the price, the higher the quality of a product. For example, a hand-phone with a camera is considered of better quality than the one with only basic features.

User-Based Criteria Quality is based on the presumption that quality is determined by what a customer wants. Quality is defined as fitness for intended use and how the product performs its intended function. This is similar to Juran's view of quality.

Value-Based Criteria Quality is based on value, that is, the relationship between usefulness and/or satisfaction to price. A quality product is one that is as useful

as competing products and is sold at a lower price and thus offers greater usefulness/satisfaction at a comparable price.

Manufacturing-Based Criteria Quality is a manufacturing-based definition. That is, quality is defined as the desirable outcome of engineering and manufacturing practice or conformance to specifications. Specifications are targets and tolerances determined by designers of products and services. Targets are the ideal values for which production is to strive; tolerances are specified because designers recognise that it is impossible to meet targets all of the time in manufacturing. This view coincides closely with Crosby's view of quality.

In addition, Garvin (1988) offers eight dimensions of product quality as defined from the customer's perspective namely performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality.

Unlike tangible goods, measuring service quality is not as simple and easy due to its intangible nature, simultaneity of production and consumption, perishability and variability of service outcome. However, research conducted by Zeithaml, Parasuraman and Berry (1990), suggests that customers evaluate the quality of service based on five dimensions or determinants; reliability, responsiveness, assurance, empathy, and tangibles.

Reliability Refers to the ability of the service provider to perform the promised services dependably and accurately. For example, when a service personnel of a computer shop does his maintenance on time and as scheduled for its customers.

Responsiveness The willingness of service providers/employees to help customers and provide prompt service to customers. For example, when a hotel guest asks for weather information, the receptionist quickly responds to it.

Assurance (competence, courtesy, credibility, security) Service employees have the required skills and knowledge to perform the service. It also refers to politeness, friendliness, trustworthiness and honesty on the part of service personnel. In addition, it is the feeling of freedom from risk, doubt and danger the customer feels when using the service.

Empathy (understanding, communication, access) Service providers make the effort to know the customers and their needs, keeping customers informed and listening to them. For examples, greeting customers by their names, trying to help them solve problems that occur during their stay at the hotel, and listening to their comments or complaints.

Tangibles The appearance of physical facilities, equipment, personnel, and communication materials. For examples, the employees of a law firm who are well-dressed or the waiting room at a hospital which looks welcoming.

Hamali (1999) cites Townsend (1986) as defining quality in two perspectives; quality in perception (how well the service/product meets customer requirements) and quality in fact (the expertise is present in the development of the service or product). Companies must meet both types of quality in order to succeed. Townsend (1986) provides two examples to support his point. The first is the Coca-Cola Company which introduced the 'new coke' that met the exact specifications of its proud parent but failed in the market as it did not meet the needs of the market. The second was Sara Lee Company that focused on 'Quality in Fact' that produced a top-quality frozen cheesecake at a low-price but sales were poor as it ignored efforts towards 'Quality in Perception'. The public perceived a high quality product must not be priced lowly.

Quality is a very subjective and multidimensional phenomenon. However, one thing is certain, in today's challenging business environment; quality is an important source for competitive advantage. For some companies, quality can either make or break them.

2.3 Quality Management

Quality management is the way in which an organisation determines and implements systems to ensure that quality, in the sense that specifications are met, is achieved (Freeman-Bell and Grover, 1994a). The British Standards BS EN ISO 8402:1995 define quality management more broadly as all activities of the overall management function that determine the quality policy, objectives and responsibilities, and implement them by means such as quality planning, quality control, quality assurance and quality improvement within the quality system. Dean & Bowen, 1994; Wilkinson et al., 1998; Dale et al., 2000; Dale, 2003 and

van Iwaardeen et al., 2006 concluded that quality management consists of three core building blocks; customer orientation, process control, and continuous improvement and its aim is to control an organisation's processes and to improve and change these processes in response to changes.

Terziovski et al. (1999) and Singh (2003) suggest the three practical approaches that organisations use to implement quality management are the standard-based approach (e.g. the ISO 9000 standards), the prize criteria approach (i.e. the various national and regional business excellence or quality awards such as the US Malcolm Baldrige National Quality Award (MBNQA) and Australian Business Excellence Award (ABE), and the elemental approach that consists of the many ideas promoted by consultants and experts in the area.

Due to its importance, there must be some ways quality can be managed by the organisations. The theories for the management of quality in organisations can be developed by looking at several sources namely; the quality gurus' perspectives, empirical research, and formal evaluation models.

2.3.1 Contribution from Quality Gurus

Deming (1986) proposed his 14 Points for Management to improve the management of quality in organisations and emphasised the importance of reducing variations in the process. He encouraged the use of statistical techniques such as the control charts to monitor and improve processes. Juran (1986) pointed out the importance of both technical and managerial aspects of quality management and according to him, the management for quality is done by quality planning, quality control, and quality improvement. Crosby (1979) proposed 14 Steps for Quality Improvement which includes management commitment, improvement team, measurement and cost of quality, and employee education and recognition. Feigenbaum (1991) is famous for his total quality control which he defined as an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of various groups in an organisation. His Three Steps to Quality are quality leadership, modern quality technology, and organisational commitment. Ishikawa (1985) emphasised the importance of employee training and education and the usage of statistical techniques to collect and analyse factual data, and teamwork as the basis for implementing total quality. Based on these quality gurus' perspectives, some common elements for effective quality management can be observed such

as management leadership, continuous quality improvement, training and education, employees' participation, use of statistical tools and techniques, planning and measurement of quality, use of teams, communication systems, recognition, and supplier relations. Table 2.1 summarises the elements for effective quality management as proposed by the above quality gurus.

Element	**Quality Guru**				
	Deming	**Crosby**	**Juran**	**Feigen-baum**	**Ishikawa**
Leadership & Management Commitment	√	√		√	
Training & Education	√	√			√
Internal Communication	√				
Use of Statistical Tools & Techniques	√				√
Quality Planning		√	√		
Quality Control	√		√		
Quality & Continuous Improvement	√		√	√	
Quality Improvement Team/Quality Circles		√			√
Quality Measurement	√	√			
Corrective Action		√			
Recognition		√			
Quality Development				√	
Quality Maintenance				√	
Quality Technology				√	
Employee Participation	√	√		√	√
Teamwork	√	√			√
Supplier Relations					√

Table 2.1: Elements for effective quality management from quality management gurus' perspectives (Ab. Wahid, 2006).

2.3.2 Empirical Research

According to Claver et al. (2003), although the critical factors of quality management vary from one author to another, there emerge some common requirements which are core to effective quality management. They are customer focus, leadership, quality planning, management based on facts, continuous improvement, human resource management (involvement of all members, training, work teams and communication systems), learning, process management, cooperation with suppliers and organisational awareness and concern for the social and environmental context. Other studies of quality management which develop a valid, reliable quality measurement instrument which are applicable to both industrial and services firms are studies by Saraph et al. (1989), Badri et al. (1995), Black and Porter (1995, 1996), Grandzol and Gershon (1998) and Quazi et al. (1998). The summary of these studies is shown in Table 2.2.

Element	Saraph et al (1989)	Badri et al (1995)	Black & Porter (1995, 1996)	Grandzol & Gershon (1998)	Quazi et al. (1998)
Role & responsibility of top management and quality goals & policy	√	√		√	√
Role of the quality department	√	√			√
Training	√	√			√
Product/service design	√	√			√
Supplier capability, partnership and quality management	√	√	√		√
Process management	√	√		√	√
Quality data & reporting	√	√			√
Employee fulfilment, satisfaction & relations	√	√		√	
People & Customer management			√		
Continuous Improvement				√	
Communication of improvement information			√		
Customer satisfaction orientation			√	√	
Learning				√	
External Interface management			√		
Strategic quality management			√		
Internal/ External Cooperation				√	
Teamwork structures for process improvement			√		
Customer focus & Integrating customer requirements				√	√
Operational quality planning			√		
Product/service quality				√	
Quality improvement			√		
Operational measurement systems				√	
Corporate quality culture			√		
Financial				√	
Public responsibility				√	
Inspection policy					√
Employee's role					√
Quality circles					√
Quality related performance					√
Supportive structure					√

Table 2.2: Critical factors of quality management according to the literature (Tari, 2005)

Tari (2005) conducted a study on TQM in 106 ISO 9000 certified firms in Spain to measure the degree of implementation of TQM elements in those firms. Eight critical factors and five results were selected based on the European Foundation of Quality Management (EFQM) model and the review of literature. The critical factors are customer focus, process management, leadership, supplier management, learning, quality planning, continuous improvement, and employee management. The five results are customer satisfaction, staff indicators, quality performance, social impact, and employee satisfaction.

The results of the study suggest that customer-related issues and process management are the most important TQM elements implemented in these ISO certified firms while human issues and continuous improvement activities are the least implemented components. These indicate that ISO 9000 certified firms implement human aspects to a lesser extent than technical aspects, and together with improvement, social concerns and quality planning are the weakest areas. Although training is given to employees, other aspects such as work teams, recognition and career development are the least implemented aspects. Tari (2005) concludes that in order to go beyond the ISO 9000 norm and advance towards total quality, certified firms should obtain a higher employee involvement and therefore improve their people orientation, engage in wider planning, and use quality improvement tools and techniques to a higher extent. Currently, tools and techniques used by these certified firms for quality improvement include internal audits, graphs, statistical process control, and flow chart.

2.3.3 Formal Evaluation Models

Quality models like the Malcolm Baldrige National Quality Awards (MBNQA) in the USA, Deming Prize in Japan, and the European Foundation for Quality Management (EFQM) are used by companies to guide them in their implementation of quality management and in carrying out self-evaluations of their quality practices (Tari, 2005).

The MBNQA offers seven categories of concepts and values in quality management such as leadership, strategic planning, human resources orientation, process management, information and analysis, customer and market focus, and business results. The European Foundation for Quality Management (EFQM) model lists nine principles namely; leadership, employee management, policy and strategy, alliances and resources, process management, people results, customer results, society results, and key results.

While the Deming Prize is grouped into ten categories which are in turn split into sub-criteria such as policies, organisation, information, standardisation, development and usage of human resources, activities ensuring quality, activities for maintenance and control, activities for improvement, results, and future plans. In general, these principles of MBNQA, EFQM and Deming Prize summarise the aspects defined in the literature (Tari, 2005).

Although there appears to be some differences between the quality gurus, empirical research and evaluation models, still general factors for successful quality management can be developed based on the three perspectives. Table 2.3 below summarised the factors or elements for successful quality management derived from the three sources.

	Element	**Contribution from quality gurus**	**Empirical research**	**Evaluation model**
1.	Management leadership	Yes	Yes	Yes
2.	Continuous quality improvement	Yes	Yes	Yes
3.	Training & Education	Yes	Yes	No
4.	Human resource management	No	No	Yes
5.	Measurement of quality	Yes	No	No
6.	Process management	No	Yes	Yes
7.	Information & Analysis	No	No	Yes
8.	Quality data & reporting	No	Yes	No
9.	Use of statistical tools & techniques	Yes	No	No
10.	Communication system	Yes	Yes	No
11.	Policy & strategy	No	No	Yes
12.	Quality policy & planning	Yes	Yes	No
13.	Customer focus	Yes	Yes	Yes
14.	Employee participation	Yes	No	No
15.	Teamwork	Yes	Yes	No
16.	Maintenance & control activities	No	No	Yes
17.	Employee recognition & reward	Yes	No	No
18.	Employee relations	No	Yes	No
19.	Supplier relations	Yes	Yes	No

Table 2.3: Factors for successful quality management from quality gurus' perspectives, empirical research, and evaluation model.

Based on the table, it would seem that management leadership, continuous quality improvement, customer focus, training and education, process management, communication system, quality policy and planning, teamwork and supplier relations are primary factors for successful quality management. Secondary factors are human resource management, measurement of quality, information and analysis, quality data and reporting, use of statistical tools and techniques, policy and strategy, employee participation, maintenance and control activities, employee recognition and reward and employee relations.

2.4 Quality Management System (QMS)

A system can be defined as a collection of interrelated parts, materials, or even abstract entities that function together to achieve a common purpose (Lim, 1998). The ISO 8402 defines a quality management system as a management system to direct and control an organisation with regard to quality. The standard defines QMS as "that part of the organisation's management system that focuses on the achievement of outputs in relation to the quality objectives". QMS is an assembly

of components, such as the organisational structure responsibilities, process and resources.

According to Munro-Faure and Munro-Faure (1992), a quality management system (QMS) is a formal management system which defines the quality environment within an organisation. QMS is referred to as a business management system that can be applied to all business sectors and all sizes of companies. It is designed to provide the support and mechanism for the effective accomplishment of quality-related activities in organisations. It is recognised as a systematic means to manage quality in organisations (Kolka, 2002). In a broader sense, Goetsch and Davis (2005, p.174) indicated that the quality management system "consists of all the organisation's policies, procedures, plans, resources, processes, and delineation of responsibility and authority, all deliberately aimed at achieving product or service quality levels consistent with customer satisfaction and the organisation's objectives. When these policies, procedures, plans, etc. are taken together, they define how the organisation works, and how quality is managed." Examples of a quality management system are the ISO 9000, QS 9000 and TS16949 standards.

2.4.1 What is ISO 9000?

ISO 9000 is a series of international standards for quality system. Under these international standards there are ISO 9000, ISO 9001, ISO 9004, and ISO 19011. However, organisations can only be certified or registered against ISO 9001:2000 – Standard for Certification (ISO 9000: 2000 standard). According to the ISO 9001: 2000 standard, the adoption of a quality management system (QMS) should be a strategic decision of an organisation. The ISO 9001:2000 has formalised an effective system for evaluating the ability of any firm to consistently design, produce, and deliver quality products/services (Fuentes et al., 2000; Martinez-Lorente and Martinez-Costa, 2004; Terziovski et al., 2003). ISO 9001:2000 provides guidelines for organisations to establish their quality systems by focusing on procedures, control, and documentation (Sun et al., 2004). Therefore the objectives of ISO 9001:2000 is the provision of consistency in products, meeting customer and regulatory requirements and having systems that address customers satisfaction, continual improvement, prevention of non-conformity, and the adoption of a system approaching TQM (Goetsch and Davis, 2005). ISO 9001:2000 is perceived as a management control tool, a driver of

innovation, and plays a strategic role within organisations in focusing and ensuring the delivery of quality products/services (Van der Wiele et al., 2005).

The ISO 9001:2000 is based on the concept that certain minimum characteristics of a quality management system could be usefully standardised, giving mutual benefit to suppliers and customers, and focusing on process rather than product/service quality (Van der Wiele et al., 2005; Dick et al., 2002). This is seen through the fact that ISO 9001:2000 encourages the adoption of the 'process approach' for the management of the organisation and its processes, and as a means of identifying and managing opportunities for improvement. The processes approach is developed based on the belief that a desired result is achieved more efficiently when activities and related resources are thought of as a process (Bhuiyan and Alam, 2004). The process-based model defines a quality management system as a single large process which links sub-processes in a continuous improvement cycle. Moreover, the utilisation of process approach emphasises the importance of understanding and fulfilment of requirements, the need to consider processes in terms of added values, obtaining results of processes and continual improvement of process based on objective measures (Tan et al., 2003). There are five main clauses in the ISO 9001 standard; quality management systems, management responsibility, resource management, product realisation, and measurement, analysis, and improvement.

Clause 4 - Quality Management System

Clause 4 of the ISO 9001:2000 states that an organisation is required to establish, document, implement and maintain a quality management and continually improve its effectiveness. Organisations are required to:

a. Identify the processes needed for the quality management system
b. Determine the sequence and interaction of these processes
c. Determine criteria and methods needed to ensure both the operation and control of these processes are effective
d. Ensure the availability of resources and information necessary to support the operation and monitoring of these processes
e. Monitor, measure and analyse these processes, and
f. Implement action necessary to achieve planned results and continual improvement of the processes.

Clause 5 – Management Responsibility

Under this clause, top management shall provide evidence of its commitment to the development and improvement of the quality management system and continually its effectiveness by:

a. Communicating to the organisation the importance of meeting customer as well as statutory and regulatory requirements;
b. Establishing the quality policy
c. Ensuring that quality objectives are established;
d. Conducting management reviews;
e. Ensuring the availability of resources.

Clause 6 – Resource Management

The organisation shall determine and provide the resources needed:

a. To implement and maintain the quality management system and continually improve its effectiveness, and
b. To enhance customer satisfaction by meeting customer requirements (ISO 9001:2000).

Clause 7 – Product Realisation

Under this clause, the organisation shall:

a. Plan and develop processes needed for product realisation
b. Determine and review the requirements related to the product/service
c. Determine and implement effective arrangements for communicating with customers
d. Plan and control the design and development of product/service
e. Determine and maintain record of inputs relating to product requirements
f. Verify and approve prior to release the outputs of design and development against the inputs.
g. Conduct review of design and development systematically at suitable stages
h. Perform validation of design and development in accordance with its plan
i. Identify and maintain record of design and development changes
j. Ensure purchased product conforms to specified purchase requirements.
k. Evaluate and select suppliers
l. Describe the product to be purchased and ensure the adequacy of specified purchase requirements prior to their communication to the supplier

m. Establish and implement the inspection for ensuring purchased product meets requirements specified.

Clause 8 – Measurement, Analysis & Improvement

The clause requires the organisation to plan and implement the monitoring, measurement, analysis and improvement processes needed:

a. To demonstrate conformity of the product
b. To ensure conformity of the quality management system, and
c. To continually improve the effectiveness of the quality management system

This shall include determination of applicable methods, including statistical techniques, and the extent of their use. It requires management to actively consider how they are going to undertake and monitor their success in achieving conforming product/service and improvements to the system.

As one of the measurements of the performance of the quality management system, the organisation is to monitor information relating to customer perception as to whether the organisation has fulfilled customer requirements. The methods to be employed for obtaining and using this information shall be determined by the organisation.

Under *analysis of data* clause, an organisation is required to determine, collect and analyse appropriate data to demonstrate the suitability and effectiveness of the quality management system and to evaluate where continual improvement of the quality management system can be made. This will include data generated as a result of monitoring and measurement and from other relevant sources. The analysis of data shall provide information relating to:

a. customer satisfaction
b. conformance to product requirements
c. characteristics and trends of processes and products including opportunities for preventive action, and
d. suppliers.

As for *improvement* clause, the organisation shall continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive

actions and management review (ISO9001:2000). Since the QMS must be improved on a continual basis, it is expected that various aspects of the system would be undergoing improvement efforts at any given time. What cannot be expected is that all aspects of the quality management system be improved simultaneously.

ISO 9001:2000 uses the PDCA (Plan-Do-Check-Act) improvement circle to enclose management responsibilities, resource management, process management, measurement, analysis and improvement (Ho, 2002). Magd (2008) suggests that the PDCA methodology can be applied to all processes and can be described as follows:

a. Plan – Establish the objectives and processes necessary to deliver results in accordance with customer requirements and the organisation policies.
b. Do – Implement the processes.
c. Check – Monitor and measure processes and products against policies, objectives, and requirements for the product and report the results.
d. Act – Take actions to continually improve process performance.

To maintain the certificate, an organisation has to be proactive in anticipating future problems and show its continual improvement efforts. Continual improvement efforts are required to be a proactive approach to the QMS development and should not be strictly related to non-conformances identified within the system.

An overview of the process concepts embraced by the standard is shown in Figure 2.1. The model of ISO 9000 standards was deduced from the philosophies of quality gurus like Juran, Deming, and Feigenbaum. The principles that guide the standard are customer-focused organisation, leadership, involvement of people, process approach, system approach by management, continual improvement, factual approach to decision making, and mutually beneficial supplier relationships. These are enablers that top management can use as a framework for introducing good management practice to underpin the organisation's management systems. The ISO 9001:2000 standard tends to increase the intersection area between QMS requirements and Total Quality Management (Biazzo and Bernadi, 2003).

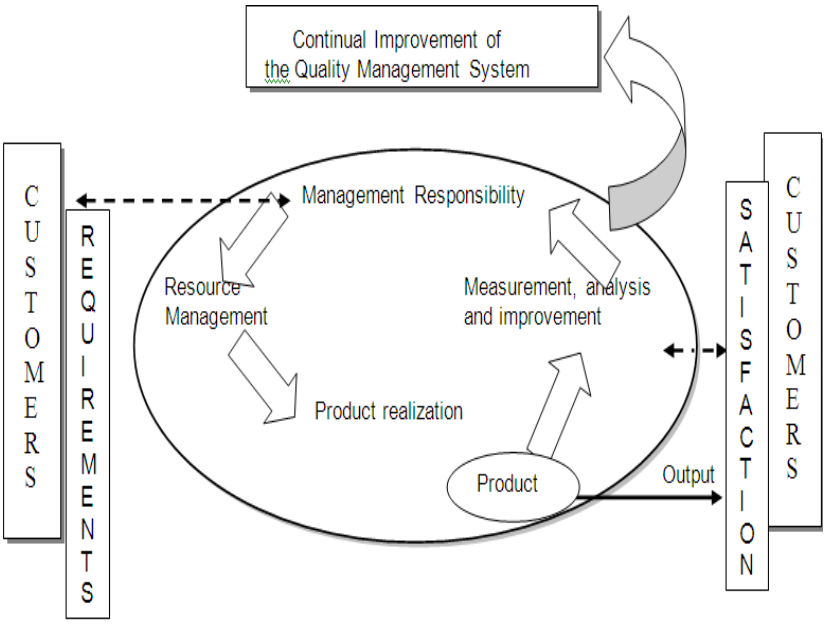

Figure 2.1: Model of a process-based quality management system (ISO 9000:2000 standards)

ISO 9001: 2000 promoted monitoring customer satisfaction, quality objectives and continual improvement (CI), giving more chances to meet needs and expectations of customer (Burzacca and Lunghi, 2003). The purpose of ISO 9000:2000 series is to assist organisations of all sectors and sizes to implement and operate an effective quality management system (QMS). The basic idea of ISO 9001: 2000 is to require an organisation to effectively use and implement its QMS including continuous improvement and prevention of nonconformity which the aim is to satisfy the customers (Tsim et al., 2002).

2.4.2 Comparison of and Relationship between ISO 9000 and TQM

ISO 9000 has many similarities with TQM but significant differences still exist between them. For instance, the goal of TQM is to improve overall quality in an organisation in order to meet customer satisfaction, whereas the goal of ISO 9000 is to ensure that a basic quality system is in place to enhance and facilitate trade (Han et al., 2007). The term ISO 9000 has become more widely used than TQM in discussions of quality improvement and global competitiveness, primarily because ISO 9000 has become the most prevalent global quality initiative (Tsiotras and Gotszamani, 1996; Foster, 2007). Since ISO 9000 is much smaller in scale than TQM, it is more manageable and achievable, and yet ISO 9000 registration efforts can give similar benefits to the organisation even though they

may not be on the same scale. Furthermore, companies that are ISO 9000 certified receive acknowledgement and recognition from a third party as well as their customers (Han et al., 2007). In addition, documentation plays an essential role in the ISO 9001 certification process, whereas it is optional for TQM. Hence, there are many methods and systems of reference to implement TQM, whereas there is one common standard for ISO 9000.

On the other hand, ISO 9000 and TQM are similar as both insist on the necessity to have a clear quality policy, to adopt a continuous improvement approach, to make prevention prevailing on correction and to measure the effectiveness of the system (Lambert and Ouedraogo, 2008). There is an increasing awareness that TQM and ISO 9000 can complement each other (Vloeberghs and Bellens, 1996). Some claim that ISO 9000 is a good start on the road to total quality management (Corrigan, 1994; Merrill, 1995; Porter and Tanner, 1996; Frehr, 1997; Goetsch and Davis, 2005).

2.4.3 Differences between ISO9001:2000 and ISO9001:2008

The ISO 9001:2008 was introduced in November 2008 to replace the ISO 9001:2000. Compared to the 2000 version upon which the study is being based on, the ISO 9001:2008 represents fine-tuning, rather than a thorough overhaul (Lee et al., 2009). The new standard does not contain any new requirements. However, some useful clarifications are made to existing requirements of ISO 9001:2000. The changes in ISO 9001:2008 are relatively minor and the key changes are made to certain areas such as:

i. Introduction (0) where it explicitly lists “risks” associated with an organisation’s “business environment” as an influencing factor of the QMS.
ii. Scope (1) where in the standard the term ‘product’ is not solely applicable for product intended or required by the customer but also any intended output resulting from the realisation process. This broadens the application and includes e.g. purchased products, products from intermediate stages in the realisation process, as well as products from outsourced processes. “Statutory” requirements applicable to the product have been introduced in addition to the previously used “regulatory” requirements.
iii. General requirements (4.1) where text was amended regarding outsourced processes for clarification.

iv. Work environment (6.4) where text was amended to provide examples of influencing conditions of work environment which may affect product conformity.

v. Determination of requirements related to the product (7.2.1) where text was amended with examples of possible requirements and contractual obligations related to post delivery activities e.g. warranty provisions, maintenance services and requirements related to re-cycling and final disposal post-delivery activities.

vi. Design and development outputs (7.3.3) where text was amended to clarify that the provision of information for production and service provision also can include information providing details for the preservation of product.

vii. Customer satisfaction where text was amended to provide examples on relevant input for monitoring of customer perception.

viii. Corrective action/Preventive action (8.5.2f/8.5.3e) where text was amended to include “reviewing the effectiveness of corrective/preventive action taken” which is also consistent with ISO 14001.

Further, the structure and outline of ISO 9001:2008 is identical to that of ISO 9001:2000. However, the changes to the wording are made for easier use, clearer language, easier to translate into other languages and better compatibility with the environmental management standard ISO 14001:2004 (www.isosimplified.com).

2.4.4 Motivations for Certification

Past research has shown that organisations seek ISO 9000 certification for various reasons. Earlier research by Rayner and Porter (1991) and Taylor (1995) showed that organisations were seeking registration to ISO 9000 mostly for external reason, internal reason and opportunistic use as a marketing device. However, as views on ISO 9000 mature, having an ISO 9000 certificate is seen more as an “order-qualifier” than an “order-winner” especially in the manufacturing sector (Hill, 2000).

The main external reasons for seeking ISO 9000 certification are customer pressures (Rayner and Porter, 1991; Taylor, 1995; Carlsson and Carlsson,1996; Mo and Chan, 1997; Anderson et al., 1999; Beattie and Sohal, 1999; Fuentes et al., 2000; Wiele et al., 2001; Poksinska et al., 2002; Santos and Escanciano,

2002; Awan and Bhatti, 2003), to achieve customer satisfaction (Magd, 2008), for advertising and marketing purposes (Rayner and Porter, 1991; Brecka, 1994; Taylor, 1995; Ebrahimpour et al., 1997; Lipovatz et al., 1999; Alkhalifa and Aspinwall, 2000; Fuentes et al., 2000; Wiele et al., 2001; Santos and Escanciano, 2002; Awan and Bhatti, 2003; Magd, 2008), competitive pressures (Rayner and Porter, 1991; Anderson et al., 1999; Beattie and Sohal, 1999; Santos and Escanciano, 2002; Awan and Bhatti, 2003; Magd, 2008), and to improve company's reputation and image in the eyes of the customers (Taylor, 1995; Tsiotras and Gotszamani, 1996; Santos and Escanciano, 2002). Huarng et al. (1999) found that external factors are most significant in decision process regarding implementing a quality assurance standard in Taiwan companies.

The internal reasons for obtaining certification to ISO 9000 which are found to have beneficial effect on business performance are as a foundation for continual improvement (Carlsson and Carlsson, 1996; Van der Wiele and Brown ,1997), to improve internal procedures such as establishing a formal system and simplifying procedures (Fuentes et al., 2000; Alkhalifa and Aspinwall, 2000; Santos and Escanciano, 2002), to improve organisational efficiency and effectiveness (Wiele et al., 2001; Alkhalifa and Aspinwall, 2000; Fuentes et al., 2000; Karim et al., 2005), to improve the efficiency of the quality system (Magd, 2008), to improve productivity (Tsiotras and Gotszamani, 1996; Ebrahimpour, 1997; Alkhalifa and Aspinwall, 2000; Karim et al., 2005) and to improve quality of products and minimise operating costs (Taylor, 1995; Van der Wiele,1997; Fuentes et al., 2000; Santos and Escanciano, 2002).

A survey conducted on a sample of 100 Malaysian companies that have gained ISO 9000 certification revealed a major difference in that the reasons for seeking registration for these Malaysian companies are management-driven as opposed to demand from customers as in developed countries (Lee and Lim, 2001). In addition, for Malaysian companies, having the ISO 9000 certificates certainly open doors for them to trade in the international and global markets especially with the European Union countries.

Other reasons offered by some of the researchers are to improve the working environment, to improve communication, to increase awareness on quality issues and to add credibility to the suppliers.

Jones et al. (1997) suggests alternative terms for external and internal reasons for seeking the ISO 9000 certification as follows:

a. Non-developmental reasons: major customer(s) requiring certification, the desire not to be locked out of future tendering processes or markets, realisation that ISO certification is progressively becoming a requirement for doing business and the opportunity to use ISO certification as a marketing or public relations tool;
b. Developmental reasons: the desire to improve the company's internal processes and to enhance the overall competitive performance of the company;
c. Mixed reasons: a combination of developmental and non-developmental reasons.

From the above literature, it can be concluded that companies are driven to seek ISO 9000 certification either by external, internal, or both reasons. Wiele et al. (2001) indicate that organisations pressured by external pressures to adopt certification experienced fewer benefits compared to organisations that did it for internally driven purpose. This is because when the main motivation for seeking ISO 9000 certification is based on the external pressure from customers, the benefits derived are only short-term. A strong and significant correlation is found between internal pressure and short-term as well as long-term business performance improvements as it involved change and continuous improvements to the business processes. According to Tsiotras and Gotszamani (2002), the true motives for certification are the key for successful adoption and implementation of the ISO 9000 requirements that will determine the effectiveness and value of the quality system.

2.4.5 Benefits of ISO 9000 Certification

Inferred in the pursuit of ISO 9000 certification is the assumption that it is associated with improved quality management systems, leading to a better quality and business performance. However, this is not always so as the Science and Engineering Policy Studies Unit (1994) concluded that there appears to be a relationship between managers' motives for obtaining certification and gains achieved in business performance. Terziovski et al. (2003) state that organisations that pursue the certification process willingly and positively across a broad spread of objectives are more likely to report improved organisational performance than organisations driven by customer pressure. As established

from past studies, the reason for adoption of ISO 9001:2000 certification is based on its benefits and their effects on the organisation's future.

The literature on the benefits of obtaining ISO 9000 certification is mixed. Terziovski et al. (1997) concluded in their study that ISO 9000 certification does not have a significant positive relationship with business performance. They suggested that the benefits attributable to certification were mainly for procedural efficiency and error rates, and less likely for market share. When compared to TQM, Zhang (2000) writes that ISO 9000 has lower effects on business performance than TQM. On the other hand, Terziovski et al. (2003), Corbett et al. (2002) and Mann and Kehoe (1994) find that adopting ISO 9000 does have a positive effect on business performance. Corbett et al. (2005) and Chow-Chua et al. (2003) suggest ISO 9000 certification leads to significant improvement in financial performance. Furthermore, Naveh and Marcus (2005) found that installing and using ISO 9000 lead to achieving competitive advantage through improved on-time delivery and reduction in cost. Karim et al. (2005) conducted a study on Australian construction firms and found that the implementation of ISO 9000 in these firms has resulted in:

a. Less rework and repair
b. Higher operational efficiency in operation
c. Continual improvement of operation
d. Improved internal performance appraisal systems
e. Better risk management
f. More systematic record keeping
g. Greater client satisfaction
h. Better access to domestic markets
i. Enhanced competitiveness

Magd (2008) found that some of the benefits of implementing ISO 9001:2000 in Egyptian manufacturing companies are improved documentation, improved efficiency of the quality system, clearer work instructions, procedures and job responsibilities, improved product quality. Improved documentation, improved quality perception, disciplined work environment, and consistency across the organisation are the main benefits discovered by Bhuiyan and Alam (2005). Meanwhile, Van der Wiele et al. (2005) found that continuous improvement, management control, quality focus and customer satisfaction are some of the benefits from ISO 9000 implementation in Holland. Han and Chen (2007)

suggest that ISO 9000 registration efforts enhance quality, cost reduction, dependability, and flexibility.

Several studies have compared performances of ISO 9000 registered companies with non-registered companies and found the results mixed. For example, Terziovski et al. (1997) showed that the performance of a large sample of Australian and New Zealand companies registered to ISO 9000 was indistinguishable from those that were not registered. Similar results were obtained by Rahman (2001) in his study of some West Australian firms on the impact of ISO 9000 on organisational performance between ISO 9000 registered companies with non-registered companies and by Simmons and White (1999) when they compared the performance of US ISO 9000-registered and non-registered companies. Lima et al. (2000) compared the financial performance of a sample of ISO 9000 registered Brazilian firms with a control groups found no discernible difference in the levels of performance across the two groups.

On the other hand, Corbett et al. (2004), and Naveh and Marcus (2005) showed that US ISO 9000 registered firms have significantly better outcomes than non-registered firms. Furthermore, Singh and Mansour-Nahra (2006) found that being certified to ISO 9000 had made it possible for a company to be able to tender for and win a number of contracts both locally and abroad. Registration to ISO 9000 has also made it possible for the certified company to review and hasten some areas of procedure and providing staff the opportunity to suggest improvements in practice.

Further, a study conducted by Sohail and Hoong (2003) on a group of companies found superior organisational performance from Malaysian small and medium enterprises having the ISO 9000 QMS compared to those which do not.

Meanwhile, Lee et al. (2009) examined the performance outcomes and contextual factors which are associated with different ISO 9000:2000 implementation patterns and found that organisations with different ISO 9000:2000 implementation patterns performed differently in the two outcomes analysed. The results indicate that firms with a high level of ISO 9000 principles adoption outperformed those with a relatively lower level of adoption in both overall performance and behavioural response.

As the literature on the benefits of being certified to ISO 9000 shows contradictory evidence, care should be taken in interpreting the results of survey based studies because the simple act of being certified does not necessarily mean that the organisations have more effective management systems in place than organisations that have not sought registration. According to Singh and Mansour-Nahra (2006), one must consider that effective performance is a composite of cultural aspects and structured systems and studies that compare performance of organisations based on ISO 9000 registration deals only with the structured system, and that comparative firms without registration may equally have effective structured systems. Therefore according to them it could be misleading to compare registered and unregistered firms.

Despite the long list of benefits associated with being certified to ISO 9000, a considerable number of criticisms also emerged. The criticisms are related to the expensive costs of certification and implementation (Van der Wiele et al., 2005), the standards being too concerned with documentation, paperwork-driven, and therefore too time consuming (Bhuiyan and Alam, 2005; Casadesus and Karapetrovic, 2005). Magd (2008) cited Seddon (1997), Stevenson and Barnes (2001) and Doughlas et al. (2003) as saying that the standard may interfere with new and better ways of operating, quality by inspection is not quality, and too heavy reliance on people's in particular assessors' interpretation of quality. ISO 9000 is also thought to discourage creative and critical thinking in employees because they are forced to work according to established procedures and rules (Casadesus and Karapetrovic, 2005).

2.4.6 Critical Success Factors of ISO 9000 Implementation

According to Li and Gurnani (1997), the most common causes or factors for success in implementing a quality management system in an organisation is the commitment from top management or the CEO, effective promotion of the exercise, and also successful introduction of the quality management system itself. Management and leadership have been found to be crucial for the success of ISO 9000 initiative, and lack of support of senior management in many organisations has seen the implementation and buy-in from employees to be at unacceptably low levels (Singh et al., 2006). The most important factors identified for successful ISO 9000 implementation in small organisations were the commitment and involvement of all organisational members and a quality manager who is dedicated and knowledgeable to facilitate and lead the

improvement work within the QMS (Poksinska et al., 2006). Chin and Choi (2003) found that top management commitment is the most critical factor for the successful ISO 9000 implmentation, whilst common goal, teamworking, education and training, and cultural changes are also important factors in the construction industry in Hong Kong. Shariff (2004) quoted quality Gurus like Deming, Juran and Crosby who mentioned that top management commitment is one of the most important factors impacting the success potential of a quality management system (QMS) in an organisation.

Because TQM implementation and maintenance closely resembled ISO 9000 implementation and maintenance, they also share similar success factors. In citing the previous studies by Zeitz et al., 1997; Ahire et al., 1996; Flynn et al., 1994 and Saraph et al., 1989, Soltani (2005) discovers that top management commitment is also considered as the critical success factor in the implementation of Total Quality Management. This is in line with other studies on Total Quality Management (TQM) where it was found that the key requirements for successful implementation of TQM including its initiatives are top management commitment, setting up of a Total Quality Steering Committee/Council, good planning and publicising of the initiative taken, and also providing infrastructure that supports deployment and continual improvement.

Badri et al. (1995) identified 8 critical factors of QMS implementation in an organisation as top management role, quality policy, quality department role, design of product or service, training, supplier quality management, process management/operation procedures, employee relation and quality data.

Also, Mann and Kehoe (1995) suggested that several main factors affecting the implementation and success of QMS such as:

a. Employee skill - The higher skilled employees accept quality management activities more quickly than lower skilled employees.
b. Education level - Higher educated employees accept quality management activities more radically than lower educated employees.
c. Length of employment – It is very difficult to change the mind of employees who have worked for long time in a specific culture and to accept quality activities and their accompanying changes. By involving employees in the quality process and activities would help.

d. Age of employees – Young employees usually can accept changes quicker than elderly employees.
e. Top management attitudes, commitment and involvement towards change.
f. Attitude of employees towards change – Negative attitudes can be overcome by educating, training and involving employees in the change project.
g. Work methods – Employees who are employed on traditional working methods have been found to have difficulty in accepting a QMS.
h. Understanding of quality improvement needs by employees – If they understand the needs then they can easily accept quality management.
i. Salaries – Employees with poor salaries are less likely to accept a QMS.
j. Leadership by top management through appointed teams, requires the monitoring of performance achieved by quality activities.
k. Cross functional integration in an organisation instead of departmental interaction.

Obviously, top management commitment and leadership, employee involvement, employee and top management attitudes of ISO, training, and reward are some of the important factors in a quality management system implementation in any organisation.

2.4.7 Barriers/Problems to ISO 9000 Implementation

The literature identifies many barriers to ISO 9000 implementation. One of them is the lack of top management commitment, involvement, and support. Lack of top management commitment and involvement are inhibiting factors in implementing QMS in Australia, New Zealand and New Jersey state organisations (Samson, 1997; Bin Srinidhi, 1998). Lack of leadership and lack of senior management's involvement and acceptance of responsibility are barriers to ISO 9000 implementation in many organisations (Quazi et al., 2002). Without the support of management, the behaviour of personnel is difficult to change (Ashire and O' Shaughnessy, 1998). Lack of top management commitment, lack of qualified personnel, insufficient quality education and training, lack of financial resources, and failures to define responsibility and authority for personnel are regarded as barriers to effective implementation of ISO 9001:2000 in the Egyptian manufacturing organisations (Magd, 2008).

Lack of training was also a barrier to ISO 9000 implementation as training is important to facilitate change and continual improvement in organisations (Chase, 1991). Also, lack of financial resources to mobilise activities such as instituting training programmes, insufficient employee education, low employee skills were found to be some of the difficulties faced by Indonesian organisations in implementing the ISO 9000 (Amar and Zain, 2002). Glover and Siu (2000), state that the lack of training courses in quality management as one of the common barriers to ISO 9000 implementation in Chinese organisations.

In addition, lack of awareness and understanding on ISO 9000 and its requirements can also be a barrier to ISO 9000 implementation. Al-Zamany et al. (2002) offered that lack of awareness is the result of lack of education, training and information on quality issues. The results achieved from ISO 9000 are influenced by people's understanding of quality and quality systems (Nwankwo, 2000). Withers and Ebrahimpour (2001) suggested that one of the common obstacles faced by European organisations in the study is the difficulty in interpreting the ISO 9000 standards. While Lee et al. (1999) concluded that understanding of ISO standards and requirements is the major roadblock.

Documentation is also a barrier in implementing ISO 9000 (Mo and Chan 1997; Carlsson and Carlsson 1996; Lee et al., 1999).The problems arise due to the lack of control on the documents and the number of documents and procedures that need to be documented (Brown and van der Wiele, 1995).

Lack of motivation as the result of inconsistent reward systems and lack of recognition is also a barrier to ISO 9000 implementation in many organisations (Ngai and Cheng, 1997). Low and Ling Pan (2004) suggest that little recognition, respect and reward for a good job done to achieve quality performance is a barrier to effective ISO 9001:2000 implementation and maintenance in Singapore.

Low and Ling Pan (2004) also found that resistance to change is a barrier to effective ISO 9001:2000 implementation and maintenance in Singaporean organisations. This is because the middle managers feel that they are losing power on decision making and over employees while employees feel they are controlled by the system, hence their reluctance to adopt the change. The ISO 9000 implementation led to employee resistance because it is seen as a lot of

extra work (Tsim et al., 2002), employees not wanting to learn new skills (Macadam, 1996), and a desire to avoid new tasks and responsibilities (Lipovatz et al., 1999). In older employees, they resisted change due to perceived threat to their positions of authority (Bardoel and Sohal, 1999).

Lack of employee support, participation, and involvement represent a problem to implement ISO 9000 (Awan and Bhatti, 2003) as employee involvement in the certification process enhances the commitment of management and employees (Brown et al., 1998). Low and Ling Pan (2004) found that low employee participation is a barrier to effective ISO 9001:2000 implementation and maintenance in Singaporean organisations.

Lack of communication appears to be another barrier to effective ISO 9000 implementation in Swedish organisations (Carlsson and Carlsson, 1996) and in public Yemeni organisations (Al-Zamany et al., 2002).

Having too many suppliers to one organisation is a barrier to ISO 9000 implementation in India, China and Mexico (Zhao, 1995). Fuentes et al., (2000) found that lack of cooperation from suppliers is a barrier to implement ISO 9000 in Spanish organisations.

High cost of certification which would include cost for registration fees, employee training, and consultant fees also seemed to be an inhibitor to ISO 9000 implementation (Dickenson et al., 2000; Stevenson and Barnes, 2001). This is especially so for small companies as they have limited resources. However, the variation in costs depends on the suitability and efficiency of existing systems and the competence of employees (McAdam and Jackson, 2002).

2.4.8 Differences between ISO 9000 Implementation and Maintenance

Most of previous research did not differentiate between the implementation and maintenance of ISO 9000. Researchers were interested in how organisations obtained their certifications, in which sector are they in, the size of the organisations certified, and concentrate mostly on the motivation for certification, its benefits, its impacts on performance, and barriers and problems of ISO 9000 implementation faced by these companies. How these certified organisations were going to maintain their certification was not studied and discussed in detail.

The process of implementing a QMS like the ISO 9000 normally follows the Plan-Do-Check-Act cycle. This approach provides structure and purpose to each stage of the quality system implementation. Moreover, this will enable the organisation to establish short-term priorities, align effort, assess daily progress, and take corrective action in a timely manner. The ISO 9000 QMS implementation phases consist of:

a. Planning & Preparation (Plan)
b. Documentation (Do)
c. Verification & Validation (Check)
d. Deployment (Act)
e. Maintenance & Continuous Improvement

Planning Phase

The QMS planning phase entails the specification of the ISO 9000 implementation goal and lays out the roadmap to achieve that goal. At this stage, top management will devise a mission, vision, policy, objectives and strategy for the successful implementation of the ISO 9000 QMS.

Documentation Phase

During this stage, the organisation's QMS is defined and documented in accordance to the ISO 9001:2000 standards. Core and critical processes are identified, refined where necessary and documented. Process flow-charts are mapped and supporting documentation are created.

Verification & Validation Phase

The ISO 9000 QMS refinement phase involves a final verification of the entire QMS to ensure that all processes interact as planned, are consistent and are correctly defined. Final validation is carried out to ensure elements of the QMS comply with the ISO 9001:2000 standards and corrective action is taken if deficiencies are found.

Deployment Phase

This stage involves institutionalising the QMS across the organisation so that it will be adopted, embraced and becomes the new way of working. Employees are trained on the defined processes and verification of the processes is also done to ensure adequacy and effectiveness. Internal quality audits are carried out to verify the execution of the processes according to what is being documented.

Maintenance & Continuous Improvement Phase

Once the implementation process has been carried out and adoption of ISO 9000 has taken place in the organisation, then the maintenance phase begins where an organisation transitions to a state where compliance with the ISO 9001:2000 standards needs to be continuously monitored and the system needs to be continuously improved and optimised. The continuous improvement phase is a never ending phase of ISO 9001:2000 implementation and entails the use of mechanisms necessary to facilitate continuous improvement of the QMS in order to keep the system alive. According to Nanda (2005), mechanisms for a QMS continuous improvement include:

a. Use of metrics programme for process and product improvements
b. Use long-term and short-term quality objectives for continuous improvement
c. Leverage internal quality audits for continuous improvement
d. Use corrective and preventive action request mechanisms
e. Conduct post-mortem analysis of projects to identify lessons learned
f. Collect customer satisfaction data
g. Collect improvement suggestions from employees

This research emphasises this last phase of ISO 9001:2000 QMS implementation that is the maintenance phase of ISO 9000. The maintenance phase differs from the other phases of implementation in several ways. First, the maintenance of the ISO QMS starts once the QMS is in place. Once adoption has been completed and certification obtained, the maintenance activities need to be activated to keep the quality system going.

Second, continual improvement is one of the requirements under the ISO 9001:2000 standards (Clause 8.5.1 Continual Improvement, ISO 9001:2000). It means to maintain a QMS would require continuous improvement in process, system, people and product/service. This can be demonstrated in the setting up of improvement projects, initiatives or programmes by individuals or in teams.

Third, organisations have to show that they are proactive in anticipating what might occur in future and in anticipating potential problems before they occur. This can be done by taking preventive action in addition to corrective action to correct problems that have already occurred.

Fourth, internal audits carried out during the certification process are to show compliance to procedures and standards. During the maintenance phase, internal audits must be utilised not merely to verify adherence to the defined QMS standards but also to explore opportunities for continuous improvement (Nanda, 2005). Therefore they must go beyond compliance auditing but also identify situations that require preventive action and possible improvements.

Fifth, in order to improve, customer satisfaction data must be collected. Collection and analysis of customer satisfaction data provides valuable information on the extent of customer satisfaction. This will pinpoint the areas that need to be improved. By monitoring customer satisfaction it can serve as an effective means for driving continuous improvement in an organisation. Figure 2.2 shows the phases of the ISO 9000 QMS implementation and maintenance in organisations.

PLANNING PHASE
Secure implementation prerequisites
Establish project goal
Form implementation team
Define implementation strategy
Define implementation process
Establish implementation schedule, identify needed resources & cost
Define mechanisms to: manage the implementation, report progress, and encourage employee participation
Plan for QMS documentation

⇩

DEFINITION PHASE
Conduct preliminary gap analysis
Revise implementation plan
Correct critical quality discrepancies
Conduct high-level process mapping & create process documentation
Conduct low-level process flowcharting & create process documentation
Create supporting process assets

⇩

REFINEMENT PHASE
Verify complete QMS
Validate complete QMS
Revise & reapprove QMS documentation

⇩

DEPLOYMENT PHASE
Perform employee training on QMS
Perform real-time monitoring of process adherence (process establishment period)
Perform internal quality audits

⇩

CONTINUOUS IMPROVEMENT PHASE
Use metrics for quantitative process and product improvements
Use long-term & short-term quality objectives for continuous improvement
Leverage internal quality audits for continuous improvement
Use corrective & preventive action request mechanisms
Conduct post-mortem analysis of projects to identify lessons learned
Collect customer satisfaction data
Collect improvement suggestions from employees

Figure 2.2: Phases of the ISO 9000 QMS implementation and maintenance in organisations (Adapted from Nanda, 2005).

For this maintenance phase, Cheng and Tummala (1998) identified six elements in which people of the organisation involved themselves in according to their importance. They are as follows:

1. Management commitment, involvement and support (84%).
2. Development of communication channels (72%).
3. Provision of training and education (68%).
4. Establishment of audit team, management reviews and/or other work teams (65%).
5. Formation of quality improvement teams (65%).
6. Adoption of appropriate leadership skills (60%).

2.4.9 Critical Success Factors, Issues and Problems in ISO 9000 Maintenance

Chin et al. (2000) conducted a study on Hong Kong electronics manufacturing companies to identify the critical issues of ISO 9000 maintenance to facilitate the manufacturers in maintaining their ISO 9000 quality systems. The aim of the study was to learn of ISO 9000 maintenance experience from the registered companies. To explore current practices in maintaining ISO 9000, 12 representative ISO 9000 registered companies were selected for interviews. From the interviews conducted with the quality directors and quality assurance managers of the companies, it was found that the success factors for ISO 9000 maintenance for electronics manufacturing companies are management commitment, teamwork, and company-wide ISO recognition. In fact, management commitment is found *crucial* for successful maintenance (Chin et al., 2000). The study found that the teamwork approach has proven to be effective for identifying and solving problems in the maintenance phase while company-wide recognition of ISO will certainly promote employee involvement in the maintenance phase.

Through the interviews by Chin et al. (2000), it was found that to achieve the effective maintenance of ISO 9000, continuous management support is a primary success factor and many reported failure cases are attributable to lack of constancy in management commitment and involvement. This seems to be in tandem with the reasons why companies failed the surveillance audits which are mostly due to lack of top management involvement and understanding of ISO 9000 requirements for the companies' quality systems (McCullough and Laurie, 1995; Dzus and Sykes, 1993). McCullough and Laurie (2000) and Dzus and

Sykes (1993) found that lack of top management commitment and support was one of the reasons why organisations failed to maintain the ISO 9000 certificate.

Based on the results of the three surveys and case study research conducted on Australian manufacturing companies, factors critical to TQM success are identified as a positive attitude of everybody in the organisation towards quality to ensure organisation-wide commitment, leadership education and training in quality management principles and techniques so that they can provide vision and leadership necessary to change the culture of the organisation, integrating the voice the voice of the customer and supplier so that quality of products and processes can be improved, and developing appropriate performance indicators and rewards at all levels of the organisation as part of performance review system (Sohal and Terziovski, 2000).

Similarly, Cheng and Tummala (1998) and Low and Omar (1997) found that the attitude and behaviour of people working in the organisation is critical in achieving the ISO 9000 registration and in the effective maintenance of ISO 9000 quality system in Hong Kong and China companies and in the construction industry in Singapore. Low and Chia (2008) also found that middle management staff with a more positive attitudes towards ISO 9000 tend to produce more effective ISO 9000 QMSs. Therefore, having the right attitude and behaviour is critical in the implementation and maintenance of ISO 9000 QMS. In order to have the right attitude which is underpinned by behaviour, would require both management and employees to be educated and trained on the ISO 9000 QMS so that they would understand what is required of them to support the maintenance of the QMS. This would enhance company-wide commitment and at the same time generate teamwork.

As for issues on ISO 9000 maintenance, based on the study carried out by Chin et al. (2000), among the 20 clauses under the ISO 9000:1994, 73.61 percent of the survey respondents who consist mainly of companies management representatives for the ISO 9000 quality system, consider the “corrective and preventive actions” the most critical issue in maintaining the ISO 9000 system. Four other clauses to be of secondary importance are clauses “document & data control”, “internal quality audits”, “quality system”, and “management responsibility” respectively. Although one of the aims of the survey is ‘*to identify the critical issues in* ***maintaining conformance to the 20 elements*** *or clauses of*

the ISO 9000', it should be noted however that the study used the 20 elements in the ISO 9000 clauses and five other elements namely; teamwork, resource allocation, company-wide commitment, costs, and language barrier as ***issues*** for the respondents to indicate as critical issues experienced in maintaining the ISO 9000 quality system since registration. Are critical issues in maintaining conformance to the ISO 9000 clauses similar to critical issues to ISO 9000 maintenance and therefore to be taken as having the same meaning? It would seem that the three elements namely teamwork, resource allocation and company-wide commitment added to the 20 elements of the ISO clauses are more appropriate to be considered as possible critical success factors and two others; costs and language barrier are critical issues of ISO 9000 QMS maintenance. The 20 elements then could be considered as potential difficult or problematic clauses to be adhered to and therefore are not issues since they are requirements of the standards.

In addition, McCullough and Laurie (2000) and Dzus and Sykes (1993) found another major failing was the lack of effective internal corrective measures, once system non-conformance and deficiencies were identified as the failed companies were often not aware of the importance of ISO 9000 maintenance and did not have well-established procedures to maintain their quality systems after ISO 9000 registration. McCullough and Laurie (2000) and Dzus and Sykes (1993) also cited that lack of understanding of the ISO 9000 standards' requirement and the difficulties in implementing corrective and preventive actions, document and data control and internal audits are barriers to ISO 9000 maintenance.

Yahya and Goh (2001) conducted a study on Malaysian manufacturing companies and found that seven clauses that are the most difficult to satisfy in descending order are corrective and preventive actions, design control, management responsibility, statistical techniques, process control, document and data control, and quality system. Other problems associated with after registration to ISO 9000 are the change in quality culture among employees and insufficient resources for training and education of employees (Lee et al., 1999; Chin et al., 2000).

In the Chin et al. (2000) study, the respondents were asked to indicate their measures to maintain the ISO 9000 certification in their organisations. It was

found that measures taken consist of eight (8) items such as strengthen internal auditing, management support and participation, training and education, regular management reviews, improve employees communication/feedback, enhance improvement culture by teamwork, effective corrective and preventive actions, and additional resources (Chin et al., 2000). According to Chin et al. (2000), regular management review may ensure that the ISO 9000 system remains effective and management can determine if a change is required in the organisational structure or in the operations of the organisation in order to improve the system. However, the findings of the above study were limited to manufacturing companies and was conducted based on the ISO 9000:1994 version which now has become obsolete. It is also possible that the focus on the views of quality directors and quality assurance managers who were responsible for the implementation and monitoring of the ISO 9000 system in the companies influenced the findings. Table 2.4 summarises the critical success factors, measures, issues and problems in maintaining a quality management system based on the literature.

Element / Study	**Low & Omar (1997)**	**Cheng & Tummala (1998)**	**Chin et al. (2000)**
Critical success factor	Top management commitment & support Technical aspects of quality management Socio-cultural aspects of quality management Productive relationships	Employee involvement (management, supervisory, staff, and operator level).	Management commitment & support Teamwork Company-wide ISO recognition
Issues & Problems	Organisation structure Employer's attitude Employee's attitude Resources Education & training Supervision Performance of suppliers & contractors Engineering & construction problems Coordination & communication	Not specified.	Corrective action Preventive action Document & data control Internal audit Quality system Management responsibility
Measures taken to maintain QMS & certification	Use of documentation Use of corrective actions Use of preventive actions Use of internal quality audit Use of training Use of management reviews	Management commitment, Involvement & support Development of communication channels Provision of training & education Establishment of audit team, management reviews & other work teams Formation of quality improvement teams Adoption of appropriate leadership skills.	Strengthen internal quality audit Management support & participation Training & education Regular management reviews Improve employee communication /feedback Enhance improvement culture by teamwork Effective corrective & preventive actions Additional resources

Table 2.4: Factors in ISO 9000 maintenance

2.4.10 Quality Management Systems (QMS) Maintenance Framework

According to Van de Water (2000), maintenance of quality management is "the application of management concepts to aspects of the process of quality management with the objective of keeping this process in a perfectly well defined state, to keep the introduced philosophy highly involving for the organisation's members, to bring it into a state seen fit to control all aspects of quality". Therefore, maintenance is the control of the quality management process which can be seen as a control system by itself (Van de Water, 2000).

Van de Water (2000) cites Fisscher (1994) as saying that a well based quality system comprises both the system structural aspects and the social-dynamical aspects. Structural aspects consists of the ISO requirements, guidelines, and control procedures while social-dynamical aspects include paying attention to employees' thoughts, feelings, interests and to the existence of potential human qualities. Sufficient attention to these aspects does result in an easier and deeper acceptance of the system structural aspects by the organisation members.

Low and Omar (1997) quoting the theoretical approach (Spekknink, 1995) asserts that an effective maintenance system requires the application of an integrative/non-technical approach in an organisation rather than the segmentalist/technical approach. The result of their study suggests that the quality management systems in the Singaporean construction industry were maintained based on the technical requirements set out in the ISO 9000 standard while the non-technical or socio-cultural aspects which help to promote an integrative environment were not emphasised. A technical approach is based on the requirement of ISO 9000 and the study found that documentation, corrective and preventive actions, internal quality audits, training and management reviews are the most popular methods for maintaining the QMS in Singaporean construction industry. According to Low and Omar (1997), in order to achieve greater effectiveness, the non-technical approach should be used as it will help to promote an integrative environment for the development of change and innovation with the primary objective of quality improvement. Moreover, an organisation should adopt the integrative or innovative-stimulating approach as it will have the ability to change and innovate its structure, culture, policies, management, and seek new ideas to contribute to new way of doing things. Therefore, they propose Kanter's (1994) theoretical model of an integrative

organisation for maintaining a QMS to help improve the system. Figure 2.3 shows the model.

Likewise, based on the case studies in the automotive sector, Van Iwaarden et al. (2006) concluded that there is a shift in quality management systems from a diagnostic towards a more interactive approach. Van de Water (2000) feels that it will be immediately clear that a crucial role within the maintenance process is the maintenance of organisational aspects with respect to at least the QMS as part of the total organisation structure. In this case, he uses the analogy for maintenance models for technical systems to quality system.

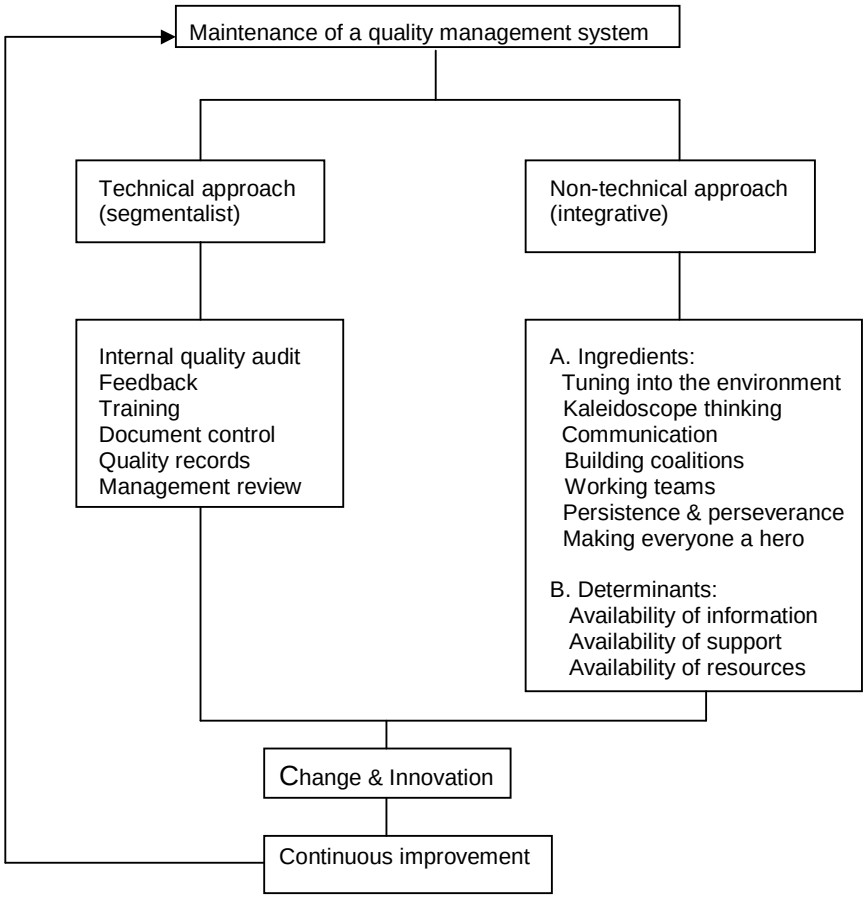

Figure 2.3: Kanter's model for effective maintenance of quality management systems. (Adopted from Low and Omar, 1997)

In addition, a necessary condition for a quality management system to succeed in obtaining the objectives of an organisation on a continuous basis is that the maintenance system for the quality system and quality management process has been designed at the moment of implementation of the QMS (Van de Water,

2000). In other words, as soon as a part of the quality management activities has been implemented, the maintenance of that part has to be started.

According to Van de Water (2000), there are two types of maintenance; namely the built-in and non built-in maintenance of a quality system. Built-in maintenance is ingrained in the process of quality management. Examples of built-in maintenance in a system are external and internal audits. Non built-in maintenance happens when an activity is left to chance and concerns activities that are not contained in the process of quality control and has to be performed to prevent or correct the poor functioning of the quality management process itself.

2.5 Organisational Structure and ISO 9000

According to Wilson and Rosenfeld (1990), organisation structure is the established pattern of relationships between the component parts of an organisation, outlining both communication, control and authority patterns. Structure distinguishes the parts of an organisation and delineates the relationship between them. Organisation structure is the formal pattern of interactions and coordination designed by management to link the tasks of individuals and groups in achieving organisational goals (Bartol and Martin, 1994). Several researchers such as Shea and Howell (1998) and Beck and Walgenbach (2003) have examined the role of structure in TQM success. Spencer (1994) proposed that the implementation of TQM is continuously enacted by organisational participants and is informed by the frailties of human understanding and the biases of human perspectives. He suggested that mental models, assumptions and preconceptions of the nature of organisations strongly influence the way people organise (Spencer, 1994).

Burns and Stalker (1961) proposed two basic ways; ***mechanistic*** and ***organic*** structure in which managers can organise and control an organisation's activities to respond to characteristics of its external environment. *Mechanistic* structure is used to organise and control activities and make employee behaviour predictable when the environment surrounding an organisation is stable. In a *mechanistic* structure, authority is centralised at the top of the managerial hierarchy, roles and tasks are clearly specified, employees are closely supervised, and the emphasis is on strict discipline and order. A *mechanistic* structure provides the most efficient way to operate in a stable environment because it allows managers to

obtain inputs at the lowest cost, giving an organisation the most control over it transformation processes and enabling the most efficient production of goods and services with the smallest expenditure of resources (Jones et al., 2000). A mechanistic management system is appropriate to stable conditions and is characterised by being bureaucratic, tall and centralised, has extensive departmentalisation, high formalisation, mainly downward communication, and little participation by low level employees in decision making (Burns and Stalker, 1961).

In contrast, an *organic* structure is used when the environment is changing rapidly. In an *organic* structure, authority is decentralised to middle and first-line managers to encourage them to take responsibility and to respond effectively to the unexpected, therefore acting quickly to the changing environment. The organic form is appropriate to changing conditions, which give rise constantly to fresh problems and unforeseen requirements for action which cannot be broken down or distributed automatically arising from the functional roles defined within a hierarchic structure. The organic model is flat and uses cross-hierarchical, flexible and functional teams and has low formalisation, lateral and upward and downward communication networks, and high participation in decision making (Burns and Stalker, 1961).

Spencer (1994) offered seven basic major doctrinal dimensions from which an organisation can be identified whether it is mechanic or organic in nature. The comparison of organisational models in relation to the seven doctrinal dimensions of TQM is shown in Table 2.5.

Dimension	**Mechanistic model**	**Organic model**
Organisational goals	Efficiency/performance goals	Organisational survival (requires performance)
Definition of quality	Conformance to standards	Customer satisfaction
Role/nature of environment	Objective/outside boundary	Objective/inside boundary
Role of management	Coordinate and provide visible control	Coordinate and provide invisible control by creating vision/system
Role of employees	Passive/follow orders	Reactive/self-control within system parameters
Structural rationality	Chain of command (vertical communication)	Process flow (horizontal and vertical communication
Philosophy toward change	Stability is valued but learning arises from specialisation	Change and learning are valued in themselves and assist in adaptation.

Table 2.5: Comparison of organisational models (Adapted from Spencer, 1994).

ISO 9000 is promoted as a universal standard applicable to all types of organisations, in all sectors, large or small. However, it is thought to be perfectly suited to organisations where there is a rather defined, hierarchical or mechanistic structure as is evidenced in many manufacturing sectors (Hazman and Jasmine (2009). The structural dimensions (mechanic versus organic) and strategy orientation (control versus creativity) of these companies might also influence the maintenance effectiveness of ISO 9000 in their companies. Hazman and Jasmine (2009) suggest that the compatibility of the standard with the organisation structure might affect how these organisations maintain their ISO. They then proposed a conceptual model of fit between ISO 9000 standard, structure and management orientation. They suggest the following:

a. Perfect fit – The standard will be highly productive in sectors where the primary managerial and organisational challenge is to reduce variation in the process to achieve consistent customer outcomes. This is normally seen in manufacturing sectors whereby control of operations is exercised by a set of routine procedures in a defined, hierarchical or mechanistic structure. Many low value added assembly operations and most record keeping government agencies are exemplars of this quadrant.
b. Misfit 1 – The need for control as required by the standard will pull organisations to fulfil the demand for control through greater standardisation and institutionalisation. This will result in organisations being pulled into different directions. Many conflicts and tensions are possible and frequent in sectors where control orientation is exercised within a rather fluid or flexible structure. The ISO 9000 standard will not be a good fit with the imperatives of this type of organisations. Examples of organisations that fall under this quadrant are public universities and their constituent units i.e. the faculties.
c. Perfect misfit – The ISO 9000 will be a perfect misfit for businesses and industries where creativity and innovation is their primary strategy as they need to institute highly flexible structures and practices. The normative values of institutionalisation, documentation, systematisation and delineation embodied in the standard will militate against the need for structural fluidity to stimulate innovation and creativity. This quadrant will be populated by small to medium consultancies in all industries.
d. Misfit 2 – Organisations which have fairly mechanistic structures but seek improvement through a highly managed process would find ISO 9000 quite friendly. Organisations that fall under this quadrant have very

defined and structured processes and systems but must constantly seek improvement in their efficiency in order to stay competitive. Many government agencies and contract manufacturers are in this quadrant as the ills of the bureaucratic structure are overcome through a laboured and limited process of improvement.

2.6 Total Quality Culture and the Environment for Change

2.6.1 Quality Culture and Change

A quality culture is an organisational value system that results in an environment that is conducive to the establishment and continual improvement of quality (Evans and Lindsay, 2005). It consists of values, traditions, procedures, and expectations that promote quality. Hence, Evans and Lindsay (2005) stress that total quality culture involves change and improvement for the organisation and its people. While there are many definitions of culture, Schein (1985) and Kotter and Heskett (1992) have indicated that quality culture should focus on having a collective or shared learning of quality-related values as the organisation develops its capacity to survive in the external environment. Quality culture formation occurs through integrated changes in the organisational system; an organisational quality-based vision, mission and goals, consistent formal and informal organisational structures, compatible reward systems, appropriate technology and job design, and attention to important personnel issues (Terziovski et al., 2003).

According to Goetsch and Davis (2000), quality culture is embedded in organisations when:

a. the behaviour of its people matches slogans
b. customer input is actively sought and used to continually improve quality
c. employees are both involved and empowered
d. work is done in teams
e. top management are committed and involved
f. sufficient resources are made available for continual improvement of quality
g. education and training are provided to ensure that employees at all levels have the knowledge and skills needed to continuously improve quality
h. reward and promotion system are based on contributions to quality continual improvement

i. employees are viewed as internal customers and
j. suppliers are treated as partners.

To create a quality culture, managing a change process like ISO 9000 would include managing employee attitudes towards change. If the reactions to change are not anticipated and managed, the change process will be needlessly painful and perhaps be unsuccessful (Jick, 1993). Hind (1996) argues that a positive attitude towards change is key to ISO 9000 success. Therefore, it is vital for an organisation to be change ready before attempting to implement and manage any kind of change (Armenakis and Harris, 2002; Kotter, 1996; Luecke, 2003) as research has shown that about 70 percent of all change programmes fail (Balogun and Hailey, 2004). Armenakis et al. (1993) defined change readiness as 'the cognitive precursor to the behaviours of either resistance to, or support for, a change effort'. Further, Jones et al. (2005) says it refers to 'the extent to which employees hold positive views about the need for organisational change (i.e. change acceptance), as well as the extent to which employees believe that such changes are likely to have positive implications for themselves and the wider organisation. Armenakis et al. (1993) argue that readiness is reflected in organisational member's beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organisation's capacity to successfully make those changes. They suggest that lack of change readiness is the main reason for organisations failing in their attempts to manage change successfully. So, in order for an organisation to be change-ready, By (2007) suggests factors such as creating a vision and a sense of urgency, empowering broad based action, communicating the change vision, and mobilising energy and commitment are essential to change readiness. In order to increase the level of change readiness, Vakola and Nikolaou (2005) implied that effective communication, top management commitment, allocation of resources, good and effective work relationships, rewards, training, and participation in the planning and implementation are crucial. By (2007) then concludes that due to the constant state of flux of the business environment in which contemporary organisations operate, organisational change management may prove more successful if focused on facilitating continuous change readiness rather than on implementing and managing specific change efforts.

To provide a framework for the analysis of client organisations in terms of quality culture and ISO 9000 benefits on a stratified basis, Terziovski and Power (2007)

divided organisations into 4 groups. This stratification was based on the premise that organisations' quality cultures go through a process of maturing over time. This division was based on whether the quality culture of the organisation was assessed as being strong or weak. One of the conclusions drawn from the study is that organisations that seek ISO 9000 certification with a proactive approach driven by continuous improvement strategy are more likely to derive significant benefits. The four-quadrant model is shown by Figure 2.4.

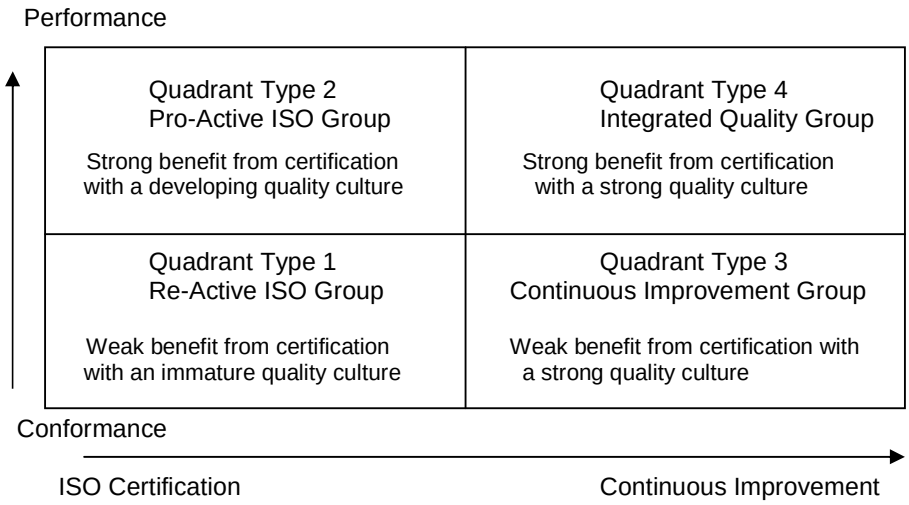

Figure 2.4: Four-quadrant model for ISO-Certified organisations (Terziovski and Power, 2007).

2.6.2 Change Management Process

For change to take place successfully, Beer et al. (1993) proposed six steps to effective change as follows:

1. Mobilise commitment to change through joint diagnosis of business problems
2. Develop a shared vision of how to organise and manage for competitiveness
3. Foster consensus for the new vision, competence to enact it, and cohesion to move it along
4. Spread revitalisation to all departments without pushing it from the top
5. Institutionalise revitalisation through formal policies, systems and structures
6. Monitor and adjust strategies in response to problems in the revitalisation process.

Meanwhile, Pugh (1993) offers four principles for understanding and managing organisational change. They are:

Principle 1: Organisations are organisms

This means the organisation is not a machine and change must be approached carefully with the implications for various groupings thought out. Participants need to be persuaded of the need for change and be given time to digest the changes after implementation.

Principle 2: Organisations are occupational and political systems as well as rational resource-allocation ones

This means that thought must be given to how changes affect people's jobs, career prospects, motivation, status, power, and prestige.

Principle 3: All members of an organisation operate simultaneously in the rational, occupational and political systems

This means that all types of arguments for change must be taken seriously.

Principle 4: Change is most likely to be acceptable with people who are successful and have confidence in their ability and the motivation to change

This means ensuring an appropriate place or set of people from which to start the change and to ensure the methods used are relevant to those who are 'first in line' in accepting the change.

2.6.3 Change Management Issues in Service

In citing Choi and Behling (1997), Black and Porter (1996), Flynn et al., (1994), Hall (1999), and Moosbruker and Loftin (1998), Huq (2005) offers six change management issues that address quality management practices in the service sector. The six change management issues are leadership, implementation of change and control, barriers to change, communications, people culture factor, and change review. He stresses that successful change requires a large commitment from top management, whether the change is occurring in a single department or in the entire organisation. It is even more difficult for service operations to implement it because of its preoccupation with internal performance dimensions that cannot keep up with the constantly changing perceptions and preferences of the customers. As opposed to manufacturing firms where companies can protect themselves from the unreasonable or capricious demands

of the customers, service companies cannot mask their operation from their customers because of marketplace choices available to them (Huq, 2005)). Thus, quality in service operation means making the service experience easy, useful, complete and even fun. Hence, most changes in organisations have a social component because the change usually involves people, and making the policies, procedure, and practices people friendly is the key to success in a service setting (Sebastianelli and Tamimi, 2003; Huq and Martin, 2001). Therefore, management must become cognisant and accordingly, plan for the social challenges that will arise from proposed change initiative like ISO 9000. It can be said that for change like the ISO 9000 to take place, a quality culture has to be established in the organisation so that it is ready to embrace change.

2.7 Quality Management in the Service Sector

In Malaysia, services are the largest contributor to the gross domestic product (GDP). It has become a leading economy of the country. The increasing number of service firms pursuing certification to ISO 9000 standards suggests that quality is viewed as equally important to service firms as it is to manufacturing companies. Certainly, the unique characteristics that are applicable to services such as intangibility, heterogeneity, inseparability, and perishability introduce special challenges for service quality and management (Fitzsimmons and Fitzsimmons, 1998).

2.7.1 What is a Service?

According to Groonroos (1990), a service is a complicated phenomenon as services are not things, they are processes or activities, and these activities are very intangible in nature. Services are those economic activities that typically produce time, place, form, or psychological utilities and they are intangible (Heizer and Render, 1999; Haksever, 2000). Services are acts, deeds, or performances (Berry, 1980). Gummesson (1987) defined service as "*something which can be bought and sold, but which you cannot drop on your foot*".

A service also can be defined as "an activity or series of activities which take place in interactions with a contact person or a physical machine and which provides consumer satisfaction" (Lehtinen, 1983). Groonroos (1990) offers his definition of service as:

an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems (p. 27).

2.7.2 Characteristics of Services

Researchers and analysts have identified various characteristics that are common to most services. Services are generally described in terms of four unique characteristics; intangibility, inseparability, heterogeneity/variability, and perishability (Haksever et al., 2000).

Intangibility

Groth and Dye (1999) defined intangibility as something that cannot be touched, seen, tasted, heard, or felt in the same manner in which goods can be sensed. Intangibility is a key factor of deciding whether an offering is a service (Zeithaml and Bitner, 2003). Due to its intangible nature, it is difficult for consumers to evaluate service quality. However, services can be embodied in or may utilise physical objects like a soft ware where the instructions are recorded on a compact disc. Further, purchasing the service does not result in ownership unless the service is embedded in a physical product.

Inseparability.

In service, the service provider usually performs the service at the same time as the full or partial consumption of the service take place. The conversion process is highly visible and it is not possible for the service provider to hide any mistake or quality shortfall and the involvement of the customer in the delivery process causes the service provider to have little or no direct control over the service experience (Ghobadian et al., 1994). This means that consumers also contribute to the service quality. At the same time, compared to manufactured goods, services are difficult to standardise partly because of consumers' involvement in the service delivery process. Ghobadian et al. (1994) said that service providers have to rely heavily on the ability of their staff to understand the requirements of the customer and react in an appropriate manner.

Heterogeneity/Variability

The outcome of the service depends on the outcome of the interaction between the customer and the service provider where the customer will form his/her perception of it. These perceptions may vary even if the same person performs the service. In another scenario, the same person delivering the same service would not perform at the same level at every performance as physical and psychological condition play an important role in service delivery.

Perishability

Services are perishables because it cannot be stored or inventoried (Lamb et al., 2000). According to Ghobadian et al. (1994), unlike manufactured goods, it is impossible to have a final check on quality and therefore it needs to be done right at the first time. However, the effects of the service can often be enjoyed long after it is performed as in the case of a successful heart surgery.

According to Fitzsimmons and Fitzsimmons (1998), due to these distinctive characteristics of services, to function the service system must interact with the customers as participants in the service process. Further, the presence of the customer as a participant in the service process requires an attention to facility design that is not found in traditional manufacturing operations. Therefore, the presence of the customer on-site requires attention to the physical surroundings of the service facility that is not necessary for the factory.

Moreover, for services, the process is the product (Shostack, 1977). The presence of the customer in the service process negates the closed-system perspective that is taken in manufacturing and demand is managed by customer waiting or queuing. Therefore, the problems of selecting service capacity, facility utilization, and use of idle time are balanced against customer waiting time (Fitzsimmons and Fitzsimmons, 1998).

Where service employees interact directly with the customers, management has little opportunity for intervention, and this requires extensive training and empowerment of employees to act appropriately. Hence, Fitzsimmons and Fitzsimmons (1998) add that the management of an open system requires techniques and sensitivities different from those of a closed system as seen in manufacturing operation. Moreover, as services are created and consumed simultaneously, it is impossible to store services and this eliminates many opportunity for quality control intervention. In contrast to manufacturing,

Fitzsimmons and Fitzsimmons (1998) stress that in services, it is the human element that is central to effective operations and therefore making the attitude and appearance of personnel of important considerations.

2.7.3 Service Classification

There have been many attempts to classify services. The first classification for service operations is the *Customer Contact Model* by Chase (1978) where services are classified according to the amount of customer contact involved. For instance, *high contact services* include hospital and restaurants where a high percentage of activities take place in the presence of the customer. In contrast, *low contact services* or *'quasi manufacturing'* firms which include distribution centres, wholesalers, and cheque-processing centres of retail banks require no face-to-face contact with customers. *'Mixed services'* which involved both the elements of high contact and low contact service, include the branch offices of banks and insurance firms.

Schmenner (1986) proposed another way to view services which is called the *Service Process Matrix* which differentiates services processes according to two major factors; the degree of interaction and customisation, and the degree of labour intensity that resulted in four quadrants known as the service factory, service shop, mass service and professional service.

Service factory

The service factory has both low interaction and customisation and low labour intensity such as airlines, trucking, and hotels.

Service shops

The service shops have high degree of interaction and customisation but low degree of labour intensity such as hospitals.

Professional service

Professional services combine highly customised service with high labour intensity such as lawyers and accountants.

Mass services

Mass services have high degree of labour intensity but low degree of interaction and customisation such as retailers, wholesalers, and schools.

These four quadrants describe the nature of the services and how they affect the service delivery process. This classification helps to focus on managerial issues that are found across similar service industries as shown by Figure 2.5.

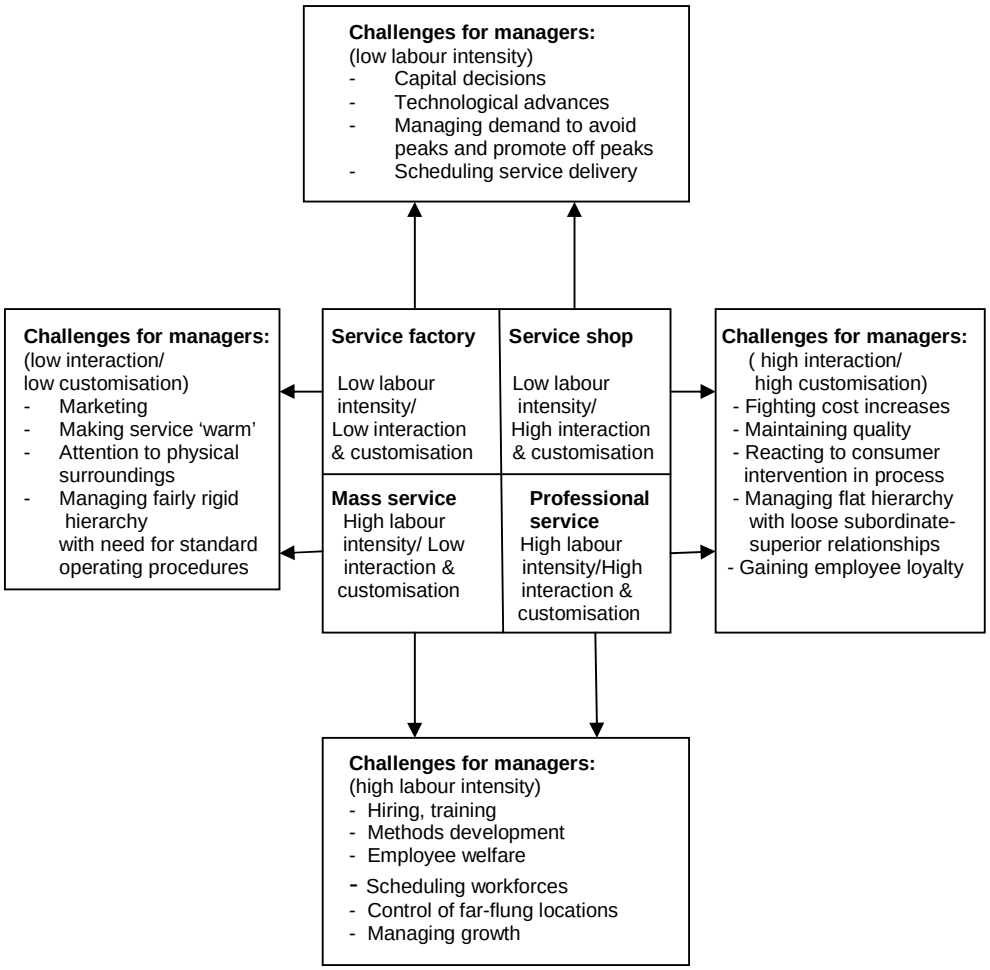

Figure 2.5: The service process matrix: Challenges for service managers (Source: Schmenner, 1986).

Services can also be classified by the service act itself which can be considered across two dimensions; who or what is the direct recipient of the service, and the tangible nature of the service. This classification schemes developed by Lovelock (1983) provide possible strategic dimensions that transcend industry boundaries (Fitzsimmons and Fitzsimmons, 1998). Other ways services can be classified are based on customer-employee presence during the service (Bitner, 1992), and on service delivery and processing focus (Parker et al., 1999).

2.7.4 Service Encounters

A service encounter which is also known as a 'moment of truth' is any episode in which the customer comes into contact with any aspect of the organisation and gets an impression of the quality of its service (Albrect, 1988). Therefore, a service encounter involves not only the customer and the service employees but also other customers, the service delivery system, and physical evidence. In order for service encounters to be a pleasant one for both the customer and the service provider, service tasks, standards, and delivery system need to be clearly defined. Management can make sure that the service encounter is a pleasant one for both the service provider and customer by selecting the right customer, establishing rules of behaviour expected from customers, and facilitating positive customer- customer interaction (Haksever et al., 2000).

2.7.5 Quality Management System for Service Industries

Yang (2006) investigates the quality management system for service organisations and presents an innovative and comprehensive quality management system for service industries. His study also examines the critical quality practices that are suitable for service organisations, and integrates them into a holistic quality management system. He wrote that excellent service quality generates a competitive advantage for service organisations, but firms must implement a comprehensive system of quality management if they are to develop an effective and reliable service quality. He added that in contrast to manufacturing industries, most service industries lack a well-managed and comprehensive system of quality management. Furthermore, service organisations need to adopt critical quality practices and an outstanding quality management system – not only to delight customers and to increase customer loyalty, but also to pursue excellence in business performance (Yang, 2006).

Based on quality practices of Hewlett Packard and IBM in Taiwan as case studies, previous studies on quality, and Kanji models, the study later develops a model for a quality management system for service industries that consists of five stages; long-term planning, short-term planning, daily management, check, and action. Figure 2.6 shows the model for a quality management system for service industries developed by Yang (2006).

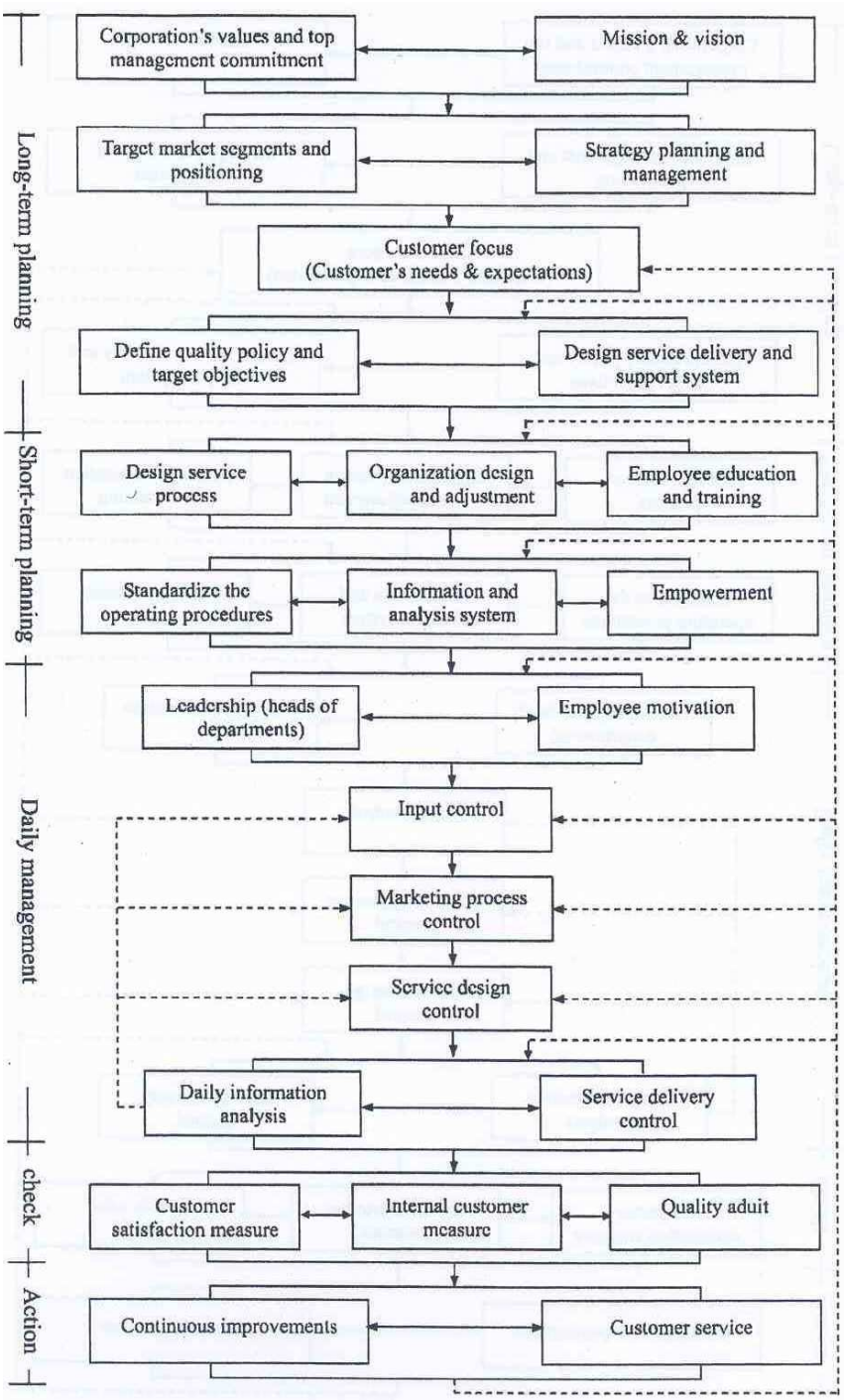

Figure 2.6: The quality management system for service organisation (Yang, 2006).

Most of the quality practices suggested by the model are actually similar to the elements or clauses of the ISO 9001:2000 standard. Table 2.6 shows the link between quality management practices for service organisation model and the ISO 9001:2000 clauses.

LONG-TERM PLANNING	
Quality practices by Yang (2006)	**ISO 9001:2000 Clause**
Management principles and top management commitment.	5.1 Management Commitment. 5.3 Quality Policy 5.4.1 Quality Objectives
Mission and Vision	5.3 Quality Policy 5.4.1 Quality Objectives
Target market segments and positioning	5.2 Customer Focus 5.6 Management Review 8.2.4 Monitoring & Measurement of Product 8.4 Analysis of Data
Strategy planning and management	5.4 Planning 5.5Responsibility,Authority and Communication 5.6 Management Review
Customer focus	5.2 Customer Focus 5.6 Management Review 6.1 Provision of Resources 7.2 Customer-related Processes 7.5.4 Customer Property 8.2.1 Customer Satisfaction
Define quality policy and target	5.3 Quality Policy 5.4.1 Quality Objectives
Design service delivery and support system	5.2 Customer focus 6.2 Human Resources 6.3 Infrastructure 6.4 Work Environment 7.1 Planning of Product Realisation 7.2 Customer-related Processes 7.3 Design & Development 7.4 Purchasing 7.5 Production & Service Provision 7.6 Control of Monitoring & Measuring Devices
SHORT-TERM PLANNING	
Quality practices by Yang (2006)	**ISO 9001:2000 Clause**
Design service process	4.1 General 7.1 Planning of Product Realisation 7.2 Customer-related Processes 7.3 Design & Development 7.4 Purchasing 7.5 Production & Service Provision 7.6 Control of Monitoring & Measuring Devices
Organisation design and adjustment	5.0 Management Responsibility 5.5 Responsibility, Authority& Communication 5.6 Management Review
Employee education and training	6.2.2 Competence, Awareness & Training
Standardise the operating procedures	4.2.1 General 4.2.2 Quality Manual 4.2.3 Control of Documents 4.2.4 Control of Quality Records
Information and analysis system	5.5.3 Internal Communications 7.5.3 Identification & Traceability 8.0 Measurement, Analysis & Improvement 8.1 General 8.2.1 Customer Satisfaction 8.2.2 Internal Audit 8.2.3 Monitoring & Measurement of Processes 8.2.4 Monitoring & Measurement of Product 8.3 Control of Nonconforming Product 8.4 Analysis of Data
Empowerment	5.5.3 Internal Communications 6.2 Human Resource 6.4 Work environment 8.5.1 Continual Improvement
DAILY MANAGEMENT	

Quality practices by Yang (2006)	ISO 9001: 2000 Clause
Leadership (heads of departments)	5.1 Management Commitment 5.2 Customer focus 6.2.2 Competence, Awareness & Training
Employee motivation	5.5.3 Internal Communications
Input control	7.1 Planning of Product Realisation 7.2 Customer-related Processes 7.3 Design & Development 7.4 Purchasing 7.5 Production & Service Provision
Marketing process control	5.2 Customer Focus 5.5.3 Internal communications 7.2.3 Customer Communication 8.2.1 Customer Satisfaction 8.4 Analysis of Data
Service design control	5.2 Customer focus 7.1 Planning of Product Realisation 7.2.1 Determination of Requirements Related to the Product 7.2.2 Review of Requirements Related to Product 7.2.3 Customer Communication 7.3 Design & Development 7.5 Production & Service Provision
Service delivery control	6.2 Human Resources 6.3 Infrastructure 7.6 Control of Monitoring and Measuring Devices 8.2.1 Customer Satisfaction 8.2.3 Monitoring & Measurement of Processes 8.2.4 Monitoring & Measurement of Product 8.3 Control of Nonconforming Product.
Daily information analysis	8.2.1 Customer Satisfaction 8.2.2 Internal Audit 8.2.3 Monitoring & Measurement of Processes 8.2.4 Monitoring & Measurement of Product 8..4 Analysis of Data
CHECK	
Quality practices by Yang (2006)	**ISO 9001:2000 Clause**
Customer satisfaction measures	8.2.1 Customer Satisfaction 8.4 Analysis of Data 8.5.1 Continual Improvement 8.5.2 Corrective Action
Internal customer measures	Not specified in ISO
Quality audit	8.2.2 Internal Audit 8.2.3 Monitoring & Measurement of Processes
ACTION	
Quality practices by Yang (2006)	**ISO 9001:2000 Clause**
Continuous improvement	8.4 Analysis of Data 8.5.1 Continual Improvement 8.5.2 Corrective Action 8.5.3 Preventive Action
Customer service	7.2.3 Customer Communication

Table 2.6: Comparison between quality practices of service industries and ISO 9001: 2000 clauses.

From the comparison, certain quality practices such as internal customer measures are not specified in the ISO 9001:2000 standards. This to a certain extent reflects that ISO 9001:2000 does not place a strong emphasis on the

employees and their welfare. The standard does not specify any requirement, whether written or implied for the measurement of employee work performance and achievement, and employee satisfaction. Nor does it say anything about the reward system that normally goes hand in hand with employee performance and achievement. Instead the emphasis is placed on the evaluation of suppliers and their performance. What is deemed important according to Clause 6.2.2 of the standard is to ensure that employees are competent to carry out their work, failing which necessary training must be provided for them to make sure they are competent. Employees are also to be made aware of the relevance and importance of their activities and how they contribute to the achievement of the organisation's quality objectives. However, once all the above have been achieved, nothing is said in the standard about rewarding and recognising employees for their achievement.

2.7.6 Comparison between ISO 9000 in Service and Manufacturing Organisations

A number of researchers have investigated the experience of service organisations with ISO 9000 (Dick et al., 2002; McAdam and Fulton, 2002; McAdam and Canning, 2001; Stelzer et al., 1997). Most of these studies have acknowledged that the requirement of the service industry is different to that of the manufacturing sector.

Singh et al. (2006) conducted a study to compare the ISO 9000 in the 160 manufacturing and 149 service organisations in Australia. The specific aspects that were investigated include: resources needed for adoption; motivation for registration; difficulties faced during implementation; benefits obtained from the standard; and management practices associated with the standard.

The results of the study showed that the resources in terms of time taken and costs incurred for registering to the standard is 12 months and AUD 20,000 for both groups. As for motivation for registration to ISO 9000, the highest priority driver for the service sector was to meet the expectations of government clients, followed by meeting the expectations of non-government customers, gaining competitive advantage, and improving quality and efficiency. For the manufacturing sector, the highest priorities were meeting the expectations of non-government customers, gaining competitive advantage, and improving quality and efficiency. The results of the study also indicate that the service

organisations had fewer problems with teamwork, training of personnel and conflicting interpretations of the requirements of the standard. In terms of benefits, the service group considered the improved documentation, increased quality of customer service, fewer mistakes and defects, and value as a marketing tool to be of greater benefit than the manufacturing group.

As for the management practices associated with ISO 9000, the finding of the study shows that the top management team of the service organisations are better at encouraging long-term strategic thinking, demonstrating commitment to quality and carrying out regular reviews of the quality system while the top management team of the manufacturing organisations are able to generate greater participation of all stakeholders and regard quality as the most important competitive priority. With regard to employee involvement, the employees in the service sector organisations were better at knowing their roles and goals. The service sector organisations appear to be better at planning for improvements to product/process, employees continuously improving their work outputs and internally auditing the quality assurance system. The manufacturing organisations were better with usage of statistical process control techniques than the service sector. The study concluded that manufacturing and service industry organisations require similar levels of resources to register to the ISO 9000, have similar motivations for implementing the standard, and face similar difficulties with implementation of the ISO 9000. However, service and manufacturing organisations do not gain similar benefits from the standard and do not use similar management practices associated with the ISO 9000.

Most of the studies mentioned above were conducted using the survey as the instrument for data gathering. Therefore, a more in-depth investigation is needed to find out the reasons for these similarities and differences by using the case study.

2.8 Gap in the Literature

Although there has been an explosion of published work on issues associated with ISO 9000 certification in quality management journals, many of these works focus on how to obtain ISO 9000 certification and the impact of ISO 9000 certification on certified organisations and do not generally address what

happens after the organisations have obtained their certification and how to maintain that certification.

The few studies conducted on the maintenance of ISO 9000 on construction, manufacturing and architectural companies also have their own limitations such as:

i. Chin et al. (2000) – The study was based on the earlier version of ISO 9000:1994 which was quite different from the ISO 9000:2000. It was carried out on electronic manufacturing companies in Hong Kong.

ii. Cheng & Tummala (1998) – The study did not specify the issues and problems of ISO 9000 maintenance. The study was carried out on manufacturing companies based on the 1994 version in Hong Kong and China.

iii. Low & Omar (1997) – The study was conducted on the construction companies in Singapore and was also based on the 1994 version.

iv. Low and Chia (2008) - The research was done on the architectural firms to investigate the middle management's influence on the effectivenesness of ISO 9000.

Table 2.7 shows some of the previous research conducted on the ISO 9000 from the literature review.

Name of Author	**Year**	**Country**	**Area of research**												
			Implementation of ISO 9000	***Motivations for ISO 9000 certification***	***Benefits of ISO 9000 certification***	***Impacts of ISO 9000 on performance***	***Relationship between ISO 9000 and TQM /QM approaches***	***Success factors for ISO 9000 implementation***	***Problems, barriers & Challenges***	***ISO 9000 Maintenance***	***Effectiveness of ISO 9000***	***Leadership/ top management***	***Comparison between manufacturing & services***	***Employee Involvement & perception on ISO 9000***	***Comparison with previous version***
Lee et al.	2009	China	√			√									
Lambert & Ouedraogo	2008	France				√									
Low & Chia	2008	Singapore							√		√			√	
Gyani	2008	India									√				

Name of Author	Year	Country	Area of research												
			Implementation of ISO 9000	*Motivations for ISO 9000 certification*	*Benefits of ISO 9000 certification*	*Impacts of ISO 9000 on performance*	*Relationship between ISO 9000 and TQM /QM approaches*	*Success factors for ISO 9000 implementation*	*Problems, barriers & Challenges*	*ISO 9000 Maintenance*	*Effectiveness of ISO 9000*	*Leadership/ top management*	*Comparison between manufacturing & services*	*Employee Involvement & perception on ISO 9000*	*Comparison with previous version*
Magd	2008	Egyptian							√						
Feng et al.	2008	Australia & New Zealand				√									
Lo & Chang	2007	Taiwan			√										
Terziovski & Power	2007	Australia		√	√										
Han et al.	2007	United States				√	√								
Boiral & Roy	2007	Canada		√		√									
Costa & Lorente	2007	Spain				√					√				√
Ferreira et al.	2007	General			√	√									
Singh & Mansour-Nahra	2006	Australia	√	√	√				√						
Singh et al.	2006	Australia											√		
Magd	2006	Egypt	√	√	√				√			√			
Rodriguez-Escobar et al.	2006	Spain		√	√										
Saizarbitoria	2006	Spain				√									
Singh & Sareen	2006	India									√				
Scott	2005	United States	√		√	√			√						
Gotzamani	2005	Greece	√						√						√
Jabnoun & Ghasyah	2005	United Arab Emirates										√			
Ahmed	2005	Hong Kong &	√												

Name of Author	Year	Country	Area of research												
			Implementation of ISO 9000	*Motivations for ISO 9000 certification*	*Benefits of ISO 9000 certification*	*Impacts of ISO 9000 on performance*	*Relationship between ISO 9000 and TQM /QM approaches*	*Success factors for ISO 9000 implementation*	*Problems, barriers & Challenges*	*ISO 9000 Maintenance*	*Effectiveness of ISO 9000*	*Leadership/ top management*	*Comparison between manufacturing & services*	*Employee Involvement & perception on ISO 9000*	*Comparison with previous version*
et al.		United States													
Bhuiyan & Alam	2005	General													
Casadesus & Karapetrovic	2005	General			√										
Chang & Lo	2005	Taiwan			√						√				
Van der Wiele et al.	2005	Holland			√										
Calisir et al.	2005	Turkey			√				√		√				
Sun et al.	2004	Western Europe	√												
Ruzevicius et al.	2004	Lithuania	√	√											
Low & Ling Pan	2004	Singapore							√						
Bhuiyan & Alam	2004	North America	√												
Naser et al.	2004	Malaysia				√									
Quazi & Jacobs	2004	Singapore			√										
Casadesus & Karapetrovic	2003	Spain			√				√						
Awan & Bhatti	2003	Pakistan	√						√						
Boiral	2003	Canada							√					√	
Sharp et al.	2003	United Kingdom	√						√						
Chin & Choi	2003	Hong Kong	√					√							
Chow-Chua et	2003					√									

Name of Author	Year	Country	Area of research												
			Implementation of ISO 9000	*Motivations for ISO 9000 certification*	*Benefits of ISO 9000 certification*	*Impacts of ISO 9000 on performance*	*Relationship between ISO 9000 and TQM /QM approaches*	*Success factors for ISO 9000 implementation*	*Problems, barriers & Challenges*	*ISO 9000 Maintenance*	*Effectiveness of ISO 9000*	*Leadership/ top management*	*Comparison between manufacturing & services*	*Employee Involvement & perception on ISO 9000*	*Comparison with previous version*
al.															
Terziovski et al.	2003	Australia				√									
Yeung et al.	2003	Hong Kong					√				√	√			
Gotzamani & Tsiotras	2002	Greece		√											
Dick et al.	2002	United Kingdom				√									
Quazi et al.	2002	General				√									
Heras et al.	2002	Spain				√									
Al-Zamany et al.	2002	Yemen							√						
Curry & Kadasah	2002	Saudi Arabia							√						
Amar & Zain	2002	Indonesia	√						√						
Rohitratana & Boon-Itt	2001	Thailand	√												
McAdam & Canning	2001	Northern Ireland	√		√	√									
Yahya & Goh	2001	Malaysia	√	√	√				√						
Withers & Ebrahimpour	2001	Europe	√			√			√						
Wiele et al.	2001	General		√		√	√		√						
Calisir et al.	2001	Turkey	√												
Singels et al.	2001		√			√									
Tan &	2001	Malaysia	√												

Name of Author	Year	Country	Area of research												
			Implementation of ISO 9000	*Motivations for ISO 9000 certification*	*Benefits of ISO 9000 certification*	*Impacts of ISO 9000 on performance*	*Relationship between ISO 9000 and TQM /QM approaches*	*Success factors for ISO 9000 implementation*	*Problems, barriers & Challenges*	*ISO 9000 Maintenance*	*Effectiveness of ISO 9000*	*Leadership/ top management*	*Comparison between manufacturing & services*	*Employee Involvement & perception on ISO 9000*	*Comparison with previous version*
Lim															
Chin et al.	2000	Hong Kong						√	√	√					
Al-Khalifa & Aspinwall	2000	Qatar	√						√						
Van der Wiele et al.	2000	Europe & Western Australia		√											
Pinar et al.	2000	Turkey	√	√					√						
Dickenson et al.	2000	Russia	√						√						
Fuentes et al.	2000	Spain	√						√						
Casadesus et al.	2000	Spain	√		√										
Dick	2000				√										
Lee et al.	1999	Hong Kong	√						√						
Lipovatz et al.	1999	Greece	√						√						
Ashire & O'Shaughnessy	1998	General	√						√			√			
Brown et al.	1998	General	√						√						
Cheng & Tummala	1998	Hong Kong & China	√					√		√				√	
Low & Omar	1997	Singapore						√	√	√					
Total			30	11	17	19	3	4	28	3	7	4	1	3	2

Table 2.7: Previous literature on ISO 9000

Based on the literature, there are few studies conducted specifically on the maintenance of ISO 9001:2000 in service organisations. As the number of service companies being certified to ISO 9000 is quite large, this represents a big gap in the literature. This research attempts to fill that gap on these particular aspects by investigating how ISO 9000 service organisations in Malaysia maintain their ISO 9000 quality management system and exploring the factors in its maintenance.

At the same time, although past research has suggested that top management commitment is crucial for successful ISO 9000 implementation and maintenance, and the lack of top management commitment as one of the main reasons why companies fail to implement and maintain their ISO 9000 certification, the role and extent of top management commitment in the maintenance of the quality management system is not fully explored and defined in the literature. In order to identify the role of top management and employees in the maintenance of ISO 9000, this study obtains both the top management and employees' perceptions/views/opinion:

i. towards quality and motivations for ISO 9000 certification which will affect their managerial action in maintaining the quality system

ii. on top management commitment and involvement and evidence of that commitment and involvement which has not been explored in previous studies.

2.9 Research Questions

As stated in the previous chapter, the main objective of this research is to investigate how the ISO 9000 is maintained by the two Malaysian service organisations. On the basis of the main objective and the gaps that exist in the current literature, several questions arise:

1. How do Malaysian service organisations maintain their ISO 9000?
2. What are the critical success factors of ISO 9000 maintenance for the service companies?
3. What are the problems and challenges associated with ISO 9000 maintenance in the service organisations and how are they addressed?
4. What are the changes and improvements made as a result of ISO 9000 maintenance in the organisations?

The secondary research questions that arise from the first research question 'How do Malaysian service organisations maintain their ISO 9000?' are:

a. Are approaches used similar or different between the companies?
b. What do they do beyond fulfilling the technical requirements to strive for excellence?
c. Is the level of maintenance the same for the service organisations?
d. What are the companies' views on quality and motivation for ISO 9000 certification?

2.10 Chapter Summary

This chapter has examined the concepts and definitions of quality which were coined from gurus such as Deming, Juran, Crosby, Feigenbaum and Ishikawa. This chapter also identifies the theories for the management of quality in organisations from the quality gurus' perspectives, empirical research and formal evaluation models such as the MBNQA, Deming Prize and EFQM as they are the basis of quality management.

Through the literature review, the key themes in relation to ISO 9000 from the previous literature were described and highlighted. Differences between ISO 9000 implementation and maintenance were also highlighted together with its critical success factors and problems.

The review of literature led to the identification of gaps in the literature which centred around the post-certification phase of ISO 9000. Although much has been written about the implementation of ISO 9000 in organisations around the world, but how to maintain the quality system for sustainable success is not provided by the literature especially in the service sector.

In addition, this chapter also reviewed the organisational structure that might affect the maintenance of ISO 9000 in organisations. At the same time, for successful maintenance, issues in change management which is associated with ISO 9000 and quality culture were highlighted. Further, this chapter described the nature and classification of service together with its managerial implications offered by Schemenner (1986). These classification frameworks provided a useful insight on the challenges for managers operating the different types of service.

The next chapter will outline the research strategy and methodology employed by this study.

CHAPTER 3 - RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research strategy and methodology designed to address the research objectives and questions that have been identified in Chapter 1 and 2. The chapter begins with an explanation on the philosophical background to the research, the research design and methods of data collection. Towards the end, this chapter also presents the limitations of the study and the review of the study from an ethical perspective.

This chapter will begin with a review of the epistemological issues before proceeding to the research methods employed to form the overall research strategy. Saunders et al. (2003) wrote that research method refers to the tools and techniques used to obtain and analyse data. They added that the tools include questionnaires, observations and interviews whereas techniques consist of statistical and non-statistical analysis. On the other hand, research methodology refers to the theory of how research is undertaken. In the social sciences, the research methodologies include surveys, experiments, histories, analysis of archival information and case studies (Yin, 2003).

In deciding how to conduct a research or to select its methods, Robson (1994), and Bell (1993) said that there is no definite rule as to which one to select when doing research as according to them it all depends on the nature and scope of the thesis, the sources of data, the research questions and hypotheses or proposal, and constraints and scope of the research. The methods employed for this research are interviews, questionnaire survey and document review. The research process employed by the researcher for this study is shown by Figure 3.1.

3.2 Research Philosophies and Paradigms

The common objective of research in social science is to explain social behaviour and it is the interpretation of explanation in this context, and how explanation can be gained through the study of the empirical world, that divides researchers (Wass and Wells, 1994).

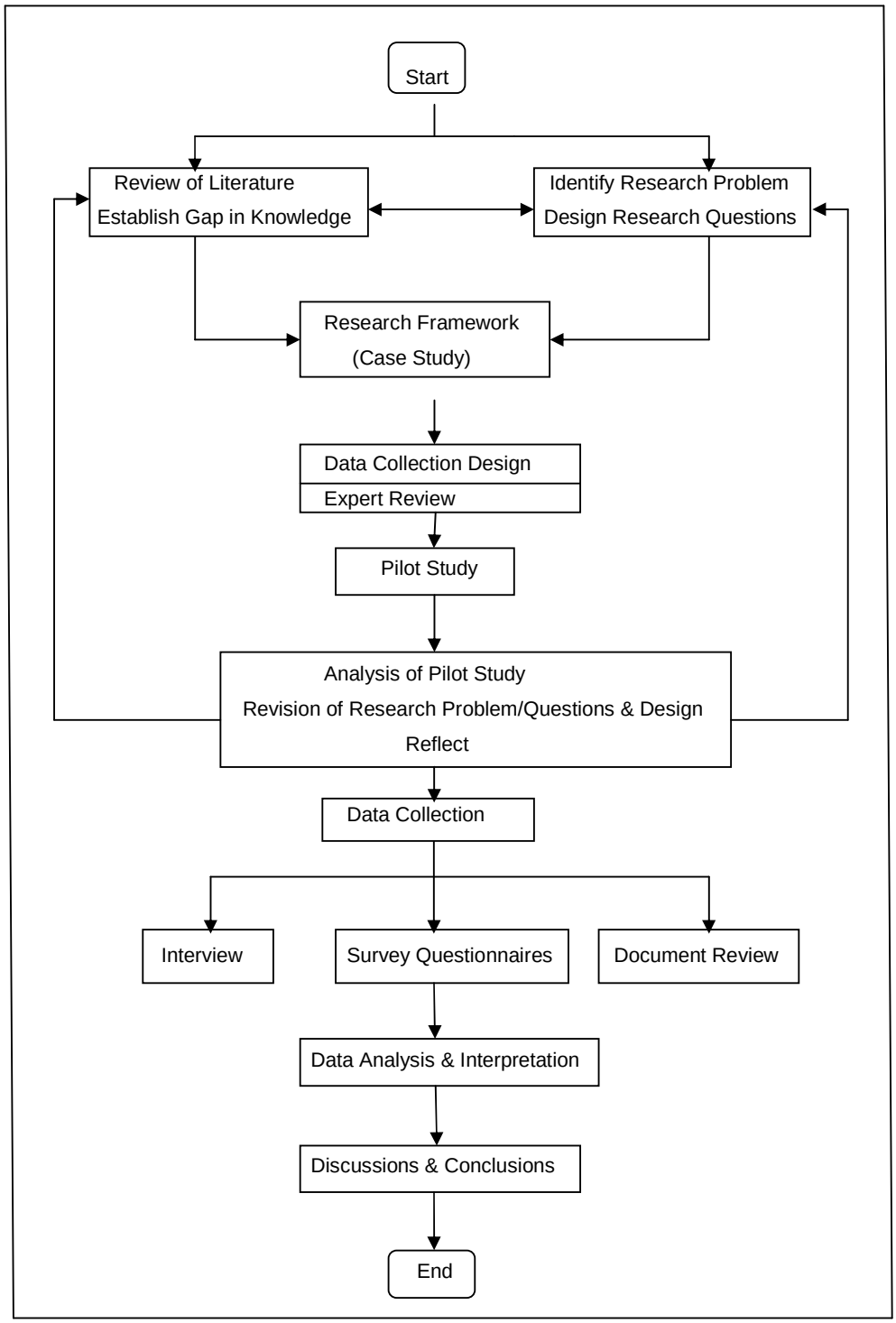

Figure 3.1: The research process (Adapted from Silverman, 2006)

According to Burrell and Morgan (1979), approaches to social science are underwritten by philosophical assumptions and all social scientists approach their subject via explicit or implicit assumptions about the nature of the social world

and the way in which it may be investigated. Social scientists conceptualised social science in terms of four sets of assumptions related to ontology, epistemology, human nature and methodology. Ontology to them is concerned with the very essence of the phenomena under investigation; whether the 'reality' to be investigated is external or internal to the individual and whether 'reality' is of an 'objective' or 'subjective' nature. On the other hand, epistemology is an assumption about the grounds of knowledge; what forms of knowledge can be obtained, the nature of knowledge as being hard, real and capable of being transmitted in tangible form and therefore can be acquired, or whether 'knowledge' is of a softer, subjective, spiritual, based on experience and insight of a unique and essentially personal nature. Human nature, the third assumption, according to Burrell and Morgan (1979) is concerned particularly with the relationship between human beings and their environment as human life is essentially the subject and object of enquiry. According to them, perspectives in social science can be identified through the view of human beings responding in a mechanistic or deterministic fashion to the situations faced in their external world or human beings playing a much more creative role and free will where man is regarded as the creator and controller of his environment.

A paradigm is a cluster of beliefs and in which dictates scientists in a particular discipline what should be studied, how research should be done and how results should be interpreted (Bryman, 1988).Therefore, the methods of management and business research are closely tied to different visions of how organisational reality should be studied (Bryman and Bell, 2003).

3.2.1 Positivism

Based on the assumptions discussed above, Burrell and Morgan (1979) stressed that social scientists can identify how they want to investigate and obtain knowledge about the social world. According to them, if one subscribes to the view of the social world like the natural world, as being hard, real and external, objective reality, then the research investigation is likely to focus upon an analysis of relationships and regularities between the various elements which it comprises and how these relationships can be expressed. Consequently, the methodological issues of importance for the functionalists or positivists are the concepts themselves; the study of the system and relationship between events, their measurements and the identification of underlying themes, so that they can come up with generalised, universal laws (nomothetic).

3.2.2 Interpretivism

Interpretivists believe that people and their instituitions are fundamentally different from that of the natural sciences and therefore the study of the social world requires a different logic of research procedure to reflect the distinctiveness of human and the natural order (Bryman and Bell, 2003). The understanding of human behaviour is the chief ingredient of the interpretivist approach to the social sciences as opposed to the explanation of human behaviour as adopted by positivists. The interpretivists subscribe to the view of social reality which stresses the subjective experience of individuals in the creation of the social world, then the search for understanding focuses upon issues and approaches them in different ways (Burrell and Morgan, 1979). The interpretivists moreover adopt a subjectivist approach to the analysis of the social world which is more implicit rather than explicit. They seek to understand the very basis and source of social reality and are anti-positivist. In terms of epistemology, interpretivists are concerned with an understanding of the way in which the individual creates, modifies, and interprets the world or environment in which he/she finds himself/herself in. For them, the social world is essentially relativistic and can only be understood from the point of view of the individuals who are directly involved in the activities which are being studied. Moreover, theory involves abstract descriptions of meanings and definitions of situations produced in natural contexts. Furthermore, methodologically, the emphasis tends to be placed upon the explanation and understanding of what is unique and particular to the individual rather than of what is general and universal (idiographic) (Burrell and Morgan, 1979).

3.2.3 Critical Realism

Realism was born out of complaint about the limitations of positivism. Although the two share some similarities in terms of features, empirical realism asserts that through the use of appropriate methods, reality can be understood. Critical realism holds that we will only be able to understand and so change the social world if we identify the structures at work that generate those events and discourses (Bhaskar, 1989). Therefore critical realism differs from positivists in that realists argue that the scientist's conceptualisation is simply a way of knowing that reality as opposed to positivist's view that scientist's conceptualisation of reality actually directly reflects that reality (Bryman and Bell, 2003). The realist perspective occupies an intermediate position between positivism and interpretivism. Realists argued that a synthesis of extremes is

possible and occurs naturally during most field research (Wass and Wells, 1994). Realists feel that positivism provides only a partial account of reality and no form of science relies exclusively on empirical evidence (Bhaskar, 1978); hence they propose that valid knowledge consists of both observable and non-observable data.

3.3 Research Strategies

The connection between theory and research, epistemological considerations and ontological considerations, and quantitative and qualitative research will determine the general orientation to the conduct of business research or what is popularly known as the research strategy (Bryman and Bell, 2003).

3.3.1 Quantitative Research

According to Bryman and Bell (2003), quantitative research can be construed as a research strategy that emphasises quantification in the collection and analysis of data that entails a deductive approach to the relationship between theory and research and emphasises the testing of theories, has incorporated the practices and norms of the natural scientific model of positivism in particular, and embodies a view of social reality as an external, objective reality. Quantitative research is where the researcher emphasises careful control and measurement by assigning numbers to measurements (Hussey and Hussey, 1997).

3.3.2 Qualitative Research

By contrast, qualitative research focuses on words rather than numbers. Bryman and Bell (2003) argue that qualitative research can be construed as a research strategy that usually emphasises words rather than quantification in the collection and analysis of data and that predominantly emphasises an inductive approach to the relationship between theory and research, in which the emphasis is placed on the generation of theories, and rejects the practices and norms of the natural scientific model, and of positivism in particular, in preference for an emphasis on the ways in which individuals interpret their social world. It embodies a view of a social reality as a constantly shifting emergent property of individuals' creation.

The fundamental differences between quantitative and qualitative research strategies (Bryman and Bell, 2003) and the key features of both research

strategies (Hussey and Hussey, 1997) is shown in Table 3.1a and 3.1b respectively.

	Quantitative	Qualitative
Principal orientation to the role of theory in relation to research	Deductive; testing of theory	Inductive; generation of theory.
Ontological orientation	Objectivism	Constructionism (reality does not exist independent of our constructed action of it).
Epistemological orientation	Natural science model, in particular positivism	Interpretivism

Table 3.1a: Fundamental differences between quantitative and qualitative research strategies (Bryman and Bell, 2003).

Quantitative	Qualitative
Uses large samples	Uses small samples
Concerned with hypothesis testing	Concerned with generating theories
Data is highly specific and precise	Data is rich and subjective
The location is artificial	The location is natural
Reliability is high	Reliability is low
Validity is low	Validity is high
Generalize from sample to population	Generalize from one setting to another

Table 3.1b: Key features of qualitative and quantitative research (Hussey and Hussey, 1997).

3.3.3 Multi-Strategy Research

Since the early 1980s, the amount of combined research has been increasing, particularly in business and management research. According to Bryman and Bell (2003), one of the reasons for using this research strategy is to allow the various strengths of both research strategies to be capitalised upon and the weaknesses offset. However, arguments arise against this view. Firstly, Smith (1983) argues that each of the two research strategies sponsors different procedures and has different epistemological implications and therefore is not complementary. Second, quantitative and qualitative research are conceived as paradigms in which epistemological assumptions, values and methods are inextricably intertwined and are incompatible between paradigms (Guba, 1985).

Although, Kuhn (1970) argued that paradigms are incommensurable, it is by no means clear that quantitative and qualitative research are in fact paradigms (Bryman and Bell, 2003). In addition, Reed (1985) suggests that the boundaries between paradigms are not clear and overstatement of the differences between those paradigms leads to isolationism and reduces the potential for creative theoretical development.

In contrast, researchers who use the multi-strategy method recognised that quantitative and qualitative research are each connected with distinctive epistemological and ontological assumptions, but the connections are not viewed as fixed, but compatible. Hammersley (1996) proposed three approaches to multi-strategy research; triangulation, facilitation, and complementarity. According to him, triangulation refers to the use of quantitative research to corroborate qualitative research findings or vice versa. Facilitation on the other hand arises when one research strategy is employed in order to aid research using the other research strategy. In addition, Hammersley said that complementarity occurs when the two research strategies are employed in order that different aspects of an investigation can be dovetailed.

The methodology applied for this study is primarily qualitative. Qualitative study is inductive and interpretive and is suitable for this research as it tries to understand and explain a phenomenon and study peoples' thought and opinion about the world in which they are in.

"Qualitative methods are more suitable when the objectives of the study demands in-depth insight into a phenomenon" (Ghauri et al., 1995).

However, *triangulation* is applied when the findings of questionnaire survey and document review are used to support qualitative research findings. The 'cycling' between qualitative and quantitative observation is a powerful way in which the researcher can gain greater insight into complex social phenomena (Miles and Huberman, 1996). *Triangulation* is also used to provide some quantification (Silverman, 1984, 1985), to corroborate the findings from qualitative research (Hammersley, 1996), and to allow access to different levels of reality (Bryman and Bell, 2003). Bryman and Bell (2003) argue that the combined use of qualitative and quantitative research methods represents a common pattern in a case study research in business and management, used by researchers in order to enhance the generality of their findings. For example, one of the purposes of this study is to identify how top management commit themselves to the maintenance of ISO 9000 QMS in their organisations. The concept of commitment can be understood only through understanding the meaning of the concept for those involved in this form of social action, hence the use of interviews. To support the findings from the interviews, employees' opinions on the same matter are obtained through the survey.

3.4 Research Design

3.4.1 Introduction

According to Denzin and Lincoln (2000), a research design describes a flexible set of guidelines that connect theoretical paradigms first to strategies of enquiry and second to methods for collecting empirical material. They added that a research design situates researchers in the empirical world and connects them to specific sites, persons, groups, institutions, and bodies of relevant interpretive materials, including documents and archives. Nachmias and Nachmias (1992) define a research design as a tool that *"guides the investigator in the process of collecting, analysing and interpreting observation"*.

Yin (2003) states five different types of research design which are experiment, survey, archival, history, and case study. In short, a research design provides the link between the questions that the study is asking, the data that are to be collected and the conclusions drawn (Robson, 1994).

3.4.2 Justification for Choosing Case Study Method

The purpose of the research is to gain a deep understanding of how selected Malaysian service companies maintain their ISO 9000 quality management system. This means that the researcher has to gain information on the factors associated with ISO 9000 maintenance which include the views on quality and ISO 9000, the real motivation for certification, top management commitment, and approaches used by the case organisations to maintain the quality system. At the same time, the critical success factors of and problems and challenges in maintaining the ISO 9000 also would contribute to the understanding of ISO 9000 maintenance as a whole. The above types of questions require the researcher to adopt an in-depth approach to obtain information in order to gain a better understanding on the area studied. By using the case study method will address the desire of the researcher to understand complex social phenomena (Yin, 2003).

Due to the nature of the research questions, the *case study* method is selected over other methods because it is the most appropriate. It is also the preferred and ideal strategy when 'what', 'how' and 'why' questions are being posed (Robson, 1994). This will allow the researcher to determine not only what happened but also why it happened (Yin, 2003). Moreover, Jankowicz (1993) believes that the advantage of case study research is that it will enable comprehensive and

informative data to be generated. Evidence collected may be qualitative (e.g. words) or quantitative (e.g. numbers) or a combination of both (Eisenhardt, 1989). Table 3.2 shows the relationship between the research questions of this study and its purpose.

Research questions	Purpose of study
1. How do Malaysian service organisations maintain their ISO 9000? ▪ Are approaches used similar or different between the companies? ▪ What do they do beyond fulfilling the technical requirements to strive for excellence? ▪ Is the level of maintenance the same for the service organisations? ▪ What are the companies' views on quality and motivation for ISO 9000 certification?	*Exploratory:* a. To investigate little-understood phenomena. b. To identify or discover important categories of meaning. c. To generate hypotheses for further research. *Explanatory:* a. To identify plausible relationships shaping the phenomenon.
2. What are the critical success factors of ISO 9000 maintenance for the service companies? 3. What are the problems and challenges associated with ISO 9000 maintenance in the service organisations and how are they addressed? 4. What are the changes and improvements made as a result of ISO 9000 maintenance in the organisations?	*Exploratory:* a. To investigate little-understood phenomena. b. To identify or discover important categories of meaning. c. To generate hypotheses for further research. *Explanatory:* *a.* To explain the patterns related to the phenomenon in question.

Table 3.2: Relationships between research questions (main and secondary) and its purpose.

Moreover, Creswell (1998) explains that case study is ideal when the researcher is trying to develop an in-depth analysis of a single or multiple cases as is the purpose of this study. His dimensions for comparing research traditions in qualitative research are shown in Table 3.3. Further, the *interpretive* case study paradigm is chosen as the leading philosophy of this research as it uses qualitative and naturalistic approaches to inductively and holistically understand human experience in context specific settings. This approach tries to understand and explain a phenomenon, rather than search for external causes or fundamental laws (Easterby-Smith, 1991) which is suitable to answer questions relating to top management commitment, motivation and employee participation for instance. Also, qualitative research can be attuned to change, sequences of events and behaviours and the transformation of culture (Dayman and Holloway, 2000).

Dimension	Biography	Phenomenology	Grounded Theory	Ethnography	Case Study
Focus	Exploring the life of an individual	Understanding the essence of experiences about a phenomenon.	Developing a theory grounded in data from the field.	Describing & interpreting a cultural and social group.	Developing an in-depth analysis of a single case or multiple cases.
Discipline origin	Anthropology, literature, history, psychology, sociology.	Philosophy, sociology, psychology	Sociology	Cultural anthropology, sociology.	Political science, sociology, evaluation, urban studies, other social studies.
Data collection	Primarily interviews & documents	Long interviews with up to 10 people.	Interviews with 20-30 individuals to "saturate" categories and detail a theory.	Primarily observations and interviews with additional artifacts during extended time in the field (e.g., 6 months to a year).	Multiple sources documents, archival records, interviews, observations, physical artifacts.
Data analysis	Stories, epiphanies, historical content.	Statements, meanings, meaning themes, general description of the experience.	Open coding, axial coding, selective coding, conditional matrix.	Description, analysis, interpretation.	Description, themes, assertions.
Narrative form	Detailed picture of an individual's life.	Description of the "essence" of the experience.	Theory or theoretical model.	Description of the cultural behaviour of a group or an individual.	In-depth study of a "case" or "cases".

Table 3.3: Qualitative enquiry and research design: Choosing among five traditions (Creswell, 1998).

Besides, Merriam (2002) explains that in a basic interpretive and descriptive study, the researcher is interested in how participants make meaning of a situation or phenomenon and that the meaning is mediated through the researcher as instrument, and that the strategy is inductive, and the outcome is descriptive. Marshall and Rossman (1999) stress that qualitative methodologists have described three major purposes for research; to explore, explain, or describe the phenomenon of interest. As this research is both an exploratory and explanatory study, then its purpose is to:

i. Investigate phenomena

ii. Explain the patterns related to the phenomenon in questions

iii. Identify or discover important categories of meaning

iv. Identify plausible relationships shaping the phenomenon

v. Generate further research.

According to Yin (2003), there are four types of case study design namely:

a. Type 1: single case (holistic) designs

b. Type 2: single case (embedded) designs

c. Type 3: multiple case (holistic) designs

d. Type 4: multiple case (embedded) designs

The decision whether to select a single or multiple cases depends on the objectives of the study, the research questions to be answered, and the availability of resources to conduct the study. As the researcher believed that a more robust approach to this particular study is by adopting the multiple-case strategy, the case study design employed for this research is the multiple case (holistic) designs.

3.4.3 Case Studies Selection and Unit of Analysis

The case organisations were chosen based on several criteria. First, they are ISO 9000 certified companies. Second, they have been certified to the ISO9001:2000 for more than three years, therefore they can show their maintenance of the QMS. Third, they are service companies and fourth, they are Malaysian companies. Company A (cargo handling and transportation), Company B (maintenance of a highway) and Company C (waste collection and management) were identified as the cases for the study. However, at the end, only Company A and Company B were selected. Company C has to be excluded due to a disagreement in the confidentiality agreement clause which contradicts the researcher's university regulation. The researcher approached another company to replace Company C but faced the same problem and outcome, hence ending up with two companies as cases for the study. The two case organisations were convenient to the researcher as the researcher knew the top management of both case organisations. In Malaysia, it is easier to obtain cooperation in all aspects of research if you knew the top management of the companies.

Chances of doing a good case study will be better by using two companies as case studies than using a single-case design (Yin, 2002). Multiple case studies looking at several organisations provide more generalisable conclusions than those provided in a single case as multiple cases augment external validity and

help guard against observer biases (Leavy, 1994). External validity means establishing the domain to which a study's findings can be generalised (Kidder and Judd, 1986). Moreover, Yin (1994) states that multiple-case studies typically provide a stronger base for theory building. At the same time, multiple cases enable comparisons that clarify whether an emergent finding is simply idiosyncratic to a single case or consistently replicated by several cases (Eisenhardt, 1991). Eisenhardt and Graebner (2007) add that theory building from multiple cases typically yields more robust, generalisable, and testable theory than single-case research as they enable broader exploration of research questions and theoretical elaboration.

3.4.4 Data Collection

3.4.4.1 The Sample within Case Studies

According to Merriam (1998), the sample in case studies will depend on the questions being asked, the data being gathered, the analysis in progress and the resources one has to support the study. Furthermore, a sample within the case needs to be chosen either before the data collection begins (purposive sampling) or while the data are being gathered (theoretical sampling). She adds that either random (which will address the validity issue) or purposive sampling can be used within the case. However, the purposive sampling is more commonly used to select the sample within the case and normally done before data collection and criteria are needed to purposefully select whom to interview, what to observe, and which documents to analyse (Merriam, 1998).

3.4.4.2 Techniques and Instruments for Data Collection

Interview

In the words of Patton (1990):

"We interview people to find out from them those things we cannot directly observe…… We cannot observe feelings, thoughts, and intentions. We cannot observe behaviours that took place at some previous point in time. We cannot observe situations that preclude the presence of an observer. We cannot observe how people have organised the world and the meanings they attach to what goes on in the world. We have to ask people questions about those things. The purpose of interviewing, then, is to allow us to enter into the other person's perspective (p. 196)".

The above applies to this research to explain why interview was chosen as one of the methods for data collection. Common types of interviews are structured, semi structured and unstructured (Saunders et al., 2003). Structured interviews use pre-determined questions and are more like an oral form of a survey while semi-structured interviews mix structured and less-structured questions and are more flexible compared to structured ones. Unstructured interviews on the other hand use open-ended questions, are very flexible and are exploratory, and are more like a conversation (Merriam, 1998).

For this research, the researcher uses face-to-face semi structured interviews as the main method for data collection in order to provide flexibility. Open-ended questioning was used as a means to relax the interviewees and provide them with the opportunity to explain in more detail, and in their own words, in the hope of extracting more useful data (Sekaran, 2004). He also points out that in the semi-structured interview the researcher can clarify doubts and ensure that the respondents understood the questions and the responses are also understood by the interviewer**.** Besides, May (2001) describes:

"In semi structured interviews, questions are normally specified, but the interviewer is freer to probe beyond the answers in a manner which would appear prejudicial to the aims of standardisation and comparability".

The respondents for the interviews consist of top management, the Management Representatives, quality managers/executives/controllers, and middle managers and operation managers in charge of operations of the two chosen organisations. The interview approach is thought to be most suitable to provide answers to all research questions. For this study, the researcher decided to interview all the top management (MD/CEO and his/her executives reporting direct to him/her) to gauge their commitment and how they display that commitment to maintain the ISO 9000 QMS in their organisation, the management representative (MR) and quality managers/controllers/executives on the running of the QMS and the difficulties they faced, and the middle managers and operation managers in order to know about the company's operations and processes in detail. All were asked about the problems and challenges they faced in maintaining the ISO 9000 quality system. To ensure content validity issues were addressed, the draft of the interview questions were submitted to an academician who is an expert in the quality management area and to a practitioner and assessor of ISO 9000 QMS

for their comments and suggestions. Later on, a pilot test was also carried out whereby two top managers from each company were chosen to answer the questions and to time the process. Based on their comments, changes were made to rephrase the difficult to understand questions.

Thirty interviews were conducted; 16 at Company A and 14 at Company B (See Appendix C). The interviews were performed using a guide with questions, which differed to a small extent depending on the position held by the interviewee. Most of the interview sessions took between 1.5 to 2 hours to complete. The researcher failed to interview one of the top managers in Company B as every time at the time of the appointment, the top manager could not attend. This happened more than three times. The sample interview questions are attached as Appendix A.

Questionnaire

To reduce the probability of sampling error occurring, stratified random sampling is used to choose the sample. Two criteria were used for the sample stratification, department and job level of employees. This strategy seems most appropriate as employees belong to different departments and job levels in each organisation and therefore, the issue of representation of the sample or *representative sample* to the population can be addressed that could not be done by other sampling designs. Having chosen the basis for the strata, the frame was used to calculate the population proportions per stratum. This determines the number of employees to be chosen per stratum, so each stratum has the same proportion in the sample as in the population. To choose for example, 18 employees from a stratum of 62 employees, the 62 employees were labelled 1 to 62. Random digit table was used to generate 18 different labels in the range from 1 to 62. The employees with those labels in the frame list are those chosen. The process was repeated for each stratum. Since both organisations have clear organisational departmental structures, it has been relatively easy to implement stratified random sampling methodology. For Company A, four departments (strata) have been identified and for Company B, 10. Three job levels have been identified for both organisations namely lower management, supervisor, and non-managerial staff. Identification of department and job level allows comparisons to refine the interpretation of the data collected and more valuable and differentiated information is obtained with respect to each group.

Roscoe (1975), applying the rules of thumb for determining sample size, proposes that sample size larger than 30 and less than 500 are appropriate for most research. Based on the resource constraints such as time and cost, the researcher decided to use sample size of 150 from each company which ensures that the margin of error as estimate of percentage will be no more than 10% (within 90% confidence limit). The decision about sample size is not a straight forward one as it depends on a number of considerations and therefore, there is no simple general answer (Bryman and Bell, 2003). The sample of questionnaire is attached as Appendix B. Appendix D shows the tabulation by department and job level for both companies.

A 30 minute self-administered questionnaire was distributed to managers, supervisors and non-managerial staff of each of the organisations being studied to discover their perceptions on top management commitment to the maintenance of ISO 9000 QMS, motivation for certification, internal communication, quality management practices in their organisations, their opinion on the ISO 9000 certification and maintenance, critical success factors and also their problems with ISO 9000 maintenance. This approach is thought best to be used to triangulate with results from research questions 1, 2, and 3. This, to a certain extent addresses the requirements for research validity and reliability as the results from questions 1, 2, and 3 will be cross-checked with results of the questionnaire survey. For qualitative casework, triangulation has been generally considered a process of using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation (Denzin and Lincoln, 2000). However, as no observations or interpretations are perfectly repeatable, Flick (1998) and Silverman (1993) acknowledge that triangulation serves also to clarify meaning by identifying different ways the phenomenon is being seen.

The questionnaire developed for this study was based on the extensive literature review with some modifications to suit the research need. For example, the framework for the statements on staff perceptions on quality management practices is taken and adopted from the work of Lakhal et al. (2006) who conducted a research on quality management practices in Tunisian companies. The questionnaire was validated by internal and external experts that consist of five academicians and a practitioner in this field.

A pilot test was carried out to refine the questionnaire and ensure the validity and reliability of the data collected (Saunders et al., 2003). Twenty respondents from each of the case study companies were used to test the questionnaire with the help from the Management Representative in identifying the respondents, distributing and collecting the questionnaire on the researcher's behalf. Based on the feedback received from the pilot study and the experts, improvements to the questions were made.

Documents

For case studies, the most important use of documents is to corroborate and augment evidence from other sources (Yin, 2003). According to Bryman and Bell (2003), in case study research, documents can be used to build up a description of the organisation and its history. In addition, documents also serve to confirm or contradict information gathered through other means (Salkind, 2006). Bryman and Bell (2003) state that because documents can offer at least partial insights into past managerial decisions and actions, they can also be useful in building up a 'timeline', particularly in processual studies of organisational change. Bryman and Bell (2003) cite Scott (1990, p.6) as setting four criteria for gauging and assessing the quality of a document in terms of its authenticity, credibility, representativeness, and meaning.

Successful or effective maintenance of the ISO 9000 QMS and quality improvement in service provided to customers can be measured through the reduction in customer complaints, increased in customer satisfaction, improved business processes, visible continual improvement initiatives and efforts, reduction in non-conformances issued during audits by both the internal and external auditors, fast feedback and an effective communication system to name a few.

Most of the evidence of those mentioned above can be obtained by reviewing of documents such as the minutes of management review meetings, corrective and preventive action records, continual improvement initiatives reports, internal and external audit reports, and customer satisfaction and complaints reports. The review of these documents made it possible to address all the research questions. The documents that have been reviewed and analysed at each company for this study are as follows:

1. Operations Manual
2. Quality Manual (Policy & Objectives)
3. Quality Procedures
4. Customer Satisfaction Survey
5. Customer Complaints
6. Supplier Evaluation
7. Corrective & Preventive Action Report
8. Training records
9. Improvement Initiatives
10. Internal Audit Report
11. External Audit Report
12. Management Review Meeting Minutes
13. Other company publications (e.g. annual report)

Other Sources

Other sources of data collection were the review of literature which includes company annual reports, journals, books, magazines, comments or feedback from people, and company internet websites.

3.5 Validity and Reliability in Case Study Research

Hammersley (1992) stated that *"validity is another word for truth and reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions".*

Yin (1994) cites Kidder and Judd (1986) who state four tests that are commonly used to evaluate the quality of research design as follows:

1. *Construct validity:* establishing correct operational measures for the concepts being studied.
2. *Internal validity (for explanatory or causal studies only, not for descriptive or exploratory studies):* establishing a causal relationship, whereby certain conditions exist which lead to other conditions, as distinguished from spurious relationships.
3. *External validity:* establishing the domain to which a study's findings can be generalised.

4. *Reliability:* demonstrating that the operations of a study if repeated, such as the data collection procedures can be repeated, with the same result.

Table 3.4 lists the four widely used tests, the recommended case study tactics, and the phase of research when the tactic is to be used.

Tests	**Case Study Tactic**	**Phase of research in which tactic occurs**
Construct validity	• Use multiple sources of evidence • Establish chain of evidence • Have key informants review draft case study report	Data collection Data collection Composition
Internal validity	• Do pattern-matching • Do explanation-building • Address rival explanations • Use logic models	Data analysis Data analysis Data analysis Data analysis
External validity	• Use theory in single-case studies • Use replication logic in multiple-case studies	Research design Research design
Reliability	• Use case study protocol • Develop case study database	Data collection Data collection

Table 3.4: Case study tactics for four design tests (Yin, 2003).

Construct Validity

Yin (2003) states that to meet the test of construct validity, a researcher must cover two steps:

1. Select the specific types of changes that are to be studied (and relate them to the original objectives of the study) and
2. Demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been selected.

The first step in construct validity for the study is met by stating the purpose of the research which is to investigate the maintenance of ISO 9000 quality management system in two service organisations in Malaysia. The second step is fulfilled by justifying how maintenance of the QMS is carried out. Some of the measures used are in terms of top management commitment and involvement, resources provided, the number of non-conformances occurring, customer complaints received, internal and external audit carried out, corrective and preventive actions taken, and improvement initiatives implemented.

To satisfy the requirements for research validity, this study employs the use of multiple sources of evidence for data collection as it essentially provides multiple measures of the same phenomenon, for example on top management commitment and involvement in ISO 9000 maintenance.

Yin (1994) quoted Marshall and Rossman (1989) who suggested that a researcher using the case study approach may use six main sources of evidence; documentation, archival records, interviews, direct observations, participant-observation, and physical artifacts. For this study, the tactics employed to increase construct validity are namely interviews, questionnaires and documents.

3.5.1 Internal Validity

For case study research, the concern over internal validity comes from the broader problem of making inferences as an investigator will "infer" that a particular event resulted from some earlier occurrence, based on interview and documentary evidence collected as part of the case study (Yin, 2003). The question whether the inference is correct which is a threat to internal validity is addressed in this study by applying the analytic tactics of *pattern matching* and *explanation building* that also lead to *cross-case analysis*.

3.5.2 External Validity

External validity refers to the generalisability of the study's findings beyond the immediate case study. According to Yin (2003), critics typically state that single cases offer a poor basis for generalising. As this is a multiple-case study, it will provide more generalisable conclusions than those provided in a single case (Leavy, 1994) as *replication logic* is being applied to a second organisation. The findings from both cases are generalised to theory. Since both cases have sustained their ISO 9000 certification, then it appears that only literal replication will result. The lack of instances of failure to sustain will mitigate against theoretical replication being possible.

3.5.3 Reliability

To address the reliability issue, this study documented its research processes and procedures so that the same processes and procedures are being followed when conducting research on the two case organisations (See Figure 3.1 for the research process). A *case study protocol* is used to develop a chain of evidence of the research as it is the standardised agenda for the researcher's line of inquiry (Yin, 2003). For example, once the purpose/objective, questions and methodology of the research have been identified and established, the list of interviewees, documents, respondents, dates and times was prepared for the interview, review and survey session to take place.

To further increase the reliability of this case study, *a case study database* was developed. Case study notes from the interviews which were audio-taped and from document reviews are typed and stored in computer files and hard copy. Both the tapes and notes are labelled with the interviewee's name, time and date of interview. Returned and completed questionnaires are also labelled and given serial numbers and put in files. Documents which are relevant to the case study such as standard operating procedures, non-conformities report, internal and external audit findings and various forms were also collected. All these materials are kept at a secured location for safety reasons and easy retrieval by the researcher.

To maintain a chain of evidence so that an external observer or reader of the case study can do a cross-reference between the methodological procedures and the resulting evidence, a *'trace'* is created. For example, the findings section of the thesis cited specific source of evidence by which the findings are based on. Also, the dates of interview and document review were specified in this chapter.

3.6 Data Collection Schedule

The data collection exercise was carried out in two phases as follows:

Instrument/Method	Phase	Date	Source
Telephone/ E-mail	1	15/12/2007 – 10/01/2008	Department of Standards and Certification bodies.
Face to face Interview	1	11/01/2008 – 19/02/2008	Top management, MR, quality officers/controllers, and middle managers – 30 respondents.
Document review	1	01/02/2008 - 06/03/2008	Document such as audit reports, corrective & preventive action report, customer complaints & feedback, customer satisfaction survey report, etc.
Questionnaire & Document review (second phase)	2	22/09/2008 - 31/10/2008	Managers, supervisors & staff – 150 for each company. Other relevant document (e.g. annual reports)

Table 3.5: Data collection schedule

3.7 Data Analysis

According to Yin (2003), data analysis consists of examining, categorising, tabulating, and rearranging the evidence obtained from a study. Although analysing case study evidence is especially difficult, every case study should nevertheless strive to have a general analytic strategy. Three strategies are relying on theoretical prepositions, setting up a framework based on rival explanations, and developing case descriptions. Any of these strategies can be used in practicing the five specific techniques for analysing case studies: pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis.

For this study, the researcher analyses the data by using the *'within-case analysis'* which typically involves detailed case study write-ups for each case (Merriam, 1998). In referring to Gersick (1988) and Pettigrew (1988), Eisenhardt (1999) wrote that these write-ups are often simply pure descriptions, but they are central to the generation of insight because they help researchers to cope early in the analysis process with the often enormous volume of data. Although there is no standard format for the analysis, the overall idea is to become intimately familiar with each case as a stand-alone entity so that it allows the unique patterns of each case to emerge before the researcher push to generalise patterns across cases (Eisenhardt, 1999). For this study, the apparent pattern or consensus emerging in each of the themes was carefully weighed against dissenting views of interviewees. Dissenting or 'outlier' views were valued as timely 'reality checks' when an otherwise strong consensus in a particular area appeared. Miles and Huberman (1994) suggested that in many cases, effective "outlier analysis strengthens an original conclusion".

Once the researcher is familiar with each case, *'cross-case analysis'* search for patterns can be done. Merriam (1998) stresses that a qualitative, inductive, multi-case study seeks to build abstractions across cases. Therefore, good cross-case comparison can be obtained by looking at the data in many divergent ways (Eisenbhardt, 1999). Merriam (1998) quotes Yin (1994) who states that in cross-case analysis, the researcher attempts to build a general explanation that fits each of the individual cases, even though the cases will vary in their details. According to Eisenhardt (1999), the idea behind these cross-case searching tactics is to force investigators to go beyond initial impressions, especially

through the use of structured and diverse lenses on the data. Moreover, these tactics improve the likelihood of accurate and reliable theory, that is, a theory with a close fit with the data. At the same time, cross-case searching tactics enhance the probability that the investigators will capture the novel findings which may exist in the data (Eisenhardt, 1999).

The analysis of data was divided into several stages such as transcribing the tapes and field notes, coding data into categories, and developing patterns and themes. For the interviews and document reviews, *thematic analysis* was used as a way to interpret and analyse the findings. Braun and Clarke (2006) define thematic analysis as a method for identifying, analysing and reporting patterns (themes) within data and state that it can offer a more accessible form of analysis, particularly for those early in a qualitative research. Steps involved in doing thematic analysis as described by Braun and Clarke (2006) and followed by the researcher are shown by Table 3.6.

Phase	Description of the process
1.Familiarising yourself with your data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2.Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3.Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5.Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Table 3.6: Phases of thematic analysis (Braun and Clarke, 2006).

Statistical Package for Social Science (SPSS) version 16 was used to analyse the data from the survey questionnaires. Descriptive statistics were used to analyse the data. Cross tabulation, frequencies and mean scores are used to interpret the results of the two companies. Chi-Square tests and *t*-tests were carried out to confirm differences in results between the companies. Where appropriate and possible, aggregation or averaging for groups of items with similar themes was used. Cronbach's Alpha is carried out to measure these items' reliability and consistency. In general, reliabilities less than 0.60 are

considered to be poor, those in the 0.70 range, acceptable, and those over 0.80 good (Sekaran, 2003). For this research, only reliabilities of 0.70 and above are taken to ensure reliability and consistency.

3.8 Ethical Considerations

In qualitative studies, ethical dilemmas are likely to emerge with regard to the collection of data and in the dissemination of findings (Merriam, 1998). In social science or management research, this is directly related to the integrity of the research and the subject matter (Bryman and Bell, 2003).

Before collecting data for this research, consent was obtained from participants of both interviews and surveys. The information sheet and cover letter outlining the research purpose were attached to the interview questions and questionnaire. The participants had the option to participate or not participate in the interview or survey without coercion. While the information gathered from participants is used in the research, care is taken on confidentiality and no participant was named in the research report. This matter is covered by signed confidentiality agreement between the parties involved. Overall, the research ensures that:

a. The informed consent of all participants is gained
b. Privacy and confidentiality is respected
c. Risk and deception is minimised
d. Exploitation of researcher-participant relationships is prevented
e. Any conflict of interest is declared.

The research guidelines of the university were adhered to when doing this study.

3.9 Chapter Summary

This chapter began with the introduction and discussion of the philosophies and paradigms to social science research namely positivism, interpretivism and realism and how the different perspectives influence the research approach. Next, the chapter continued with the research strategy which comprises quantitative, qualitative and multi-strategy research. The chapter then continued with the research design outlining the case study strategy and justifying the reasons for choosing this strategy and the use of triangulation. In this chapter, the issues of validity and reliability of the method are also discussed and addressed.

At the end of the chapter, the limitations and ethical considerations related to this research are highlighted.

In addition, to improve this study, the researcher has also presented papers at the Australia & New Zealand Academy of Management (ANZAM) (2008) Conference and at the Annual Waikato Management School Student Research Conference (2007 & 2009). From these conferences, comments and feedback from experts and academia were obtained. Further, the researcher also has written several articles and submitted them to a few journals for reviews and publication. One of these articles has been published in 2009. The review received from the journals was used to strengthen the study.

The next chapter, Chapter 4 introduces the case study organisations and their profiles.

CHAPTER 4 - CASE ORGANISATIONS

4.1 Introduction

The two case organisations selected for this study are subsidiaries of what is known as government-linked companies (GLCs) in Malaysia. Therefore before proceeding to introduce the case companies, this chapter presents an overview on government-linked companies (GLCs). Then, the chapter continues with the introduction of the case study companies in terms of their operation and profiles.

4.2 Government Linked Companies (GLCs)

GLCs were set up as the result of Malaysia's privatisation policy in the early 1980s to enable government agencies to become more efficient and cost effective. GLCs were previously government agencies or public enterprises established to provide services for social purposes. The government own at least 20% ownership interest in the companies and has an influence in the appointment of members of the board of directors and senior management positions. At the same time, the government has a controlling stake in making major decisions e.g. contract awards, strategy, restructuring and financing, acquisition and divestments (GLC Transformation Manual, 2006). Currently, there are about 90 companies categorised as GLCs in Malaysia.

In Malaysia, GLCs are the main providers of utilities, postal services, airlines, airports, public transport, water and sewage, banking and financial services (Lau and Tong, 2008). The group has about 400,000 employees or 5 percent of the national workforce (Abdullah, 2005). The purpose of GLCs is not only to ensure wealth maximisation but also to achieve several social goals that contribute towards nation building as outlined by the government. In short, Malaysian GLCs are hybrid organisations as they have to achieve financial gains while fulfilling their social responsibilities.

Results of prior studies on the extent to which government intervention affects a company's performance are mixed with one group of researchers finding companies with government intervention being better governed (Martin and Parker, 1995; Kole and Mulherin, 1997; Ramirez and Tan, 2004; Ang and Ding, 2006) as these companies are more conscious of the importance of maximising

shareholders' value over self-interest. In contrast, the second group of researchers found that companies in private hands are more competitive and have more incentive to innovate and contain costs (Boubakri and Cosset, 1998; Sun and Tong, 2002; Wei and Varela, 2003).

Whatever the outcomes the studies uncovered, it cannot be denied that in Malaysia, GLCs play an important role in the development of the Malaysian economy. Company A and B are GLCs and therefore are bound by the government policy and intervention.

4.3 Company Overview, Operation and Profile

4.3.1 Company A

Company A was incorporated under the Companies Act, 1965 in 1994. It is a subsidiary wholly owned by PM Berhad to handle the delivery of cargo around the world via PMs' global network of routes. Back in the year 1972, Company A handled 30,000 tonnes of cargo. Currently, the company has about 900 employees. With a new facility at Kuala Lumpur International Airport (KLIA) and automated processes for cargo handling, it has the capacity to serve cargo needs of up to a million tonnes per year.

The registered office of Company A is at the Advanced Cargo Center (ACC), KLIA with branches in Penang, Kuching, and Kota Kinabalu. Company A operates 24 hours a day at a 92,900 square metre processing area. For convenience, the processes are handled under one roof with a centrally located document office controlling both in bound and outbound cargo as well as transhipment cargo. In addition, the Malaysian Customs Department is also located within the ACC to facilitate a 24 hours a day cargo clearance. Over 27,000 square meters of space with 6,500 units of storage bins have been allocated for storage facilities and 74,320 square metres for freight forwarders.

The core businesses or services of Company A are sales of cargo space on PM flights, handling of normal cargo, express cargo, perishable, animal, and transhipment cargo on behalf of PM and customer airlines, i-port transhipment service and charter services. Customers of Company A consist of freight forwarders, agents, customer airlines, both local and overseas. Company A has

several key or major customers consisting of freight forwarders/agents and customer airlines which bring more than 60% of revenue to the company.

The scope of the quality system for Company A is planning of chartering PM aircraft for transportation of cargo and provision of cargo ground handling services and warehouse operations on behalf of PM and customer airlines in ACC. This research covers only Company A cargo operations at Advanced Cargo Centre, KLIA.

The preparation for MS ISO 9001:2000 started in June 2003 with the appointment of a consultant. On January 8, 2004 Company A was awarded the MS ISO 9001:2000 Quality Management System for the above scope. Other prestigious awards received by Company A are the ISO 14001:2004 and OHSAS 18001:1999, Best Global Ground Handler (2007) and Excellence in Logistics - Air Cargo Services (2007).

Cargo operations are divided into 3 sections namely; operations commercial, operations line stations, and operations support. Operations Commercial's core processes are export and import operations, ramp, documentation office and physical charter. The core functions of Operation Line Stations are quality assurance and Line Station, transhipment, customer care and cargo safety. Meanwhile, Operations Support consists of core processes such as management and maintenance of cargo equipment, budget, tender and procurement of cargo equipment, animal hotel, express handling unit, and property administration and maintenance.

The organisation structure of Company A comprises 6 levels as shown by Figure 4.1.

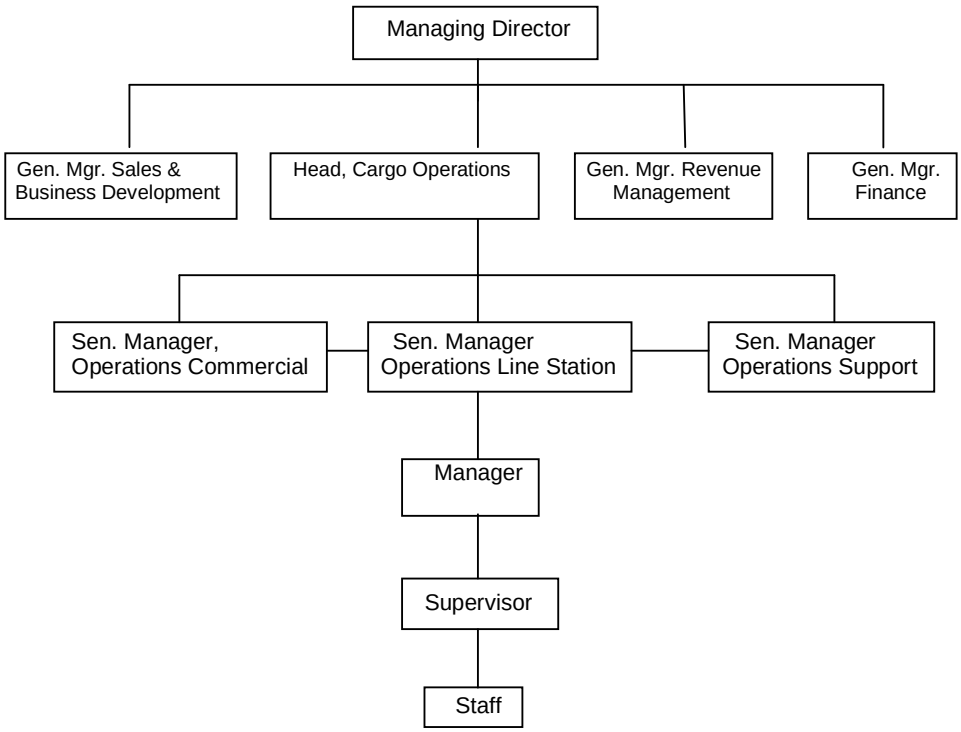

Figure 4.1: Company A - Organisation structure

To provide corporate policies, general administration and guidelines in matters affecting safety, quality and security of all cargo operational areas, Cargo Operations Manual is used. This manual provides commonality of approach in managing cargo handling in compliance with regulatory requirements. To ensure necessary, accurate and up to date documents, documents and records are made available to those personnel required to use them. This includes in the case of outsourced operational functions, employees of external service providers. Where an electronic system is being used, in order to ensure redundancy, an acceptable back-up system has electronic files required to conduct or support cargo operations immediately in the event the primary reference system becomes unavailable.

To control operations and its performance, quality objectives of each unit are monitored using the Key Result Area (KRA) on a monthly basis. KRA is based on the Operations Performance Standards identified earlier by each unit in Operations. Each unit prepares their monthly report and if objective(s) is not met, corrective action request (CAR) is initiated. The achievement or non-

achievement of quality objectives is discussed and reviewed by management in the Management Review meeting. The status, actions to be taken and outcomes of the meeting are recorded in the Management Review Meeting Minutes.

4.3.2 Company B

Company B was formed in 1988 to undertake all maintenance works of the PLK North South Expressway (NSE). Company B is a sister company of PLK Berhad which manages and operates the NSE under concession from the Malaysian government which is the owner of NSE. The NSE is an 848 kilometres dual carriageway inter-urban toll highway system linking the industrial areas in the west coast of Peninsular Malaysia from Thailand at the northern border to Singapore in the south. Since then it has grown and offers a comprehensive range of services for every aspect of infrastructure maintenance and in particular, a road and highway maintenance. Company B's vision is aimed at making its workforce focused in delivering their best at all times in order to provide 'clean, safe, and comfort' to the users of the facilities maintained by the company. Company B uses the Internet-based Computerised Maintenance management System (CMMS) in providing its total comprehensive service.

Currently the company has over 900 staff and a fleet of more than 350 units to support it operations. Company B is divided into 3 regions; Northern, Central, and Southern region offices. Company B has been awarded both the MS ISO9001:2000 Quality Management System in 1999 and also OHSAS 18001:1999 Occupational Health and Safety Management System accreditations in 2002. Now it is embarking on the ISO1400O Environmental Management System and certification to this standard is expected by the end of 2008. Company B begun preparing for ISO 9001:2000 certification since 1998. There is no consultant engaged to assist preparation for certification as the company has the expertise from their own people.

The main customer of Company B is PLK Berhad. Other clients include the North South Expressway Central Link (ELITE), Penang Bridge, METRAMAC, Linkedua, and PUTRA to name a few. The regulatory body for Company B is the Malaysian Highway Authority.

The scope of the quality system for Company B is highway routine maintenance, pavement, landscaping, traffic management, logistic and machinery, building maintenance and head office support. This research covers Company B at Central Region and Kuala Lumpur Head Office only.

In terms of operation, there are ten (10) departments in Company B. The biggest is the Maintenance Operations department followed by Logistics & Machinery, Central Technical Support, Engineering, Treasury & Finance, Administration, Human Resource, Special Project, Health, Safety, Environment & Quality Assurance, and Director's Office.

For Maintenance Operations department, its core function is the maintenance of highway which also includes facilities, building, and rest areas maintenance. Other core processes are maintenance of mechanical, electrical and electronic equipment such as air-conditioning system, lighting and power systems, UPS back up system for uninterrupted system, and generator sets and also closed circuit television. These are located at about 69 toll plazas with the lighting at the interchange and along the highway. As for Logistics & Machinery department, its core functions are the management and maintenance of plant and machinery, doing pavement work, and ensuring all pavement machines are in good conditions and can operate well. Central Technical Support and Engineering department work closely with Maintenance Operations while other one-off projects are assigned to Special Projects department.

The organisation structure of Company B comprises 7 levels as shown by Figure 4.2.

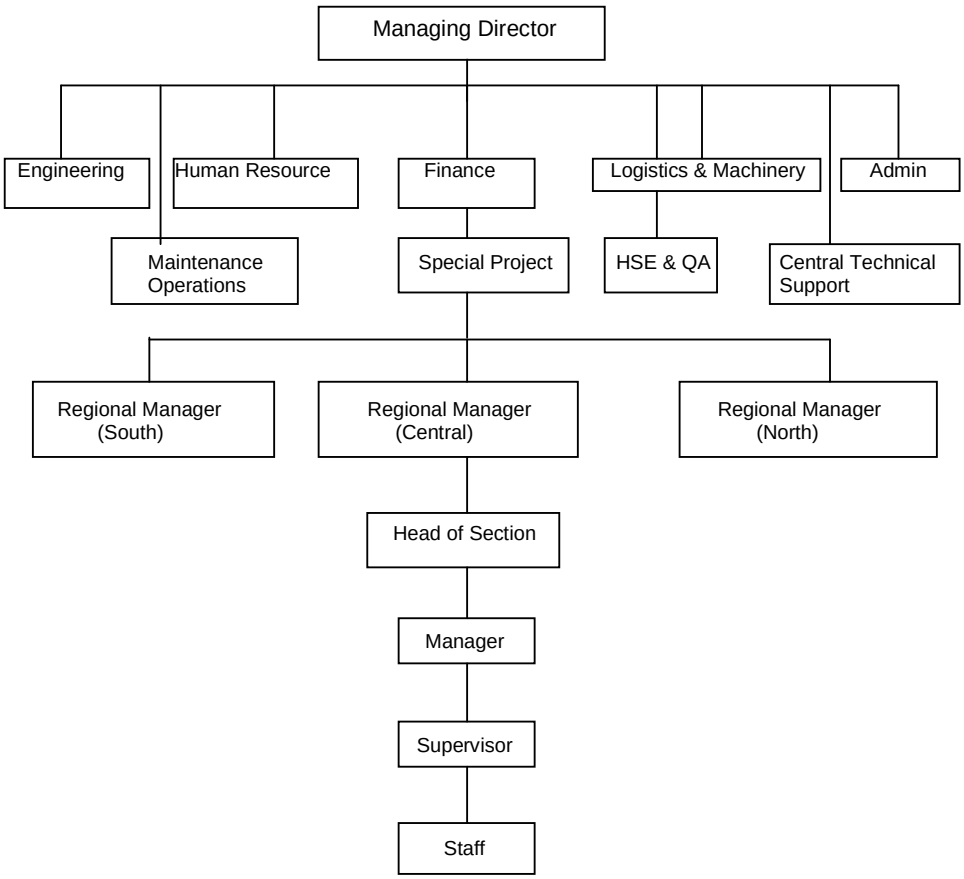

Figure 4.2: Company B - Organisation structure

4.3.3 Company Profile

Table 4.1 shows the profiles of the above companies. The table indicates a similarity between the two companies in terms of the number of employees engaged, company size and ownership.

The age of business or years of establishment of the companies which is 14 and 20 years indicates that these two companies are well-established and stable businesses. By the number of employees engaged by the two companies, both can be regarded as large companies. The number of years certified to ISO 9000 of 4 and 9 years respectively also indicates that both companies have had certain amount of time to absorb and to evolve the ISO 9000 quality management system.

Criteria	Organisation	
	Company A	**Company B**
No. of Employees	904	910
Company Size	Large	Large
Age of Business (years)	14	20
Core business	Cargo handling & transport	Maintenance of highway
Main Customers Base	Local & International	Mostly local
Classification of service	Service factory	Mass service
No. of years certified to ISO 9000	4	9
Nature of company	Subsidiary of GLC	Subsidiary of GLC
Ownership	Malaysian	Malaysian
Organisation structure (layers)	6	7

Table 4.1: Summary of case companies profiles

The core business of the two companies differs with Company A involved in cargo handling and transportation while Company B's main activity is maintaining the highway. However both companies can be said to be in the transportation industry. Since both are subsidiary companies, the policies and direction of these companies are governed by their parent companies. Therefore, planning and decision making by top management of the companies are aligned to the policies and direction as outlined by their parent companies.

Looking at the organisation structure, both companies are adopting the functional structures that limit the duplication of effort in terms of work. Compared to Company B, Company A has a flatter organisation structure. Flatter organisation structure implies easier and more effective communication rather than taller ones as too many levels bring difficulties in understanding of objectives and communicating both up and down the hierarchy (Drucker, 1989).

4.4 Chapter Summary

This chapter began with the introduction of what are GLCs as both case organisations are subsidiaries of these types of companies. The profiles on the two case study companies showed that both companies are large companies and are in the transportation business. However, in terms of classification of service, Company A is a service factory while Company B is a mass service. Company A has been certified to the ISO 9000 for the past 4 years while Company B for the past 9 years.

CHAPTER 5 - FINDINGS (INTERVIEW & DOCUMENT REVIEW)

5.1 Introduction

This chapter focuses on the findings of the research. The results presented in this chapter are derived from the interviews conducted with all the targeted respondents which consist of top management, management representative of the quality system, middle management, quality managers/executives, and the operations managers. These interviews are the main source of data for this study. However, documents as outlined in Chapter 3 were also reviewed and used to support the findings when and where appropriate.

The findings from the case study companies (introduced in Chapter 4) are presented in order to meet the objectives and questions of this research which were outlined in Chapter 1 and 2. Therefore, each company begins with the introduction of the background of the respondents and describes the motivation for certification, views on quality, ISO 9000, and role of top management. Then the finding on top management commitment in ISO 9000 maintenance is presented followed by how the ISO 9000 is being maintained according to the requirements of the standard. Later, the human resource aspect in ISO 9000 maintenance is described. Lastly, views on the effectiveness of ISO 9000 maintenance are presented followed by the critical success factors and problems and challenges in ISO 9000 maintenance.

This chapter is long and descriptive and full of details. Chapter 7 is a concise summary of this chapter.

5.2 Company A

5.2.1 Background of Respondent – Top Management

The top management is defined as the Managing Director and executives reporting directly to him. The total number of respondents (top management) for Company A is 8. Table 5.1 shows the number of years the respondents have been with the company.

Based on the table, the average number of years top management of Company A have been with the company is 11.5 years. As the implementation of ISO 9000

started in 2004 at Company A, top management of the company are the ones who designed the quality system and have had the opportunities to operate the quality system. The exception is the MD, who being relatively new to the company, may not have had the opportunity to learn much about the quality system in place.

	Position	No. of years
1	Managing Director	1
2	General Manager, Sales & Business Development	14
3	General Manager, Revenue Management	13
4	Head of Cargo Operations	16
5	General Manager, Finance	5
6	Senior Manager, Information Technology	35
7	Senior Manager, Corporate Communications	6
8	Manager, Human Resource	2
	Average	11.5

Table 5.1: Respondents' length of service with the company

5.2.2 Motivation for Certification

Before identifying how the company maintains its ISO 9000 quality management system, a question was asked to the top management on the motives for certification. According to the General Manager of Sales and Business Development, the main reason Company A went for ISO 9000 certification was to improve its operation's efficiency as it was making losses prior to certification. Based on the interviews' responses, the motivations for implementing the ISO 9000 QMS and obtaining certification to the standard are divided into internal and external reasons. The internal reasons can be split into three (3); documentation, people, and improvement.

Documentation

- To have a documented system.
- To standardise and document work processes.
- To have standardised processes.
- To define and document policy and procedures.
- To properly established standard operating procedures.

People

- To change the mindset of employees.
- To develop people.
- To have a clear line of responsibility.

Improvement of system

- To improve process and service.
- To improve the organisation as a whole.
- To measure customer satisfaction.
- To systematically monitor and establish performance.
- To do things in a proper and systematic way.
- To benchmark against others in the same industry.
- To provide a disciplined environment.
- As a platform for obtaining other certifications such ISO 14000 & ISO 18000.

On the other hand, the external reasons can be summarised as follows:

- To tackle the perception of the industry and to enhance company's image.
- It's a requirement in the business environment.
- It's a social responsibility.
- To show quality is a priority to the company.
- ISO 9000 is a global, universal benchmark for quality.
- Most ground handlers are ISO-certified.
- Customers prefer their suppliers to be ISO-certified.
- To gain competitive advantage.
- Customer expectation.
- To satisfy customer needs and wants.
- As a marketing tool.
- To deliver world quality to customers.

5.2.3 Views on Quality

Maintaining a QMS such as ISO 9000 needs commitment from the top (Chin et al., 2000; Cheng and Tummala, 1998; Low and Omar, 1997). Before finding out about top management's commitment to the maintenance of the ISO 9000 in the company, it is essential for the researcher to understand the importance of quality to top managers. Top managers were asked to give their definition of quality and also to explain the importance of quality to their organisation. Their answers would to a certain extent reflect their views on quality and how they place quality which would have a bearing on their commitment and work practices.

The Managing Director defines quality as:

"Quality is something that changes depending on your capability so you must keep raising the bar. Raising the bar means rising in costs. Sometimes you have to ask yourself this question. Is the customer willing to pay if you keep raising the bar? You have to realise that you are running a commercial organisation and if people are not willing to pay for it then you should say to yourself that you've benchmarked yourself and this is the level of quality that I'm comfortable with."

The above statement reflects the traditional thinking on quality which is associated with higher cost. This can be considered as looking at quality based on product/service. It implies the higher the levels and amounts of service characteristics, the higher quality it is. At the same time, the Managing Director is talking about the 'value' of the service to customers and the relationship between its usefulness to price. To him, quality comes with a price and as a commercial organisation; the company must produce something the customers are willing to pay.

On the other hand, the General Manager of Sales and Business Development, the Senior Manager for Corporate Communication and the Senior Manager for Information Technology quality definitions are more customer-oriented or user-based as can be seen from their statements:

"To me it is when we sell our service, customer is happy and delighted about it."

"Quality to me is about productivity and deliverables. To maintain and sustain your promise to end users."

"Quality is in the eyes of the customer. I don't always believe in the words 'going beyond expectation'. Why do you want to go beyond when you already met customer expectation?"

However, the Senior Manager for Information Technology does not believe in going further to please the customer when their expectations have already been fulfilled. In other words, he does not believe in delighting the customer; for him it is enough to stop at satisfying them, again thinking on 'value' it gives to customers. In contrast, the definition of quality given by the General Manager of Revenue Management is broad and vague as he states it very generally.

"Whatever that's good. Actually to me 'excellent' is quality. Excellent in terms of result and execution."

Meanwhile, the Head of Cargo Operations and the Human Resource Manager show a deeper understanding on what quality means based on their statements:

"Frankly, there are many definitions. For me quality is a set of standards that is expected of you. You can have low quality, high quality or medium quality. Quality is a method of measurement. It's a verb not a noun."

"Quality is subjective. It's the degree of satisfaction to an individual. Something which is of quality to me might not be so to someone else because you can never anticipate customer's perception of quality of services being rendered."

On the importance of quality to their organisation, the Managing Director says:

"Very important because airfreight business is a B2B business. We are not dealing directly with end customers; so we must make our partners look good because the end customers are entrusting them to handle their freight and they are entrusting us. We must maintain their trust in us".

Other reasons why quality is important to the organisation given by other top managers are:

a. It will create customer loyalty.
b. As a benchmarking tool
c. It defines the company image
d. For smooth operation
e. To fulfill customer needs and expectations
f. To retain customers.

The above reasons given indicate that the top management of Company A have a good understanding on the importance of quality to their organisation. This will help the organisation in its quality improvement initiatives to improve the quality of service provided to the customers.

5.2.4 Views on ISO 9000 QMS

To understand how they feel about the ISO 9000 itself, the top management of Company A were asked about their views on the ISO 9000.

Based on the interviews, the top managers and the QA staff collectively agreed that ISO 9000 is a good quality system. According to one of the top managers, the measurement, analysis and improvement part of the standards is the most effective because according to him in the end, it measures the effectiveness of the company's procedures. The second top manager said ISO 9000 is quite systematic and its requirements are sufficient for effective quality system maintenance. The third top manager stressed ISO 9000 is almost perfect except it is lacking in the soft side of human resource.

5.2.5 Views on the Role of Top Management in ISO 9000 Maintenance.

As described in past research, the success of ISO maintenance depends on the commitment and support from the organisation's top management (Chin et al., 2000; Low and Omar, 1997). Top management of both companies were asked about their views on commitment and support as one of the most important factors to successful implementation and maintenance of a quality system like ISO 9000.

The Managing Director opined that quality should be driven from the top and management has to dedicate time for ISO initiatives. In addition, he explained that if support is not given by the top, the employees will feel it is not an important project. His view is shared by several other top managers as shown by the following statements:

"Yes, in whatever you do, it's down to the leader. Without a push and commitment from top management, I don't think we can achieve the award and even if we achieved it, without continuous support from top management, we would not be able to maintain it. So it's full commitment from top management, nothing more, nothing less." – General Manager, Sales & Business Development.

"It is very important. It is a critical success factor of ISO implementation programme. If management or senior management do not support whatever programme that is being implemented, the staff will actually see through the real situation. Once they knew management is not serious about it, they themselves would not give 100% commitment. They know that even if they don't give their best, management could not be bothered. They will escape the implications of not implementing what's required. So management commitment is quite critical because they provide the drive, they provide the solution; they remove the roadblocks that staff encountered during implementing the ISO

processes and procedures. Senior management is the one who provide adequate resources and additional resources for the implementation of ISO programmes." – Head of Cargo Operations.

"As top management, we have to be supportive of this ISO 9000. We attended whatever meetings and training along with the staff to be able to support any ISO initiatives undertaken by the company. My involvement is important to make sure it's successful. I totally agree that top management support is critical not only to ISO but to any other initiatives the company undertake. Without them, the company wouldn't be able to operate smoothly as they are the one who provide resources, budgets and priorities." – General Manager of Finance.

"I would agree with the statement. In fact in every initiative that the business embarked on, the most important thing is the commitment from top management. The floor can have ideas but if management does not 'buy-in' or support, it will remain just as ideas. That's why top management commitment is very vital." – Human Resource Manager.

Based on their responses, top management of Company A understand the importance of their commitment and support in maintaining the ISO 9000 QMS of their organisation. They are clear on their role towards ISO 9000 maintenance in order to make it successful.

5.2.6 Top Management Commitment and Involvement in ISO 9000 Maintenance

The top management of the company agreed that they play important roles in ISO 9000 implementation and maintenance. They recognised that their commitment and support as one of the most important factors to be successful in sustaining the quality management system. In order to find out on how committed and involved they are in the ISO 9000 maintenance, top management were asked to rate their commitment and involvement to the maintenance of ISO 9000 QMS on a 5 point scale (1 = very low, 2 = low, 3 = satisfactory, 4 = high, and 5 = very high).

Rating on commitment and involvement is done separately as the meaning of the words differs. Commitment refers to pledging oneself to a course of action while involvement means being concerned and associated with it (Oxford Dictionary). Involvement tends to suggest a more hands-on approach.

Table 5.2a shows the self-rating done by the top management of Company A on their commitment and involvement to the ISO maintenance. One of the top managers declined the self-rating.

Position	Self-rated Commitment	Self-rated Involvement
Managing Director	5	5
General Manager, Sales & Business Development	5	5
Head of Cargo Operations	5	4
General Manager, Revenue Management	-	-
General Manager, Finance	5	4
Senior Manager, Information Technology	5	5
Senior Manager, Corporate Communications	4	3
Manager, Human Resource	4	3
Average	4.71	4.14

Table 5.2a: Self-rating on top management commitment and involvement

When asked why some of them rate themselves lower on the involvement compared to the commitment, the first top manager said that her involvement is lower because the opportunity for her to be involved is rather limited. She said that her department plays a supporting role in maintaining the QMS, not as implementer. Similar opinion is shared by the second top manager although he stresses that his involvement is important to support any ISO initiatives undertaken by the company. On the other hand, the third top manager said he is more involved in Health and Safety (OSHA) rather than quality. While the fourth top manager said that he rates his involvement 4 and not 5 because he is just providing guidance; the actual doers are the employees. The average rating of 4.71 on commitment and 4.14 for involvement indicates top management of Company A feel that they are highly committed to maintaining the ISO 9000 quality system and this can be seen in how highly involved they are in its activities and programmes in order to maintain it.

All the middle managers rate their top management's commitment and involvement as 5, very high. The Management Representative (MR) however rates top management commitment and involvement as 4, high. The Operations Manager rates top management as 4 and involvement as 3. Table 5.2b shows the rating.

Position	Commitment	Involvement
Middle managers	5.0	5.0
Management Representative	4.0	4.0
Operations Manager	4.0	3.0

Table 5.2b: Rating on top management commitment and involvement by middle managers, MR, and Operations Manager.

Based on the rating, it can be said that on average, all top management feel that they are very highly committed to ISO 9000 maintenance and are highly involved in activities related to maintaining the quality system. This view is also supported by the middle managers. However, there is a difference in opinion when it comes to the Management Representative and the Operations Manager.

5.2.7 Evidence of Top Management Commitment and Support

To find out how the top managers show their commitment and support to the maintenance of the QMS in their organisation, they were asked to describe their involvement in the QMS and its activities. Table 5.3 displays how top managers exercise their commitment and support by involving themselves in activities in order to maintain the ISO 9000 QMS in their organisation.

Top management of Company A in describing their involvement, seem to be *hands-on* and specific by using phrases like *'use ISO 9001 clauses as a guide to solve problems; change process flow to suit ISO requirements; attend workshops for process improvement; use service level agreement when dealing with customers; ensure easy accessibility and distribution of document by developing intranet documentation system'.*

This implies that they know why they need to be involved.

Position	Action
Managing Director	Chair the ISO Steering Committee meeting as often as possible and also chair the Management Review Meeting.
General Manager, Sales & Business Development	Use ISO 9001 clauses as a guide to solve problems, Be Vice Chairman for ISO Committee, and chair Management Review Meeting and ISO meeting when the boss is not around.
Head of Cargo Operations	Walk the talk, explaining to staff the importance and advantage of ISO 9000, involved staff in the process, provide adequate resources, sit, chair facilitate, and observe meetings, discussion groups, and subcommittees. Apart from that support staff by removing road blocks to their work.
General Manager, Revenue Management	Change process flow to suit ISO requirements and attend workshops for process improvement.
General Manager, Finance	Document all processes in own department, use Service Level Agreement (SLA) when dealing with customers, ensure Standard Operating Procedure (SOP) for processes are in place.
Senior Manager, Information Technology	Ensure easy accessibility and distribution of document by developing intranet documentation system. Participated in meetings, dialogues and in setting up procedures for documentation.
Senior Manager, Corporate Communications	Member of ISO 9000 Steering Committee.
Manager, Human Resource	Provide the human resources with soft skills and ensure people are equipped with knowledge. Try to change the mindset of people to instill new culture.

Table 5.3: Evidence of commitment and support by top management

Apart from participating in the above activities, top management of Company A also show their commitment by carrying out their roles and responsibilities in areas such as strategic planning, setting, communicating and reviewing of quality policy and objectives, and planning and providing of resources to carry out work as required by the standard (refer to ISO 9001:2000, Management Responsibility – Clause 5).

To maintain the ISO 9000 of their company, top management of Company A show their commitment by involving themselves in various activities that support the implementation and maintenance of the quality system. They headed the ISO 9000 Steering Committee, chaired ISO related meetings, documented processes, conducted workshops on the importance of ISO and ISO related matters and trained employees.

5.2.8 ISO 9000 Maintenance

Maintaining a QMS like ISO 9000 requires continuous improvement in the process, system, people, and product/service. Low and Omar (1997) divided the approaches used to maintain the QMS into technical and non-technical approaches. They suggest that to effectively maintain the QMS would require the application and integration of both approaches to promote quality improvement.

In this section, both the technical approach based on the ISO 9000 requirements and the human resource aspects (non-technical) are presented. The findings start with the technical aspect of ISO 9000 which comprises the ISO 9001:2000 standard requirements such as quality management system, management responsibility, resource management, product realisation, and measurement, analysis and improvement. This is followed by the human resource aspects such as employee involvement, empowerment, performance measurement, recognition and reward, and teamwork.

5.2.8.1 Quality Management System - Clause 4

Clause 4 of the ISO 9001:2000 states that an organisation is required to establish, document, implement and maintain a quality management and continually improve its effectiveness. To fulfill and address these requirements, Company A has developed a Quality System documentation which consists of the Quality Manual and Quality Procedures which define and describe the overall quality management system of the company. The Quality Policy serves as a

guide to set the company's direction and prescribes what to be done by the company while the quality procedures describe how things should be carried out in sequence of steps to execute what has been prescribed in the Quality Policy. Currently there are 47 procedures at Company A. The level of documentation in Company A can be divided into 4 levels namely; Quality Manual, Quality Procedures, Work Instructions & Forms, and Records as shown by Figure 5.1.

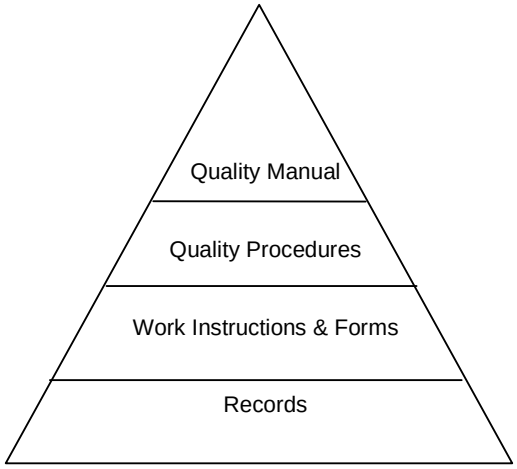

Figure 5.1: Level of documentation at Company A

5.2.8.2 Management Responsibility - Clause 5

Under this clause, top management shall provide evidence of its commitment to the development and improvement of the quality management system and continually its effectiveness by:

a. Communicating to the organisation the importance of meeting customer as well as statutory and regulatory requirements;
b. Establishing the quality policy
c. Ensuring that quality objectives are established;
d. Conducting management reviews;
e. Ensuring the availability of resources.

Setting and Reviewing of Quality Policy and Quality Objectives

Based on the strategic planning, top management of Company A develops their policies, strategies and objectives. According to the Management Representative, to communicate to the organisation the importance of meeting customer as well as statutory and regulatory requirements, a team of people from management develops the quality policy and objectives which are later discussed in the management meeting. The Managing Director has the power to approve the

quality policy together with its objectives. Top management review this policy and objectives once a year during the Management Review Meeting. Changes are made to them if necessary. The Quality Policy of Company A is shown in Figure 5.2.

QUALITY POLICY

Company A is committed to providing excellent service in air cargo transportation by focusing on reliability, consistency and innovation aimed at ensuring the highest quality of service to our valued customers.

To achieve our Quality Policy, **Company A** shall comply with the following:

1. To implement and maintain an effective quality management system in compliance with the requirements of ISO9001:2000
2. To improve our capabilities through continuous improvements through trainings and the use of technology
3. To develop and implement operating procedures with our vendors to meet the high quality standards required of the **Company A** Management
4. In total compliance with all regulatory requirements
5. To continuously review and improve our service level in order to meet and exceed customer expectations.

The **Company A** management is committed to ensure that this policy is communicated and understood by all staff throughout the company. The policy shall be reviewed and continually improved to ensure its suitability and effectiveness.

Signature of MD

Managing Director, Company A

Date: 1 September 2007

Figure 5.2: Company A's Quality Policy

Apart from the Quality Policy, to ensure that quality objectives are established, Company A has developed quality objectives for their key businesses such as cargo operations and charter and planning. Under cargo operations, objectives are set for general management, quality assurance, export, import, ramp, operations support, commercial support, and charter services. Each of these objectives is assigned a measure, target, measurement frequency and responsibility. To ensure these quality objectives are met, performance standards are developed in areas that will support the achievement of quality objectives and critical to quality of service being delivered.

To control operations and its performance, the quality objectives of each unit are monitored using the Key Result Area (KRA) on a monthly basis. KRA is based on the Operations Performance Standards identified earlier by each unit in Operations. Each unit prepares their monthly report and if objective(s) is not met,

corrective action request (CAR) is initiated. The achievement or non-achievement of quality objectives is discussed and reviewed by management in the Management Review meeting. The status, actions to be taken and outcomes of the meeting are recorded in the Management Review Meeting Minutes. Based on the interview, the process flow for monitoring the quality objectives is as shown by Figure 5.3.

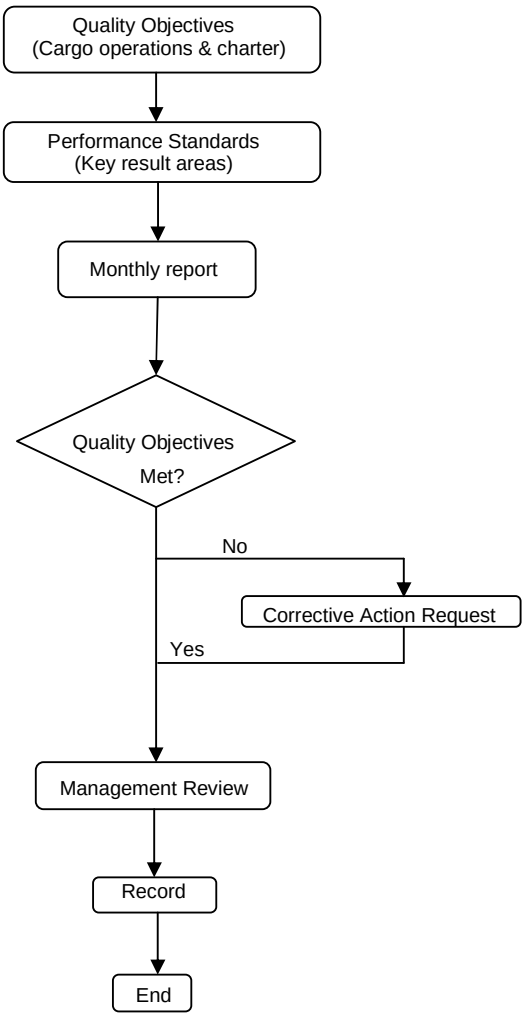

Figure 5.3: Process flow for monitoring the quality objectives at Company A

Communication of Quality Policy and Objectives

Based on the interviews, there are various ways that the top management of Company A communicates the quality policy and objectives of the organisation to their employees. Some of the ways are through:

- Displaying them on notice boards.
- Meetings.

- Drilling down.
- Training
- Circulars
- Memos
- Word of mouth
- Telling them in technical, plain and in language they could understand.
- Departmental meetings
- Minutes of meetings distributed to employees.
- Posters
- Policy cards
- E-mails

According to the Senior Manager, Operations Commercial, the achievement of quality objectives is communicated to the employees by middle management through meetings with second liners. A daily operation review meeting at 9-10am is conducted and it focuses on the last 24 hours performance. Performance reports were also generated and reviewed. Apart from this, the Senior Manager for Operations Support stresses that performance reports are also produced monthly and staffs are briefed on the achievement. The performance chart for the quality objectives are displayed on the notice boards of each section. The achievement or non-achievement of quality objectives is discussed and reviewed by management in the Management Review meeting. The status, actions to be taken and outcomes of the meeting are recorded in the Management Review Meeting Minutes.

Management Review

The Quality Manual states that Company A shall review its quality system at least once a year. However, based on the Management Review Meeting minutes, in reality the management review meeting which is chaired by the Managing Director is held twice a year to discuss the following:

a. The suitability of Quality Policy and Quality Objectives
b. Customer feedback/complaints/survey
c. Audit Results (Internal & External)
d. Quality Objectives Achievement
e. Service performance
f. Status of corrective & preventive actions
g. Changes affecting Quality Management System

h. Recommendation for improvement
i. Follow-up action from previous Management Review Meeting
j. Resources needed

The results of the Management Review meeting were recorded in the Management Review Meeting Minutes and distributed to the relevant people.

Responsibility, Authority and Communication

The responsibilities, authorities and their interrelation are defined and communicated within the organisation through employees' job description and the organisation chart of the company. According to the Management Representative, relevant procedures are made known and available to the staff concerned.

In terms of the Management Representative (MR), Company A has appointed the Manager for Cargo Operations, Quality Assurance & Line Stations for this position. The MR is assisted by the Assistant Management Representative (AMR) from Penang, Sarawak and Sabah. The MR is responsible to the Managing Director of Company A for ensuring that all the requirements outlined in the Quality Manual are effectively implemented and maintained.

Internal Communication

The communication system is developed to ensure a permanent and smooth flow of information throughout the whole organisation and supply chain including external organisations that conduct outsourced operational functions. Specific means of communication between management and staff include:

a. E-mail and telephone
b. Operations and departmental meeting and briefing
c. Internet web page
d. Operational reporting system
e. Letters, notices, memos and bulletins
f. Publications e.g. newsletters and magazines.

Once in every two months the MD will brief the staff on the direction of the company and important issues such as the parent company's strategic plan and the corporate transformation plan. An operations postmortem meeting is conducted at 9am for about 1-1.5 hours. In this meeting, heads of units will report

what is going on and their status. Problems arising are also discussed and solved in this meeting. This is done 7 days a week including Saturdays and Sundays where executives and managers will take turn chairing the meeting. Vendors are also monitored to ensure they do their job properly.

Respondents were asked on the effectiveness of communication in the organisation as effective communication is crucial for successful operation. They were asked on a scale of 1-5 (1= not effective, 2= slightly effective, 3= mostly effective, 4= effective and 5= very effective) to rate the effectiveness of communication and to justify the reason for their rating. Table 5.4 shows the rating given by the management on the effectiveness of communication at Company A.

Respondent	TM1	TM2	TM3	TM4	TM5	TM6	TM7
Score	4	2.5	5	4	4	5	4
Respondent	TM8	MM1	MM2	MM3	MR	OM	Average
Score	2	4	4	4	4	4.5	3.92

Table 5.4: Rating on the effectiveness of communication

The average score of the rating indicates that communication in the company is between *mostly effective* and *effective*. From the rating score, most of the respondents seem to rate communication as *effective*. The first top manager who disagrees and rates communication as 2.5 seems to think that certain decisions made at the top were not cascaded down on time or as it should have. The second top manager who rates communication as slightly effective thought communication is lacking, shaky and one-sided in the company. According to her, people do not communicate or if they communicate, it is only to a group of people who they think are worth talking to. Communication which she calls directive is from top to bottom. She lamented:

"We are still shaky in communication because it's still one-sided, from top to bottom. You can't call it communication, it's a directive. The implication to Company A is it leads to a lot of misinterpretation. When there's no two-way communication, when you hear from one party, you interpret it yourself and this leads to disharmony. As it's more in the form of directive, you are expected to grab it and do it. You are not given the opportunity to respond or give feedback, to have his/her say in the matter. I believe there must be a two-way communication and a response and a feedback for communication to be effective."

The third top manager said that it depends on people's acceptance to the idea introduced:

"*The issue here is trying to get the horse to drink water. You can bring the water to the horse but you can't force it to drink. If people are not acceptable to the idea we introduced, no matter what we do, if they are not receptive, there's nothing much we can do."*

According to the fourth top manager, another reason for improvement in communication is needed because of dealing with different time zones which impact the emails.

Overall, most of respondents (11/13) feel that communication within the company is effective.

5.2.8.3 Resource Management – Clause 6

The organisation shall determine and provide the resources needed to implement and maintain the quality management system and continually improve its effectiveness, and to enhance customer satisfaction by meeting customer requirements (ISO 9001:2000). However, before an organisation can determine and provide the resources needed to carry out its activities, it has to know what it needs. This is where the need for strategic planning arises.

Strategic Planning

According to the General Manager, Sales and Business Development, every five years, Company A developed what is known as a five year plan to strategically plan for its business and determined where the company want to be within the next five years. This five year plan is being reviewed every year by the top management of Company A. As Company A is a subsidiary, its strategic plan is tied to that of the parent company. Some of future plans for Company A as outlined by the Managing Director are set out below.

- Increase margin from 4% to 10%.
- Increase turnover from RM2.8 billion to RM5.0 billion.
- Increase profit from RM150 million to RM350 million.
- Linking with other emerging countries in Asia like Indochina, Malaysia to do all higher value-added services.
- To provide good service at reasonable cost to customers.

- To acquire better aeroplanes to be cost effective.

Currently, Company A have about 60% of the market share and are big in China, Europe and Australia. However, liberalisation of trade will help Company A in increasing business and to position itself in the right markets as it means Company A can fly to any countries.

Planning of Resources

When asked whether the company has enough resources to carry out its activities and maintain its quality management system, the Managing Director of Company A replied:

"There's a clear objective to maintain the certification. There's annual audits to look at the discrepancies and basically there are also internal people who will do cross audit with other departments before the external auditors come here. Resources are adequate."

The first sentence refers to resources to maintain and audit the quality management system while the last to resource in general to carry out business activities. The view that resources are adequate at present is also echoed by the Head of Cargo Operations. He however cautioned:

"Realistically speaking, I would like to have more resources but we have to look at the costs and benefits. I think the resources are adequately provided for what we are required to do and I'm quite satisfied with what we have achieved so far. The impetus or rule is to maximise what we have. I could ask for more but the question is, 'Is it a need or a want situation?' Senior management has to rationalise accordingly."

The Senior Manager for Information Technology also seems to share the same opinion on maximising what the company has when he said:

"*Resources are never enough but you have to prioritise. In terms of manpower, the department had shrunken from 22 to 13 employees. It's sufficient for the running of our quality system and activities."*

The Senior Manager for Corporate Communication begs to differ in terms of resource adequacy when he said:

"*In terms of manpower, right now definitely I'm short because of the new structure."*

When interviewed, the middle management collectively agrees that resources are adequate and manpower is sufficient for their operation. Top managers were also asked on how they plan for the company's resources to ensure their adequacy to carry out activities and to maintain the company's QMS. According to the General Manager of Sales & Business Development:

"We looked at the current staff. If they are able to do their jobs well, then we don't hire additional staff. We motivate them to perform better."

The Head of Cargo explained his version:

"The first thing we do is we identify the resources that we require and see whether we have it or not. If we have it, it is fine but if we don't have it, we'd better start asking for it. This is where management's role is very important. If they are committed, they'll give you those resources because you have to give tools for people to be able to do their job. The needs for resources are based on the strategic plan."

According to the Human Resources Manager, Company A's employees have been reduced from year to year because of the ongoing cost saving exercise practiced by the company. The Human Resources Manager said:

"We have our manpower which keeps reducing from year 2003 -2007. In 2003, we have about 1400 employees. The numbers were reduced by retirement and resignation and if we compare the number of going and the number replaced, the ratio is 10:2. As at 31/12/2007, we only have 1,184 all over the world."

She however stressed that the reduction in the number of employees has not negatively affected the company in terms of quality and profit:

"Still the quality is there and in terms of revenue making, we are increasing. How we do this is although the company is trying to save cost, it has no intention to compromise on quality."

She added that Company A has adopted several solutions to produce quality service and make profits:

"……. we provide training to the staff that will broaden and expand their knowledge so that they will be multi-skilled. We keep on training and developing people so that manpower would not become an issue. We will maximise the staff potential and redeploy them and do cross functional training by putting them in different units for at least 6 months. By 1.5 to 2 years, they will become all-rounders and can be deployed anywhere."

This is confirmed by the Senior Manager of Information Technology when asked about the solutions for addressing reduction in manpower:

"*What we do now is multi-tasking."*

Apart from having multi-skilled workers, multi-skilling serves another purpose according to the HR Manager as she explained:

"*This is also good as it will help in succession planning to replace who are going to retire and resign. When it comes to promotion, our company's recruitment policy is to give priority to our staff. If we can't find the right candidate internally, only then we engage the outsiders."*

Other ways the company engages to maintain quality and control cost especially with the fuel price hike is explained by the Senior Manager of Operations Commercial:

"We are trying to contain our facilities and try to utilise our resources to our optimum. We are trying to make do with what we have now to combat cost. As for technology, we are quite up-to-date, we have this i-cargo, a mega project. I-cargo is a system, an information system that is designed to support our business using new technology to replace the old system."

As for charter and planning, proper scheduling and advanced notification by customers is important due to the number of planes available for charter as explained by the Operations Manager:

"We don't have just one airplane dedicated for charter because whenever we can find available aircraft time, we'll use that. If we have a customer wanting to ship their cargo on certain days but we couldn't accommodate, we'll offer at another time. If the customer agrees we'll proceed with the charter. Some charter have a tight deadline, some are a bit flexible."

"For our regular customers like Formula 1, Motor GP, A1 GP, they have a tight deadline but they gave us ample time 3 or 4 months notice in advance before the events take place. So we plan our schedules around them. We use 2 planes which we own, the 747-400 series and four 747-200 series which we lease from Air Atlanta Icelandic."

Based on the interviews with the managers, planning for resources such as manpower, infrastructure, and work environment of the company is through following these steps:

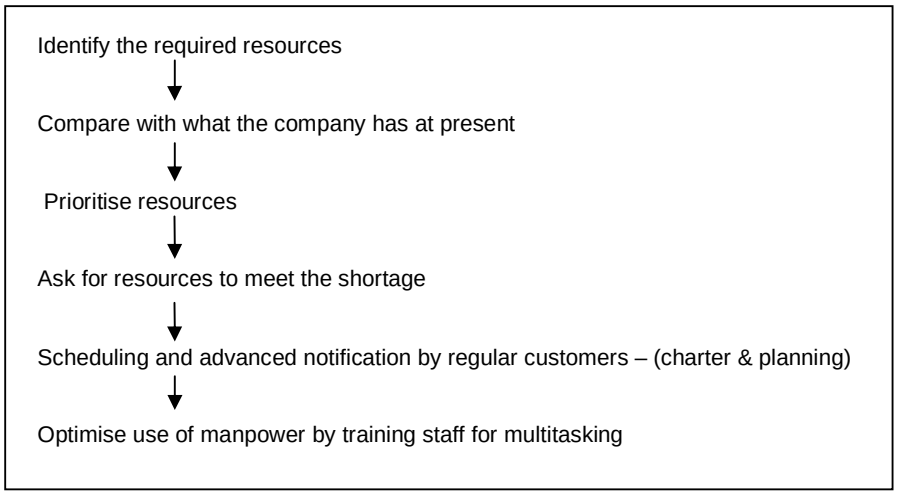

Figure 5.4: Steps in resource planning at Company A

Competence, Awareness and Training

Under this clause, the organisation is expected to:

a. Determine the necessary competence for personnel performing work affecting product quality
b. Provide training or take other actions to satisfy these needs
c. Evaluate the effectiveness of the actions taken
d. Ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives, and
e. Maintain appropriate records of education, training, skills and experience.

As stated in the previous section, in order to be competent and be multi-taskers, Company A trains its employees. When asked whether his employees are adequately trained to do their job, the MD of Company A said that the company's employees are adequately trained and he pointed out that this can be seen by

looking at the company's performance. He further explained his reasons for staff training:

"I try to get them to leave their comfort zone so that they can be developed and become multi-skilled and be more productive. As management, we are willing to invest in people development. So once you are developed, you have more knowledge and have a chance for promotion. The only way to develop people without engaging more people is to make them multi-task."

The importance of training the employees to the Head of Cargo Operations is clear through the following statement:

"Cargo is a very specialised business. Every person are given enough training in fact some training are mandatory requirements in the cargo industry such as cargo training course, training in awareness and handling of dangerous goods."

The importance of training is also supported by the General Manager of Revenue Management when he elaborated:

"Our target is to have a minimum of 1 staff to go for training a year. In reality, we sent more than that. In Revenue Management, we have 4 main areas; cargo booking reservation, capacity planning, revenue management, and tariff. Different types of training are required for each area and also to cater to Authority requirements such as the IATA."

According to the HR Manager, Company A believes that quality, safety and security awareness can be put in place successfully through periodic quality, safety and security training programmes that will educate all users to the requirement and importance of quality, safety and security. She added that training is conducted on the basis of competency and to create awareness on the importance of quality, safety and security in all operational areas.

In order to be competent, the requirements for initial and recurrent training apply to all cargo operations personnel who perform duties within the scope of cargo operations including external service providers. The Senior Manager of Operations Commercial explained:

"We have two types of people that we train. First, our Company A staff. It is mandatory for some staff to be trained on certain courses especially the front liners and staff who

handles dangerous goods. Second, the vendors gave us their training schedules and we take a look at that."

He added that recurrent training for dangerous goods is conducted every 24 months while other recurrent training is completed on a frequency in accordance with the requirements of the regulatory authority but not less than once during every 36-month period. As for Charter and Planning, the Manager of Freighter Operations agrees that his staff have been adequately trained as he elaborated:

"As part of ISO 9000 requirements, we have a minimum requirement of 2 days training a year. We've fulfilled that every year. I sent my staff for various courses that are related to charter operation like doing calculation of weight and balance for air craft, dangerous goods, and airfreight skill."

As for Operations Support, the Senior Manager said that his staff are also adequately trained and records of training are properly maintained. In giving an example he said:

"For example, trucks driver or handler they went for industrial safety training, Factories & Machinery Act training, and human factors training to name a few. These training are compulsory to comply with regulation."

According to the Human Resource Manager, once the staff completed this training programme, he or she should be competent to execute those safety and quality duties and functions which he/she is assigned to, knowledgeable about human factors/human performance as related to safety and quality duties, and be aware of the current status of compliance with all mandatory regulatory requirements. For specific airlines business or industry courses such as Dangerous Goods Regulations and Awareness training, the company will go to IATA and for quality related courses to external providers like SIRIM.

She adds that for functional training like basic cargo and airfreight skill, weight and balance skill, and effective supervisory skill, normally it is conducted in-house by PM Academy. PM Academy has its own instructors to run the modules. The Operation Manual states that training is imparted through meetings, briefings or courses conducted by operational areas, PM Academy, Cargo Operations management or approved external training provider. Apart from that, departments also appoint their own people as trainers. There are also an on-the-job training,

classroom and site training going on and annual training calendar for staff according to the Senior Manager, Information Technology. Staff Yearly Training Plan and Training Attendance Record is compiled and kept by the Human Resource Department. On the adequacy of staff training, the response received from the Management Representative is a bit different:

"If you asked me to rate from 1-5 scale on whether staff are adequately trained to do their job effectively, I would give it a 3. There's a need for more training."

His view is supported by the General Manager, Sales and Business Development through the following statement:

"Training is never enough. Airfreight industry is a very dynamic world. For example, Boeing comes up with the latest technology and since we are using their aircraft, we have to retrain people. Our client like DHL is sometimes bigger than us. They are very advanced in their processes and in order to be at par with them, we must be as advanced. When new skills are required, we sent our people to IATA."

Apart from the specific training mentioned above, other training undergone by both management and staff is Awareness and Introduction to ISO 9000. According to the Document Controller, staff also attended the ISO 9000 Documentation training.

Based on the results of the interviews, training needs analysis has not been done by the Human Resources Department (HRD) as training was previously not under the department's jurisdiction. However, the HR Manager said that with the current structure, training is under HRD and the training needs analysis will be conducted from now on. Figure 5.5 shows the steps for training needs analysis that will be carried out according to the HR Manager.

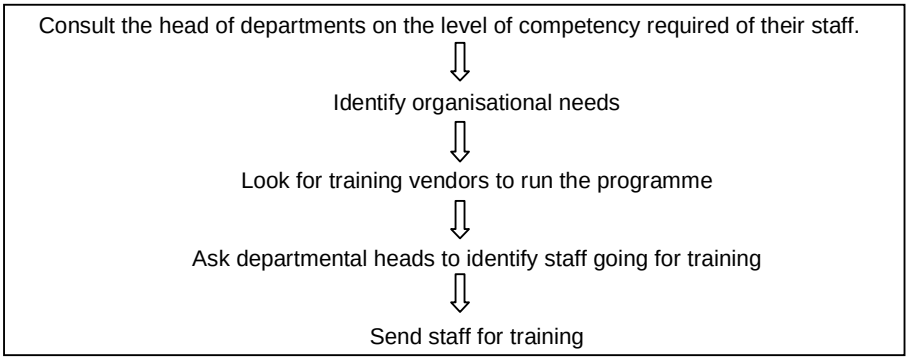

Figure 5.5: Steps in identification of training needs of Company A

She added that training needs analysis will be done periodically and to enhance staff knowledge in quality, one of the training that is compulsory to the staff is the awareness of ISO 9000 training. She further explained:

"Our target audience is the graded staff, the supervisory and clerical level. We target them because they are the real players on the operations floor who are doing the work. We have to instill in them that having a proper and established procedures, we can't make mistake because every tasks count. You cannot just skip it."

According to her, the Head of Department is responsible to perform training need analysis and reviews to ensure effectiveness and currency of the course programme.

Based on the interviews, to make the most of its resources and cut cost, Company A trained its employees to be multi-skilled through cross functional training by placing them for a certain period of time in different units to perform different kinds of job. Apart from being flexible, employees are trained to be multi-skilled to prepare them for promotion or succession planning.

In terms of technology, Company A engages in the up-to-date information system, the *i-cargo* to improve its business operation in order to provide better service to customers. Advanced notification by the customers helps in scheduling scarce and capital intensive resource such as the airplanes for charter services. Company A plan its resources based on its strategic plan which is reviewed yearly. Resource planning is quite straight forward as the company's core service is cargo transportation. However, due to fluctuating in demand (because of fuel price increase or seasons), managing the resources to the optimum may be difficult for Company A. The business environment of Company A can at times be quite volatile and this can present a challenge to managers in terms of scheduling service delivery.

5.2.8.4 Product Realisation - Clause 7

The product realisation involves the product realisation process which includes identifying customer requirements, reviewing product requirements, communicating with customers, designing and developing products, purchasing,

producing and delivering services, and controlling measurement and monitoring devices.

According to the Managing Director, the service planning of Company A is based upon its parent. Company A will then develop its own strategic plan to achieve the overall target sets by the parent company. The Revenue Management General Manager said that freight forwarders will request for cargo airfreight service by telephone, fax or filling the Cargo Commodity Network form online. The information pertaining to the request such as the requirements of the service is processed and reviewed by a system used by Company A to process a request or order. Confirmation of order is issued by the department once everything is agreeable to both parties. The relevant units are informed in preparation for service delivery to the customers. As for customer airlines where Company A acts as a ground handler, Service Level Agreement (SLA) is drawn up and signed by both parties before the company carries out the service required by the customers. In order to communicate about product information and enquiries, Company A has an online website. To get feedback from customers, Company A carried out Customer Satisfaction Survey. Customers also can give their feedback through complaints. The service realisation process flow chart of Company A (KLIA) is shown as Figure 5.6.

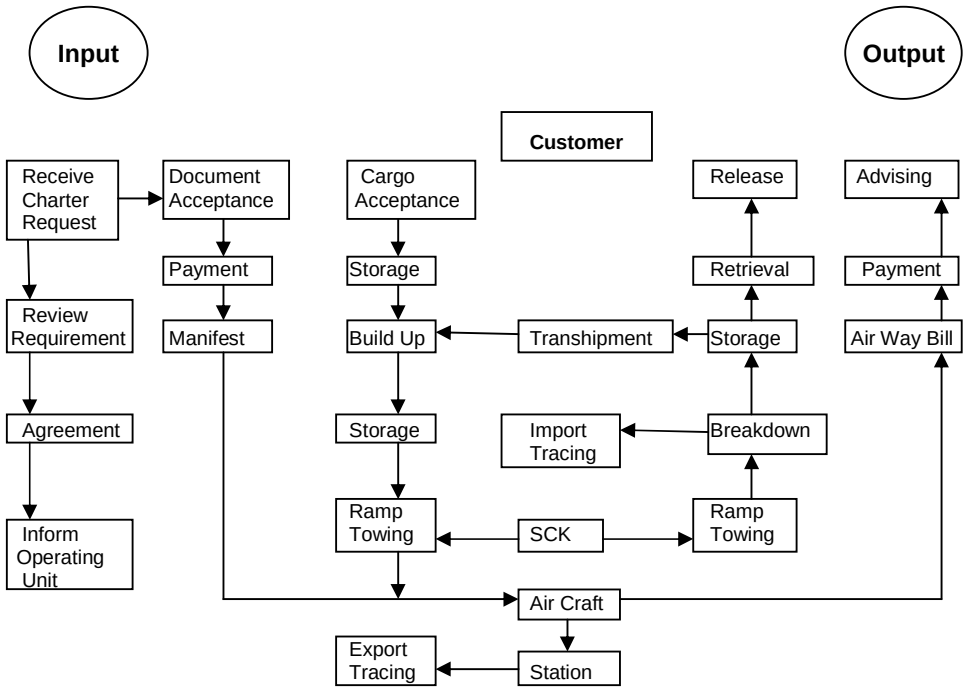

Figure 5.6: Service realisation process – Company A (Source: Extract from Company A's Quality Manual)

Looking at the service realisation process flowchart, service realisation at Company A appears to be clear, structured and standardised.

5.2.8.5 Measurement, Analysis and Improvement - Clause 8

The clause requires the organisation to plan and implement the monitoring, measurement, analysis and improvement processes needed:

a. To demonstrate conformity of the product
b. To ensure conformity of the quality management system, and
c. To continually improve the effectiveness of the quality management system

Measurement of Performance

Currently, Company A collects, measures and analyses data related to its system and operations' performance, employees' performance, customers e.g. satisfaction and complaints, and evaluation of its suppliers. To monitor and measure customer perception, Company A carried out Customer Satisfaction Surveys.

System and Operations' Performance Measurement

According to the Head of Cargo Operations, Company A has developed quality objectives for their key businesses such as cargo operations and charter and planning. Under cargo operations, objectives are set for general management, quality assurance, export, import, ramp, operations support, commercial support, and charter services. Each of these objectives is assigned a measure, target, measurement frequency and responsibility. To ensure these quality objectives are met, performance standards are developed in areas that will support the achievement of quality objectives and critical to quality of service being delivered. Performance standards are developed for export, import, transfer, document, empty ULD (Unit Load Device) release to shippers, claim, response, and mishandling rate. Examples of these performance standards are shown in Table 5.5.

The Document Controller says that quality objectives of each unit are monitored using the Key Result Area on a monthly basis. KRA is based on the Operations Performance Standards identified earlier by each unit in Operations. Each unit will prepare their monthly report and if objective(s) is not met, corrective action

request (CAR) is initiated. The achievement or non-achievement of quality objectives is discussed and reviewed by management in the Management Review meeting. The status, actions to be taken and outcomes of the meeting are recorded in the Management Review Meeting Minutes.

Area: General/Management				
No.	Measurement	Target	Measurement Frequency	Responsibility
1.	Improvement project	Minimum 2 projects per unit per year.	Half yearly	All cargo operations manager
Area: Quality Assurance				
No.	Measurement	Target	Measurement Frequency	Responsibility
2.	a. Zero occurrence in usage of obsolete documents	100%	Per internal audit	Quality Assurance Manager
	b. Zero outstanding NCR in Management Review Meeting	100%	Per Management Review Meeting	Quality Assurance Manager
Area: Export				
No.	Measurement	Target	Measurement Frequency	Responsibility
3.	a. Total shipment uplift against confirm booking (avoidable factors)	99.5%	Monthly	Export Manager
	b. Mishandled shipment	0.1%	Monthly	Export Manager
Area: Import				
No.	Measurement	Target	Measurement Frequency	Responsibility
4.	a(i). Breakdown – Ready for collection within 4 hours ATA (passenger flight) a(ii). Breakdown – Ready for collection within 4 hours ATA (freighter flight)	100% 99%	Monthly Monthly	Import Manager Import Manager
	b(i). Release – Import release -45 minutes truck tour (0900-1100 hrs) b(ii). Release – Import release – 45 minutes truck tour (1100-0859 hrs)	98% 100%	Monthly Monthly	Import Manager Import Manager
	c. Breakdown & release – Mishandled shipment	0.05%	Monthly	Import Manager
5.	a. Transhipment – SCK-Mishandled shipment	0.05%	Monthly	Import Manager
	b. Transhipment – QTC-Mishandled shipment	0.03%	Monthly	Import Manager
	c. Transhipment – NTC-Mishandled shipment	0.1%	Monthly	Import Manager
6.	a. Perishable – document (error in data entry (AWB)	0%	Monthly	Import Manager
	b. Perishable – export (mishandled shipment)	0%	Monthly	Import Manager
Area: Ramp				
No.	Measurement	Target	Measurement Frequency	Responsibility
7.	a(i). Ramp - Update Q35 for flight >2 hours	100%	Monthly	Ramp, Airside & ULD

	a(ii). Ramp - Update Q35 within 90 minutes ATD	90%	Monthly	Manager Ramp, Airside & ULD Manager
	b(i).Ramp – Outbound cargo to be ready at bay (passenger flight:90 mins STD b(ii) Ramp – Outbound cargo to be ready at bay (freighter flight:120 mins STD c(i). Ramp – Inbound cargo to reach warehouse within 60 mins ATA (passenger flight) c(ii) Ramp - Inbound cargo to reach warehouse within 60 mins ATA (freighter flight)	100% 100% 100% 99%	Monthly Monthly Monthly Monthly	Ramp, Airside & ULD Manager Ramp, Airside & ULD Manager Ramp, Airside & ULD Manager Ramp, Airside & ULD Manager
8.	ULD – release to agent<30 mins after request	100%	Monthly	Ramp, Airside & ULD Manager
Area: Operations support				
No.	Measurement	Target	Measurement Frequency	Responsibility
9.	Maintenance; ground support equipment total downtime	1.5%	Monthly	Senior Manager, Operations Support
10.	Cargo system; sustem operation total downtime	5%	Monthly	Senior Manager, Operations Support
11.	Admin; to refund application within 2 weeks	98%	Monthly	Manager, Operations Support & Admin.
12.	Claims; to respond to claims letter within 10 days claims letter received.	98%	Monthly	Manager, Operations Support & Admin
Area: Commercial support				
No.	Measurement	Target	Measurement Frequency	Responsibility
13.	a. CPO – Document; error in data entry (AWB) b. CPO – Export; mishandled shipment	0% 0%	Monthly Monthly	Commercial Support Manager Commercial Support Manager
14.	AVI – Export; mishandled shipment	0%	Monthly	Commercial Support Manager
15.	a. EHU - Document; error in data entry (AWB) b. EHU – Export;	0% 0.05%	Monthly Monthly	Commercial Support Manager

	mishandled shipment c. EHU – Import; ready for collection within 90 minutes ATA	100%	Monthly	Commercial Support Manager Commercial Support Manager
Area: Charter & Planning				
No.	Measurement	Target	Measurement Frequency	Responsibility
16.	Improvement project	Minimum 2 projects per unit per year	Half yearly	Sales Planning & Charter Manager
17.	a. Charter services - Customer satisfaction survey b. Vendor performance c. Customer retention (for F1, MOTOGP & Superbike)	Rating>85% 100% on time departure 100%	Annually Annually Half yearly	Sales Planning & Charter Manager Sales Planning & Charter Manager Sales Planning & Charter Manager

Table 5.5: Operations performance standards - Company A (KLIA).

Vendor/Supplier Evaluation

Company A has more than 20 registered main vendors. There are two types of vendors in Company A; internal and external. Internal vendors are appointed by the parent company. All subsidiaries are compelled to utilise the services. On the other hand, external vendors are appointed by Company A. Daily operation meeting is held by Company A with the external vendors and Corrective Action Request (CAR) is used as a mode of communications between both parties in the event of any non-conformance.

External vendors are evaluated once every 4 month but their performance is monitored and recorded every month using form QAD/QP07/F01/05 and for Planning & Charter unit form QAD/QP07/F03/02 is used. Periodically operations meeting chaired by Head of Cargo Operations will be conducted by both parties to review vendor's performance and any contractual issues pertaining to quality. Vendors are evaluated on quality, service performance, and response time for complaints. Based on these three areas, an overall performance is then indicated as acceptable, require monitoring, or not acceptable.

Customer Satisfaction Survey

Customer satisfaction survey is conducted once in every two years by a consultant firm to evaluate and monitor Company A performance as to ensure

mutually beneficial long term customer relationship with their forwarding agents and customer airlines. Areas that are measured are overall quality, customer satisfaction level, overall value for money for services provided, overall pricing, customer loyalty, cargo handling, personnel, loading services, irregularities handling, routes, reservation enquiry system, and security. For Charter and Planning, after each charter flight an evaluation form was distributed to the customers. The monitoring concentrates on the percentage of on-time performance.

Based on the results of 2007 customer satisfaction survey on 82 forwarding agents and 25 customer airlines, overall performance of Company A has improved for both forwarding agents and customer airlines with most areas of evaluation registering significant improvements from 2005. Comparing the two customer segments, forwarding agents have a better overall experience with Company A almost on every aspect than customer airlines. When asked about whether customers are satisfied with Company A's service, most of the respondents give an affirmative answer. The MD and the Operations Manager (OM) answered respectively:

"Yes, quite a number are satisfied but of course some would not be satisfied."

"Most of them are satisfied with our service."

The responses given by both the MD and OM are realistic as it is difficult to please all customers. However, customer satisfaction has increased as shown by the Customer Satisfaction Survey report and as stated by the Management Representative:

"*Yes, they are satisfied. The results show there's improvement from previous years. Yes, customer satisfaction has been increasing for the past 3 years."*

Although customer satisfaction has increased, there is still room for improvement as put by the General Manager for Sales & Business Development:

"Yes, but there are areas for improvement. For example, previously my sales team did not visit customers at all. They make calls but the customer wants face-to-face interaction."

Apart from customer wanting to talk face-to-face to salespeople, communication seems to be another issue that affects customer satisfaction. This can be seen from the statement given by the Head of Cargo Operations:

"I would like to think they are and I would like also for them to know that if they have any issues, it's easily solvable. It's just a matter of communication. They will have to tell us the nature of problems and issues they have with us. It's a matter of communicating and resolving the matter together."

Customer Complaints

According to Senior Manager, Operations Commercial, back in 2000, the company has about 100 complaints per day and the amount of claim compensation paid was RM7-8 million per annum. After a new management took over in 2002, it became better resulting in the closing down of customer complaints department. Instead a new unit, Customer Care, has been set up to manage customer complaints. On the reason of the closure and how the company proactively manages its customers, the MD of Company A said:

"Customer complaints department was closed down 4 or 5 years ago because customer complaints have reduced. What we do for key customers (they contribute to 60% of total revenue of KLIA) is we have regular meetings with them. We don't wait for problem to happen and for them to complain. So we arranged meetings with them once every two weeks or once a month. If there's a problem, we meet every week. We work as partners. They have the opportunity to voice their problems with us and we also tell them our problems with them."

From the above statement, it could be said that Company A applies a proactive approach in dealing with its key customers by sharing problems through regular meeting and treating its customers as partners.

To Company A, handling complaints by key customers which represent the bulk of its business is of primary importance compared to other customers as explained by the Senior Manager, Operations Line Station:

"Our major objective is to satisfy our major customers that contribute 60-70% of our business. We make sure they are taken care of. Some of the complaints come from small agents and the nature of complaints is very minor but they can be very demanding.

Sometimes their complaints can be quite unreasonable. This will be taken care of on a different basis."

According to Senior Manager, Operations Commercial, after obtaining ISO 9000 certification in 2004, customer complaints had dropped to 1-2 a day and the amount of claim compensation is now less than RM0.5 million as reflected by Table 5.6.

On the types of complaints received, the Senior Manager, Operations Line Station and the Freighter Operations Manager said:

"We have missing, damages, mishandling types of complaints."

"Type of complaint like delayed flight which can be due to weather condition, air traffic controller (ATC), and ground handling management for examples".

In terms of how long it takes to handle the complaints, the Senior Manager, Operations Line Station continued:

"In general, we dealt with complaints within a day of receiving them. We don't have a specific procedure for customer complaints but it's more on claims and customer complaints are limited to it."

When it receives a complaint, the Freighter Operations Manager elaborated on how he handles it:

"When we received complaints, we try to find the root cause of the problem. Sometimes, if the root cause is beyond our control like the weather and ATC (air traffic control), there's nothing much we can do. But if it's due to ground handling or technical reasons we'll take up the issues with the respective departments and ask them what they are going to do to correct and prevent the problem from happening again. So far, we don't receive many complaints."

Based on the interviews, Company A normally receives feedback or complaints from agents or freight forwarders and also from individual customers. There are several ways customers can channel their feedback such as:

a. Individual unit or department. Customer complaints are handled by each unit providing the service. For example, once customer complaints are

received, respective unit will trace the error or mistake according to tracing procedure EXP/QP02. Root-cause analysis is conducted to identify the reason for the mistake that had occurred and the problem is then resolved.

b. Evaluation Form. In Charter & Planning Unit, a Customer Survey Form is given to customer after each charter service has been delivered. This form is used to assess customer's satisfaction/dissatisfaction with the service and also to take action to improve the service.

c. Monthly meeting (for major customers).

d. Customer Care Unit. A customer feedback/complaints unit known as the Customer Care Unit, is being set up to handle and manage customer feedback.

e. Survey. Customer Satisfaction Survey is conducted once in every two years.

Based on customer feedback/complaints report, types of written complaints received for the year 2005, 2006 and 2007 are shown by Table 5.6.

Year/Type of complaints	2005	2006	2007 (until October)
Offloaded cargo	98 (42.06%)	179 (48.25%)	127 (54.98%)
Damaged cargo	23 (10.00%)	91 (24.53%)	34 (14.7%)
Missing cargo	40 (17.17%)	51 (21.89%)	20 (8.66%)
Delayed cargo	13 (5.57%)	16 (4.31%)	23 (9.96%)
Undelivered/Non delivery /wrongly delivered cargo		4 (1.08%)	
Delayed flight/Retime	9 (3.86%)	4 (1.08%)	2 (0.086%)
Dangerous cargo	5 (2.15%)	3 (0.8%)	
Booking not confirmed		3 (0.8%)	
Filing claims	3 (1.29%)		6 (2.6%)
Mishandled cargo		3 (0.8%)	
Missing Air waybill	1 (0.43%)	2 (0.54%)	1 (0.043%)
Aircraft downgraded		1 (0.27%)	2 (0.086%)
Other	41 (17.60%)	14 (3.77%)	16 (6.93%)
TOTAL	233	371	*231+9 (nov) + 23(dec) = 263

Table 5.6: Type of complaints received by Company A for 2005-2007

*Type of complaints for November and December 2007 cannot be ascertained as it has not been classified by the person in charge at the time of issue.

Based on the 3 years average percentage, it can be seen that for the past 3 years, customers complained most about offloaded cargo (48.43%). According to the Head of Cargo Operations, some of the reasons cargo is offloaded are due to excess baggage, fuel weight, size and dimension of cargo, overbooking, and space limitation. Some of these reasons are not within Company A's control; e.g. size of cargo which is wrongly stated by customers.

The second type of complaint from customers is damaged cargo (16.41%). The Head of Cargo explains that cargo is damaged due to several reasons such as improper packing, overstuffed cargo, insufficient/over inner padding, weather and rough handling.

The third type of complaint is missing cargo (15.91%). Missing cargo happened when cargo is not received due to cannot be located, not found, and left behind.

The fourth is delayed cargo (6.61%) which can be attributed to factors such as delayed flights, insufficient amount sent, and offloaded cargo. The 4 types of customer complaints account for 87.36% of total complaints received for the past 3 years.

Corrective actions are taken by the relevant unit after they have been briefed or informed during the daily operations meeting which are held at 9-10 am everyday or through the e-mail. According to the parent company standard, complaints must be acknowledged within 2 days and replied to within 7 days. There is a procedure for cargo claims and loss prevention (CLP/QP01) and also cargo refund process (ADM/QP01) to address customer grievances such as cargo damage.

When asked whether service recovery is important to the company, the management representative said that service recovery is important and the company has a service recovery unit whose main duty is to sort complaints or queries when they come in within 24 hours. The recovery team consists of 12 people from Operations and Line Stations.

Internal Quality Audit

According to the Manager for Quality Assurance & Line Station, he is responsible for developing an audit programme that encompasses all areas of the Operations Department and third party organisations that affect operational safety, security and quality. He explains the internal audits are conducted twice a year by approved qualified internal auditors to verify that all activities and procedures are in compliance with regulatory bodies, customers and/or company/corporate requirements. The scope or area audited are the cargo ground handling and warehouse operations in ACC and planning and chartering Malaysia Airlines Aircraft for transportation of cargo. He says audit plans, audit reports and

responses are documented for a period of 2 years after the clearance of the finding.

Internal Audit Findings

Based on the internal audit findings report, most of the non-conformances found were related to:

a. Control of documents where in some instances documents were found not updated (clause 4.2.3)
b. Control of records e.g. records not filled completely, cannot be retrieved or not updated (clause 4.2.4).
c. Control of production and service provision e.g. improper storage of cargo or cold room temperature not consistent (clause 7.5.1)
d. Corrective action e.g. corrective action request was not monitored and corrective action not effectively carried out (clause 8.5.2)
e. Control of nonconforming product (clause 8.3).

The details of the internal audit findings and non-conformances are as follows:

Year/ISO Clause		2004	2005	2006	2007	Total
4	**Quality Management System**					
4.2.1	General Requirement		1			1
4.2.3	Control of Documents	2	10	13	5	30
4.2.4	Control of Records	3	5	6	9	23
5	**Management Responsibility**					
5.1	Management Commitment	1				1
5.4.1	Quality Objective			1		1
5.5.1	Responsibility & Authority			3		3
5.6	Management Review					
5.6.1	General	1				1
5.6.3	Review Output	1				1
6	**Resource Management**					
6.1	Provision of Resources				1	1
6.2.2	Competence, awareness & training	1	1	2		4
6.3	Infrastructure		1			1
7	**Product Realisation**					
7.1	Planning of Product Realisation	1		1		2
7.4.1	Purchasing Process			1		1
7.5.1	Control of Production & Service Provision		2	3	2	7
7.5.2	Validation of Processes for Production & Service Provision				1	1
7.6	Control of Monitoring & Measuring Devices			2		2
8	**Measurement, analysis and improvement**					
8.2.2	Internal Audit	1				1
8.2.3	Monitoring & measurement of processes			1		1
8.2.4	Monitoring & measuring of product		2	1		3
8.3	Control of nonconforming		2	3	1	6

	product					
8.5.2	Corrective action	1	1	3	5	10
	TOTAL	**12**	**25**	**40**	**24**	**101**

Table 5.7a: Summary of internal audit findings for the year 2004-2007

According to the Document Controller, due to high number of non-conformances raised for control of documents (Clause 4.2.3) and control of records (Clause 4.2.4), the Quality Assurance Unit conducts ISO 9001 Internal Documentation training. Looking at the Non-Conformity record, all the non-conformances were duly dealt with and closed within a month's time.

For 2005 - April 2007 audits, the breakdown of non-conformances according to unit is shown by Table 5.7b. By looking at the table, it could be seen that for the past 3 years Export, Import, Cargo Maintenance, ULD Logistics, Transhipment, Express Handling, Perishable, Central Processing Office has the most non-conformances respectively. Compared to previous year (2006), while others have decreased in the number of non-conformances received and some units seem to have the same number of non-conformances in 2007, Perishable unit's non-conformances has increased substantially from 1 to 5 from the previous year. The same problem is being reported in the external audit report.

Unit	**No. of Non-conformances**			**Total**
	2005	**2006**	**2007**	
Export	3	4	3	10
Import	1	4	4	9
Cargo Maintenance	3	4	2	9
ULD Logistics	1	5	2	8
Transhipment	4	2	1	7
Express Handling	2	4	1	7
Perishable	0	1	5	6
Central Processing Office	1	5	0	6
Planning & Charter	0	2	2	4
Ramp	3	0	1	4
Material Handling/Control Room	1	3	0	4
Administration	0	2	1	3
Claim	1	1	1	3
Training	1	1	0	2
Animal Hotel	1	1	0	2
Quality Assurance	1	1	0	2
TOTAL	**23**	**40**	**23**	**86**

Table 5.7b: Summary of internal audit findings for the year 2005 - 2007 according to unit.

External Audit Findings

The external audit of Company A was carried out by a third party auditor. The audit findings for 2005-2007 are as follows:

Clause/Year	**2005**
Management Review	The management review was conducted as scheduled with the General Manager chairing the meeting and all respected heads attended except for Charter & Planning unit. Minutes did not indicate any decision/action on some non-achievement by the Charter & Planning Unit.
Internal audit system	Conduct of the internal quality audits was evident from the records sighted. Audits were plan and carried out accordingly by trained internal auditors.
Customer complaints	It is noted that the records of customer complaints were maintained. Evidence of review and corrective action taken were demonstrated during the audit.
Continual improvements	It is noted that the organisation has recently revised its plan to include a minimum of 2 projects per unit per year.
Useful comparison with previous audit results	Effective corrective action on previous audit findings.
No. of NCR	1 (minor)
Overall remarks	Based on the records and documents sighted during audit, it was noted that the organisation has demonstrated the maintenance of its quality system effectiveness. Commitment of management and support of all employees were key elements in the organisation's continuous improvement efforts.
Opportunity for improvement	8.5.2(b) Corrective action (determining the cause of non-conformities - Root cause analysis was not effectively done, it could be done in greater detail. 8.5.3 Preventive action - Potential non-conformities to be prevented could be more clearly specified to verify the effectiveness of preventive actions. 8.2.2 Internal audit - Some findings were wrongly identified in terms of the requirements of ISO 9001:2000. Planning of audit taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audit was not well demonstrated. Some corrective actions that were taken were actually corrections i.e. not to the effect of eliminating the causes of non-conformities recorded.
Clause/Year	**2006**
Management Review	Recording of decisions and actions resulting from reviews could be improved for verification from the records.
Customer complaints	Adequate complaints handling system noted.
Control of production and service provision	Service provision at the perishable centre was not under controlled condition. Perishable staff failed to monitor on temperature reading and overlooked to cross checked actual reading at cold room.
Monitoring and measuring of processes	Results of process measurement reported in the monthly report for EHU was inconsistent date used as a basis for the measurement. Newly appointed Unit Document Control staff wrongly calculates the quality objectives due to misunderstanding on the raw data sources where he takes the input from Daily Mishandling Report instead of the correct raw data from Import Release Performance Cargo.
Monitoring and measuring of Product	Signing off by relevant security personnel required for process number 7.0 in EHU/QP06 failed to be demonstrated. The root cause is the lack of understanding by security staff on the monitoring for the signing off process which is stated in Process Flow number 7.0.
No. of NCR	3 (minor)
Clause/Year	**2007**
Management Review	Management review could be used more effectively to ensure that the quality management system (QMS) is implemented in the manner intended.
Internal audit system	Planning of audit taking into consideration the status and importance of the process and areas to be audited, as well as the results of previous audit was not well demonstrated.
Customer complaints	Satisfactory complaints handling system generally consistent with the requirements of ISO 9001:2000.

Continual improvements	Evident through the use of audit findings, customer feedback and records of various meetings.
Useful comparison with previous audit results	Control of the quality management system processes audited and commitment continued to be demonstrated. However, some observations related to ISO 9001:2000 clause 8.2.2 (internal audit) and 8.5.3 (preventive action) were still valid.
No. of NCR	Nil
Overall remarks	Satisfactory overall documentation and implementation of the QMS consistent with ISO 9001:2000 in the areas audited. The expected outputs/results of trends of improving service conformance and continual improvement was evident at the certified sites. Planning, control and monitoring of the product realisation processes in the areas audited were satisfactory but the *measurement of some processes* was not effective. Awareness and understanding of some requirements specified in the organisation's QMS documentation and ISO 9001:2000 could be improved.

Table 5.7c: External audit report of Company A for year 2005-2007

Based on the external audit findings from 2005 – 2007, it indicates several matters such as:

1. Management Review is not as effectively used to ensure the QMS is implemented as it should be especially in terms of its results (decisions and actions taken).
2. Planning of internal audit was not properly thought out.
3. Corrective action taken not effective.
4. Identification of potential non-conformities for preventive action not specified.
5. Lack of knowledge and understanding (internal auditors, new staff and security staff)
6. Lack of monitoring and supervision on service realisation process
7. Measurement of some processes was not effective.

Continual Improvement

In order to be ISO-certified, an organisation has to fulfill all the requirements of the standards. To maintain the certificate, an organisation has to be proactive in anticipating future problems and show its continual improvement efforts. Generally, the sources for corrective and preventive actions and improvement efforts of an organisation certified to ISO 9000 are the management review, customer satisfaction survey, customer complaints, internal audit report and external audit report.

According to the Head of Cargo Operations, processes and system are improved continuously at Company A to adapt to changes in market, market needs, and technology. Based on the interviews, according to the respondents, the areas that need to be improved are:

a. The Express Handling Unit and Animal Hotel. The company must fulfil all its service level agreement (SLA) with its customer as this will be the key.
b. Export; because it received a lot of complaints from customers.
c. The quality objectives.
d. Mostly on the documentation such as old forms being used.
e. The measurement of quality objectives
f. Corrective action

Currently, the company has carried out several continuous improvement initiatives. Thus far, some of the improvement projects that have been carried out are to improve the skill of employees in problem solving and corrective and preventive action analysis, modification, simplification and improvement of work processes, upgrading of system to minimise administration time, improvement of forms and documentation, and also upgrading of vendor monitoring device and system. Detailed examples of the improvement projects for the year 2007 carried out by Company A in order to maintain its ISO 9000 is shown by Table 5.8.

Unit	Project	Status (May-Oct)
Quality Assurance	1. Coordinate C-Solution Team (ICC) to achieve Gold Award in Regional Convention 2007.	Completed
	2. Coordinate training for 'The Effectiveness of Problem Solving Skill, Corrective and Preventive Action Analysis.	Pending
	3. Conduct Internal ISO 9001 Awareness & Documentation Training.	Completed
Transshipment	4. Avoid wrong uplift of SCK Cargo due to early staging at bay.	Completed
	5. Monitoring electronic shipment ; AMD/CAP/INTEL/OSRAM/SPANSION by staff.	Completed
Export	6. Back end containers to gain an additional uplift of consignment on Reservation offer released.	Ongoing
	7. Volume auditing for cargo submission at Acceptance Truck Dock. Audit was carried out by Acceptance Officer in order to eliminate revenue leakage.	Ongoing
Central Processing Office (CPO)	8. Collection of export payment at "CAR Creation Counter".	Completed
	9. Merging of "MH & FOCA" Load Control	Pending – on trial
Unit Load Devices	10. Modified Dolly for X-Ray machine.	Completed
	11. Special tray for new van to allocate the brownlines, single rings, double stud rings, PMking tape, spreader and wood.	In progress
	12. Send all incoming 20 feet pallets to ULD workshop for inspection to avoid difficulty in loading.	
	13. All MYI to be fixed with Company A label printed as "**COMPANY A PROPERTY KUL**"	

Unit	Project	Status (May-Oct)
Charter	14. Standardize & simplify the Charter Agreement as to minimize the time spent on contractual issues.	Completed
	15. Further improvement on the Charter Costing Sheet so it contain more details and is user-friendly.	Pending
Admin	16. Reduce the number of refund request.	Completed
	17. Uniform Indent using server.	Completed
Claims	18. Implementation of Imdemnity Form for SLAC shipments ex PVG effective March 2007.	Completed
	19. Introduction of Cargo Claims module on Power Point for Claims Training	Completed
Maintenance	20. To convert all first class/service LD3 to light weight.	Completed
System	21. Reinstatement of CF01 at first floor.	Completed
	22. Refurbishment of ETV wheel.	Completed
Import	23. Monitoring vendor activity and performance by CCTV.	
	24. Minimize usage of forklift at Breakdown by maximizing usage of BOXA during breakdown.	
Ramp Inbound	25. Assigned vendor (Gemilang Tech.) staff to closely monitor all inbound cargo at PAX terminal.	
Animal Hotel	26. To expand Animal Hotel business, selling pet food and cages.	
	27. To install portable CCTV cameras in individual pet kennels and warehouse area.	
Perishable	28. Awning TF06 is defective to machine and movement activities will stop if it rains heavily.	
	29. Upgrading current cold room facilities.	
Express Handling Unit	30. In house staff training for handling.	
	31. Implement i-secure handling	
	32. Install additional weighing scale.	

Table 5.8: Improvement projects for 2007

For Company A, since the implementation of the QMS four years ago, there are many improvements carried out in order to maintain the ISO 9000 certificate and sustain the QMS. The company makes it a policy for every unit to come up with two improvement projects per year. When asked about the improvements that have been made as a result of implementing the QMS, the MD of Company A gave the following answers:

"There is improvement of processes and raising the bar of performance."

According to the General Manager, Revenue Management, this improvement and changes of processes are carried out to suit changing market and market needs.

With regards to the improvement of processes, how and in what areas improvements are made can be seen by the following statements:

"We have managed to simplify and reduce the number of activities in some of the processes. Standard operating procedures (SOP) are constantly updated." - General Manager, Sales & Business Development.

"Processes are documented. Tracing of errors are easier. Customer complaints decreased from 30 to 2-3 per day." - Head of Cargo Operations.

The Management Representative said that the biggest improvement made is on tracing:

"*The biggest improvement is on tracing. Previously, we'll have problem if we want to trace a process and it will take a long time to do so."*

Other improvements that can be observed are:

"Improvement on internal training is achieved as the result of internal audit. Second, on simplifying import delivery performance. Previously it took 4 hours to retrieve cargo from flight touch down until release. Through asking key agents to pre-alert us on the shipment, we can now release the shipment within 2.5 hours."- Management Representative & QA Unit.

"On the operation side, cargo mishandling rate has come down from 0.2% to 0.06%." - General Manager, Finance

"The process flow is smoother and process time has improved. This leads to reduced delivery time. Maintenance cost has also decreased." - Senior Manager, Corporate Communications.

"What is very significant is ISO QMS certification enables us to minimise work errors. Service standard has improved a lot. For instance, standard time to process transhipment cargo has been reduced. It's faster now. A lot of improvement can be seen in Cargo Operations." - Manager, Human Resource.

"Back in 2000, we have about 100 complaints per day and we paid claim compensation of RM7-8 million per annum. After we got our ISO 9000 certification in 2004, customer

complaints dropped to 1-2 a day and the amount of claim compensation is now less than RM0.5 million." - Senior Manager, Operations Commercial.

"The number of charter flights has doubled from the previous year. In year 2007, we operated about 20 charter flights compared to 2006 where we operated 10 charter flights." - Operations Manager, Freighter Operations.

Based on the responses given by the respondents, since implementing the ISO 9000, Company A has carried out several improvements in its effort to maintain the certification as shown by Table 5.9.

Improvement	
Area	**Result**
Processes • Simplify the process by reducing the number of activities in the process • Processes are documented • Processes are changed to suit the market • Simplify import delivery performance by asking key agents to pre-alert shipment • Processes are standardised	• Easier tracing of work errors • Shorter time taken to trace a process • Immediate recording and detection of discrepancies and damages at cargo warehouse • Shorter delivery and release time for shipment • Smoother process flow • Improved process time • Decreased maintenance cost • Reduced cargo mishandling rate • Reduced number of customer complaints • Increased in service standard • Reduced standard time to process transhipment cargo • Lower claim compensation • Increased awareness in people about the process and service standard • Increased transparency on process and service standard • Improved service standard
Documentation • Standard operating procedures are constantly updated • Online document control system to control document	• Improved customers' trust and confidence in the company • People are more responsible and accountable for their work • Help to track and monitor performance • Trigger corrective and preventive action • Staff are more aware of policy and procedures • Change of staff attitude • Transparency in doing business • People work in accordance with the procedures • Improved work organisation
System • Daily meeting and post-mortem • Online document system • Online booking • Internal training	• People become more proactive in tackling problems • Easier to control document • Wider access to trace and track processes • Reduced cycle time for change of document • Better housekeeping • Customer Services department has been closed • Checking of booking through online electronic computer bookings.

Table 5.9: Improvements resulted from ISO 9000 maintenance

According to the MD, people are convinced ISO is a good thing and as a result, they want to do more and more. Apart from the above improvements, other positive changes brought by the implementation and maintenance of the ISO 9000 are shown by the following statement:

"Attitude of staff from top to bottom has changed for the better; they become very committed. All ranks and levels are involved" – General Manager, Revenue Management.

This change of attitude in people is due to an increase in people's awareness of the process as it has become standardised as explained by the General Manager of Finance:

"People are more aware of and talk more about the processes, service level and service standards which they are expected to deliver. It has become more transparent and visible to them. With ISO 9000, processes have become standardised."

At the same time, people are also becoming more sophisticated in terms of technology and this creates a shift in the mindset of the staff. This is expressed by the Senior Manager, Information Technology when he says:

"*They are adapting to technology; from phone bookings to online, electronic, computer bookings*."

As for the online document system, according to the MR, the acceptance of people is very impressive in which they use the system to upgrade their unit and as a result the morale of the staff has improved.

It could be concluded that for Company A, some positive changes have resulted because of the improvements carried out on the processes, documentation, and system in maintaining the ISO 9000. People want to contribute and become proactive; they are committed and involved and their morale has improved. They become more aware and knowledgeable about the processes and their roles in delivering the service. In terms of technology, they also become more sophisticated. Figure 5.7 shows the transformation resulting from ISO 9000 maintenance.

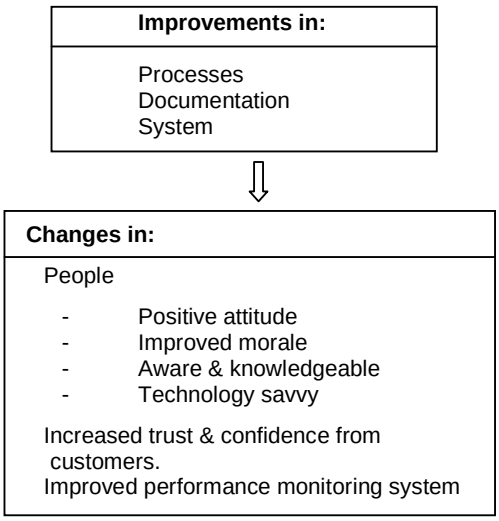

Figure 5.7: Improvements and changes due to ISO 9000 maintenance

Practices and Tools Used for Quality Improvement

The respondents were asked on the tools and practices used by the company for quality improvement. These practices and tools have helped Company A to enhance the improvements carried out towards a more effective quality management system. Table 5.10 summarises the practices and tools adopted by Company A and its purpose for quality improvement.

Management Practices	Purpose of Use
ISO 14001: Environmental Management System	To manage environment.
ISO 18001: Occupational Health & Safety System	To manage health and safety.
Six Sigma	To help reduce errors in operations.
Quality Control Circles	To resolve issues identified by staff to improve work.
Performance Measurement System (PMS)	To measure and monitor staff performance
Key Performance Indicators (KPIs)	To measure and monitor key areas.
Industry benchmarking on productivity	To compare against others in the same industry.
Computer Services Request Improvement team	To evaluate internal and external customers needs including vendors.
Project teams	Handling of valuables. Shorten shipment time.
Laboratory projects	To create initiatives that will give value to services.
Improvement projects	To compete in ICC Convention every year.
Industry benchmarking on Key Performance Indicators (KPIs)	To compare company's performance against others in the same industry.
Plan-Do-Check-Act (PDCA) cycle	General planning and monitoring of operations flow.
Brainstorming	To create ideas for improvement.
Revenue Management System	Computerised Revenue Management System to check bookings to maximize cargo load and avoid operations problem.
I-Cargo	Data warehouse for integrated information management system.

Management Practices	Purpose of Use
Root Cause Analysis	To identify the root cause of a problem.
Cost-Benefit-Analysis	To identify the feasibility of service and improvement.
Pareto Diagram	To prioritise problems.
Customer Satisfaction Survey	To measure customer satisfaction
Statistical Analysis & Tools (Regression, charts)	To improve, track and display process performance and trends.

Table 5.10: Management practices and tools for quality improvement

Corrective and Preventive Action

According to the Corrective Action procedure, corrective action can be initiated as a result of audit findings or when quality objective is not met and when the same nonconformity occurred repeatedly three (3) times within a month. The Corrective Action Request (CAR) is filled and relevant personnel where the non-conformity is detected will carry out the corrective action within the agreed time frame. The Head of Department then will determine the effectiveness of the corrective action taken to prevent recurrence. If it is effective, the CAR will be closed, if not a new CAR will be issued and the same process will take place until the CAR is closed.

According to the Quality Executive, corrective actions for all non-conformities raised by the external auditors shall be submitted to the Audit Team Leader within one month and evidence of implementation within three (3) months of the date of the external report. The Management Review Committee will decide whether preventive action should be initiated after looking at the analysis from sources such as:

a. internal and external quality audit results
b. corrective action request
c. service non-conformities
d. customer complaint
e. other information from the industry.

According to the Preventive Action Procedure QAD/QP06, preventive action is initiated to eliminate potential causes of non-conformities to prevent occurrence of service non-conformities. The Head of Department/Manager will raise the Preventive Action Request Form and take appropriate actions.

Based on document review, corrective and preventive actions were carried out at Company A. However, the Document Controller says that there are still areas for

improvement especially when it comes to initiating corrective actions when the quality objectives were not met and in some instances, corrective actions were not effectively carried out.

As a conclusion, Company A has its own performance measurement to ensure the achievement of its quality objectives and to asses its vendors. The customer satisfaction survey conducted by Company A provides the company with opportunities to improve its service. Company A has regular two-way communication with its main customers to discuss matters related to the quality of service provided by the company. Based on the internal audit results, areas that non-conformances were raised were in control of documents, control of records, control of production and service provision, corrective action and control of non-conforming product. This shows the lack of both document and operation control. As for corrective and preventive actions, Company A carried out its corrective and preventive actions but sometimes they were ineffective. People seemed reluctant to initiate a corrective action request (CAR) even when the quality objective was not met.

In the process of maintaining the ISO 9000 Company A had carried out a lot of improvements on its processes, documents and system. The company has used a lot of practices and tools to support its quality improvement efforts. In terms of technology, Company A is moving towards an online computerised system in its core activities and documentation. The company is also profitable for the past years since the implementation of ISO 9000 (Refer to Table 5.11).

Year	**2004**	**2005**	**2006**	**2007**
Profit	RM 224,400,000	RM 67,500,000	RM 179,500,000	RM 136,000,000

Table 5.11: Profit before tax for Company A (Source: Company A's Finance Department).

Other major change brought about by the improvements of its quality system is that the Company A has managed to transform its people for the better in terms of attitude and awareness to the ISO. People's mindsets have changed and they are more open and receptive to new ways of doing things. They have become more responsible and accountable for their work. Employees are more aware of policy and procedures.

5.2.9 Human resource aspect in ISO 9000 Maintenance

In this section, the human resource aspects to maintaining a QMS is presented. This section explores the respondents' views on employee involvement, empowerment, teamwork, employee performance measurement and reward system in Company A.

5.2.9.1 Employee Involvement and Participation in ISO 9000 Maintenance.

A question was asked to the respondents whether employees are involved and participated in maintaining the QMS. The following are their responses.

Respondent	Yes/No
Top Management	Yes
Middle Management	Yes
Management Representative and QA Unit	Yes
Operations Manager	Yes

Table 5.12: Responses on employee involvement and participation

Based on the findings, all the respondents agree that employees are involved and participated in the maintenance of ISO 9000 QMS at Company A. One of the top managers says that employees are involved and participated because they know that they will be rewarded for good performance. While most respondents think that employees involvement are voluntary, one of the middle managers feels that employees are forced to be involved and to take part, otherwise they will have to leave the company. This is clearly indicated by the following statement:

"They are forced to get the performance level at the peak. It's do or go."

The Management Representative presents a supporting picture in describing employees as an obedient lot by doing what were asked of them. One of the QA executives said that employees' involvement and participation were spurred because of every unit has their own quality objectives and if any of these quality objectives is not met, corrective action request (CAR) has to be raised and corrective action needs to be taken. In short, having the ISO 9000 quality system encourage employees to know their roles, to participate and be involved. Staff also show their participation by attending training and workshops provided for them to improve their knowledge and skills.

5.2.9.2 Employee Empowerment, Feedback and Satisfaction

A question was asked on whether employees are empowered in the company and how this is done. One of the top managers says that at the operational level, the company empowers the managers by putting them in control and managers must be responsible for their section. The second top manager said that targets and limits are set by top management but how to achieve those targets is up to the staff. The third top manager stresses that he empowers his staff to make decisions as he believes they are the ones who deal directly with customers all the time. The fourth top manager said she encourages her staff regardless of rank to learn and make decisions within their work areas without having to refer to her every time but they have to tell her what they have decided and their justification so that she is aware of what is going on. She says at first she found it difficult because of the old culture that the boss is expected to make decision. However, now that has changed. The fifth top manager said that the Approving Authority Manual (AAM) spells out what kind of authority that can be assigned to people. It is part of governance of the company.

Based on the interviews with top and middle management, there is no formal employee feedback system in Company A. The parent company however has a formal employee feedback and satisfaction survey for the whole group known as 'Employee's Voice', Staff Grievances Procedures and Global Employee Survey. Informally however, employees can give their feedback in Company A through several channels such as:

- Daily performance review meeting
- Monthly departmental meeting
- Through e-mail
- Open door policy by management
- Face to face communication

5.2.9.3 Employee Performance Measurement and Reward System

According to the Human Resource Manager, the Human Resource Department measures the performance once a year. Based on the job descriptions, quality objectives and performance standards, performance target are set at the beginning of the year. In the middle of the year, these targets will be reviewed for changes to the original targets. At the end of the year, superiors will assess their employees' performance and competency based on the targets set earlier and Key Result Areas (KRAs).

A question was asked to the HR manager whether rewards are linked to performance. According to her, Company A has already applied it for example, last year (2007), the MD of PM agreed to give Company A staff a performance bonus for year 2006 between 1-3 months depending on your PMS result. All other top managers interviewed agree that rewards are linked to performance.

To encourage staff to seek improvement initiatives and appreciate those who have done it, Company A came up with several recognition and reward programs for the staff in the form of cash rewards, paid holiday packages and commendation certificates. Company A has recognition programs which are called 'Employee of the Year and Employee of the Month'. This is confined to Operations staff only and employees are nominated by their department heads and can be across functions too. Employees that meet the criteria most will be named 'Employee of the Month' and they get to be driven by the GM of Operations of Company A for a RM75 lunch date. There will be 12 of them and at the end of the year, one of them will be chosen as 'Employee of the Year'. This person will get a vacation package together with his /her spouse. There is also a reward program called the C-STAR which stands for Cargo Staff Testimonial and Reward system. Staff who collected the highest point will be announced as the Annual Superstar of Company A who will get RM1000 cash reward and also a certificate. An extended version of C-STAR which is called C-MIND, promotes the innovative mind of staff. Staff will have to come out with ways and submit proposals on how to improvise and solve problems individually or with others. It is like a competition. The winner(s) will get RM5000 cash. This is how the organization rewards its staff for their contribution and fosters their team spirit and creativity. In some instances, they get promoted and are rewarded on the spot if management see them doing good deeds.

A question was asked on how management deals with low or under performers and how they motivate staff to perform well. One of the top managers says there are not many of them in the organisation. What the company did was look at the cause of non-performance and later counsels and motivates those employees. The cause of not performing might be due to the lack of training or attitude for example. Employees are then sent for counseling and motivation courses.

5.2.9.4 Teamwork

At Company A, teamwork was also encouraged and nurtured through and during the improvement initiatives. Initiative and Creative Circle (ICC) teams entered nation-wide competitions and have won the top ten placing for the past several years. According to the Managing Director:

"It takes one person to instruct the company, but it takes everybody's effort to make it successful".

When asked whether teamwork is important to the company and for what reason it is important, the General Manager, Sales & Business Development gave the following response:

"Yes, because in an industry like ours, teamwork is very important. It's all interrelated. For example, to transport cargo from Brussels to Sydney, they have to go through many airports, people, and system".

The other respondents also agree that teamwork is important and provided their reasons as shown by the following statements:

"Yes, teamwork is here otherwise you cannot close the accounts on time. We also have a QC team set up by one of my senior accountants to look for solution in some problematic areas so that error rates can be reduced. For the past two years, we have automated our billing process." - General Manager, Finance.

"Yes, definitely. In fact in my area if you are doing different thing, you must also know what your colleague is doing. We have a few ICC teams here and also cross functional teams. One of the teams is under Encik K, Operations Manager of Animal Hotel." - Manager, Human Resource.

"Yes, especially now we also involved our vendors. In this cargo business, it involved a lot of people and teamwork has to be good. You'll have a good quality product in the chain." -Senior Manager, Operations Commercial.

"*Yes, our Malaysian culture, we work in teams and we have harmonious environment."* - Senior Manager, Operations Stations.

"Yes, they work in teams when they want to repair equipment. Teamwork is strongly emphasised in this company. We have a few quality improvement projects. We improve for example i) a lighting system of equipment to reduce cost without compromising

quality and ii) put protection guard on equipment to prevent damage to cooling system of equipment." - Senior Manager, Operations Support

In summary, employees at Company A get themselves involved and participated in the ISO maintenance. Their participation is spurred by the anticipation of reward and also because they are afraid they will be asked to leave the company if they do not perform.

The empowerment of employees at Company A is guided by the Approving Authority Manual. Currently, there is no Employee Satisfaction Survey conducted by Company A but employees are free to voice their feedback and grievances under the Group Employee Survey. As for feedback, employees can channel their feedback through department meetings and other common communication channels.

As for employee performance, Company A has its own performance measurement system (PMS) to assess employees' performance. Rewards are linked to employees' performance and Company A has its own way of rewarding and motivating employees.

Teamwork is important in Company A and to encourage teamwork and promote improvement, Company A has set up its own Initiative and Creative Circle (ICC).

5.2.10 View on the Effectiveness of the ISO 9000 Maintenance

Before asking about the critical success factors of ISO 9000 maintenance, the respondents were first asked their views on the effectiveness of ISO 9000 maintenance at Company A. The Management Representative explained the reasons for believing that ISO 9000 is effectively being maintained at Company A by the following statement:

"In terms of control, we manage to control our documents. In terms of quality objectives, we measure it every six months and discuss them through our MRM. In terms of processes, we have written processes so that is a reference for improvement. There are few things that we try to improve year by year basis. I can say that because we've seen the benefits of it. The processes are dynamically changed with the work we do. It's not a system that's just sitting there. It's something that we do use. We still have the ISO 9000 certification and no major non-conformance is raised by the external auditor. It's already been 4 years since we got the certification."

The Human Resources Manager opined on the effectiveness of ISO 9000 maintenance:

"We have not failed to comply with the requirement of ISO 9000 certification. The number of non-conformances raised during audits has also reduced. The staff are more proactive now than before when they just react to things."

The MD feels that the maintenance of ISO 9000 in the company is effective because there are not many non-conformances found during audits and the company has managed to reduce cost of auditing by developing a pool of champions.

The General Manager of Sales and Business Development and the General Manager of Revenue Management in saying why they think the quality system is effectively maintained said:

"There's continuous improvement in operating procedures".

"We have improved our processes and continuously doing our evaluation. We are on track."

The Head of Cargo Operations and Senior Manager, Information Technology offered their reasons by the following statements:

"We've received awards and customers are convinced that this actually works."
"Year after year we have won awards such as Safety Award, Branding Award (it means we stand out well), and Technology Award for second year running for the entire processes."

All of respondents seemed to believe that the ISO 9000 QMS at Company A is effectively maintained and their reasons for believing so can be summarised as follows:

a. Not many non-conformances found during audit.
b. The number of NCR raised has reduced.
c. There is no major NCR received during audits.
d. Not failing the surveillance audits by external auditors.
e. Reduction in the cost of auditing
f. Continuous improvement in operating procedures

g. Received awards such as Safety Award, Branding Award, Technology Award, Best Air Cargo Carrier (Asia) and has been awarded the ISO 14000 and OHSAS 18001:1999 certificates.
h. Processes are documented, reviewed and continuously improved.
i. There is a Quality Assurance Unit looking after the ISO 9000.
j. The staff are more proactive.
k. Performance and the QMS are being tracked daily.
l. Documents are controlled.
m. Quality objectives are measured and reviewed every six months in the MRM.

Based on the above, the reasons can be grouped into:

1. Audit results or outcomes (items a,b,c and d)
2. Compliance to ISO requirements (items h,k,l and m)
3. Improvement (items e,f and,,j,)
4. Awards received (item g)
5. The setting up of a Quality Assurance Unit to look after the ISO (item i)

5.2.11 Critical Success Factors for ISO 9000 Maintenance

Previous literature (Chin et al., 2000; Cheng and Tummala, 1998; Low and Omar, 1997) found that management commitment is one of the critical success factors for ISO 9000 maintenance. Other factors identified are teamwork, company-wide ISO recognition (Chin et al., 2000), employee involvement (Cheng and Tummala, 1998), technical aspects of quality management, socio-cultural aspects of quality management and productive relationships (Low and Omar, 1997). In order to successfully maintain the quality system such as the ISO 9000, there must be some critical factors that can be identified by an organisation.

A question was asked to the respondents on what are the critical success factors for maintaining and improving the ISO 9000 QMS in a service organisation like Company A. Table 5.13a shows the results of their responses.

It could be said that the critical success factors for maintaining and improving the ISO 9000 quality management system at Company A revolve around the people of the organisation; the top management and the employees.

Critical Success Factor	Respondent	Frequency
Top management commitment & leadership	Managing Director, General Manager of Sales & Business Development, Head of Cargo Operations, Senior Manager of Information Technology, Senior Manager of Corporate Affairs, Human Resource Manager, Senior Manager of Operations Line Station, Senior Manager of Operations Support, Freighter Operations Manager, and Management Representative.	10/13
Employee involvement	General Manager of Sales & Business Development, General Manager of Revenue Management, Head of Cargo Operations, Senior Manager of Information Technology, Senior Manager of Corporate Affairs, Senior Manager of Operations Line Station, Senior Manager of Operations Commercial, Senior Manager of Operations Support, Freighter Operations Manager, and Management Representative.	10/13
Motivation, good reward system & working environment	Management Representative, Senior Manager of Operations Support, Senior Manager of Corporate Affairs.	3/13
Continuous improvement	Freighter Operations Manager, Head of Cargo Operations	2/13
Teamwork	Senior Manager of Information Technology.	1/13
ISO 9000-certified vendors	Senior Manager of Operations Line Station	1/13
Correct identification of issues to measure for process improvement	Head of Cargo Operations	1/13
Having the right people to do the job	Managing Director	1/13
Having a quality management system ingrained within your quality culture	Managing Director	1/13
Continuously making reference to ISO and referring to the Standard Operating Procedures.	General Manager of Sales & Business Development	1/13

Table 5.13a: Critical success factors of ISO 9000 maintenance

Based on the analysis, for Company A, people, consisting of top management and employees play the most critical role in maintaining the ISO 9000. Commitment and leadership from top management and involvement of employees are equally critical as ingredients for effective maintenance of the ISO 9000 quality system certification. The importance of people in maintaining the quality management system is clearly supported by these statements:

"It's always the people. You can have the best policy, procedures and system in place, but if you don't have the strong involvement and commitment from people, it can weaken the system. We must instil a very strong sense of accountability and responsibility and have clear role. A lot of problems here are due to people not sure and clear of their roles. In ISO, every single individual must be informed and communicated." - Senior Manager, Information Technology.

"The soft side is very important in any ISO programme. People are the one who make the system moves. System is just a framework to show them the way to do it." - Head of Cargo Operations.

"Commitment from the people at all levels of organisation to make sure we maintain the system." - QA Executive.

"Human factors, recognition of workers' contribution. Commitment from people is important. It's no use having a good system but we don't know how to maintain it." - Senior Manager, Corporate Communications.

Related to the people aspect, motivation, good reward system and working environment are the third critical success factor in maintaining the ISO 9000 QMS at Company A. The respondents who provided these views are the Management Representative and Senior Manager, Operations Support who are involved with the quality system from the start and had have the time and opportunity to see the evolution of the quality system from implementation stage until now. The Senior Manager, Corporate Affairs & Communications went on to explain that in order to get commitment from people (workers), they have to be recognised for their contributions. Recognising workers' contributions to him is one of the factors that might enhance the effectiveness of the ISO 9000 maintenance.

Meanwhile, the Head of Cargo Operations and Manager of Freighter Operations find that continuous improvement is also critical to successful ISO maintenance. The latter expressed his view:

"……you have to improve, simplify and enhance your work processes to adapt to changes in the environment. In charter business, it's very competitive and time is very tight. You have to adapt to this."

In addition, the Head of Cargo Operations finds that correct identification of issues by people to measure process improvement as critical to ISO maintenance. His view is based on his position as someone who is in charge of cargo operations and deals with issues or problems that need to be solved on a daily basis and processes improved constantly.

The Managing Director of Company A feels that having the right people to do the job and having a quality management system ingrained within the company's quality culture also are critical to ISO maintenance.

The Senior Manager of Information Technology says that teamwork is critical for quality system maintenance. At the same time, the General Manager of Sales and Business Development who is a pioneer and strong supporter of ISO 9000 in the company feels that by continuously making reference to ISO and its standard operating procedures would also help.

The Senior Manager of Operations Line Stations who has a lot of dealing with suppliers feels that with regard to ISO knowledge and practice, having vendors who are certified to the ISO 9000 standards further contribute to effective ISO 9000 maintenance as they would understand the system requirements. According to him:

"If they are ISO-certified, it's so much easier to work together as they will understand the requirement of the standards. If not, they might not be compatible with us as they don't understand the importance of the standards."

As for other factors that might enhance the effectiveness of ISO 9000 maintenance, with regards to the ISO 9000 standards itself, the General Manager of Sales & Business Development opined:

"If it can be more industry specific by using the same framework but giving a bit more detail for application to service for example, it will be better."

Another factor for enhancing the effectiveness of ISO 9000 maintenance as given by the Senior Manager, Operations Commercial is the strong team of internal auditors.

"My personal view, we have this internal audit going with a strong team of internal auditors to review the management and maintenance of ISO 9000 system. We are ok."

The Senior Manager, Operations Support voiced his opinion:

"Currently what we don't have is an effective quality department. In cargo we don't have dedicated QA inspectors to do surveillance, to be on the floor all the time, to look for shortcomings. In cargo, we should have a QA department that report directly to MD."

So for Company A, the critical success factors for ISO 9000 maintenance according to the respondents are:

Rank	Critical success factor
1	Top management commitment
=1	Employee Involvement
3	Motivation & Reward
4	Continuous Improvement
5	Teamwork
=5	ISO 9000-certified vendors
=5	Correct identification of issues to measure process improvement
=5	Having a QMS ingrained in the quality culture
=5	Continuously making reference to ISO and Standard Operating Procedure.

Table 5.13b: Critical success factors of ISO 9000 maintenance - summary

It can be concluded that for Company A, the top two equal critical success factors for ISO 9000 maintenance are top management commitment and employee involvement. It is followed by motivation and reward in third place, continuous improvement, fourth place, and teamwork and others in fifth place.

Further, from the respondents' point of view, in order to enhance the effectiveness of ISO 9000 maintenance, the ISO 9000 standards must be more industry specific, internal audits are conducted by strong internal quality auditors and an effective quality department that reports directly to the MD must be set up.

5.2.12 Problems and Challenges in ISO 9000 Maintenance

The literature describes a variety of problems associated with the implementation of ISO 9000. Some of these are mostly due to lack of top management involvement and understanding of ISO 9000 requirements for the companies' quality systems, the lack of effective internal corrective measures, and not having well-established procedures to maintain their quality systems after ISO 9000 registration (McCullough and Laurie, 1995; Dzus and Sykes, 1993). It was found that lack of top management commitment and involvement are inhibiting factors in implementing QMS in Australia, New Zealand and New Jersey state organisations (Samson, 1997; Bin Srinidhi, 1998; Quazi et al., 2002).

In order to understand what are hindering successful ISO 9000 QMS maintenance, a question was asked to the respondents on the problems and challenges faced by them in maintaining the system. The MD of Company A feels that his people welcome the implementation of the ISO 9000 but they are being complacent of the quality system as can be seen by his statement:

"I think the maintenance part of the QMS, the process is not a challenge because they fully embrace it but the thing is now for them to look at problem areas and fix it. We want it to be an active kind of participation and not complacent. They have to look at problem areas and how to improve it. Sometimes there may be other things outside the scope that we might need to look at."

With regards to complacency, the Head of Cargo put it succinctly when he said:

"The issue is basically maintaining the momentum. Getting a certification is almost like trying to win the race and every race after that is the real challenge. People start losing steam, basically beating the mentality of complacency. It's easy to win something but very difficult to maintain it. It's more to do with people."

This sentiment about maintaining ISO 9000 being 'more to do with people' is also supported by the following statements:

"Top management must continuously be involved and sit in meetings as scheduled. As for lower staff, it is difficult to get commitment, involvement and participation from them because they have their day to day work. For example, we used to conduct training at the workplace but staff got interrupted by their superiors about work, so we have training outside the workplace; at hotels so staff can concentrate fully on their training instead of thinking of their job. Staff don't give much support because they lacked the sense of importance and urgency. For example, they don't fill forms and don't do follow-ups. They have to be reminded." – Management Representative

"We have to constantly remind them that we have to do continuous improvement. If we don't, our quality system will fail." – Operations Manager.

According to one of the Quality Executives:

"Actually the processes are already good; it's just the reminding of people to comply with the standards. It's more developing them towards the quality culture. We do conduct awareness programme once in a while to remind people of what is ISO 9000 and why we

have to do this, our reasons for having the system in place. I don't think there's much issue because it's through our control we can limit the amount of non-compliances. So far we have minor non-compliances such outdated documents are being used. It's not a big issue."

Based on the statement given above, it could be said that the Quality Executive is not too concerned about the document non-compliance discovered. However, this can be quite an issue to other people as sometimes, confusion crept in during the transition period as experienced by the Operations Manager:

"We have some small issues with the manual, new procedures. For example, we amended the work process and tell the Document Controller where she will change and distribute the new document to respective person or unit. Sometimes the old document is not removed and this is discovered by the auditor."

Other problems and challenges faced by the respondents are given by the following statements:

"They try to cheat the system. The system is there but they try to cheat it. The challenge is when they do the reporting of non-conformances. Everybody will try to write a good report about themselves because it's linked to their performance. So they will try to manipulate the data and make the report looks good. They are actually trying to cover up." – General Manager, Sales & Business Development.

"One of the problems is on the measurement and the other on corrective action. We have raw data for quality objectives. CAR must be raised if any of the quality objectives is not achieved. However, I found out that some units have not raised the CAR even when their quality objectives are not achieved. During the external audit, the external auditors found the same non-conformances and problems. We arranged for corrective and preventive action training. But last year we have the organisation restructured, the workshop has been postponed. This is the major issues in maintaining the QMS for last year. The rest are like updating the documentation. I can do the internal training for them. I don't have much problem on the documentation but I have problem with data analysis and don't know how to raise CAR." – Document Controller.

"…….. the mindset of people. They have this old mindset and they are afraid of change. There is also a huge barrier between the old and new generation. The old will claim that they are trained and are experienced. The new comes in with theory but with no practical knowledge."- Human Resource Manager.

"To sustain adequate resources; people and manpower related. We do multi-tasking and job rotation to help develop the staff. Also to maintain and update ISO documentation when there are changes." - Senior Manager, Information Technology.

With regard to people resource, especially auditors who conduct internal audits, the challenge as put by the Senior Manager, Operations Line Station is:

"The main challenge is the qualification and the quality of staff conducting the internal audit. If they are really well trained and knowledgeable on this, that would be better. Unfortunately, they are picked up from our own pool of employees. Our employees are well versed in their aspects of the job but are not in others, so they don't know how to audit. They have to understand the whole process flow before they do the auditing. Not all employees are equipped with this due to limitation of resources where we also have different teams of auditing; OSHA team and environment. One of my suggestions to management is to have people who are able to conduct all these auditing, consolidated auditing simultaneously to be more economic."

As for dealing with document changes, the Senior Manager, Operations Commercial said:

"One of the challenges is the quality system that we write; it's never going to be permanent. It's going to change continuously when the industry progresses, when the requirement changes and when we have to move forward. We have to make sure the ISO moves together. The real challenge is when new changes come, we have to go back and review and amend our document and communicate it down the line."

Table 5.14 summarises the problems and challenges encountered in maintaining the ISO 9000 at Company A and measures taken by the company to overcome them.

	Problems	**Measures to Overcome**
1.	Identifying problem areas to correct it.	a. Provide training on ISO 9000 awareness, documentation, internal audit, corrective and preventive action and skill training to identified employees outside the workplace. b. Training of new employees and re-training of old employees c. Empowering employees and employing two-way communication.
2.	Maintaining momentum to sustain the ISO 9000 quality system.	a. Providing appropriate leadership and management commitment as people are looking for leadership and guidance. b. Administration of a proper reward system e.g. reward employees for good result/performances and for improvement initiatives. c. Training of new employees and re-training of old

	Problems	Measures to Overcome
		employees. d. Improving internal communication (daily and weekly unit/department meetings). e. Reminding staff of their roles/duties to comply with the standards.
3.	Difficult to get commitment and support from staff because they are busy with their day to day work and lack the sense of importance.	a. Providing appropriate leadership and management commitment as people are looking for leadership and guidance. b. Provide training on ISO 9000 awareness, documentation, internal audit, corrective and preventive action and skill training to identified employees outside the workplace. c. Training of new employees and re-training of old employees. d. Improving internal communication (daily and weekly unit/department meetings).
4.	Updating and distributing new documents.	a. Provide training on ISO 9000 awareness, documentation, internal audit, corrective and preventive action and skill training to identified employees outside the workplace. b. Cascading down the information and changes to people by emails, briefings, memos, meetings and face-to face communication.
5.	To get people complying with the standards.	a. Reminding staff of their roles/duties to comply with the standards. b. Providing appropriate leadership and management commitment as people are looking for leadership and guidance. c. Administration of a proper reward system e.g. reward employees for good result/performances and for improvement initiatives. d. Provide training on ISO 9000 awareness, documentation, internal audit, corrective and preventive action and skill training to identified employees outside the workplace. e. Improving internal communication (daily and weekly unit/department meetings). f. Reminding staff of their roles/duties to comply with the standards.
6.	Incorrect reporting of non-conformances	a. Provide training on ISO 9000 awareness, documentation, internal audit, corrective and preventive action and skill training to identified employees outside the workplace. b. Training of new employees and re-training of old employees.
7.	Corrective action	a. Provide training on ISO 9000 awareness, documentation, internal audit, corrective and preventive action and skill training to identified employees outside the workplace. b. Training of new employees and re-training of old employees. c. Working as a team. d. Empowering employees and employing two-way communication.
8.	Analysis of data	a. Provide training on ISO 9000 awareness, documentation, internal audit, corrective and preventive action and skill training to identified employees outside the workplace. b. Improving internal communication (daily and weekly unit/department meetings).
9.	People are afraid of change	a. Providing appropriate leadership and management commitment as people are looking for leadership and guidance. b. Training of new employees and re-training of old employees. c. Improving internal communication (daily and weekly unit/department meetings). d. Working as a team. e. Empowering employees and employing two-way communication. f. Cascading down the information and changes to people by emails, briefings, memos, meetings and face-to face

	Problems	Measures to Overcome
		communication.
10.	To sustain adequate resources especially manpower.	a. Multi-tasking of employees. b. Working as a team. c. Administration of a proper reward system e.g. reward employees for good result/performances and for improvement initiatives.
11.	Lack of knowledge on the part of internal auditors to conduct audits.	a. Provide training on ISO 9000 awareness, documentation, internal audit, corrective and preventive action and skill training to identified employees outside the workplace.

Table 5.14: Problems and challenges in ISO 9000 maintenance and measures to overcome

Overall, the above problems faced by Company A in maintaining the quality system can be summarised as lack of commitment from top management, lack of commitment from staff and lack of knowledge/training on the part of:

i) internal quality auditors to carry out internal audits
ii) staff to do data analysis
iii) staff to do the measurement of quality objectives
iv) staff to take corrective and preventive action when necessary.

All those are associated with people. On documentation side, problems arose in terms of using obsolete documents and updating the changes to documents. The problems with regards to documentation might be caused by the lack of knowledge/training on documentation and ISO 9000 requirements, due to people's attitude towards ISO or lack of communication especially when documents are changed and new documents are issued in replacement. For Company A, communication of changes to documents down the line is a challenge.

5.3 Company B

5.3.1 Background of Respondent – Top Management

The total number of respondents (top management) for Company B is 7. The following table shows the number of years the respondents have been with their companies.

	Position	No. of years
1	Managing Director/CEO	1
2	Senior General Manager, Maintenance Operations	6
3	Senior General Manager, Finance	4
4	General Manager, Engineering	20
5	General Manager, Special Project	2
6	Senior General Manager, Central Technical Support	11
7	Senior Manager, Logistics & Machinery	13
	Average	8.14

Table 5.15: Respondents' length of service with Company B

Based on the table, the average number of years spent by top managers of Company B with the company is 8.14 years. For Company B, as the implementation of the quality system took place in 1999, only a few of its top management have had the opportunity to design and operate the quality system. The MD of Company B being relatively new to the company and may have not had the opportunity to learn much about the quality system in place.

5.3.2 Motivation for Certification

When asked the reasons for certification to the ISO 9000, the Senior General Manager of Maintenance Operations (the largest department in Company B) who has been with the company for 6 years said that the main reason for certification to ISO 9000 was because of client's requirement . The MD thinks having ISO 9000 certification will help as a marketing tool for market expansion. Other reasons given by management of Company B can be categorised as internal and external reasons such as:

Documentation

- To improve on documentation
- To control document
- To have systematic documentation

Improvement of the system

- To improve on quality

- To have some sort of quality management system
- For continuous improvement
- To move with time
- To be a quality company

The external reasons in seeking certification to ISO 9000 for Company B are as follows:

- To satisfy customers
- To give a good image and impression to customers
- It's a good marketing tool/for marketing purposes
- Clients' requirement
- To enhance company's image
- It's a norm, standard criteria for doing business
- It's a recognized international certification
- To expand to other projects
- Potential clients' requirement
- To be competitive
- It's the norm for companies on Kuala Lumpur Stock Exchange (BSKL) to be certified to ISO 9000

People aspect was not one of the motives for certification at Company B.

5.3.3 Views on Quality

When asked about his views on quality, the definition of quality as given by the Managing Director of Company B is:

"Quality is conformance to requirement. It's not about being shiny or beautiful; it depends on what it is for. Quality is about what people want and expect from something and if they get it, it is quality."

This is a user-based definition of quality as it is based on the presumption that quality is determined by what a customer wants. This view is shared by other top managers such as the Senior General Manager of Maintenance Operations and the General Manager for Special Projects when they said:

"In terms of service, quality is delivery of services that are of value to and accepted by customers within the time specified by the contracts or service level agreements (SLA)."

"Quality to me means giving what the customer wants according to the specifications."

On the other hand, the producer-based definition of quality is being embraced by Senior Manager of Logistics and Machinery and Senior General Manager of Finance when they said:

"Quality to me is work without defect and rework."

"Quality is a good product or service with the right specification, free from defect and with no customer complaints."

Other definitions of quality stated by the other top managers are *"doing the right things right the first time"* and *"a continual improvement that is based on the needs that arise, not a stagnant process".*

By analysing the above responses given by the top management of Company B, it would seem they are rather specific in their interpretations of quality as their definitions of quality seem to be based on the user and producer perspectives of quality.

In terms of the importance of quality to the organisation, the Managing Director of Company B stated:

"I would say it's very important for any business because it's about satisfying customers. No customers, no business."

Other responses given to why quality is important to the organisation are:

a. Good image
b. To safeguard customer's reputation
c. It is very costly to rework
d. Uninterrupted work
e. For safety reason
f. To satisfy customers
g. Continuity of business
h. It is a service-oriented company.

Based on the above reasons, Company B's top managers seem to show a clear perspective on the role of quality and what it can do to an organisation.

5.3.4 Views on ISO 9000 QMS

When asked on their views on ISO 9000, most of the respondents agree that it is a good quality system. One of the top managers says that ISO is a well thought out system. The second top manager says that at present the requirements of ISO are sufficient for effective maintenance of a quality system, but in future the requirements needs to be reviewed to adapt to change in technology and customer needs. The third top manager sceptically says that ISO 9000 is just a way of measuring performance.

5.3.5 Views on the Role of Top Management in ISO 9000 Maintenance.

When asked about his opinion on his role as top management being one of the most important factors to successful implementation and maintenance of ISO 9000 QMS, the Managing Director opined:

"I agree because ISO 9000 is just a tool but you got to have a desire to achieve a certain level of quality. Top management being the leadership of the organisation has to get everyone to share the same values as what is important to the organisation. And as quality is one of the important ingredients to a successful business, the organisation has to place value on achieving quality. That has to be disseminated by top management because top management as the first point where the characteristics and personality of the organisation come from."

The Senior General Manager for Central Technical Support seems to share his views on the matter when he said:

"*Yes of course. Without top management support it's difficult for middle management and staff to act. People don't like to be controlled and this thing needs to be enforced in such a way so that they see how important it is to the company. So, top management commitment and support is really important."*

Other top managers seem to concur with the above opinions as they feel employees' commitment is tied to top management's commitment. They said there should be leadership by example and it needs management commitment to push any project through. Company B top management seem to understand the importance of their role in ISO 9000 maintenance of the company.

5.3.6 Top Management Commitment and Involvement in ISO 9000 Maintenance

The top management of Company B agreed that they play important roles in ISO 9000 implementation and maintenance. They recognised that their commitment and support as one of the most important factors to be successful in sustaining the quality management system. In order to find out on how committed and involved top management are in the ISO 9000 maintenance, they were asked to rate their commitment and involvement to the maintenance of ISO 9000 QMS on a 5 point scale (1 = very low, 2 = low, 3 = satisfactory, 4 = high, and 5 = very high).

All top management completed the self-rating on their commitment and involvement. The results are shown by Table 5.16a.

Position	Self-Rated Commitment	Self-Rated Involvement
Chief Executive Officer/MD	5	5
Senior General Manager, Maintenance Operations	3	3
General Manager, Engineering	4	4
Senior General Manager, Central Technical Support	5	4
Senior Manager, Logistics & Machinery	4	4
General Manager, Special Projects	3.5	3.5
Senior General Manager, Finance	4	4
Average	4.07	3.93

Table 5.16a: Self-rating on top management commitment and involvement

By looking at the result, it shows that 6 out of 7 top managers rated their commitment and involvement as the same except for the Senior General Manager for Central Technical Support. He says that his commitment is higher compared to his involvement because although he is 100% committed, due to his core job, his involvement is a little affected. The Senior General Manager for Maintenance Operations, the largest department, is modest about his commitment and involvement in ISO 9000 maintenance. Overall, top managers rated themselves 4.07 for commitment and 3.93 for involvement. These ratings show that the top management of Company B are highly committed to ISO 9000 maintenance with satisfactory involvement being displayed.

When asked what are their opinions on top management commitment and support, the first middle manager says that yes, top management are committed. As a result, the company is improving continuously. The second middle manager says he is happy with top management support so far. According to him, top

management are always concerned with the financial implications that come with having a quality system in place. However, they are very committed and he does not have any problem in terms of support from top management. In terms of commitment and support, middle managers rated top management as follows:

Position	Commitment	Involvement
Dep. Sen. Manager, Maintenance Operations	4.5	3
Head of Mechanical & Electrical, Maintenance Operations	4	3.8
Average	4.25	3.4

Table 5.16b**:** Rating on top management commitment and involvement by middle managers.

The Management Representative (MR) stresses that the company just have a new Managing Director (MD) in September 2007. From that time until the present, the new CEO revises the quality policy and checks certain procedures so it is in line with the Group policy. So far, many procedures have been revised. The MR adds that in future, the CEO wants to chair the management review meeting. Previously, the HODs would alternate among themselves on chairing the meeting. The MR feels that top management involvement in the QMS programme in the organisation impacts its success because if the management team knows what is the process and what they want and once people do as being documented, the system should be in place. The MR rated top management commitment and involvement as high.

Position	Commitment	Involvement
Management Representative	4	4

Table 5.16c**:** Rating on top management commitment and involvement by Management Representative

Lower managers are satisfied with top management commitment as according to them the ISO 9000 is the top management tool and initiative for the improvement of the company. The following are their rating on top management commitment and support.

Position	Commitment	Involvement
Manager, Maintenance Operations	3	3
Senior Executive, Logistics & Machinery	4	4
Average	3.5	3.5

Table 5.16d: Rating on top management commitment and involvement lower managers

5.3.7 Evidence of Top Management Commitment and Support

To find out how the top managers show their commitment and support to the maintenance of the QMS in their organisation, they were asked to describe their involvement in the QMS and its activities.

When asked how they show their commitment and support, top managers at Company B described their involvement through the following activities as displayed in Table 5.17.

Position	Action
Chief Executive Officer/MD	Observe the operations and performance, analyse customer satisfaction. Hold sessions with staff to discuss customer feedback and expectations. Chair management meeting weekly. Translate management accounts into roles and targets to achieve quality.
Senior General Manager, Maintenance Operations	Go through any new procedures, SOP and quality documents.
General Manager, Engineering	Involved in developing procedures. Involved in getting the ISO 9000 certification for the company. Initiate changes needed for continuous improvement. Sit in the Management Review Meeting. A member of the ISO 9000 Steering Committee.
Senior General Manager, Central Technical Support	An IQA auditor and team leader. Responsible for maintaining and updating department quality policy and procedures. Conduct yearly training. Monitor contractors and suppliers' performance through Productivity & Quality Management Unit.
Senior Manager, Logistics & Machinery	Participating in both external and internal audits. Follow policy and procedures. Try to minimise non-conformances during audits.
General Manager, Special Projects	Sit in the Management Review Meeting. Sit in the support group of ISO.
Senior General Manager, Finance	Attended activities and meetings that need senior management presence and support. Sit in the Management Review Meeting.

Table 5.17: Evidence of top management commitment and involvement in ISO 9000 maintenance

Based on the interviews, the MD of Company B was not involved in chairing the ISO 9000 Steering Committee and Management Review meetings. Instead the Head of Department based on rotation and availability, will chair those meetings at Company B. However, in future, the MD will chair both the meetings. He stressed that at the moment, he observes the operations and performance and analyzes customer satisfaction. In order to maintain the quality system, top management of Company B involved themselves in attending meetings with staff to discuss customer feedback and expectations, initiating documentation (e.g. policy, procedures, standard operating procedures), and providing training to staff.

Apart from participating in the above activities, Company B's top management also show their commitment by carrying out their roles and responsibilities in areas such as strategic planning, setting, communicating and reviewing of quality policy and objectives, and planning and providing of resources to carry out work as required by the standards (refer to ISO 9001:2000, Management Responsibility – Clause 5).

Top management of Company B tend to be rather general in their description of involvement and emphasise their function without stating the end purpose of doing so when they use phrases like *'observe operations and performance, analyze customer satisfaction; go through any new procedures, SOP and quality documents; involved in developing procedures and getting certification for the company; an IQA auditor and team leader; responsible for maintaining and updating department quality policy and procedures; conduct yearly training; follow policy and procedures; try to minimise non-conformances during audits'.* These phrases do not state the *'why'* they are doing it. When people know why they do things, it normally implies they have a deeper understanding of the matters concerned.

5.3.8 ISO 9000 Maintenance

In this section, both the technical approach based on the ISO 9000 requirements and the human resource aspects are presented (refer to section 5.2.8).

5.3.8.1 Quality Management System - Clause 4

Clause 4 of the ISO 9001:2000 states that an organisation is required to establish, document, implement and maintain a quality management and continually improve its effectiveness. In order to fulfill and address these requirements, Company B has developed its quality management documentation with its Quality Manual and Procedures. The Quality Manual defines and describes the Quality Policy, Quality Objectives, organisation structure and procedures of Company B. Currently, the company has 27 procedures in use. There are 3 levels of quality system document in Company B namely Quality Manual, Policies & Procedures, and Forms & Checklists as depicted by Figure 5.8.

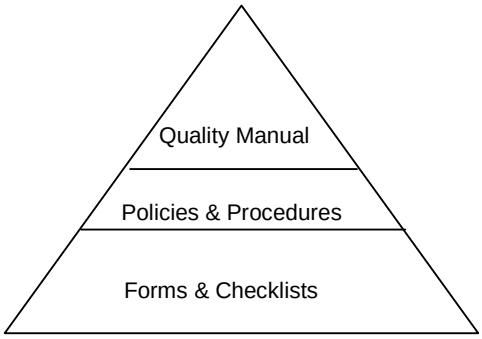

Figure 5.8: Level of documentation at Company B

Company B has developed its own Quality Manual to define and describe its overall quality management system and have met the requirements for ISO 9000 documentation.

5.3.8.2 Management Responsibility - Clause 5

The management responsibility comprises the requirements for developing and improving the quality system, listening to customers, formulating quality policy and planning, and defining responsibilities, authorities and communication processes to facilitate effective quality management.

Setting and Reviewing of Quality Policy, Objectives and Procedures

According to the Management Representative, the Quality Policy was developed by top management and presented during the Management Review Meeting for approval. For quality objectives, every department set their own quality objectives. Departmental quality objectives are set by the respective department heads after consultation with the Management Representative and were discussed in the Management Review Meeting for approval. Quality policy and objectives are being reviewed once a year. The Quality Policy of Company B is shown in Figure 5.9.

To ensure the achievement of its quality objectives, Company B controls and measures its operations and performance. The company has a scorecard for both system and employee performance. To measure the achievement of quality objectives, key result areas and targets, Key Operational Performance Index (KOPI) is used.

QUALITY POLICY

Company B is a one stop maintenance solution provider for highway operators, building and facility owners.

Company B is committed towards providing services of high standard via:

1. The implementation of Quality Management System in compliance with MS ISO 9001:2000.
2. Periodical review of its business processes to continually improve the standard of services.

Every employee of Company B is committed to:

1. Understand our customers' expectations
2. Meet or exceed customers' requirements
3. Optimise the utilisation of resources.

Signature of MD/CEO

Managing Director, Company B
Date: 1 September 2007

Figure 5.9: Company B's Quality Policy

The KOPI is monitored every month using software called Computerised Maintenance Management System (CMMS). Some examples of KOPI are site instructions, repair and breakdown for Maintenance Operation; machinery downtime and idletime, and machinery utilisation for Logistics & Machinery; work order delay and completion for Engineering. To monitor suppliers and contractors' performance, Suppliers & Contractors Review is carried out. The process flow for monitoring the quality objectives is shown by Figure 5.10.

The Management Representative stressed that procedures are changed when there is a need especially when there is a change in structure, a change in the players' approach in the market, from government policy and also based on internal, external, and group audits. Document change requests are raised when there are changes to the procedures. Based on the interviews, there seems to be differences on the frequency of procedure reviewed by certain departments. For example, once a year for Central Technical Support, quarterly for Logistics & Machinery, and on a project basis for Special Projects. According to the Management Representative, the review of the quality system is done once every six months by the Internal Quality Audit team.

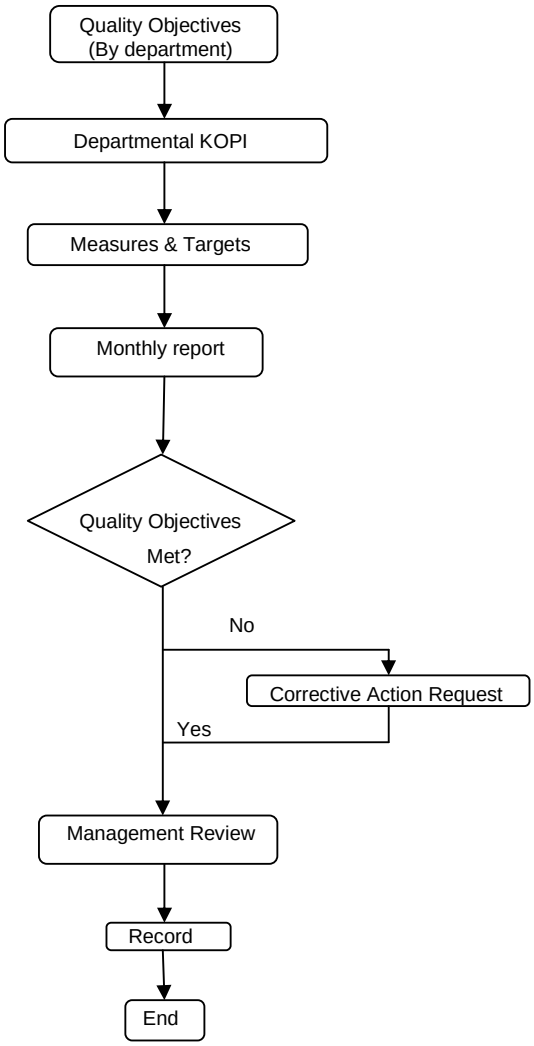

Figure 5.10: Process flow for quality objectives at Company B

Communication of Quality Policy and Objectives

There are various ways that the top management of Company B communicates the quality policy and objectives of the organization to their employees. Some of the ways are through:

- Site visits
- Meeting with staff at the head office, regional offices, and sections.
- Display quality policy & objectives at common places within department.
- Going around the department and section.
- Departmental meetings
- Briefings

- Paste QP & objectives on the wall
- CD Rom given to all departments.
- E-mails
- Short messaging system
- Training
- Notice board

According to the Management Representative, employees' understanding on the quality policy and objectives are tested during the internal quality audit and based on that outcome the company will conduct an awareness training to enhance their understanding.

Management Review

According to its Quality Manual and by reviewing the Management Review meeting minutes, the management review on the quality system is conducted once a year. Previously, the management review meeting was chaired by the Head of Department alternately. However, in the future, the present MD will chair the meeting. During this meeting, the following matters have been reviewed:

a. Internal Quality Audit findings and annual audit schedule
b. The effectiveness and suitability of quality system e.g. Quality Policy & Objectives, Key Operational Performance Index .
c. Resources and manpower to support the QMS
d. Performance of projects undertaken
e. Compliance to legal requirement
f. Contractor performance
g. Customer feedback
h. Status of preventive & corrective action taken

Responsibility, Authority and Communication

To describe, define and communicate the job responsibility, accountability, authority limits, reporting line and skills required from the employee, job description and organisational chart is used by the company. Standard operating procedures and procedures are made available to relevant staff to perform their job.

The Management Representative of Company B is the Head of Health, Safety, Environment (HSE) and Quality Assurance (QA) and Quality Control (QC) of the parent company. His job in Company B is the Management Representative for ISO 9000 and OHSAS 18000.

Internal Communication

When asked on the channel of communication in the company, the respondents said that communication in Company B is through several ways such as:

a. Site visits
b. Memos
c. Telephones, e-mails and short messaging system
d. Meetings and briefings
e. Face to face
f. Internet

Respondents were asked on the effectiveness of communication in the organization as effective communication is crucial for successful operation. They were asked on a scale of 1-5 (1= not effective, 2= slightly effective, 3= mostly effective, 4= effective and 5= very effective) to rate the effectiveness of communication and to justify the reason for their rating. Table 5.18 shows the rating given by the management on the effectiveness of communication at Company B.

Respondent	TM1	TM2	TM3	TM4	TM5	TM6	TM7
Score	3.5	4	3	4	4	4	4
Respondent	MM1	MM2	MR	LM1	LM2	Average	
Score	4	3	3	4	4	3.71	

Table 5.18: Rating on the effectiveness of communication

The average score of 3.71 indicates that communication in the company is between *mostly effective* and *effective*. From the table, 8 out of 12 respondents seem to find communication in Company B effective. However, most of them feel that there is still room for improvement. The MD feels that communication in Company B can be improved when he said:

'There are areas for improvement. When I went on to the sites, the way I was received by the staff indicates that they did not see enough of management. Therefore I come to a conclusion that management also did not receive a lot of feedback from staff. Laterally, I

am looking at certain processes that can be improved and cycle time could be shortened if communication is better between departments'.

Others feel that communication at Company B should be improved for various reasons as shown by the following statements:

"There's a room for improvement. What I can say is there should be more interaction between Head Office and site staff in Alor Star and Johor Bharu. There's a gap now which resulted in people at sites not understanding the objectives of Head Office as they don't speak the same language." - General Manager of Engineering

"Policy and procedures are turned into CDs but people's acceptance is another issue. Some of them are not good in English." – Senior Manager, Contract/Central Technical Support

"The area for improvement is in personal communication between people because in Company B people are so widespread as they have many sites and different regions." – Senior General Manager, Finance

"When it comes to individuals, some are not communicating. But the system is alright." – Deputy Senior Manager, Maintenance Operations.

"We have a hurdle in terms of logistics due to our diverse locations or sites. Now we have email system where everybody can access to but not everybody have a computer. So we lack a bit on the infrastructure." – Head of Mechanical, Electrical & Electronics, Maintenance Operations.

"Because the QMS is not a way of life in this organisation partly because we have to abide by certain rules set by the Group. In addition, we are also a government-linked company (GLC). Under this role, the Khazanah, the monitoring body of GLC has introduced a set of guidelines for 10 initiatives." – Management Representative

"Because for a service company like us, communication is very vital. There's still area for improvement such as some information are not clearly defined." – Manager, Maintenance Operations.

From the analysis, the top management of Company B have developed a statement of the importance of meeting customer requirements in their Quality

Policy in order to communicate to the organisation the importance of meeting customer as well as statutory and regulatory requirements and to continually improve their service level.

As for the quality objectives, for Company B, every department has their own quality objectives. To ensure the achievement of its quality objectives, at Company B, Key Operational Performance Index (KOPI) is used to measure the achievement of its quality objectives.

The MR of Company B is not the company's employee but of its parent. This has resulted in dissatisfaction and resentment by some people in Company B who want the MR to be from their own company as commented by one of the top managers when asked about the problems in maintaining the ISO 9000 QMS:

"…….if you noticed, the MR is not from Company B, but from UM. I think there are people in Company B who is capable of doing this job, why appoint an outsider? He would not understand our problems."

As for internal communications, based on the rating score, areas identified as needing improvement at Company B are such as; to obtain more feedback from staff especially at sites, communication between Head Office and sites, language barrier, lack of computers, and information not clearly defined.

5.3.8.3 Resource Management – Clause 6

Under this clause, it is stated that the organisation shall determine and provide the resources needed to implement and maintain the quality management system and continually improve its effectiveness, and to enhance customer satisfaction by meeting customer requirements (ISO 9001:2000).

Strategic Planning

According to the Chief Executive Officer, Company B has a 5 year strategic plan which is being reviewed by the top management at the end of every year for the last 2 years. A rolling plan and target is developed each year to work towards achieving the long term plan established. Plan is reviewed every quarter and the business plan is reviewed once a year. All the Head of Departments are involved in strategic planning. To plan, the MD looks at what Company B is doing. Company B core business right now is maintaining the North-South highway for

PLK, the owner of the highway which is also part of the group. Currently, 90 % of Company B's business is there.

According to the MD, in the next 5 years, the company wants to get more business, at least an equal volume of business from outside the group and to grow bigger. Right now what the company does is supporting the rest of the group. In order to grow, the company needs to go out and to expand its client base. As Company B is going international, the MD thinks having ISO 9000 certification will help as it gives a good first impression of the company's quality system. Another aspect that is being looked at is risk management where management analyses the risk of continuity of business with client in case of a change in the management and or in the decision making.

Planning of Resources

When asked on the adequacy of resources for the running and maintaining of business activities and quality system, the MD of Company B replied:

"Yes, I think so but we also recognise there's a continual need to reassess, to review the requirements from time to time. Also to restructure how these resources are provided. Over the years, Company B has not only developed its own people, but we also recognised we cannot be specialist in all areas. So we subcontract certain kind of work."

The Senior General Manager, Maintenance Operations Department also answered positively:

"Yes, they are adequate. All resources are adequate."

Two of middle managers say that currently, the company is running at 90% of resources utilisation. This implies that resources are more than adequate. There is still a spare capacity that is not utilised. Based on the interviews, it seems that all respondents answered positively about resource adequacy except for the Management Representative who said:

"No, especially on the internal quality audit team. We need to have a competent and consistent internal quality audit for further improvement. Now we have only 6 internal auditors. Previously there were 73 internal auditors but management reduced it because

they don't have enough manpower to do core jobs. So we have 6 people for 19 section offices and 5 departments. It's not enough definitely. In terms of facilities we can make do with what we have now."

Top managers were asked on how they plan for the company's resources to ensure their adequacy to carry out activities and to maintain the company's QMS. Some of the responses are as follows:

"In Company B, we have two main activities; recurring and non-recurring. Recurring is like maintenance activities and non-recurring is like projects which contribute 25% of the business. We use forecasting for recurring business. We use yearly budget and divide it into monthly budget and 5 years rolling forecast" - Senior General Manager, Finance.

"We have our main client that is PLK and we plan our resources based on PLK future work. It is also based on direct manpower, subcontractors, transporters, quarry suppliers, and in-house machinery" - General Manager, Engineering.

"Recognising the importance of having the right resources, we also ensure our subcontractors subscribed to the quality targets that we have set. We manage and help them to develop and we assess their performance based on the target" - Managing Director.

"Yes. If we want to add our machinery, we propose to management and normally management will approve it. So we have no problem when it comes to resources" - Senior Manager, Logistics & Machinery.

On the lower level, the Maintenance Operations Manager explains how he plans for resources:

"I planned it based on criticality of the activity. Planning and budget is done by the Group. We only assist them to get the work done".

Upon analysis, the following are aspects that are important to resource planning in Company B.

- Resource planning is based on recurring (e.g. maintenance activities-75%) and non-recurring (e.g.projects-25%) activities.
- Planning of resources is based on PLK future work.
- Reviewing and reassessing resource requirements from time to time

- Restructuring how these resources are provided.
- Developing people.
- Subcontracting certain kind of work
- Ensuring subcontractors subscribed to quality targets set.
- Managing, assessing, and developing subcontractors based on set target
- Use forecasting for recurring business.

Competence, Awareness and Training

See section 5.2.8.3 for general ISO 9000 requirements for this sub-clause.

According to the Assistant Human Resource Manager in charge of training, one of the objectives of HR department is to have 60% staff attending training annually. In one of the KPIs, 2 training per year for each employee are required. She added employee training is conducted on a continuous basis based on the training needs analysis. The Head of Department is responsible on the identification of the employee training need and will submit them to the Human Resource Department for training to be executed. Programmes that are required to achieve the targets set especially on competency, training and documentation are reviewed by the Management Representative to ensure those targets are met.

In addition, managers and higher level staff will be sent to UM Leadership Centre for leadership grooming. For executive and below, they are sent to train at the UM Academy. At present, she says that Company B does not have a standard template or format for training needs and analysis as it was developed on a yearly basis based on department objectives, KPIs and scorecards. After completing their training, the Head of Department will assess the effectiveness of the programme on the staff by filling in a standard form for that purpose.

When asked whether employees are adequately trained to do their job, the MD of Company B said that all have gone through the basic minimum training. He stressed that some employees have gone the extra miles and some have potential to go for additional developmental programmes to realise their potentials.

The Senior General Manager of Maintenance Operations said the company had spent quite a bit of money compared to other companies when it comes to

training and as a result, all operators are qualified and competent. His view is supported by the Management Representative when he says that operators have the certification and qualification to do their jobs. However he disagreed that enough or adequate training is provided to the staff:

"No, *training should be continual and staff should be given refresher courses, on the job training, and the company should adopt a mentor-mentee approach.*"

The General Manager of Engineering also feels that there is still lack of training especially technical training as it has been reduced from the previous years. He stressed that competency training is required for supervisors:

"*For the last 2 years UM Builders, our parent company encourages more in-house training. What I felt personally is that there is still lack of training especially technical training as it has been reduced from the previous years. Competency training is required for supervisors. Earlier on we had CIDB and IKRAM as our trainer, but for the last 2 years since the in-house training started, irrelevant training is given and other training such as technical and technology training are reduced. These training are important for updating staff knowledge."*

This sentiment is agreed by Senior Manager, Logistics and Machinery who expressed his views quite strongly:

"If you say about management/leadership training, it's adequate. But for technical training especially for operators, it's not adequate. Competency training for machine operators is not adequate although they get training from our suppliers of machineries. We need more training".

The General Manager for Special Projects expressed his thoughts by the following statement:

"I have a multilevel of staff, so they required different levels of training. I have 22 staff; 6 trainees from universities and 16 permanent staff doing different level of work. Most of them do their work based on experience. Training is provided for example project management courses that took 2.5 months to complete. Yes people are trained but some areas need to be improved".

There are several types of training attended by the staff in Company B; indirect training which is conducted internally and formal training where staff are sent to

UM Academy and third party trainers. There is also knowledge sharing program under UM Builders (the Group) where Company B staff are sent to. However, for the last 2 years, the parent company has encouraged more in-house training. Training is normally conducted in house by the engineers in classroom and on the job.

From the interviews, areas that are critical for people to be trained are on equipment maintenance, maintenance effectiveness and competency training for supervisors. So far, the types of training attended by the staff are:

a. Lead auditor training
b. Introduction to ISO 9000
c. ISO 9000 awareness
d. Internal audit
e. Safety and First Aid

On analysis, Company B plan its resources based on the company strategic plan which is being reviewed yearly. The resource planning process for Company B is a bit complex as the nature of work is much more diverse and much of it is subcontracted. Company B has a stable business environment as it has recurring activities based on PLK which contributes 90% to its business.

Company B suffers in terms of an insufficient number of internal auditors to conduct its internal audit as it has quite a large number of section offices. This shortage of internal auditors might affect the effectiveness of the company's QMS as a whole. As for other types of resources such as facilities, Company B still has a 10% spare capacity as it has not fully utilize its resources.

At Company B, the Head of Department is responsible for the identification of training needs. For Maintenance Operations, all operators performing maintenance works are qualified and competent. However, for Engineering and Logistic & Machinery, technical and technology training seems to be inadequate for supervisors and machine operators as stated by the Senior Manager, Logistics and Machinery. These technical training are required continuously for supervisors in order for them to be competent and knowledgeable especially for new technology and machinery for pavement. The MR of Company B thinks that training is inadequate and should be done continually.

5.3.8.4 Product Realisation - Clause 7

The product realisation involves the product realisation process which includes identifying customer requirements, reviewing product requirements, communicating with customers, designing and developing products, purchasing, producing and delivering services, and controlling measurement and monitoring devices.

For Company B, the planning of service is based on PLK as it is the main contributor to its business ((90%). The main services that Company B provides to PLK are civil maintenance, mechanical, electrical and electronics maintenance and pavement works. The first two services are performed by the Maintenance Operations department while pavement works involves Engineering and Logistics & Machinery departments. According to the quality procedures, the Project Manager will be responsible to arrange and coordinate all necessary aspect of project planning upon receiving the letter of award or tender from the client. An example of service realisation flow chart for civil maintenance works can be seen in Figure 5.11.

The MR says that in routine maintenance, nonconformities report (NCR) and Notice of Defect (NOD) are commonly used. NCR will highlight the non conformity work within the stipulated time (normally 3 days or any other timeframe that may be agreed by both parties). Within that day Company B's team shall take their recovery action to rectify the NCR works. This recovery plan shall involve deployment of additional team or appointment of new vendor to undertake to complete the task. While in NOD that work may involve performing new task that constitute entirely new work in which client has to issue work order or repair and replacement works. Indirectly Company B will get new work. From NOD form, client (PLK) shall issue work order form or repair and replacement (R&R) form for Company B to do the work. At this junction, there will be a new time frame to execute the work which will be agreed and supervised by the client.

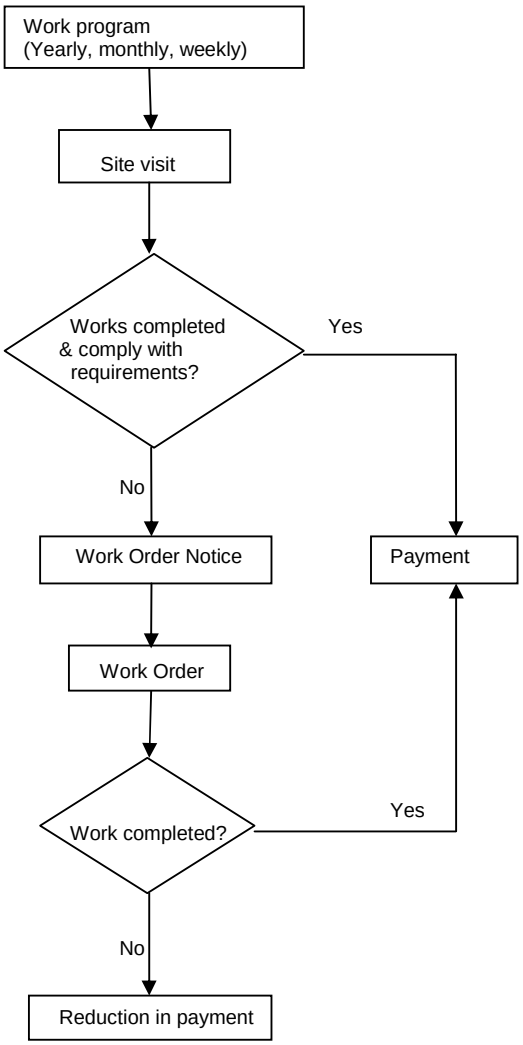

Figure 5.11: Service realisation process – Company B (Source: Company B Quality Procedure PQ700-12)

Service realisation at Company B is complex as the company provides many categories of services such as routine maintenance, mechanical, electrical and electronics works, preventive maintenance, upgrading and repair works, pavement, traffic management and facilities to maintain the highway. Its operations are also scattered along the highway, making communication one of its problems. In addition, Company B has more than 200 subcontractors and suppliers, making service realisation a challenge as the company has to depend on its many contractors and suppliers to realise its service.

5.3.8.5 Measurement, Analysis and Improvement - Clause 8

See section 5.2.8.5 for general ISO 9000 requirements for the clause.

Measurement of Performance

The Management Representative explains that performance of processes, system, people, suppliers and contractors are measured in Company B and for this purpose, the company has a scorecard for both system and employee performance. Company B uses Key Operational Performance Index (KOPI) for both process and performance measurement system for staff. KOPI is also used to measure the achievement of quality objectives, key result areas and targets. To monitor suppliers and contractors' performance, Suppliers & Contractors Review is carried out. The KOPI is monitored every month.

System and Operation's Performance Management

According to Senior General Manager, Maintenance Operations, customer needs and requirements in term of facilities such as lighting, rest place, and toilet and response time such as in case of accidents are identified based on the requirements of highway end users. For example, the company has to respond and reach the scene within 30 minutes of its happening if the area is within 60 km of the accident area. The area has to be cleared as soon as possible for other users to use. So far, the company has a target of 90% for response time. In addition, toll system which is PLK core business must be up and running 24 hours a day. In the maintenance of a highway, response time and safety are critical to customers and are considered the most important factors.

The achievement of quality policy and objectives can be monitored by meetings and tracking on KOPI according to the Deputy Senior Manager, Maintenance Operations in charge of Performance Monitoring Unit. He adds that the company uses Computerised Maintenance Management System (CMMS) to monitor for maintenance performance. He said that his job is to track, analyse and advise relevant parties on performance status. A weekly report on performance is then generated to all departments. He says that another way to ensure the achievement of quality policy and objectives is through the internal and external audits. Examples of KOPI/performance standards are shown by Table 5.19.

Department	KOPI	
Engineering	• Commencement of work delay should be less than 10%. • Completion of work order delay should be less than 10%. • Completion of projects delay should be less than 10%.	
Logistic & Machinery	• Machinery down time less than 10% • Machinery idle time less than 20% • Machinery utilisation more than 70%	
Maintenance Operations	Civil Works	Mechanical, Electronics & Electrical
	• Standard Instruction (SI) < 16 per month. • SI not closed< 8 per month • Delay in PIT response time < 30 minutes • Delay in guardrail response time < 48 hours • Delay in pothole response time < 48 hours.	• Repair time < 2 hours • Attend breakdown < 2 hours • MTTR (Mean Time to Repair)

Table 5.19: Examples of key operational performance index (KOPI)

Supplier and Contractor Evaluation

Based on the suppliers and subcontractors' list provided by Company B, the company has more than 200 suppliers and subcontractors. The large number of suppliers and subcontractors is due to the classification of service they are required for such as for civil works, mechanical, electrical and electronics, engineering, pavement, cleaning and etc. Contractors' Performance Review (CPR) system is used to monitor contractors' performance on a monthly basis. According to the quality procedure, the Head of Contract Department is responsible to review the CPR completed by the Maintenance Operations and Engineering Department and to classify the contractors' performance. The findings will be reviewed in the Management Review Meeting. From the evaluation, the contractors' performance is graded into categories as follows:

Group	Points Earned	Status	Remark
A	90 and above	Excellent	Given priority to participate in new tender or extension of contract.
B	75 - 89.9	Good	Given priority to participate in new tender or extension of contract.
C	60 -74.9	Satisfactory	Performance to be monitored and can be considered to participate in new tender or extension of contract.
D	59.9 and below	Poor	Might be considered for termination if performance does not improve over time.

Table 5.20: Grading of subcontractors and suppliers

For those whose performance falls to below standard, the company sent them reminders. After the second reminder, if there is no improvement seen, the work will be terminated and re-tendered.

Customer Satisfaction Survey

The main customer or client of Company B is PLK. PLK is a company which manages and operates the PLK North South Expressway (NSE) under the concession agreement with the Malaysian government, the owner of the highway. The NSE is being maintained by Company B. Other external clients of Company B include the North South Expressway Central Link (ELITE), Penang Bridge, METRAMAC, Linkedua, and PUTRA to name a few.

Company B conducts customer satisfaction surveys once a year. The survey was sent to PLK section managers for Mechanical, Electronics and Electrical (MEE) and Civil works. The survey asked the section managers (customers) to rate Company B's performance in terms of its workmanship, proactiveness, cleanliness, supervision, expertise, ability to meet schedule, progress reporting, balance between service cost and value, and expectation. It also asked customers to rate the importance of each criteria specified above to them. End-users/road users' satisfaction survey is conducted by the Malaysian Highway Authority.

The results of year 2006 survey for services rendered in 2005 shows that Civil Works had a lower rating when compared to Mechanical, Electrical & Electronic (MEE) Works. Areas that were rated low (somewhat dissatisfied) for Civil Works are on the proactiveness in solving problems, provision of adequate expertise, and the adequacy of level of supervision provided at site.

For year 2007 result for services rendered in 2006, again Civil Works performed lower than MEE. For Civil Works, areas that were rated low (somewhat dissatisfied) are on the cleanliness at site after maintenance, proactiveness in solving problems, adequacy of level of supervision provided at site, working according to schedule, being informed about progress and meeting expectation. For MEE, all the respondents rated all the areas 'Somewhat Satisfied' and above. Clearly, not much improvement has taken place in Civil Works compared to MEE since 2005.

When asked about whether customers are satisfied with Company B's service, the MD answers:

"I looked as last year's and compared it to previous years, there have been improvements. Mostly yes but there are areas for improvement. And looking at external audit result, there were more opportunities for improvement than non-conformances reported. The survey conducted on PLK section managers on their perception is limited to their sections and was more on operation issues, and not the whole sum. So it doesn't give a balanced picture. That's why we are conducting the survey to include other customers. As far as perception survey, it's done group-wide starting 3 years ago to assess the image of the company in the eyes of the customers. Customers of Company B are PLK Berhad, Malaysian Highway Authority (MHA), regulatory bodies like JKR and JPJ, the media and other individuals."

However, the results of this other customer survey were not accessible to the other top managers as explained by General Manager of Engineering:

"Based on the feedback from the client, there are not much complaints from the end users. So far, we have not been able to get a copy of the customer satisfaction survey conducted by MHA. What we know is based on information given to us by PLK, our client."

Based on PLK's feedback, 5 of 8 respondents agreed that customers are satisfied with their service. Two of them rated customers' satisfaction as 6 out of 10. However one of them added:

"In the service industry, there are many grey areas that people can complaint about."

Customer Complaints

According to the Management Representative (MR), customer complaints are received directly by the individual department or sections at Company B from PLK, its main client. He explains that in the Service Level Agreement (SLA) between both parties, complaint mechanism is highlighted in the forms of non conformity notes (NCN), Notice of Defect (NOD) and/or SI (Site Instruction). It is distinguished from routine maintenance and work order system.

According to the Senior General Manager, Maintenance Operations, when there is a complaint, PLK, the main client will call for meetings and issue nonconformity report (NCR) to the respective units/sections in the Maintenance Operations Department (MOD). These nonconformities will be recorded and the NCR will be closed within 3 days as required by Company B's standard. However, he explained that the standard varies according to the nature or extent of work. If the NCR is not attended in a timely manner, it will get escalated up. Otherwise it will be handled by the respective regional manager. PLK will issue a Site Instruction (SI) if the NCR cannot be closed within the specified time. SI is a form of penalty and will result in deduction in fees. This sometimes can be costly to Company B.

Based on the interviews, there are 2 types of complaints received by Company B from PLK; complaints on equipment breakdown and complaints on services not rendered accordingly. According to the Head of Mechanical, Electrical & Electronic, Maintenance Operations, to manage the complaints, Company B has a system called I-TEM (Intelligent Toll Equipment Monitoring System) which PLK can log on to and enter the complaint.

"The system will automatically send a short messaging system to our standby personnel. This is like a real-time system. Report will be generated from I-TEM and the service level will be known, for example in terms of response time. The company has a certificate from PLK for achieving 99.8% up time for equipment."

For other departments, complaints were received indirectly and they were not recorded. The Senior Executive, Logistics & Machinery said Company B also receives complaints from its internal customer.

"……we received complaints from internal customer, Engineering department. Normally they complained through verbal communication and also from the survey conducted. We received feedback to improve certain things like not enough machinery."

Based on the interviews, Company B receives complaints from PLK, its major customer directly through its Maintenance Operations Department (MOD) where it will be recorded and closed within a specified time or Sites Instruction will be issued by PLK. For other departments, complaints were received indirectly and they were not recorded. Table 5.21 shows the overall number of complaints received by Company B from 2003 to 2007.

Year	2003	2004	2005	2006	2007
Non-conformances (NCR)	376	254	177	276	141
Site Instruction (SI)	29	10	0	0	0

Table 5.21: Number of complaints received by Company B from 2003 to 2007.

From the table, the number of NCR decreased each year except for year 2006. The number of SI issued by PLK also decreased from year 2003 to 2004 and diminished for the year 2005 until 2007. In terms of NCR, this indicates a steady improvement. In terms of SI, this shows a remarkable improvement in performance. However, according to the MR, complaints were not categorised or analysed.

Internal Quality Audit

According to the Management Representative, Company B planned and conducted its internal quality audit in stages.

Internal Audit Findings

Based on its internal audit file, the following are the findings for internal audit carried out for the year 2006 – 2007.

	2006	
No.	**Description**	**Category**
1.	Acknowledgement acceptance of receipt of goods not being stamped on delivery order from a supplier.	Document Control
2.	Day 8 inspection defect list were not seen for certain period of time.	Operation control
3.	Vehicle inspection checklist form for a vehicle not filed consistently as per clause 8.1	Document Control
4.	Store (CIVIL) not provided with plan layout and tagging.	Operation control
5.	Daily vehicle inspection checklist form was signed by Plant Supervisor daily instead of HOD who signed on monthly basis.	Document Control
6.	Civil - Store Management is adequately in place but condition seems insecure.	Operation control
7.	Mee – Store management is in place but is uncomfortable to personnel due to poor ventilation system .	Operation control
8.	Preventive action for repetitive delay in guardrail repair was not planned and carried out consistently- reminder & warning to subcontractor.	Operation control
9.	Official reminder to subcontractor for list of defects as picked up by OPUS in CPC for certain work order was not issued.	Operation control
10.	Latest issue of certain P&P was not accessible.	Operation control
11.	Certain form & checklist was not implemented by PIT team	Document control
12.	Store not arranged properly, no layout plan or tagging.	Inventory
13.	No advice given to Regional Manager or reminder to section office of the 6 month delay in PLK CPC certification for a certain work order.	Operation control
14.	Company vehicle assignment forms were not endorsed by the head and are obsolete.	Document control
15.	No evidence of effort in monitoring/tracking for the timely CPC & final BQ process and the documents arrival to NRO for R&R claim and payment.	Operation control
16.	Storage of items at section store – physical stock count does not tally with bin card record.	Inventory
17.	Last day 8 inspection for routine maintenance conducted was on	Operation control

	2006	
No.	**Description**	**Category**
	a specific date but no evidence of such inspection thereafter.	
18.	Vehicle inspection checklist form for WLK 3397 was not filled for Nov 06.	Document control
19.	Few guardrail and pothole repair works done more than I month before ITCW issued.	Operation control
20.	No receipt date of grass cutting, landscape and drainage routine maintenance monthly program from contractor for the last 3 months of 2006.	Operation control
21.	Store found not provided with no layout, tagging and bin card.	Operation control
22.	Monthly program not approved by client since June 2006	Operation control
23.	Plastic barrier was issued but was not approved. Sticker not tagged to materials. Stock card system not implemented and P.O and D.O does not tally.	Inventory
24.	Store lay-out plan and bin card was not available and cutter pin count does not tally with actual figure.	Inventory
25.	Certain form and date of acceptance and completion not fill up.	Document control
26.	No clause indicates the control of non-company driver to use Company B vehicles.	Operation control
27.	Work program not provided with revision status proposed pavement.	Operation control
	2007	
1.	Operational Organisational Chart was not updated.	Document control
2.	The KOPI should be such that it can capture defects so that it can be monitored closely to reduce the number of defects. Summary of defects not found for further analysis.	Document control
3.	Discrepancies in the 'Key Result Area' set in PMS not similar to Job Description.	Document control

Table 5.22a: Internal audit findings for the year 2006-2007

By looking at the internal audit findings above, it seems that there are two types of control lacking; control of document and control of operation. This lack of control in these two specific areas indicate the lack of monitoring and supervision, lack of knowledge and understanding on staff part, difficulties in accessing documents, improper layout, lack of communication between people, and attitude of people.

External Audit Findings

An external audit of Company B is conducted by a third party certification body once a year. Surveillance audit is carried out once in every 3 years. The results of the external audits and the root cause analysis done by Company B are shown below.

Clause/Year	**2005**
Quality Objectives	The quality objective should be reviewed and more challenging target should be set. *Analysis of basic cause: The main objective set for MEE is based on the Service* Agreement with client. The subsequent objective is set by the department or unit might be quoted inaccurately.
Purchasing	Although Contractors Performance Evaluation has been carried out by relevant sections, newly appointed subcontractors must be competent not only in quality but also safety aspects. *Analysis of basic cause:* No proper briefing done on safety to newly appointed subcontractors.

Production & Service Provision	There was an isolated delay at S4 for achieving the 48 hours response time to guardrail replacement. Investigation should be carried out to help achieve the target. *Analysis of basic cause*: There are 2 factors that might cause the delay; 1. Not enough stock level 2. The contractor cannot provide the second team to carry out the additional repair even though it is stated in the contract.
Preservation of Product	The utilization of Stock Summary Report should be implemented at all sections to control the movement of stock and to ensure that minimum stock level is observed. *Analysis of basic cause*: Lack of updating on the newly changed procedure at section/region level caused the slow improvement on the overall implementation. Tracking cannot be done in a timely manner due to poor reporting.
Clause/ Year	**2006**
Management commitment	Although the input of KOPIs achievement, minor safety performance, and improvement suggestions have been presented, management's response, acceptance, approval and suggestions (output) are not evident in the annual Management Review. KOPIs have not been reviewed and there was no response to 5 major accidents recorded in 2005 or any corrective actions are agreed upon. Analysis of basic cause**:** KOPIs are not incorporated officially and HODs have not reviewed or communicated to staff about it.
Competence, awareness & training	Knowledge of accessing procedures from CD-ROM on the P&P was found to be unsatisfactory. Analysis of basic cause: Staff not exposed to P&P CD-ROM.
Identification & Traceability	There is no proper system at N5 as evidenced by no proper storage planning for stored products, some products cannot be traced, and the product quality status (segregation of non-conforming product from usable ones) was not adequately identified. Analysis of basic cause: No official instruction from management to set proper store.
Identification & Traceability	Bin card figures did not match actual physical stock in storage yard. Contractors being allowed to return materials without storekeeper being present. Analysis of basic cause**:** Procedures not followed strictly.
Clause/ Year	**2007**
Quality Objectives	Good Inward inspection reports are not used for those without D.O and cones returned are not updated in the bin cards. So procedures are not followed. *Analysis of basic cause:* The new storekeeper was not aware of the procedure on the matter.
Control of Production & Service Provision	Although the KOPI - Work orders for all region are very high due to delays at start compared to the target of not more than 10% , there is no proper analysis done to indicate the root cause and the preventive action taken to mitigate the delay. *Analysis of basic cause***:** The Regional Executive in charge was not aware that he needs to do the analysis manually as the CMMS has the ability to analyse it.
Identification & Traceability	Documents such as work orders were incomplete or missing from the trail. *Analysis of basic cause***:** - (blank)

Table 5.22b: External audit findings for the year 2005-2007

Based on the external audit findings from 2005-2007, it could be said that Company B's problems are in terms of:

a. Communication (Operation control)
b. Contractors/suppliers' control (Operation control)
c. Management responsibility
d. Not following procedure (Operation control& Document control)

e. Data analysis/Analysis of root cause for problems (Operation control)
f. Lack of knowledge and awareness (new staff and existing staff)

The summary of the external audit findings from year 2005 – 2007 is shown as follows:

ISO Clause/ Year		2005	2006	2007	Total
5.	**Management Responsibility**				
5.1	Management Commitment		1		1
5.4.1	Quality Objectives	1		1	2
6.	**Resource Management**				
6.2.2	Competence, Awareness & Training		1		1
7.	**Product Realization**				
7.4	Purchasing	1			1
7.5	Production & Service Provision	1			1
7.5.1	Control of Production & Service Provision			1	1
7.5.3	Identification & Traceability		1	1	2
7.5.5	Preservation of Product	1			1
Total		**4**	**3**	**3**	**10**

Table 5.22c: Summary of non-conformances for the year 2005-2007

Continual Improvement

Based on the interview with the MR, areas for improvement are identified based on Key Operational Performance Index (KOPI) and contracts (Service Level Agreement) with the client. Once target is achieved, the company will try to improve it. One of the top managers feels that Company B should continue to improve on the policy and procedures as some of the procedures are outdated with the current practices. In addition, budgets should be channelled for the improvement of safety and quality at Company B. The Quality Executive thinks that more efforts should be placed on continual improvement.

The respondents were asked about the changes that they see and improvements that have been made since the implementation of the QMS in Company B. When asked about the improvements that have been made in maintaining the QMS and the changes that have taken place as the results, the MD of Company B gave the following answers:

"I have observed some improvements in terms of greater consistency in the level of quality of service in Company B. There is awareness from the general public when they use the highway and they compare PLK highway and other highways, there is a difference."

The improvement in terms of the quality of service is explained by the Quality Assurance Executive when he said:

"The quality of service has improved, there's less rework, less reject and statistical data is collected."

On the improvements of documents, the following statements are given:

"Over the years, procedures have been developed and refined." - Senior General Manager, Maintenance Operations.

"With the ISO 9000 quality system in place, new employees and players can get acquainted with the policy and procedures and job scope easily as they are standardised. People are more concerned with documenting and recording work. When it comes to dispute, it is easily settled because there is a proper documentation in place." - Head of Mechanical, Electrical & Electronics (MEE), Maintenance Operations.

"Documentation has improved a lot, now we have procedures that are standardised so it's easy for everybody to follow." - Quality Assurance Executive

"Before we embark on ISO 9000, we have hundreds of checklists that we designed ourselves and also originated from the Head of Department. After we are certified to ISO 9000, we compiled and simplified the checklists to 20 PLK. With ISO, operations are more systematic as we have policy and procedures, before we have only guidelines. When new people joined the company, it's easier for them to do their job because they can follow the procedures." - Manager, Maintenance Operations.

In terms of system, improvements are made when most of the systems now are semi-automated and updating is done online. Documentation also is migrating from hard to soft document to online document system. As for and innovation, the MD said Company B has introduced the use of its own assembled mechanical robots at the highway for traffic management and control.

According to the Senior Manager, Logistics and Machinery, his department also has made improvements on the safety aspect of machinery, working conditions and staff personal protective equipment (PPE) and staff has become more aware of quality and safety at workplace. Another major improvement made in maintaining the quality system is related to the company's suppliers and

subcontractors. Talking about the monitoring of quality of its subcontractors, the MD of Company B said:

"*Mechanism by which Company B ensures its subcontractors' level of quality and consistency has improved. There are assessment, feedback and reward system both positive and negative that drives the subcontractors."*

Based on the statements given by the respondents, in the efforts of maintaining the ISO 9000 certification, Company B has carried out the following improvements as shown by Table 5.23.

Improvement	
Area	**Result**
Processes • Standardised operation • Processes are documented • Processes are monitored through reports	• Work becomes more systematic • Improved record and tracing of work • Analysis could be done
Documentation • Developed and refined • Recorded • Standardised procedures • Simplified checklists from more than 100 to 20	• Better acquaintance with Quality Policy, procedures and job scope. • Reduce overlapping of functions & roles • Easier to settle dispute • Easy to follow • More systematic • Easier to do jobs • Easier for newcomers to do jobs
System • Semi-automated system • Report generation • Proper filing • Online document & updating of document • Mechanical robots • Performance measurement unit • Statistical data collection	• Improved record and tracking purposes • Improved traffic management & control • Improved monitoring and reward for staff, suppliers and subcontractors • Improved in revenue and profit before tax • Improved service quality • Decreased in operating cost • Performance measurement possible

Table 5.23: Improvements resulted from ISO 9000 maintenance

The above improvements resulting in major changes at Company B as the result of maintaining the quality system can be seen from the following statements:

"The staff are more concerned on report and documentation and proper filing. It's good for record and tracking purposes." - General Manager, Engineering.

"The workforce understands their roles better and there's no overlapping of functions, roles are more defined. There is a better measurement system of performance for people and overall." - Senior General Manager, Maintenance Operations.

Roles are defined in the form of job description that is documented so that everybody knows what their jobs are and based on the job description, employee performance can be measured. According to Senior General Manager of Finance, reports are generated to monitor and analyze performance.

"In term of changes, most of the systems are now semi-automated and updating done using on line system. Documentation also has been changed from hard to soft document and now is migrating to on-line document." –Management Representative.

According to the Senior General Manager, Central Technical Support, Company B also has set up the Productivity & Quality Management Unit to monitor contractors' and suppliers' performance, performance review, tenders and registration for Contractor Service Centre where all documents related to it are kept. Previously, when it was not centralised, individual units kept the contractors' performance. At times, the units do not keep it and this creates difficulty for Company B to monitor and measure contractors' performance.

As a result of improvements carried out in the process of maintaining the ISO 9000, Company B also has expanded its business. According to the General Manager, Special Projects:

"What I see in Company B from 2006 is the change in terms of expansion of core business. In 2006, Company B's core business was maintenance and operation of the PLK Highway. In 2007, we have multiple projects and outside or external clients. There's a trend to satisfy the requirements by external clients such as Malaysian Airport Berhad (MAB), Johor Land Berhad and Alloy Consolidated. So Company B is changing in terms of it not only serving PLK but also other external clients outside the group."

His view on the expansion of business is also corroborated by the Deputy Senior Manager, Maintenance Operations when he said:

"The business in Company B has grown and increased at least 10% each year and so is revenue. We have more maintenance business and broader client base. If previously we have business mainly from PLK, but now we also get business from NPE, BesRaya, Gamuda, Subang Airbase and the Multimedia University. For these companies we provide cleaning and maintenance works for building and facilities. Now we are penetrating PETRONAS (oil & gas) in industrial cleaning services."

On revenue, the Senior General Manager of Finance said:

"Since 1999 until now revenue has grown, profit before tax has increased."

His view is also echoed by the Management Representative as according to him, the company has improved in terms of revenue, profit before tax and on overall process for awarding and paying its contractors. Moreover, according to Senior Executive, Logistics and Machinery, by implementing and maintaining the quality system, people awareness of the system has increased and operating cost has reduced.

In summary, changes that have taken place since the implementation of the QMS include people becoming more aware of the ISO 9000 especially on the documentation, they understands their roles better, most of the systems are now semi-automated, an on-line updating system is being used, better measurement system of performance for people (employees and subcontractors). A performance measurement and monitoring unit has been set up and statistical data collected. The volume and scope of the business has expanded.

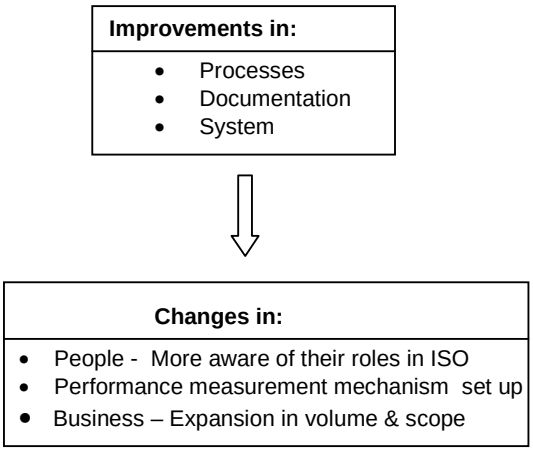

Figure 5.12: Improvements and changes due to ISO 9000 maintenance

Practices and Tools Used for Quality Improvement

A question also was asked to the respondents on the practices and tools used to support quality improvement in maintaining the ISO 9000 of the organisation. Table 5.24 shows the practices and tools adopted by Company B and its purpose of use as stated by the company.

Management practices/tools	Purpose of Use
OHSAS 18000 ISO 14000 (in July)	For safety and health. Important for waste management and environment.
Innovative, Creative Circle/work teams/continual improvement projects	To improve process and its flow.
Performance Measurement System	Measure staff performance
Six Sigma	To reduce errors in operations
Benchmarking	To benchmark against similar industries and concession owners on facilities users against the MHA requirements.
Pie, bar charts & histogram	Weekly statistical reports. Planning Analyse data Display performance
Pareto Diagram	Problem solving
Fishbone chart	Problem solving
Statistical Analysis	Reports
Microsoft Project (software)	Monitor progress of projects
Supplier Performance Review	To monitor & assess supplier's performance.
Contractor Performance Review	To monitor & assess contractor's performance.
Key Operating Performance Index (KOPI)	Utilisation, downtime and maintenance of machine.
Computerized Maintenance Management System (CMMS)	Maintenance history and tracking of fleet and machinery. Monitor utilisation of key fleet and machinery consumption of vehicles.
Gantt Chart	Monitor projects
Project Scheduling	Schedule projects
Cost Analysis	Monitor Costs of projects
Service Level Agreement(SLA)	Track response time
Brainstorming	Solve problem
Web graph analysis	Look at gaps in performance based on customer satisfaction survey. Display performance

Table 5.24: Management practices and tools for quality improvement

Corrective and Preventive Action

Corrective and preventive action is specified under the Quality Service Improvements procedure. According to the procedure, corrective action is an immediate action to remove non-conformance and all noncompliance corrective actions shall be carried out by respective area. In order to initiate preventive action, the following source of information shall be compiled and analysed to determine the root cause of the problem:

a. Site instruction
b. Contractor evaluation
c. Internal quality audit
d. Quality assurance

e. Non-conformance notice
f. Routine maintenance daily checklist
g. Defect list

Based on document review, site instructions, contractors' performance, internal audit reports and non-conformances were compiled and discussed in the management review meeting. The nature of actions to be taken were also discussed and decided during this meeting.

Based on the findings, Company B has its own performance measurement and monitoring systems to ensure the achievement of the company quality objective and to evaluate its suppliers and contractors. In terms of the number of suppliers/contractors, Company B has a large number of subcontractors/suppliers. This is due to the various work categories that formed the overall service provided by the company. This means that subcontractors' performance evaluation takes a lot of Company B's resources. The close and constant monitoring of subcontractors indicates that the relationship between Company B and its subcontractors tends to be adversarial rather than a partnership.

To gauge customers' perception on their service, Company B carried out a Customer Satisfaction Survey. The survey conducted on PLK's (main client) section managers was carried out on MEE and Civil Works Units of Maintenance Operations only. The satisfaction survey on the highway users, the end and real customers are conducted by the Malaysian Highway Authority (MHA) and the result is disclosed to PLK but not to Company B. Clearly, this shows that it is not easy for Company B to improve its performance if it does not know its strengths and weaknesses.

As Company B has one major customer or client (PLK), which contributes to 90% of its business, when there is a complaint, PLK will issue the complaints directly to the individual department or section at Company B. PLK will call for meetings and issue nonconformity report (NCR) to the respective units in the Maintenance Operations Department. Company B received NCR in meetings arranged by the customer. It then must start to act on the complaints within a specified time failing which a penalty will be issued by PLK. This complaints handling approach adopted by Company B is a reactive one and the company does not have much say in it. Based on the results of internal audits, there are the two types of NCRs

reported by the internal audit report of Company B, document and operation control.

As for corrective and preventive actions, Company B did carry out its corrective and preventive actions to improve the company's service. However, this area itself needs to be improved as people seemed reluctant to raise a corrective action request (CAR) even when the situation warrants it.

In the process of maintaining the ISO 9000, Company B has carried out a lot of improvements on its processes, documents and system. To help in its quality improvement efforts, the company has used a lot of quality management practices and tools. In terms of technology, it is moving towards an online computerised system in its core activities and documentation. The company is also being continually profitable for the past years since the implementation of ISO 9000.

Year	**2004**	**2005**	**2006**	**2007**
Profit	RM44,873	RM67,401	RM61,967	RM60,160

Table 5.25: Company B profit before tax (Source: Company B's Management Representative)

Other main changes that can be seen as a result of continual improvement in Company B are the existence of a more formal performance measurement system with the setting up of a performance monitoring unit. Statistical data is collected thus enabling analysis of data for better monitoring of process and system performance. At the same time, the mechanism for monitoring suppliers and subcontractors' quality is also improved. The scope of business for the company is not limited to the maintenance and operation of PLK highway but also to other highways. With better control and standardisation of document, Company B has the ability to expand to other business beyond their current scope of work and existing client. Its core business now has a broader client base which comprises other external clients outside the group in other areas such as an airport, university, and oil and gas industrial cleaning.

5.3.9 Human Resource Aspect in ISO 9000 Maintenance

In this section, the non-technical approach relating to the human resource aspects to maintaining a QMS is presented. This section explores the respondents' views on employee involvement, empowerment, teamwork, employee performance measurement and reward system of Company B.

5.3.9.1 Employee Involvement and Participation in ISO 9000 Maintenance.

A question was asked to the respondents whether employees are involved and participated in maintaining the QMS. The following are their responses.

Respondent	Yes/No
Top Management	Yes
Middle Management	Yes
Management Representative & QA Executive.	Yes and No.
Lower management	Yes and No.

Table 5.26: Responses on employee involvement and participation

Although all top management collectively agree that employees participated and involved themselves in the maintenance of the quality system, the MD stated:

"With regards to ISO 9000 procedures, they follow the procedures, but for continual improvement and data gathering and analysis, more could be done. They are encouraged to make decision and many of them are participative."

Further, the Senior General Manager, Maintenance Operations said:

"They are supportive although at the moment we are not strong on the analysis part. It's still at the embryo stage. We collect data but we don't analyse it enough. For example, we have a safety system that requires us to report near misses. We have about 400 near misses and one major, but we didn't get many near misses reported."

Although staff do participate they have to be constantly encouraged as put by the General Manager of Engineering:

"Yes, they do participate in department's activities, through constant encouragement from the Head of Department."

As for middle management, they also agree that employees do take part in ISO maintenance as shown by the following statements:

"ISO 9000 related issue is one of the Performance Measurement System key results areas." - Deputy Senior Manager of Maintenance Operations in charge of performance.

"Earlier they complained of more paperwork to them but now it's ok."- Head of MEE, Maintenance Operations.

However, although agreeing that employees are involved and participated in maintaining the QMS, the Management Representative has a different view in terms of employee motivation to be involved and participated as he said:

"I would say that 50% are motivated, 50% are not motivated. This is because their efforts are not translated in the performance management system."

Regarding motivation, the Quality Executive lamented:

"At present, the old or veteran staff know what they are supposed to do. Only if they have some motivation, then they will do it properly, if not they just take it for granted. During the audit time people are alert, after that they slow down and it's always the same every time, every year."

At the lower management level, they agree that employees are involved in the ISO maintenance. However, the Maintenance Operations Manager gave this interesting view:

"Yes, they are supportive, they know why we need ISO 9000 certification, but they just don't participate."

The findings suggest that there are mixed feelings about employee participation in ISO 9000 maintenance. Although top management said employees are participative, their participation is limited and had to be pushed. At the same time, half of the employees lack the motivation to participate as they consider their participation would not be rewarded.

5.3.9.2 Employee Empowerment, Feedback and Satisfaction

A question was asked on whether employees are empowered in the company and how this is done. At Company B, employees are empowered through several ways such as:

- Encouraged to make decision
- Take on their duties
- Participate in department's activities
- Assign responsibilities to each staff

However, employee empowerment at every level is guided by a Discretionary Authority Limit (DAL). Employees need to be empowered because of Company B multi-site location. However, one of the respondents said that most of the staff are indecisive and this to a certain extent, limit the empowerment.

According to the MD, employee feedback and satisfaction survey is not conducted by Company B but the Group carries out the Employee Climate Survey for all employees under the Group. There is a HELPDESK under the Group for employee feedback. However, the Engineering department for example receives feedback from employees through a fortnightly meeting where the project managers will report to the HOD. Other ways employees can give their feedback informally is through face to face, short messaging systems, and emails.

5.3.9.3 Employee Performance and Reward System

The Performance Measurement System (PMS) is used by the Human Resource Department to assess employee performance. Employees are assessed once a year by their Head of Department (HOD). The HOD will review staff performance twice a year based on targets that have been set earlier in the year. Staff will be assessed at the end of the year. The assessment result will be passed to the Human Resource Department. According to the Management Representative, in the PMS guideline it shows the inter-link between performance against the reward system. The quality objective is translated as Key Result Areas (KRA) in staff Performance Management System/Appraisal System or in other words departmental (KPI) Key Performance Index. The linkage is focused on HOD at the moment. The process of cascading down the KPI to the rest of the staff will be done in 2008.

Most of the respondents collectively agree that reward is linked to performance. However, two of the respondents felt the opposite. When asked their opinion on whether employees are motivated to maintain the ISO 9000, the Management Representative who disagreed answered that only 50% are motivated and 50% are not. When probed further, he said the reason he felt that way is because the employees' efforts are not translated in the performance management system. His feeling is echoed by the Quality Assurance Executive who said:

"What I can say is there's up and down trend. At the beginning everybody's very happy but after some times, we took it for granted that we already have the ISO certification. To maintain it people/staff need more motivation."

When probed further about what kind of motivation he thinks the staff needs to maintain the quality system, he replied:

"I think company's recognition on their efforts in maintaining the certificate and maybe the tangible rewards for everybody who has been involved in the ISO. Like for the internal auditors maybe the company can give some extra allowance for conducting the audits and Head of Department can release them to go for audits. At present, the company does not give all these and believes it's our job and we have to do it."

It seems at present, employees are rewarded with Company Bonus, performance bonus, promotion and special increment. According to one of the top managers, employees are rewarded mostly in the form of monetary reward, not much on recognition. Compared to the number of employees, there are not many or no under achievers in the departments of Company B. For departments with under achievers, the HOD with the help from Human Resources department will call and counsel the staff involved. Their performance is monitored on a quarterly basis.

5.3.9.4 Teamwork

Teamwork at Company B was encouraged and nurtured through and during the improvement initiatives like the Initiative and Creative Circle (ICC) teams.

When asked whether teamwork is important to the company and for what reason it is important, the responses given by the MD is as follows:

"*Yes, very important. We have Intervention Team when accident happened. As for improvement team, 2 years ago we have but now it's not active anymore. We have discussion to rejuvenate it."*

The Maintenance Operation Manager said:

"Yes, it's very important. For example, if something went wrong at site, I need other people from electrical and traffic to assist me. It's very vital as we have 16 sections."

Other respondents also agreed that teamwork is important at Company B. According to the MR, teamwork is very important as processes are interlinked. To build the spirit of teamwork, the General Manager of Engineering said that they organise a retreat every year. On the importance of team work, the Head of MEE said:

"Yes, we may fail if we don't work as a team."

On analysis, top management of Company B feel that employees are participative but they have to be encouraged constantly while the middle managers says that employees feel they have no choice as their performance will be measured. There is a mixed response at the MR, QA Executive and lower manager level. The MR says that only half of the employees feel motivated to participate in the ISO maintenance and the QA Executive voices his concern over participation from old staff. The lower manager says that although employees are supportive of the system, they just do not participate.

5.3.10 View on the Effectiveness of the ISO 9000 Maintenance

Before asking about the critical success factors of ISO 9000 maintenance, it is essential to know the respondents' view on the effectiveness of the QMS. A question on the effectiveness of ISO 9000 maintenance was asked to the respondents at Company B. When asked his views on the effectiveness of the ISO 9000 maintenance of the company, the MD was not sure about it. He said:

"There's not much improvement in place. The drive for improvement must be pushed. The system is being maintained but customers, stakeholders, and even staff's expectations are always changing. They expect to get more. The system is there, it's working, it's been maintained but whether it's effective? But it's keeping up with the times. Quality is relative; there must be a benchmark, the goal post. As far as achievement of company's target, we are approximately where we have set for last year. Over the years that target has been set rather conservatively and easily reachable. There's no big leap. We are at the goal post."

Perhaps the reasons for his uncertainty are because he could not see much improvement being done and when improvement is carried out, it must be pushed. The Senior General Manager, Maintenance Operations on the other hand felt that Company B is half-way there in terms of ISO 9000 maintenance effectiveness but according to him there is a lot more to be done.

The Manager, Maintenance Operations said the quality system is not so effectively maintained because:

"……only when the external auditors are coming, then people start preparing for audit; at other times they do shortcuts to suit themselves when doing their work."

Although he said that the ISO 9000 is being effectively maintained, the Deputy Senior Manager, Maintenance Operations felt that there are room for improvements as he elaborated:

"When you have a system, the important thing is to make the system user-friendly for people to use. For example, our procedures are too long. It's enough to have flowcharts instead of being too wordy. It's too much paper. Just make it simple by simplifying the procedures."

Others respondents believed that the ISO 9000 at Company B is effectively maintained and their reasons for believing so can be summarised as follows:

a. Not much nonconformity found.
b. All staff knew the system and follow the policy and procedures in their action.
c. Internal and external audits are carried out.
d. There is a specific person looking after it , the MR.
e. Progress can be seen in terms of increased in profits, reduced down time, and better implementation of projects.
f. Requests to add and refine processes are received from sites; people are aware and are continuously improving the system.
g. There are procedures for guidance.

The above reasons can be grouped into:

1. Audit results or outcomes (items a and c)
2. Compliance to ISO requirements (item b)
3. Improvement (items e,f and g)
4. There is a Management Representative looking after the QMS (item d).

Thus, there are mixed feelings about the effectiveness of the company's ISO 9000 maintenance. Two of Company B's respondents, the Senior General Manager and Manager of Maintenance Operations felt that Company B's quality

management system is not effectively maintained and the MD said it is maintained but was not sure in terms of its effectiveness.

5.3.11 Critical Success Factors for ISO 9000 Maintenance

A question was asked to the respondents on what are the critical success factors for maintaining and improving the ISO 9000 QMS in a service organisation like Company B. The results are as follows:

Critical Success Factor	Respondent	Frequency
Top management commitment & leadership	Managing Director, Senior General Manager of Maintenance Operations, General Manager of Engineering, Senior Manager of Logistics & Machinery, General Manager of Special Projects, Senior General Manager of Finance, Head of MEE, Management Representative, Senior General Manager of CTS, Senior Executive of Logistics & Machinery.,	10/12
Employee involvement	Managing Director, Senior General Manager of Maintenance Operations, General Manager of Engineering, Senior Manager of Logistics & Machinery, Manager of Maintenance Operations, Senior General Manager of Finance, Head of MEE, Management Representative, Senior General Manager of CTS, Senior Executive of Logistics & Machinery.,	10/12
Continuous improvement	Managing Director, Senior General Manager of Maintenance Operations	2/12
Teamwork	Senior General Manager of Maintenance Operations, Senior Executive of Logistics & Machinery.	2/12
Understanding of QMS	Senior Executive of Logistics & Machinery, Deputy Senior Manager of Maintenance Operations.	2/12
Right reward system	Managing Director	1/12
Translating vision and objectives into roles and target	Managing Director	1/12
Management Representative	Management Representative	1/12
Consistency of procedures	Management Representative	1/12
Measuring and exchanging of feedback	Managing Director	1/12

Table 5.27a: Critical success factors of ISO 9000 maintenance

For Company B, top management and leadership and employee involvement equally represent the most critical success factors for ISO maintenance. The importance of people in ISO maintenance which consists of both top management and employees can be seen from the following statements:

"Mostly it's about people; this includes top management and staff of the organisation." – Managing Director.

"Top management must say it's important to maintain the quality system and staff must embrace it as a work culture so they could be in tandem." – General Manager, Engineering.

"To me both the top management and employees need to work together and need each other to make the system works." - Head of MEE, Maintenance Operations.

The Managing Director also feels that continuous improvement, having the right reward system in place, measuring and exchanging feedback and being able to translate vision and objectives into roles and targets as critical to ISO maintenance. His view on continuous improvement as being one of the critical success factors for ISO maintenance is also shared by the Senior General Manager of Maintenance Operations who felt that only by doing continuous improvement then the system can evolve.

At the same time, both the Senior General Manager of Maintenance Operations and the Senior Executive of Logistics & Machinery felt that teamwork is another critical factor to ISO maintenance. Lastly, another critical factor mentioned by the respondents is related to understanding the ISO 9000 standards and consistency in procedures.

When asked about factors that might enhance the effectiveness of ISO maintenance of the company, the Senior General Manager, Maintenance Operations said:

"*To implement a good quality system we need infrastructure, training of people and to relate cost to quality. If we look at Company B, we have been maintaining the highway since 1980. When we compare the standard of PLK highway with other highway, we can see PLK highway is better than the rest. However there's a cost to ensure all this."*

Apart from infrastructure and training of people, language and access to documents also need to be improved to increase the understanding of the policy procedures as told by the Senior General Manager, Central Technical Support when he said:

"There is a need to have dual language for the policy and procedures and wider access of documents."

Another factor that might enhance the effectiveness of ISO 9000 maintenance is to do self-audit on work and incorporate risk management into the quality system as suggested by the Senior Manager, Logistics & Machinery and the Management Representative.

"Do more self regulated check and balance, self regulated audits on our own work. Risk identification and analysis need to be carried out." - Senior Manager, Logistics & Machinery.

"In future, the QMS should have a business continuity plan for the company to focus on. We have a risk management system but it's not integrated with the QMS. Under the BSKL, every listed company should have a risk management system." - Management Representative.

Based on the interviews, the factors that are critical to successful maintenance of the quality system are shown by Table 5.27b.

On analysis, the top two critical success factors for ISO 9000 maintenance at Company B are top management commitment and employee involvement. These two factors are equal in their criticality as success factors to ISO 9000 maintenance. Continuous improvement, teamwork, and understanding of ISO 9000 are equal third critical success factors. Reward is at sixth place.

Rank	Critical Success factor
1	Top management
1	Employee Involvement
=3	Continuous Improvement
=3	Teamwork
=3	Understanding of ISO 9000 QMS
6	Reward
=7	Translating vision & objectives into roles & target
=7	Management Representative
=7	Consistency of procedures
=7	Measuring & exchanging of feedback

Table 5.27b: Critical success factors of ISO 9000 maintenance - summary

According to the respondents, to further enhance the effectiveness of ISO 9000, several things are needed such as:

i. Infrastructure
ii. Training of people
iii. Dual language for policy and procedures
iv. Wider access to documents
v. Perform self-regulated audits on work

vi. Conduct risk identification and analysis

5.3.12 Problems and Challenges in ISO 9000 Maintenance

A question was asked to the respondents on the problems and challenges faced in maintaining the ISO 9000 of their organisation. In explaining his thought about the problems and challenges encountered in maintaining the ISO 9000 quality system, the MD said:

"The challenge is trying to introduce changes for improvement."

This is further explained by the Senior General Manager, Maintenance Operations:

"The system is there but when it comes to informing about changes in the process, the ground workers who actually performed the job lacked initiatives. So what is being done is not the same as what is written in the procedures."

The problem with the ground workers happens due to lack of communication as according to the General Manager, Special Projects:

"To me there are 2 groups of staff; the people in HQ and the people on the ground/at sites. The people in HQ are easy to control because they are close to us, we can talk to them. But the people on the ground, they are far away and scattered as there are so many places. So cascading information down to the ground people, this needs to be improved because they need to hear and see, then they'll follow."

The General Manager, Engineering said that although employees are beginning to understand the QMS compared to at the beginning when it was first introduced, training should be done continuously as:

"We must do more training as right now staff don't understand the policy and procedures because there is a change in key personnel due to promotion. Internal audit was not taken seriously and there's no disclosure/display on audit performance or result to employees so they are not aware of what's going on. Staff motivation died once they think the company has achieved the ISO 9000 certification."

The problem of ignorance and lack of understanding on the QMS is apparent on the operators' side according to Senior Manager, Logistics & Machinery. He stressed:

"Mostly what I see is on the operator's side. They are ignorant and don't understand. Even if they understood, they don't care about the QMS. So far we have no major problems. I would say acceptance and awareness is quite good. The challenge is to simplify the checklist for machinery maintenance. It's too long." Commitment from lower level staff e.g. operators due to their educational background. It's a hurdle."

To overcome this lengthy checklist problem, he offered:

"One way to overcome this problem is by establishing operators' competency so that they can do their own inspection of the machines."

Another problem faced by the Logistics & Machinery department stated in the last sentence of the statement is lack of commitment from lower level staff which is attributed to their educational background. This can be quite a difficult problem as employee involvement and participation is needed to maintain the ISO 9000 quality system as explained by the Senior General Manager, Corporate Finance:

"Any system introduced needs to be participated by people down the line. The challenge is to people to be supportive and fully involved in anything they do. Traditionally Finance department is a very busy department and people are fully involved in day to day work. Anything new is an added pressure to them. In order to get their support and participation, they must be convinced that the things they do are beneficial not only to them but also to the company. At the end of the day, they need to understand that the things they do will improve the company and not as an additional burden. They must understand why we do certain things. These are the challenges."

The problem of lack of commitment from people also seems to be affirmed by the Manager of Maintenance Operations and clearly voiced by the Management Representative when he said:

"*The commitment from both sides, the leader (management) and the follower (staff). The Head of Department (HOD) as the custodian of procedures took their time in giving feedback to the MR when it comes to immediate review and improvement of the system. Monitoring of process is the obligation of HOD. On staff part, they took their time to practice the new revised procedures. They like to follow the old procedures. Top*

management (top managers) are reluctant to revise their procedures on time as the market practice."

Again this lacking is explained by the Deputy Senior Manager, Maintenance Operations when he lamented:

"Commitment from all because people tend to be busy with their work. Sometimes, they don't have the time to go through or read the procedures. Only when something went wrong, then they are forced to read the procedures. Due to logistics (many sites), staff tend not to follow certain procedures and clauses. They may not be so thorough in following procedures."

People not following procedures as mentioned in the above statement is not something new or unusual at Company B and the reasons why it is so according to its Head of Mechanical, Electronic & Electrical, Maintenance Operations can be seen from the statement:

"*There are instances where we have to do shortcuts to a process as it is very long. So in actual, we do not really follow the procedures. But in terms of the documentation, it's there. The challenge is first to train new employees. Second, in time of emergencies, we cannot follow the procedures 100%, we have to do shortcuts."*

On the participation and motivation of staff after the company is ISO-certified, the Quality Assurance Executive elaborated:

"*What I can say is there's up and down trend. At the beginning everybody's very happy but after some times, we took it for granted that we already have the ISO certification. To maintain it people need more motivation."*

This is also in accord with what the General Manager of Engineering said about staff motivation died once the company obtained the ISO 9000 certificate. Staff motivation also tends to slack after audits have been conducted as explained by the Quality Assurance Executive:

"*During the audit time people are alert, after that they slow down and it's always the same every time, every year."*

According to the Manager, Maintenance Operations, age factor affects compliance to ISO 9000 as he said:

"*Some of the old staff performed their jobs not according to procedures. They used shortcuts."*

His view about old staff causing problems to ISO maintenance is shared by the Senior Executive, Logistics & Machinery when he opined:

"A few are not participative or supportive, about 15%. They are lazy. The main problem is to deal with people. It's quite difficult to change their attitude and behaviour especially in older employees."

The Quality Assurance Executive added:

"At present, the old or veteran staff know what they are supposed to do. Only if they have some motivation, then they will do it properly, if not they just take it for granted."

When asked on staff participation in the ISO maintenance, the percentage given by the Senior Executive, Logistics & Machinery is quite small compared to the one that is being told by the Management Representative in his statement when he said:

"I would say that 50% are motivated, 50% are not motivated. This is because their efforts are not translated in the performance management system. Finding from previous internal audit shows operational control is the major source of non-conformances. People do not realise the importance of procedures or what was being practiced is not what is being written. This is due to the procedures being written by the Head of Department (HOD) and not the process owners or the actual people doing the job at sites. The process owners are not involved and not given the chance to give their feedback. The custodian of procedures does not validate the procedures to their own staff. Communication is lacking and the process owners do not know what procedures they are actually supposed to adhere to. Work instructions must be aligned to procedures and at the present, it's not the case."

The Maintenance Operations Manager says that staff are supportive but they just do not participate. If they do participate, it is not done voluntarily as clearly shown by the following statements:

"*Yes, they have to because ISO 9000 related issue is one of the Performance Measurement System key results areas."* – Deputy Senior Manager, Maintenance Operations

"Yes, they do participate in department's activities, through constant encouragement from the Head of Department." – General Manager, Engineering.

According to Senior General Manager, Maintenance Operations, another problem in maintaining the QMS is related to Company B having a lot of subcontractors as he explained:

"Unfortunately, in our set up, we subcontract a lot of work. So our problem is on the subcontractors and suppliers; the management of subcontractors and their attitude and business culture. We have to be on guard at all times, if we sleep they will do the least possible to save cost and have shortcuts."

Apart from problems associated with people when introducing improvement or changes, to do improvements is also difficult because the owner of the highway is the Malaysian government. To expand from two lanes to three lanes for example, PLK, the client needs the approval of the government and therefore has to go through several agencies before it can award the project to Company B. According to the MR, sometimes it can be a lengthy process and the customers (end users) will just have to wait. Table 5.28 summarises the problems and challenges encountered at Company B in maintaining the ISO 9000 and measures taken by Company B to overcome them.

	Problems	**Measures to Overcome**
1.	Informing change to process to ground workers.	a. Conduct in-house training for workers. b. Use of short messaging system and emails for internal communication.
2.	Lack of communication due to disperse in location.	a. Placing a person-in-charge at regional level. b. Use of short messaging system and emails for internal communication.
3.	Lack of employee understanding on the policy and procedures.	a. Conduct training on awareness and understanding of ISO 9000. b. Make Quality Policy & Procedures bilingual c. Head of Department conducts workshop/briefings on Quality Policy & Procedures.
4.	Internal audit not taken seriously.	a. Conduct training on awareness and understanding of ISO 9000. b. Implement Employee Performance Measurement c. Highlight problematic matters in meetings/briefings..
5.	Audit performance not disclosed to employees.	a. Sent leader to parent company Leadership Center for training. b. Conduct training on awareness and understanding of ISO 9000. c. Highlight problematic matters in meetings and briefings.
6.	Lack of staff motivation.	a. Conduct training on awareness and understanding of ISO 9000. b. Implement Employee Performance Measurement. c. Conduct in-house training for workers.

	Problems	Measures to Overcome
7.	Lack of operator's competency in Logistics & Machinery department to do machine inspection.	a. Conduct skill and competency training for operators. b. Assess training requirement to establish operator's competency. c. Conduct in-house training for workers.
8.	Lack of commitment from lower level staff.	a. Conduct training on awareness and understanding of ISO 9000. b. Implement Employee Performance Measurement. c. Head of Department conducts workshop/briefings on Quality Policy & Procedures.
9.	Lack of commitment from people (management & staff)	a. Sent leader to parent company Leadership Center for training. b. Conduct training on awareness and understanding of ISO 9000. c. Implement Employee Performance Measurement.
10.	Following old procedures.	a. Placing a person-in-charge at regional level. b. Head of Department conducts workshop/briefings on Quality Policy & Procedures. c. Review and revise procedures. d. Highlight problematic matters in meetings/briefings.
11.	Not following procedures, use shortcuts.	a. Make Quality Policy & Procedures bilingual. b. Conduct training on awareness and understanding of ISO 9000. c. Implement Employee Performance Measurement. d. Implement non-conformance report (NCR) and Work Order Notice. e. Review and revise procedures f. Highlight problematic matters in meetings/briefings.
12.	Monitoring subcontractors/suppliers performance.	a. Establish contractor/supplier performance measurement and monitoring system. b. Implement non-conformance report (NCR) and Work Order Notice.

Table 5.28: Problems and challenges in ISO 9000 maintenance and measures to overcome.

For Company B, its problems and challenges in maintaining the quality system can be summarised as lack of commitment from leaders, staff (ground workers, operators) and subcontractors, lack of participation from staff, and lack of employee knowledge and training. In terms of communication within the company, it is also a problem as most staff are at the ground/site. The scattered location creates difficulties in communication of information from top to the bottom. In addition, audit performance is not disclosed to lower level staff, making them unaware of their work performance. As for documentation, problems arose due to not following procedures and following old procedures. Procedures are sometimes not followed 100% and shortcuts taken especially when the manager and employees think the procedures are very long and in emergencies.

As a conclusion, problems and challenges associated with ISO 9000 maintenance at Company B are people, documentation, and communication. The communication problem is due to its scattered location, many site offices, and weakness in its internal communication.

5.4 Analysis of the Two Case Studies

According to Eisenhardt (1989), in a case study, *cross-case* analysis can be performed once the researcher is familiar with each case as the result of doing *within-case* analysis performed earlier. This section presents the similarities and differences between the two companies based on the findings of interviews and document reviews that would help to explain how these would impact the maintenance of ISO 9000 in these two companies. Later, further analysis in the form of an assessment would enable the researcher to determine the level of ISO 9000 maintenance performance of these two companies (See Chapter 7).

5.4.1 Profile and Background of Respondents

In terms of the average number of years spent with the company, top management of Company A has been with the company longer (11.5 years) compared to top managers of Company B who have been with the company on average of 8.14 years. As the implementation of ISO 9000 started in 2004 at Company A, top management of the company who are the ones who designed the quality system has had the opportunities to operate the quality system. For Company B, as the implementation of the quality system took place in 1999, then it could be said that only a few of its top management have had the opportunity to design and operate the quality system. However, both companies' MDs are relatively new to the company and have not had the opportunity to learn much about the quality system in place.

5.4.2 Views on Motivation for Certification

The analysis on the motives for certification to ISO of both companies shows that for Company A, the main motivation for certification is to improve its operations' efficiency. Company B's motivation for certification to the standard is due to client's requirement and as a marketing tool for market expansion. However, both companies have similar motives in terms of the establishment of a systematic, documented and standardised documentation as the intent of certification to the standard. Both also indicated that improvement and control of existing documents as another motive. Although improvement in people aspect was one of the motives for ISO 9000 certification at Company A, it was not so at Company B.

As for the improvement of system, Company A's top management are very clear on why they went for certification. The top management of Company A's reasons

for ISO certification are to improve the process, service and the whole organisation, to do things systematically and properly in a disciplined environment, to monitor and establish performance, to measure customer satisfaction, to conduct industry benchmarking and as a platform to other certification such as the ISO 14000 and OHSAS 18000. At present, Company A has obtained both certifications.

On the other hand, top management of Company B are less specific about the company's motives for certification to ISO 9000. They state to improve on quality, to be a quality company, to have some sort of a quality management system, to move with time and for continuous improvement as the motives for ISO certification. However, it has also obtained the OHSAS 18000 certification and is working towards the ISO 14000.

Some of the external reasons for certification to ISO 9000 which are similar for the two companies are to satisfy customers, to enhance company's image and perception of customers, it is the norm or requirement to do business, it is a recognised, universal, international certification, customers/clients'/potential clients' requirement, to be competitive, to gain competitive advantage and as a marketing tool.

5.4.3 Views on Quality

With regards to the top management's view on quality, by analysing the above responses given by the top management of Company B, they are more specific in their interpretations of quality. In comparison to Company A, their definitions of quality seem to be based on the user and producer perspectives of quality. On the other hand, Company A's top management definitions of quality tend to be based on product/service and value-oriented in addition to user/customer-oriented. Both companies' top managers understood the importance of quality to their organisations. The views given by the Managing Directors of both companies on making their partners look good and customers satisfied also reflect the importance and value of partners and customers to them and hence ensuring quality service delivery.

5.4.4 Views on ISO 9000 and its Effectiveness

On ISO 9000, all at Company A think that ISO 9000 is a good quality system while only most thought so at Company B. On the effectiveness of ISO 9000

maintenance, from the interviews, all respondents at Company A feel that the company's quality management system is effectively maintained. In contrast, there is a mixed feeling about the effectiveness of the company's ISO 9000 maintenance in Company B. Two of company's respondents, the Senior General Manager and Manager of Maintenance Operations feel that Company B's quality management system is not effectively maintained and the MD of Company B says it is maintained but was not sure in terms of its effectiveness. However, it could be concluded that for both companies, those who believed that the ISO 9000 is effectively maintained based their views on four main reasons namely: the audit results, compliance to ISO requirements, improvement carried out in people, process, documentation, performance, and the existence of a formal post or unit specific for looking after the ISO 9000 QMS.

5.4.5 Top Management Commitment and Involvement

Both companies' top management agree that top management commitment and support are one of the most important factors to successful implementation and maintenance of the ISO 9000 QMS in any organisation. The average self-rating score of 4.17 on commitment and 4.14 for involvement indicates top management of Company A feel that they are highly committed to ISO 9000 maintenance and this is reflected in how involved they are in its activities and programs. At Company B, top managers rated themselves an average of 4.07 for commitment and 3.93 for involvement reflecting they are highly committed with satisfactory involvement in the ISO 9000 maintenance activities.

On similarities, the top management of both companies chair their management meeting on a regular basis and involved themselves in the following activities in order to maintain the ISO 9000 QMS:

i. Attend and sit in meetings (e.g. Management Review, ISO Steering Committee and ISO support group, Management meeting).
ii. Explain and convince staff/employees about ISO 9000.
iii. Initiate change for improvement
iv. Initiate and involve in the development of documentation system (e.g. policy & procedures, standard operating procedures)
v. Provide training to staff.

The difference is the MD of Company A chairs the ISO 9000 Steering Committee and the Management Review Meeting at Company A while the MD of Company B previously was not involved in either of them as the Head of Departments at Company B on rotation will chair those meetings. This practice might have an impact on the effectiveness of the committee and decisions made during management reviews.

Top management of Company A in describing their involvement, are more *hands-on* and specific as compared to the top management of Company B who tend to be more general in their description of involvement as they seem to emphasise more on their function without stating the end purpose of doing so. Apart from participating in the above activities, top management of both companies also show their commitment by carrying out their roles and responsibilities in areas such as strategic planning, setting, communicating and reviewing of quality policy and objectives, and planning and providing of resources to carry out work as required by the standard (refer to ISO 9001:2000, Management Responsibility – Clause 5).

5.4.6 ISO 9000 Maintenance

The companies maintain their ISO 9000 based on both the technical/ISO 9001:2000 requirements and the human resource aspect of quality management.

5.4.6.1 Documentation

In terms of number of procedures being used, Company A outnumbered Company B by 20 procedures. In addition, Company B has lesser level of quality system documentation compared to Company A. Both companies have developed their own Quality Manual to define and describe their overall quality management system and have met the requirements for ISO 9000 documentation. However, the results of internal audits (2004-2007) of Company A indicate that control of documents and control of records are two main areas of non-conformances at Company A. In some instances for examples, documents and records were found not updated and difficult to retrieve. This could result in the use of old/obsolete procedures and forms instead of the current version. At Company B, control of document is also a problem based on the internal audit findings for year 2006 and 2007. Most of the problems are associated with not filing the document/record consistently, forms not signed by authorised person, forms not available for use at specific location, use of obsolete documents,

documents not filled or not filled completely and operational organisational chart was not updated.

5.4.6.2 Quality Policy and Objectives

From the analysis, both the top management of Company A and Company B have developed a statement of the importance of meeting customer requirements in their Quality Policy in order to communicate to the organisation the importance of meeting customer as well as statutory and regulatory requirements and to continually improve their service level.

As for the quality objectives, for Company A, they are set for each relevant units and key processes such as cargo operations and charter and planning while for Company B, every department has their own quality objectives. To ensure the achievement of its quality objectives, Company A develops performance standards in areas that are critical to quality. At Company B, Key Operational Performance Index (KOPI) is used to measure the achievement of its quality objectives. Although there is a slight difference in how they went about implementing and monitoring their quality objectives, it could be said that both companies had gone to a great length to establish measures to ensure the achievement of their quality objectives. Both have also use the job description, organisation chart and operating procedures to define the responsibility and authority. These are made known and available to the relevant staff.

5.4.6.3 Authority and Communication

Although both companies have appointed their own MR as required by the standards, the difference is for Company B, the MR appointed is not the company's employee but of its parent. In contrast, the MR for Company A is one of its own people. This has resulted in dissatisfaction and resentment by some people in Company B who want the MR to be from their own company.

As for internal communication, based on the rating score, Company A is doing slightly better than Company B. For Company A, communication is said to be from top to bottom and decisions made at the top are slow to be cascaded down to the floor. Areas that need to be improved at Company B are such as; to obtain more feedback from staff especially at sites, communication between Head Office and sites, language barrier, lack of computers, and information not clearly defined.

5.4.6.4 Resource Planning

Both Company A and Company B plan their resources based on their strategic plan which is being reviewed yearly. The resource planning process for Company A and Company B is similar to one another in how both companies base and identify their resource needs and restructure or prioritise these resources. In some instances, resource planning is quite straight forward at Company A as opposed to Company B where the nature of work is much more diverse and many of them are subcontracted. However, due to the possibility of fluctuation in demand for example because of the increase in fuel which increases the cost of transport, managing the resources to the optimum may be difficult for Company A when compared to Company B which has recurring activities based on PLK which contributes 90% to its business. In this sense Company B has a more stable business environment.

Although Company A is making do with what it has in terms of resources by training and developing existing people to make them multi-skilled, Company B is suffering in terms of insufficient number of internal auditors to conduct its internal audit as it has quite a large number of section offices. This shortage of internal auditors might affect the effectiveness of the company's QMS as a whole. As for other types of resources such as facilities, Company B still has a spare capacity as it has not fully utilise its resources.

5.4.6.5 Training

At Company A, the Head of Department (HOD) will identify the needs for training of employees. Necessary competence for personnel performing work is determined by the nature of work itself such as for people handling of dangerous goods, truck drivers and forklift handlers. They will attend courses such as Dangerous Goods Regulation and Factories & Machinery Act. These types of training are mandatory regulatory requirements by the industry. In addition, competence is also determined when there is a requirement for new skills resulting from the advancement in process as airfreight is a very dynamic industry. To ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives, all graded staff are going for the ISO 9000 Awareness training. The Management Representative (MR) for the quality system at Company A feels that there is a need for more training for Company A staff.

At Company B, the HOD is responsible for the identification of training needs. For Maintenance Operations, all operators performing maintenance works are qualified and competent. However, for Engineering and Logistic & Machinery, technical and technology training seems to be inadequate for supervisors and machine operators as stated by the Senior Manager, Logistics and Machinery. These technical training are required continuously for supervisors in order for them to be competent and knowledgeable especially for new technology and machinery for pavement. The MR of Company B thinks that training is inadequate and should be done continually. Both companies are aware of the need for continuous employees' competency training in order for them to be competent and knowledgeable to perform their work. However, in Logistics & Machinery Department at Company B, it is still inadequate.

5.4.6.6 Service Realisation

Obviously due to the different kind of service provided by the two companies, their service realisation process is not similar to one another. Service realisation process for Company A is more structured, standardised and straight forward compared to Company B. Company A's service is easier to realise compared to Company B's because its core business is cargo transportation only while Company B provides many categories of services such as routine maintenance, mechanical, electrical and electronics works, preventive maintenance, upgrading and repair works, pavement, traffic management and facilities to maintain the highway. Further, Company A's operations are located at one place, at ACC, KLIA. Company B's operations on the other hand are scattered along the highway, making communication one of its problems. Company B also has more than 200 subcontractors and suppliers, making service realisation a challenge as the company has to depend on its many subcontractors and suppliers to realise its service.

5.4.6.7 Performance Measurement System

Both Company A and Company B have their own performance measurement and monitoring systems to ensure the achievement of their quality objective and to evaluate their suppliers and contractors. In terms of the number of suppliers/contractors, Company B has a bigger number of subcontractors/suppliers compared to Company A. This is due to the various work categories that formed the overall service provided by Company B.

Therefore subcontractors' performance evaluation takes a lot of Company B's resources.

5.4.6.8 Customer Satisfaction Survey and Complaints

To gauge customers' perception on their service, both companies carried out a Customer Satisfaction Survey. For Company A, the survey was professionally done by a consultant and the results of the survey are communicated to the respondents interviewed so that everybody know what are their strengths and weaknesses as perceived by customers. In the case of Company B, the survey conducted on PLK (main client) section managers was carried out by Company B on MEE and Civil Works Units of Maintenance Operations only. The satisfaction survey on the highway users, the end and real customers are conducted by the Malaysian Highway Authority (MHA) and the result is disclosed to PLK but not to Company B. Clearly, this shows that it is not easy to improve its performance if Company B does not know its strengths and weaknesses.

When comparing the two companies, there is a major difference in the approach employed by Company A and Company B in handling customer complaints. Company A has many customers. Its key customers consist of freight forwarders and customer airlines which brings more than 60% of revenue to the company. Company A treats its key customers differently compared to its other customers. To them, the key customers are of priority; their problems are being listened to and they are treated as partners. The approach employs by Company A towards its key customers is a proactive one as it seeks customers feedback by arranging meetings with its key customers once every fortnight. It also tries to make the customers understand the company's problems in providing the service as required by the customers.

Company B on the hand, has one major customer or client, PLK which contributes to 90% of its business. When there is a complaint, the customer (PLK) will issue the complaints directly to the individual department or sections at Company B. PLK will call for meetings and issue nonconformity report (NCR) to the respective units in the Maintenance Operations Department. Compared to Company A where both the customers and company share their problems in meetings, Company B seems to get NCR in meetings arranged by the customer. Company B then must start to act on the complaints within a specified time failing which a penalty will be issued by the customer. This complaints handling

approach adopted by Company B is a reactive one and Company B does not have much say in it.

5.4.6.9 Internal and External Audit Findings

In terms of problem areas, the results of internal audits (2004-2007) of Company A indicate that control of documents and control of records, corrective action, control of production & service provision, and control of non-conforming product are main areas of non-conformances at Company A. External audit results (2005-2007) show that Management Review is not effectively used to ensure the QMS is implemented as it should be especially in terms of its results, planning of internal audit was not properly thought out, corrective action taken not effective, identification of potential non-conformities for preventive action not specified, lack of knowledge and understanding (internal auditors, new staff and security staff), lack of monitoring and supervision on service realisation process, and measurement of some processes was not effective. The internal audit findings of Company B (2006-2007) show there are two types of control lacking; control of document and control of operation. This lack of control in these two specific areas indicates the lack of monitoring and supervision, lack of knowledge and understanding on staff part, difficulties in accessing documents, improper layout, lack of communication between people, and attitude of people. Also, Company B's (2005-2007) external audit findings indicate the area of non-conformances are communication, contractors/suppliers' control, management responsibility, not following procedure, data analysis/analysis of root cause for problems, and lack of knowledge and awareness on the part of new staff and existing staff.

5.4.6.10 Corrective and Preventive Action

As for corrective and preventive actions, both companies did carry out their corrective and preventive actions to improve their service. However, this area itself needs to be improved for both companies as people seemed reluctant to raise a corrective action request (CAR) even when the situation warrants it.

5.4.7 Employee Involvement and Participation

In terms of human resource aspects, employees at Company A get themselves involved and participated in the ISO maintenance. Their participation is spurred by the anticipation of reward and also because they are afraid they will be asked to leave the company if they do not perform. At Company B, top management feel that employees are participative but they have to be encouraged constantly

while the middle managers says that employees feel they have no choice as their performance will be measured. There is a mixed response at the MR, QA Executive and lower manager level. The MR says that only half of the employees feel motivated to participate in the ISO maintenance and the QA Executive voices his concern over participation from the old staff. The lower manager says that although employees are supportive of the system, they just do not participate.

5.4.8 Employee Empowerment

Although both companies empower their employees, the empowerment is guided by the companies Approving Authority Manual for Company A and Discretionary Authority Limit for Company B. Formally, there is no Employee Satisfaction Survey conducted by both companies but employees are free to voice their feedback and grievances under the Group Employee Survey. As for feedback, employees of both companies can channelled their feedback through department meetings and other common communication channels.

5.4.9 Employee Performance and Reward

As for employee performance, both companies have their own performance measurement system (PMS) to assess employees' performance. Rewards are linked to employees' performance and the companies have their own way of rewarding and motivating employees. Employees at Company B feel that at present, there is not enough recognition and reward given to staff who have taken the extra mile to contribute to the maintenance of the ISO 9000 QMS of the company.

5.4.10 Teamwork

On teamwork, both companies agree that teamwork is important in their companies. To encourage teamwork and promote improvement, Company A and Company B have set up their own Initiative & Creative Circle (ICC).

5.4.11 Critical Success Factors of ISO 9000 Maintenance

Top management and employee involvement are equal in their position as the most critical success factors of ISO 9000 maintenance (Refer Table 5.29). There is a difference in the third place with motivation and reward for Company A and teamwork for Company B. Continuous improvement also is third place at Company B but fourth at Company A. Equal third at Company B is understanding of the QMS. Others factors critical to ISO 9000 maintenance for Company A are

teamwork, ISO-certified vendors, correct measures for process improvement, the right people, quality culture, and use of the standards as reference. On the other hand, other factors considered critical to ISO maintenance at Company B by its management are reward, consistency of procedures, measures and exchanging of feedback, translating vision into targets, and management representative.

Rank	Company A	Rank	Company B
1	Top management commitment	1	Top management commitment
=1	Employee Involvement	=1	Employee Involvement
3	Motivation & Reward	3	Teamwork
4	Continuous Improvement	=3	Continuous Improvement
5	Teamwork	=3	Understanding of QMS

Table 5.29: Critical success factors of ISO 9000 maintenance for both companies

Company A's respondents said that in order to enhance the effectiveness of ISO 9000 maintenance, the ISO 9000 standards must be more industry specific, internal audits are conducted by strong internal quality auditors and an effective quality department that reports directly to the MD must be set up. Meanwhile, according to Company B's respondents, to further enhance the effectiveness of ISO 9000, the following are needed:

i. Infrastructure
ii. Training of people
iii. Dual language for policy and procedures
iv. Wider access to documents
v. Perform self-regulated audits on work
vi. Conduct risk identification and analysis

5.4.12 Problems Associated with ISO 9000 Maintenance

The problems and challenges associated with ISO 9000 maintenance by Company A are in terms of lack of commitment from people and lack of employee knowledge/training which also affect the distribution and communication of documents especially when there is a change in document or new document is being issued. For Company B, lack of commitment from people is also one of the main problems in ISO maintenance. As for documentation, old procedures were being followed and shortcuts were taken when performing jobs. Apart from people and documentation, communication also becomes a problem at Company B due to its scattered location, many site offices, and weakness in its internal communication.

For Company A, some of the measures to overcome the problems are such as training people on leadership and ISO 9000 and ISO-related courses, improving internal communication, administration of proper reward system, multi-tasking by employees, and working as a team. For Company B, the HOD of the company conducts workshop/briefing on quality policy and procedures, the company makes the quality policy and procedures bilingual, implements employee and subcontractors performance measurement, and conducts both management and staff training to improve leadership, skills and understanding on the ISO 9000.

5.5 Chapter Summary

This chapter has described the findings from interview and document reviews. Based on the average number of years, Company A's top management have been with their company a little longer than Company B's. The main motivation for ISO 9000 certification differs between the two companies. Company A motivation for ISO 9000 certification was to improve its business operation's efficiency while for Company B it is because of client's requirement and as a marketing tool for market expansion. However both companies have internal and external reasons for registration to ISO 9000.

Both companies' top managers understood the importance of quality to their organisations. All at Company A think that ISO 9000 is a good quality system while only most thought so at Company B. However, both Company A's and Company B's top management agree that top management commitment and support are one of the most important factors to successful implementation and maintenance of the ISO 9000 in any organisation. The result of the average rating on commitment and involvement as perceived by top management shows, both companies display high level of commitment to ISO maintenance. The level of involvement is rated as satisfactory for Company B and high for Company A.

The chapter also has presented how the two case companies manage and maintain their quality system based on the ISO 9000 requirements. The findings were narrated under the clauses of ISO 9001:2000 which are quality management systems, management responsibility, resource management, product realisation, and measurement, analysis and improvement.

The companies have used quality management practices and tools to help them in their quality improvement efforts. In terms of technology, both companies are also moving towards an online computerised system in their core activities and documentation. In order to maintain the ISO 9000 better and move beyond its maintenance, the human resource aspects such as employee involvement and participation, empowerment, feedback, teamwork, and recognition and reward system were also adopted by the two companies at different levels.

The chapter continues with the respondents' perceptions on the effectiveness of ISO 9000 maintenance in their company. The critical success factors for maintaining the ISO 9000 were identified and explored. Lastly, this chapter identifies the problems and challenges faced by the companies in maintaining the ISO 9000. The main problems and challenges associated with ISO 9000 maintenance are related to people, documentation, and communication. Measures to overcome the problems were also presented.

To support the interview findings, the next chapter, Chapter 6 will present the survey findings of the research.

CHAPTER 6 – FINDINGS (SURVEY)

6.1 Introduction

The previous chapter presented, analysed and discussed the interview and document review results. This chapter will present the findings from the survey questionnaire that was distributed to the case study companies. The questionnaire employed for this study is attached as Appendix B.

The purpose and outcome of the survey presented in this chapter is to corroborate the findings of the previous chapter in order to answer the research questions identified earlier. As an introduction, the first section under each case organisation examines the questionnaire return rate and the descriptive data of respondents in terms of demographics such as job status, age, education, position, department, number of years working with the company, and working hours. The second section presents the employees' view on quality and their opinion on motivation for certification as motivation for certification to ISO 9000 is thought to influence the performance of organisations. The third section explores staffs' perceptions on top management and their own commitment and involvement in ISO 9000 maintenance, their perceptions on the effectiveness of communication in their organisation, the principles of ISO 9000 which include the human aspects of quality management, and on quality management practices of their companies. The second and third sections will provide answers to research question "How do Malaysian service organisations maintain their ISO 9000?" The fourth section presents staff opinion on ISO 9000 and its maintenance, their perceptions on the benefits and impact of ISO 9000 maintenance that would affect the involvement and participation of employees in maintaining the quality system. To help answer research question "What are the critical success factors of ISO 9000 maintenance for these companies?" the second last section of section three under each case organisation offers employees' opinion on the critical success factors for maintaining the ISO 9000 of the two companies. To answer research question "What are the problems and challenges associated with ISO 9000 maintenance and how are they addressed?" the last section of section three describes the problems associated with ISO 9000 maintenance and suggestions on improving the quality system by the employees.

Apart from item by item analysis, group analysis (aggregation or averaging of groups of items under similar themes) was also used to support findings from interviews. Further analysis was carried out using the Chi-Square test and *t*-tests to confirm significant differences between the two companies on some items or groups of items. According to Sekaran (2003) a p-value of less than 0.05 indicates there is a significant difference between the companies' outcomes. Where appropriate and necessary, Cronbach's Alpha is used to check the reliability of measures. Cronbach's Alpha of less than 0.6 is considered poor, 0.6 to 0.7, acceptable and 0.8 and above, good (Sekaran, 2003). For this study, only reliabilities of 0.7 and above are used to ensure reliability and consistency.

6.2 Company A

6.2.1 General Descriptive Statistics of Respondents

This section examines the questionnaire return rate and descriptive data of respondents in terms of demographics such as job status, age, education, position, department, number of years working with the company, and working hours. The sample size for this study is 150 and the sample was chosen using the stratified random sampling method described in Chapter 3.

6.2.1.1 Questionnaire Response/Return Rate

The returned or response rate of this company is 74% as shown by Table 6.1a. All returned questionnaires are usable.

Company	Total questionnaires distributed (frequency)	Total questionnaires returned (frequency)	Total Usable Questionnaires (frequency)	Total Usable Questionnaires Rate (%)
Company A	150	111	111	74

Table 6.1a: Questionnaire return rate

There are 532 people at Company A, KLIA who fall into the lower management, supervisor, and staff categories. Out of 532 people at Company A, 34 are lower management, 41 are supervisors and 457 are staff employees. From this configuration, 10 questionnaires were distributed to lower management, 12 to supervisors, and 128 to staff employees of Company A (refer to Table 6.1b).

Job level	No. of employees	Questionnaires distributed	Questionnaires returned	Response rate (%)
Lower Mgt	34	10	7	70.0
Supervisor	41	12	12	100.0
Non-Managerial Staff	457	128	92	71.9
Total	**532**	**150**	**111**	**74.0**

Table 6.1b: Questionnaire distribution by levels of respondents

6.2.1.2 Background of Respondents

Age of Respondents

The majority of the respondents are of the 35-44 years group with this group making up 54% of Company A respondents. This is followed by the age group of 25-34 which made up 36%.

Age (years)	Frequency	Percentage (%)
18-24	3	2.7
25-34	40	36.0
35-44	60	54.1
45 and above	8	7.2
Total	**111**	**100.0**

Table 6.2: Age of respondents

Age and Job level

At Company A, 71% lower management are in the 35-44 age brackets. For supervisors, 100% are of between 35-54 years old while 95% non-managerial staff are between 25-44 years old.

Job level	Age (years)					
	18-24	25-34	35-44	45-54	55 & above	Total
Lower management	0%	28.57%	71.43%	0%	0%	100%
Supervisory	0%	0%	50%	50%	0%	100%
Non-managerial staff	3.26%	41.3%	53.26%	2.17%	0%	100%

Table 6.3: Age and job level of respondents

Job Level

Based on the sampling frame, in terms of job status/level, the non-managerial staff made up 86% of Company A's respondents. This group contributed to the largest number of employees. For lower management, the percentage of employees is 6% while at the supervisory level, 8%.

Job level	Frequency	Percentage (%)
Lower Management	34	6.4
Supervisor	41	7.7
Non-Managerial staff	457	85.9
Total	**532**	**100.0**

Table 6.4: Job status/level category of respondents

Education Level of Respondents

For Company A, less than 3% of the respondents hold a degree or higher level of education. Most of the respondents (85%) are lowly educated. Those who have middle level of education (certificate or diploma) made up 13% of Company A's respondents.

Education level	Frequency	Percentage (%)
Primary/SPM/STPM	94	84.7
Certificate/Diploma	14	12.6
Bachelor & above	3	2.7
Total	**111**	**100.0**

Table 6.5: Education level of respondents

Years Working with the Company

The majority of respondents (68%) have worked for more than 10 years in Company A. Looking at the Table below, 90% of Company A's respondents have worked between 6 years and above with the company. The majority of respondents have worked for a considerable time with Company A and have therefore had opportunity to learn about the quality system in place.

Years worked	Frequency	Percentage (%)
1-2	0	0
3-5	11	9.9
6-10	25	22.5
Over 10	75	67.6
Total	**111**	**100.0**

Table 6.6: Years working in the company

Job Level and Number of Years Working

At Company A, more than half (57%) of lower management has worked between 3-10 years with the company while 43% has worked for more than 10 years (see Table 6.7). For Company A, the implementation of ISO 9000 started in 2004. As 71% of lower management group have worked between 6 years and above with the company, there are many people in this group who were involved in the early phase of ISO 9000 implementation of the company.

At the supervisory level, 92% of supervisors at Company A have worked over 10 years with the company. Only 8% of supervisors at Company A have worked between 6-10 years with the company. As for the non-managerial staff, majority (66%) at Company A have worked over 10 years with the company. 10% of Company A non-managerial staff have spent 5 years and below with the company.

Job level	No. of years working with company				Total
	1-2	3-5	6-10	10 & over	
Lower Management	0%	28.6%	28.6%	42.9%	100.0%
Supervisor	0%	0%	8.3%	91.7%	100.0%
Non-Managerial staff	0%	9.8%	23.9%	66.3%	100.0%
Total	0%	9.9%	22.5%	67.6%	100.0%

Table 6.7: Job level and the number of years working

Job level and Education

Table 6.8 shows that 29% of lower management at Company A have bachelor and above qualification with 29% having a certificate/diploma. At the supervisory level, 83% of supervisors have primary/secondary education. For non-managerial staff, 88% have primary/secondary education and 11% have certificate/diploma.

Job level	**Education level**			
	Bachelor & above	Certificate/ Diploma	Primary/SPM/ STPM	Total
Lower management	28.6%	28.6%	42.9%	100%
Supervisor	0%	16.7%	83.3%	100%
Non-Managerial Staff	1.1%	10.9%	88.0%	100%

Table 6.8: Job level and education of respondents

Working Hours

Table 6.9 indicates that most (80%) of the Company A respondents worked shifts. Only 20% worked regular hours at Company A.

Working hours	Frequency	Percentage (%)
Regular hours	22	19.8
Shift	89	80.2
Total	**111**	**100.0**

Table 6.9: Working hours of respondents

6.2.2 Views on Quality and Motivation for Certification

6.2.2.1 Views on the Importance of Quality

A question was asked to the respondents on the importance of quality to them. They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

The statements were 'Quality is very important to me' and 'What differentiates one company from the other is its quality of service'. It was found that 99% of Company A respondents agree or strongly agree that quality is very important to them (refer Table 6.10a).

Scale				**Total (%)**
Strongly Disagree	Disagree	Agree	Strongly Agree	
0%	0.9%	50%	49.1%	100.0

Table 6.10a: Views on the importance of quality

As for the second statement, 100% of Company A's respondents agree or strongly agree with the statement.

Scale				**Total (%)**
Strongly Disagree	Disagree	Agree	Strongly Agree	
0%	0%	44%	56%	100.0

Table 6.10b: Views on quality as a differentiator

The outcomes suggest employees feel strongly about quality in a positive way and they realise that the quality of their service will set them apart from others.

6.2.3 Employees' Motivation for Certification

In Company A, employees feel that motivations for certification to ISO 9000 are for improvement (89%), to satisfy customers (81%), to penetrate global market (74%), as a marketing tool (62%), to have proper documentation (59%), and a requirement to do business (58%). Two respondents on shifts basis who have been working between 6-10 years and more than 10 years with the company however do not know the reason why their company went for the ISO 9000 certification.

Motive	Percentage (%)
For improvement	89.2
To satisfy customers	81.1
To penetrate global market	73.9
As a marketing tool	62.2
To have proper documentation	58.6
A requirement to do business	57.7
Don't know	1.8

Table 6.11: Motivation for ISO 9000 certification

6.2.4 Top Management Commitment, Internal Communication and Quality Management Practices

6.2.4.1 Staff Perceptions on Top Management Commitment

In order to gauge staff perceptions on top management commitment to ISO maintenance, respondents were asked their views on whether:

i. Top management is actively involved in quality improvement
ii. Top management is committed in maintaining the quality system
iii. Top management provides the necessary resources to carry out activities effectively
iv. Resources are adequate to carry out business and quality system activities

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

A group analysis was conducted on all the 4 items. The results show that 86% of Company A's employees agree or strongly agree with the statements. The

Cronbach's Alpha for top management commitment is 0.84 which indicates that the items used are of good reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.8%	11.8%	76.4%	10.0%	100

Table 6.12a: Views on top management commitment

When asked to rate on the top management's commitment on the scale of very low, low, satisfactory, high, and very high, 60% of the employees rated it satisfactory and 30% rated it high. On top management's involvement in the ISO 9000 maintenance, 61% respondents of Company A rated it satisfactory and 28% rated it high.

Degree of commitment	Percentage (%)	Degree of involvement	Percentage (%)
Low	9.0	Low	9.9
Satisfactory	59.5	Satisfactory	61.3
High	29.7	High	27.9
Very high	1.8	Very high	0.9
Total	100	Total	100

Table 6.12b: Rating on top management commitment and involvement

6.2.4.2 Internal Communication

Employees were asked their perceptions on several matters related to communication within their company such as whether:

i. Quality policy and objectives are communicated and disseminated to all employees
ii. They know and understand the quality policy and objectives of their organisation
iii. Communication in the organisation is effective
iv. It is easy to communicate about work with their superior
v. Important information is presented and transmitted to staff.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable. The result of group analysis conducted on the 5 items for internal communication shows that 81% of Company A's employees agree or strongly agree with the statements and 19% disagree. The Cronbach's Alpha for internal communication is 0.77 which indicates that the items used are of acceptable reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.9%	17.0%	76.4%	4.7%	100.0

Table 6.13a: Views on internal communication

At Company A, non-managerial staff on shift and lower management on regular working hours who have worked between 6-10 years and above 10 years with the company are the group of employees who disagree with the statements concerning internal communication at Company A especially on the communication and dissemination of quality policy and objectives. They are from departments such as Export, Central Processing Office, Administration and Quality Assurance & Line Station (QALS). As for communication in the organization is effective, all who disagree are non-managerial staff mostly on shift work from Export, Import, Central Processing Office (CPO), and Ramp. They have spent between 6-10 and over 10 years with Company A. While for the statement 'It is easy to communicate with superior', those who disagree are non-managerial staff on shift work from Import, Export, CPO, Ramp, Perishable, Express Handling Unit (EHU), and Transshipment and whom have had spent between 6-10 and over 10 years with the company. As whether important information is presented and transmitted to staff, those who disagree in Company A include non-managerial staff, supervisor, and lower management on both regular and shift work basis from Import, Export, CPO and QALS. Most of them have been with the company for more than 10 years.

When asked to rate communication within their organisation on not effective, slightly effective, mostly effective, effective, highly effective scale, 56% found communication within the company effective while 31% found it mostly effective.

Scale	Percentage (%)
Not effective	0.9
Slightly effective	9.9
Mostly effective	30.6
Effective	55.9
Highly effective	2.7
Total	100

Table 6.13b: Rating on the effectiveness of internal communication

Out of 46 respondents at Company A who have rated communication between not effective and mostly effective, only 17 of them provided the reasons for their rating. The reasons as given by them are as follows:

Reason	Percentage (%)
Lack of interaction & teamwork between people	55.9
Lack of knowledge & understanding of ISO	20.5
Information not received by staff	5.9
Lack of attention	5.9
Lack of awareness	5.9
Not using the channel of information provided.	5.9
Total	100

Table 6.13c : Reasons for ineffectiveness of internal communication

To improve internal communications, out of 12 respondents at Company A, 34% suggested that management fosters closer relationships with staff through programmes, dialogue and discussion, 25% said to work as a team, 25% suggested for effective communication and dissemination of information especially of new policies and ISO and to make ISO 9000 QMS as a work culture, listen to staff problem and suggestion (8%) and recognise and reward excellence staff (8%).

6.2.4.3 Teamwork

To gauge how important teamwork is to the company, respondents were presented with the statement 'In this organisation, we work as a team.' They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

92% of respondents at Company A agree or strongly agree that employees in the company work as a team.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
1.8%	6.3%	55.0%	36.9%	100.0

Table 6.14a: Views on working as a team

About 92% of employees at Company A agree or strongly agree that work groups are common in the organisation.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	8.1%	61.3%	30.6%	100.0

Table 6.14b: Views on the existence of work groups

6.2.4.4 Process Approach

When asked whether their organisation adopts a process management approach, 94% respondents at Company A agree or strongly agree that their organisation adopts a process management approach. Their answer is based on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
0.9%	5.5%	80.0%	13.6%	100.0

Table 6.15: Views on the adoption of process approach

6.2.4.5 Continuous Improvement

Using the same scale, to obtain the perception of whether there is continuous improvement in the organisation; respondents were asked the following items:

i. Processes are continuously improved
ii. The quality system in the company is improved continuously.

On continuous improvement on the processes, 94% respondents of Company A agree or strongly agree with the statement.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0.9%	5.6%	73.1%	20.4%	100.0

Table 6.16a: Views on continuous improvement of processes

Meanwhile, 95% of respondents at Company A agree or strongly agree that the quality system in the company is improved continuously.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0.9%	4.6%	70.6%	23.9%	100.0

Table 6.16b: Views on continuous improvement of system

6.2.4.6 QM Practices and Tool

To find out whether the company uses quality management practices and tools to support the maintenance of ISO 9000 and continuous improvement effort by the organisations, respondents were presented with 4 statements:

i. The organisation uses quality circles/quality improvement teams
ii. Multi-tasking of employees is practiced by the organisation
iii. The company uses quality programmes to improve its quality
iv. The company uses statistical tools and techniques to measure and control quality.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

From the group analysis, it was found that 83% respondents at Company A agree or strongly agree with these statements. However, 17% at the company feel the opposite. The Cronbach's Alpha for quality management practices and tools is 0.76 which indicates that the items used are of acceptable reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.9%	15.2%	77.1%.	5.7%	100.0

Table 6.17: Views on the adoption of quality practices and tools

6.2.4.7 Organisational Structure

A question was asked whether there is a little bureaucracy in the organisation. Based on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable, 79% of the respondents at Company A agree or strongly agree that there is a little bureaucracy in the organisation. However a substantial percentage of respondents (17%) of the company beg to differ.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.9%	15.2%	77.1%	5.7%	100.0

Table 6.18: Views on organisational structure

Those who disagree at Company A are from a manager in Systems, a cargo operations Controller, a supervisor in Import, and non-managerial staff from various departments such as Export, CPO, Ramp, Maintenance, Perishable, EHU, Transshipment, Animal Hotel, and ULD Logistics. Most of them have stayed with the companies for 6 years and over. 4 respondents found the statement not applicable to them and 1 did not answer. All are from non-managerial staff. They might not understand the question as 88% of non-managerial employees at Company A are low educated.

6.2.4.8 Employee Training

To gauge employee training, respondents were presented with the following statements:

i. The company provides continuous training for its staff
ii. Training needs and training are always evaluated
iii. Employees are trained in the use of these statistical tools and techniques.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

By analysing the individual items, it shows that the percentage of agreement for all the three items is consistently high. At Company A, those who disagree with the first and second statements are mainly from Export with few others from

various departments. Most of them have been with the Company for more than 10 years. As for being trained in the use of the statistical tools and techniques, those who disagree are mostly from Export, Import, CPO and a few from other departments. 5 respondents found the statement not applicable to them while 1 did not answer. This might be because in their work, they do not use or need to use the tools and techniques. The Cronbach's Alpha for employee training is 0.76 which indicates that the items used are of acceptable reliability.

Statement	Strongly Disagree	Disagree	Agree	Strongly Agree
The company provides continuous training for its staff.	1.8%	9.9%	58.6%	29.7%
Training needs and training are always evaluated.	2.7%	9.0%	59.5%	28.8%
Employees are trained in the use of these statistical tools and techniques.	0%	13.3%	72.4%	14.3%

Table 6.19: Views on employee training

6.2.4.9 Employee Empowerment, Participation and Involvement

5 statements were offered to the respondents to find out their perceptions regarding employee empowerment and participation in their companies. The following are the statements;

i. Employee feedback is always sought
ii. Employees are encouraged to participate and be involved in the company's activities.
iii. Employees are encouraged to make decision with regards to their job.
iv. Management lets employees participate in achieving organisational objectives
v. Employees are responsible for tasks they perform, and inspect their own work.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

Based on the result on the group analysis on all the 5 items on employee empowerment and participation, it was found that 75% agree or strongly agree with the above statements while 25% disagree at Company A. The Cronbach's Alpha for employee empowerment is 0.83 which indicates that the items used are of good reliability.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
1.9%	22.6%	72.6%	2.8%	100.0

Table 6.20a: Views on employee empowerment and participation

When asked on their own commitment in the ISO 9000 maintenance on a scale of very low, low, satisfactory, high, and very high, 63% of Company A's respondents rated themselves satisfactory and 24% high. As for their involvement in ISO 9000 maintenance, on the same scale, 62% of Company A's employees rated satisfactory and 26% high.

Level of commitment	Percentage (%)	Level of involvement	Percentage (%)
Very low	0.9	Very low	1.8
Low	10.8	Low	9.0
Satisfactory	63.1	Satisfactory	62.2
High	24.3	High	26.1
Very high	0.9	Very high	0.9
Total	100	Total	100

Table 6.20b: Employee commitment and involvement in ISO maintenance

6.2.4.10 Measurement of Employee Satisfaction

Respondents were asked whether employee satisfaction is measured. They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

At Company A, 72% agree or strongly agree that employee satisfaction is measured while 29% strongly disagree or disagree with the statement.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
2.8%	25.7%	57.8%	13.8%	100.0

Table 6.21: Views on measurement of employee satisfaction

6.2.4.11 Employee Performance

When asked on the existence of a performance measurement system, 90% of respondents at Company A agree or strongly agree that there is a performance measurement system in their company.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.8%	8.1%	65.8%	24.3%	100.0

Table 6.22a: Views on the existence of employee performance

On whether employee performance is measured, 86% agree or strongly agree at Company A and 14% disagree or strongly disagree.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0.9%	12.7%	61.8%	24.5%	100.0

Table 6.22b : Views on employee performance being measured

6.2.4.12 Employee Recognition, Reward and Opportunity for Promotion

Employees were presented with statements concerning the existence of reward and recognition in their company and also whether multi-tasking will increase the opportunity for promotion of employees. Based on the five-point Likert scale, 95% respondents of Company A agree or strongly agree that there is a reward system in place to encourage new ideas from employees.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	5.5%	66.4%	28.2%	100.0

Table 6.23a: Views on the existence of reward system

For the statement 'In this company, recognition is given to high achievers', 87% agree or strongly agree at Company A.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
2.8%	10.2%	58.3%	28.7%	100.0

Table 6.23b: Views on recognition

As to whether skills and knowledge acquired from multi-tasking will increase an employee's opportunity for promotion, 84% of Company A's employees agree or strongly agree with the statement. The Cronbach's Alpha for employee performance, recognition and reward system and opportunity for promotion is 0.84 which indicates that the items used are of good reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.8%	14.4%	56.8%	27.0%	100.0

Table 6.23c: Views on the relationship between multi-tasking and promotion

6.2.4.13 Customer Needs and Satisfaction (Customer Focus)

To discover respondents' opinion on customer needs and satisfaction, 5 items were presented to them. They are:

i. Top management encourages employees to consider customers' needs and expectations
ii. Customer needs and feedback are integrated into the service development design and process
iii. The company carries out market studies to determine its customers' needs and wants
iv. The company carries out studies to measure customer satisfaction
v. The company has a system to collect and manage customers' complaint.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

Based on group analysis on all 5 items, 84% of respondents at Company A agree or strongly agree with the above statements on customer needs and satisfaction. However, 16% strongly disagree or disagree. The Cronbach's Alpha for customer needs and satisfaction (customer focus) is 0.84 which indicates that the items used are of good reliability.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	15.8%	77.9%	6.3%	100.0

Table 6.24: Views on customer focus

Eight respondents answered statement (ii) as not applicable to them and 1 respondent did not answer this question. This might be due to not dealing with that aspect of work and not exposed to feedback from customers directly as almost all of them are non-managerial staff. In addition, most of the 6 respondents, the majority are non-managerial staff from various departments thought these statements did not apply to them. This might be attributed to not knowing the matters being asked.

6.2.4.14 Supplier Relations

With regards to relationship with suppliers, two statements were asked to the respondents:

i. The company works in close collaboration with suppliers to improve processes
ii. The company treats its suppliers as partners

Based on a five-point Likert scale, 94% of Company A's respondents agree or strongly agree that the company works in close collaboration with suppliers to improve processes.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	6.5%	78.5%	15.0%	100.0

Table 6.25a: Views on collaboration with suppliers

As to whether the company treats its suppliers as partners, 95% at Company A agree or strongly agree with the statement.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	4.8%	81.9%	13.3%	100.0

Table 6.25b: Views on suppliers as partners

6.2.4.15 Documentation

In terms of documentation, two statements were presented to the respondents of both companies to gauge their opinion. The statements are:

i. The company has a clear documentation procedure
ii. The company has a clear set of work instructions.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

For statement (i), 96% of Company A's respondents agree or strongly agree with it while for statement (ii) 90% at Company A feel the same way.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0.9%	2.8%	72.9%	23.4%	100.0

Table 6.26a: Views on documentation structure

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.9%	8.5%	69.8%	19.8%	100.0

Table 6.26b: Views on work instruction

6.2.4.16 Measurement, Information and Data Analysis

4 statements concerning measurement, information and data analysis were asked to the respondents such as:

i. The company collects and analyses data related to its activities
ii. The company harnesses information to improve its key processes and services.
iii. The company measures and control quality.
iv. The company uses statistical tools and techniques to measure and control quality.

Based on a five-point Likert scale, the group analysis on the 4 items shows that 88% respondents at Company A agree or strongly agree with the statements. The Cronbach's Alpha for measurement, information, and data analysis is 0.88 which indicates that the items used are of good reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.0%	10.7%	81.6%	6.8%	100.0

Table 6.27: Views on measurement, information and data analysis

6.2.5 Opinion on ISO 9000 Maintenance, its Benefits and Impact on the Organisation.

6.2.5.1 Opinion on ISO Maintenance

To obtain their opinion on ISO maintenance, respondents of both companies were presented with the following statements:

i. It takes a lot of hard work to maintain the ISO 9000 certification.
ii. ISO 9000 QMS places more demands on everybody's time
iii. The ISO 9000 QMS is maintained effectively by the company
iv. Maintaining a quality system is not easy for me.
v. Maintaining a quality system is time-consuming.

Based on a five-point Likert scale, the result of the group analysis shows that 91% respondents at Company A agree or strongly agree with the above statements.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	9.1%	81.8%	9.1%	100.0

Table 6.28a: Views on ISO 9000 maintenance

Although most of the respondents feel that it takes a lot of hard work to maintain the ISO 9000 certification, ISO 9000 QMS places more demands on their time, it is time-consuming and it is not easy for them to do it, 97% of employees at Company A feel that the ISO 9000 is maintained effectively by the company.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	2.7%	60.4%	36.9%	100.0

Table 6.28b: Views on the effectiveness of ISO 9000 maintenance

6.2.6 Benefits of ISO 9000

Six statements were presented to respondents to discover the benefits of ISO based on their perspectives. They are:

i. Having the ISO 9000 certification is good for the organisation
ii. ISO 9000 QMS can control and monitor change

iii. ISO 9000 QMS helps the company measures how we are meeting our customers' requirements on an ongoing and continuous basis.
iv. ISO 9000 QMS allows us to constantly improve our efficiency.
v. ISO 9000 QMS encourages improvement of the process, service and system.
vi. The company gains a lot of benefits as a result of obtaining ISO 9000 certification.

Based on the five-point Likert scale, the result of the group analysis shows that 99% respondents of Company A agree or strongly agree with the above statements.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	0.9%	80.4%	18.7%	100.0

Table 6.29: Views on the benefits of ISO 9000

6.2.7 Impact of ISO 9000 Maintenance

The respondents were asked their opinion on the impact brought by the ISO 9000 maintenance in terms of improvement on the quality of service provided by the company. Using the five-point Likert scale, 99% of Company A's respondents agree or strongly agree that effective maintenance of ISO 9000 will improve the quality of their company's service.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strong Agree	
0.9%	0%	56.8%	42.3%	100.0

Table 6.30a: Views on ISO maintenance's impact on service quality

And since the implementation of ISO 9000 in their organisation, 98% of Company A's respondents agree or strongly agree that quality of the company's service has indeed improved.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	1.8%	66.7%	31.5%	100.0

Table 6.30b: Views on service quality improvement

There is strong agreement on the positive impact brought by the ISO 9000 implementation and maintenance on the improvement of service quality of the company.

6.2.8 Critical Success Factors and Problems Associated with ISO Maintenance

6.2.8.1 Factors in ISO 9000 Maintenance

To identify the factors in ISO 9000 maintenance from the employees' perspectives, five statements were presented to them:

i. Maintaining the certification in line with the ISO 9001:2000 needs the involvement of everybody in the organisation
ii. Top management commitment and support is important in motivating employees to maintain the ISO 9000 QMS.
iii. Employee involvement and participation is important in maintaining a quality management system like ISO 9000.
iv. Recognition and reward is important in motivating employees to maintain the ISO 9000 QMS.
v. Application of quality tools and techniques is important for quality improvement and maintenance.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

The result of group analysis for the above items indicates that 97% respondents at Company A agree or strongly agree with the above statements.

Scale				Total (%)
Strongly Disagree	Disagree	Agree	Strongly Agree	
0%	2.8%	75.2%	22.0%	100.0

Table 6.31: Views on factors in ISO maintenance

6.2.8.2 Critical Success Factors of ISO 9000 Maintenance

When asked to rank the critical success factors of ISO 9000 maintenance in descending order (1= most important, 2= second most important, 3= third most important and so forth), an average rankings on the 1-6 scale shows that for Company A, top management commitment is the most important factor. Second most important is employee involvement. Equal at the third most important factor are reward and recognition and teamwork. Continuous improvement took the fifth place while the last place is quality culture.

Rank	Factor	Percentage (%)
1	Top management commitment	1.75
2	Employee involvement	2.41
3	Teamwork	3.61
4	Reward & recognition	3.66
5	Continuous improvement	4.67
6	Quality culture	4.99

Table 6.32: Critical success factors of ISO 9000 maintenance

6.2.9 Problems in ISO 9000 Maintenance

When asked about the problems in ISO 9000 maintenance, Company A respondents said that with regard to people, the problems are: lack of cooperation and teamwork between people (28.6%), lack of commitment (16.3%), , lack of awareness, knowledge and understanding on the importance of ISO (16.3%), lack of acceptance by lower level staff(10.2%), work culture(6.1%), lack of interest from people (6.1%) and lack of participation (4.1%), lack of communication (4.1%), lack of effort to continuously improve the system (4.1%), lack of education (2.0%), and late in updating documents when changes are made (2.0%).

In terms of documentation, 28.6% of the respondents at Company A feel it is because of documents are not updated as the system changes at a fast pace. 19.0% said that documentation system is not satisfactory and therefore needs to be improved. Also inconsistency in supervisor's instruction with job requirements seems to be one of the problems (14.3%). Apart from that, information received late by staff (9.5%), lack of access to documents (9.5%) and too many documents (9.5%), lack of information on documents (4.8%) and instructions and procedures are vague (4.8%) contributed to the documentation problem.

Process-wise, problems faced are too bureaucratic and lengthy process (38.5%), too many procedures delay the process (15.4%), too many processes for each element (15.4%), lack of continuous commitment from staff (7.7%), ineffective distribution/dissemination of information from the top (15.4%) and lack of understanding of the process (7.7%) as problems they faced with the process.

With regards to system, 33.3% feel that frequent system changes create lack of concentration on employees' part, and systems need to be updated (33.3%) the Company is still using the old system (16.7%), and lack of knowledge and courses on the ISO (16.7%) contributed to system problems.

Other problems are on the lack of facilities such as the walkie-talkie for communication purpose and office facilities being not satisfactory. Table 6.33 displays the survey result.

Problem	Company A (%)
People	
Lack of cooperation /teamwork between people	28.6
Lack of commitment	16.3
Lack of awareness/ understanding/knowledge on ISO 9000	16.3
Information received by staff not consistent or accurate.	-
Lack of acceptance by lower level staff	10.2
Work culture	6.1
Lack of interest from people	6.1
Lack of participation	4.1
Lack of communication	4.1
Lack of effort to continuously improve system	4.1
Lack of education	2.0
Late updating documents	2.0
Total	100.0
Documentation	
Documents not updated	28.6
Documentation system not satisfactory	19.0
Inconsistency in supervisor's instruction with job requirements.	14.3
Information received late by staff	9.5
Lack of access to documents	9.5
Too many documents	9.5
Lack of information on documents	4.8
Instruction & procedures are vague	4.8
Total	100.0
Process	
Bureaucratic & lengthy process	38.5
Too many procedures delay the process	15.4
Too many processes	15.4
Ineffective distribution/dissemination of information from the top	15.4
Lack of continuous commitment from staff	7.7
Lack of understanding of the process	7.7
Total	100.0
System	
Frequent system changes create lack of employee concentration	33.3
Systems need to be updated	33.3
Using the old system	16.7
Lack of ISO knowledge and courses	16.7
Total	100.0

Table 6.33: Problems associated with ISO maintenance

They offered several suggestions to overcome the above problems such as:

a. Educate and train staff on ISO and give priority to employee involvement in ISO (20%)
b. Obtain suggestion and support from all people (10%)
c. Disseminate information about ISO 9000 effectively (10%)
d. Effective communication between top management and staff (10%)
e. Have an ISO 9000 promotion at the workplace (10%)
f. Improve on document and make process easier to understand (10%)
g. Provide and increase facilities needed at work (10%)

h. Management should be involved in problem solving and monitor on ISO maintenance (10%)
i. Other (10%)

6.3 Company B

6.3.1 General Descriptive Statistics of Respondents

This section examines the questionnaire return rate and descriptive data of respondents in terms of demographics such as job status, age, education, position, department, number of years working with the company, and working hours. The sample size for this study is 150 and the sample was chosen using the stratified random sampling method described in Chapter 3.

6.3.1.1 Questionnaire Response/Return Rate

The returned or response rate of this company is 54% as shown by Table 6.34a. All returned questionnaires are usable.

Company	Total questionnaires distributed (frequency)	Total questionnaires returned (frequency)	Total Usable Questionnaires (frequency)	Total Usable Questionnaires Rate (%)
Company B	150	81	81	54

Table 6.34a: Questionnaire return rate

For Company B, out of 438 people, 90 are lower management, 58 are supervisors, and 290 are staff employees. 27 questionnaires were distributed to lower management, 22 to supervisors, and 101 to staff at Company B (refer to Table 6.34b).

Job level	No. of employee	Questionnaires distributed	Questionnaires returned	Response rate (%)
Lower Mgt	90	27	22	81.5
Supervisor	58	22	12	54.5
Non-Managerial Staff	290	101	47	46.5
Total	**438**	**150**	**81**	**54.0**

Table 6.34b: Questionnaire distribution by levels of respondents

6.3.1.2 Background of Respondents

Age of Respondents

The majority of the respondents are in the 35-44 years group where this group made up 54% of Company B's respondents. This is followed by the age group of 25-34 which made up 36%.

	Frequency	Percentage (%)
18-24	2	2.5
25-34	29	35.8
35-44	44	54.3
45 and above	6	7.4
Total	**81**	**100.0**

Table 6.35: Age of respondents

Age and Job level

At Company B, 64% of respondents are in the 35-44 age brackets. For supervisors, the company has 25% of the supervisors between 25-34 years of age and 75% of 35-54. At Company B, 91% non-managerial staff are between 25-44 years old.

Job level	**Age (years)**					
	18-24	25-34	35-44	45-54	55 & above	Total
Lower management	0%	31.8%	63.6%	4.6%	0%	100%
Supervisory	0%	25.0%	50%	25.0%	0%	100%
Non-managerial staff	4.3%	40.4%	51.1%	2.1%	2.1%	100%

Table 6.36: Age and job level of respondents

Job Level

Based on the sampling frame, in terms of job status/level, the non-managerial staff made up 66% for Company B. This group contributed to the largest number of employees. For lower management, the percentage of employees is 21% for Company B. As for the supervisor level, Company B has 13% of employees.

Level of education	**Frequency**	**Percentage (%)**
Lower Management	90	20.6
Supervisor	58	13.2
Non-Managerial staff	290	66.2
Total	**438**	**100.0**

Table 6.37: Job status/level category of respondents

Education Level of Respondents

For Company B, 20% of respondents have higher education (with bachelor's degree or above). Those who have middle level of education (certificate or diploma) made up 31% of Company B's respondents while 49% or about half of Company B's respondents are in the lower education group.

Education level	**Frequency**	**Percentage %**
Primary/SPM/STPM	40	49.4
Certificate/Diploma	25	30.9
Bachelor & above	16	19.8
Total	**81**	**100.0**

Table 6.38: Education level of respondents

Years Working with the Company

Looking at the table below, 46% of respondents of Company B has worked over 10 years with the company. 80% of Company B's respondents have worked between 6 years and above with the company. Almost half of the respondents of Company B have worked for considerably a long time in the company and would have the opportunity to learn about the quality system being implemented.

Years worked	Frequency	Percentage%
1-2	5	6.2
3-5	11	13.6
6-10	28	34.6
Over 10	37	45.7
Total	**81**	**100.0**

Table 6.39: Years working in the company

Job Level and Number of Years Working

At Company B, 45% of lower management has worked between 3-10 years with the company while 55% has spent more than 10 years (see Table 6.40). This indicates that more employees in the lower management group at Company B have worked longer with the company and therefore are more experienced in terms of work. Since the implementation of the ISO 9000 started in 1999, it would mean that some of the lower management people at Company B were involved with the implementation process of the QMS as 55% has spent over 10 years with the company. At the supervisory level, 33% of supervisors at Company B have worked over 10 years with the company. More than half of supervisors at Company B have worked between 6-10 years with the company. As for the non-managerial staff, 45% at Company B have worked over 10 years with the company while 21% have spent 5 years and below with the company.

Job level	No. of years working with company				Total
	1-2	3-5	6-10	10 & over	
Lower Management	0%	22.7%	22.7%	54.6%	100.0%
Supervisor	0%	8.3%	58.3%	33.3%	100.0%
Non-Managerial staff	10.6%	10.6%	34.0%	44.7%	100.0%
Total	6.2%	13.6%	34.6%	45.7%	100.0%

Table 6.40: Job level and the number of years working

Job Level and Education

Table 6.41 below shows that lower management at Company B have better academic qualification (68%) with bachelor and above qualification. As for those who have certificate/diploma, the percentage is 23% at Company B. At the supervisory level, 58% of supervisors have certificate/diploma qualification. Only 42% supervisors at Company B have primary/secondary education. For non-

managerial staff, 70% have primary/secondary education while 28% have certificate/diploma.

Job level	Education level			
	Bachelor & above	Certificate/ Diploma	Primary/SPM/ STPM	Total
Lower management	68.2%	22.7%	9.1%	100%
Supervisor	0%	58.3%	41.7%	100%
Non-Managerial Staff	2.1%	27.7%	70.2%	100%

Table 6.41: Job level and education of respondents

Working Hours

Table 6.42 indicates 37% of the Company B respondents worked shifts. 63% worked regular hours at Company B.

Working hours	Frequency	Percentage (%)
Regular hours	51	63.0
Shift	30	37.0
Total	**81**	**100.0**

Table 6.42: Working hours of respondents

6.3.2 Views on Quality and Motivation for Certification

6.3.2.1 Views on the Importance of Quality

A question was asked to the respondents on the importance of quality to them. They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

The statements were 'Quality is very important to me' and 'What differentiates one company from the other is its quality of service'. It was found that 100% of Company B respondents agree or strongly agree that quality is very important to them (refer Table 6.43a).

Scale				Total (%)
Strongly Disagree	Disagree	Agree	Strongly Agree	
0%	0%	57%	43%	100.0

Table 6.43a: Views on the importance of quality

As for the second statement, 96% of Company B's respondents agree or strongly agree with the statement.

Scale				Total (%)
Strongly Disagree	Disagree	Agree	Strongly Agree	
0%	3.8%	56.3%	40%	100.0

Table 6.43b: Views on quality as a differentiator

The outcomes suggest employees of the company feel strongly about quality in a positive way and they realise that the quality of their service will set them apart from others.

6.3.3 Employees' Motivation for Certification

The employees of Company B think that their company's motivation for ISO 9000 certification are for improvement (70%), to penetrate global market (68%), to satisfy customers (65%), to have proper documentation (56%), a requirement to do business (34%), and as a marketing tool (33%). Ten employees (13%) do not know why their company went for certification. Those who do not know consist of non-managerial staff and supervisors from Maintenance Operations department who worked on shifts basis. Most of them have been with the company between 6-10 years and a few above 10 years.

Company B has a high number of respondents who do not know the company's reason for being certified to ISO 9000. This certainly will affect the achievement of company's objective as people are supposed to know what to achieve before striving to achieve them especially as a few of them are in supervisory level.

Motive	Percentage (%)
For improvement	69.6
To satisfy customers	64.6
To penetrate global market	68.4
As a marketing tool	32.9
To have proper documentation	55.7
A requirement to do business	34.2
Don't know	12.7

Table 6.44: Motivation for ISO 9000 certification

6.3.4 Top Management Commitment, Internal Communication and Quality Management Practices

6.3.4.1 Staff Perceptions on Top Management Commitment

In order to gauge staff perceptions on top management commitment to ISO maintenance, respondents were asked their views on whether:

i. Top management is actively involved in quality improvement
ii. Top management is committed in maintaining the quality system
iii. Top management provides the necessary resources to carry out activities effectively
iv Resources are adequate to carry out business and quality system activities

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

A group analysis was conducted on all the 4 items. The results show that 94% of Company B employees agree or strongly agree with the statements. The Cronbach's Alpha for top management commitment is 0.84 which indicates that the items used are of good quality.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	6.2%	92.6%	1.2%	100

Table 6.45a: Views on top management commitment

When asked to rate on the top management's commitment to the ISO 9000 maintenance on the scale of very low, low, satisfactory, high, and very high, 85% respondents of Company B rated it satisfactory and 8% rated it high.

Degree of commitment	**Percentage (%)**	**Degree of involvement**	**Percentage (%)**
Low	7.5%	Low	7.5%
Satisfactory	85.0%	Satisfactory	86.3%
High	7.5%	High	6.3%
Very high	0%	Very high	0%
Total	100%	Total	100%

Table 6.45b: Rating on top management commitment and involvement

6.3.4.2 Internal Communication

Employees were asked their perceptions on several matters related to communication within their companies such as whether:

i. Quality policy and objectives are communicated and disseminated to all employees
ii. They know and understand the quality policy and objectives of their organisation
iii. Communication in the organisation is effective
iv. It is easy to communicate about work with their superior
v. Important information is presented and transmitted to staff.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

The result of group analysis conducted on the 5 items for internal communication shows that 68% of Company B's employees agree or strongly agree with the statements. The result also displays a substantial percentage of employees at

Company B (32%) who disagree with these statements. The Cronbach's Alpha for internal communication is 0.77 which indicates that the items used are of acceptable reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	31.6%	68.4%	0%	100.0

Table 6.46a: Views on internal communication

At Company B, those who disagree with the first and second statement are non-managerial staff, supervisors and lower management from Maintenance Operations department who have worked between 6-10 years and over 10 years with the company. One lower manager of Special Projects with more than 10 years working experience disagree that he knew and understood the quality policy and objectives of his company. Those who do not find communication is effective within Company B, it is not easy to communicate with their superior and important information is not presented and transmitted to staff comprise non-managerial staff, supervisors and lower management from various departments such as Special Projects (SP), Engineering(ED), Central Technical Support (CTS) and Logistics & Machinery (LMD) but are mainly from Maintenance Operations (MOD). Again most of them have spent 6-10 and over 10 years with the company B and they are on regular and shift basis.

When asked to rate communication within their organisation on not effective, slightly effective, mostly effective, effective, highly effective scale, the results are shown by Table 6.46b as follows:

Scale	Percentage (%)
Not effective	0%
Slightly effective	7.4%
Mostly effective	88.9%
Effective	3.7%
Highly effective	0%
Total	100%

Table 6.46b: Rating on the effectiveness of internal communication

At Company B, 89% of respondents rated communication as mostly effective. Less than 4% found communication effective. Out of 78 respondents at Company B who have rated communications between not effective and mostly effective, only 10 of them provided the reasons for their rating. The reasons as given by them are as follows:

Reason	Percentage (%)
Lack of knowledge & understanding of ISO.	20.0
Lack of attention	20.0
Lack of interaction & teamwork between people	20.0
Lack of employee training & education	10.0
Information not received by staff	10.0
Not using the channel of information provided.	10.0
Frequent document changes	10.0
Total	**100.0**

Table 6.46c: Reasons for ineffectiveness of internal communication

To improve internal communications, only 8 respondents provide their suggestions for improvement. They are; listen to staff problem and suggestion (37.5%), use suitable communication tool/approach to suit employees' level of education/understanding (12.5%), look after employees' welfare (12.5%), work as a team (12.5%), management to foster closer relationships with staff through programmes, dialogue and discussion and look after employees' welfare (12.5%), share results of customer satisfaction with others and treat audit result as a tool to find solution (12.5%).

6.3.4.3 Teamwork

To gauge how important teamwork is to the company, respondents were presented with the statement 'In this organisation, we work as a team.' They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

At Company B, 85% agree or strongly agree that employees work as a team in the company. Those who disagree (15%) are mainly from lower management and non-managerial staff of MOD, ED, LMD, SP, and CTS who mostly have worked for 6 years and above.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	14.8%	69.1%	16.0%	100.0

Table 6.47a: Views on working as a team

About 88% at Company B agree or strongly agree that work groups are common in the organisation.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	12.3%	80.2%	7.4%	100.0

Table 6.47b: Views on the existence of work groups

6.3.4.4 Process Approach

When asked whether their organisation adopts a process management approach, 88% respondents at Company B agree or strongly agree that their organisation adopts a process management approach. Those who disagree at Company B (12%) are the lower management and non-managerial staff of ED, CTS, LMD and MOD who have mostly spent between 6 years and over with the company. Their answer was based on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	12.3%	84.0%	3.7%	100.0

Table 6.48: Views on the adoption of process approach

6.3.4.5 Continuous Improvement

Using the same scale, to obtain the perception of whether there is continuous improvement in the organisation, respondents were asked the following items:

i. Processes are continuously improved
ii. The quality system in the Company is improved continuously.

On continuous improvement on the processes, 90% respondents at Company B agree or strongly agree with the statement. Those who disagree at Company B (10%) are mainly from the lower management and non-managerial staff of SP, ED, LMD, and MOD who have been working between 6 years and above.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	9.9%	88.9%	1.2%	100.0

Table 6.49a: Views on continuous improvement of processes

95% of respondents at Company B agree or strongly agree that the quality system in their company is improved continuously.

Scale				Total (%)
Strongly disagree	Disagree	Agree/	Strongly Agree	
0%	4.9%	88.9%	6.2%	100.0

Table 6.49b: Views on continuous improvement of system

6.3.4.6 QM Practices and Tool

To find out whether the company uses quality management practices and tools to support the maintenance of ISO 9000 and continuous improvement effort by the organisation, respondents were presented with 4 statements:

i. The organisation uses quality circles/quality improvement teams
ii. Multi-tasking of employees is practiced by the organisation

iii. The company uses quality programmes to improve its quality
iv. The company uses statistical tools and techniques to measure and control quality.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

From the group analysis, it was found that 72% respondents at Company B agree or strongly agree with these statements. However, there seems to be a substantial percentage of those who feel the opposite (28%). The Cronbach's Alpha for quality management practices and tools is 0.76 which indicates that the items used are of acceptable reliability.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
1.2%	27.2%	71.6%	0%	100.0

Table 6.50: Views on the adoption of quality practices and tools

6.3.4.7 Organisational Structure

A question was asked whether there is a little bureaucracy in the organisation. Based on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable, 71% of the respondents at Company B agree or strongly agree that there is a little bureaucracy in the organisation. However a substantial percentage of respondents (28%) beg to differ.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
1.2%	27.2%	71.6%	0%	100.0

Table 6.51: Views on organisational structure

Those who disagree are from the lower management in Special Projects, Finance, Central Technical Support, and MOD. Others are a supervisor in MOD and non-managerial staff from Finance, LMD, and MOD. Their length with the company varies from 3-5 years, 6-10 years and over 10 years.

6.3.4.8 Employee Training

To gauge employee training, respondents were presented with the following statements:

i. The company provides continuous training for its staff
ii. Training needs and training are always evaluated

iii. Employees are trained in the use of these statistical tools and techniques.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

Looking at the table, there is a high percentage of agreement on employees are trained in the use of statistical tools and techniques at Company B compared to other statements.

Statement	Strongly disagree	Disagree	Agree	Strongly agree
The company provides continuous training for its staff.	0%	27.2%	64.2%	8.6%
Training needs and training are always evaluated.	0%	28.4%	67.9%	3.7%
Employees are trained in the use of these statistical tools and techniques.	0%	11.1%	85.2%	3.7%

Table 6.52: Employee training

In Company B, those who disagree that the company provides continuous training for its staff consist mainly of LMD and MOD staff and a few from Finance, Engineering and Special Projects who mostly have been with the company for 6 years and over. Almost similar group of people disagree that training needs and training are always evaluated. In terms of being trained in the use of the statistical tools and techniques, most of those who feel the opposite are mostly from MOD who had been with the Company for 6 years and above. The Cronbach's Alpha for employee training is 0.76 which indicates that the items used are of acceptable reliability.

6.3.4.9 Employee Empowerment, Participation and Involvement

5 statements were offered to the respondents to find out their perceptions regarding employee empowerment and participation in their companies. The following are the statements;

i. Employee feedback is always sought
ii. Employees are encouraged to participate and be involved in the company's activities.
iii. Employees are encouraged to make decision with regards to their job.
iv. Management lets employees participate in achieving organisational objectives
v. Employees are responsible for tasks they perform, and inspect their own work.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable. Based on the result on the group analysis on all the 5 items on employee empowerment and participation, it was found that only 44% at Company B agree or strongly agree with the above statements while 56 % disagree. The Cronbach's Alpha for employee empowerment is 0.83 which indicates that the items used are of good reliability.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	56.3%	42.5%	1.3%	100.0

Table 6.53a: Views on employee empowerment and participation

When asked on their commitment in ISO 9000 maintenance on a scale of very low, low, satisfactory, high, and very high, 56% of Company B's employees rated satisfactory and 41% high. As for their own involvement in the ISO 9000 maintenance 91% of Company B's respondents rated themselves satisfactory and 3% high.

Level of commitment	**Percentage (%)**	**Level of involvement**	**Percentage (%)**
Very low	0%	Very low	0%
Low	3.8%	Low	6.4%
Satisfactory	55.7%	Satisfactory	91.0%
High	40.5%	High	2.6%
Very high	0%	Very high	0%
Total	100.0%	Total	100.0%

Table 6.53b: Employee commitment and involvement in ISO maintenance

6.3.4.10 Measurement of Employee Satisfaction

Respondents were asked whether employee satisfaction is measured. They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

At Company B, 58% agree or strongly agree that employee satisfaction is measured by the company while 42% strongly disagree or disagree with the statement.

Scale				**Total (%)**
Strongly disagree	Disagree	Agree	Strongly Agree	
1.2%	40.7%	54.3%	3.7%	100.0

Table 6.54: Views on measurement of employee satisfaction

6.3.4.11 Employee Performance

When asked on the existence of a performance measurement system, based on a five-point Likert scale, 81% respondents at Company B agree or strongly agree that there is a performance measurement system in their company.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.2%	17.3%	69.1%	12.3%	100.0

Table 6.55a: Views on the existence of employee performance

On whether employee performance is measured, 64% agree or strongly agree at Company B while 35% disagree.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.3%	35.0%	56.3%	7.5%	100.0

Table 6.55b: View on employee performance being measured

6.3.4.12 Employee Recognition, Reward and Opportunity for Promotion

Employees were presented with statements concerning the existence of reward and recognition in their company and also whether multitasking will increase the opportunity for promotion of employees. Based on the five-point Likert scale, 59% respondents of Company B agree or strongly agree that there is a reward system in place to encourage new ideas from employees while 41% disagree with this statement.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	40.7%	55.6%	3.7%	100.0

Table 6.56a: Views on the existence of reward system

For the statement ‘In this company, recognition is given to high achievers’, at Company B, 78% agree or strongly agree while 22% disagree with this statement.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	22.2%	72.8%	4.9%	100.0

Table 6.56b: Views on recognition

As for whether skills and knowledge acquired from multi-tasking will increase employee’s opportunity for promotion, 79% at Company B agree or strongly agree with the statement. The Cronbach’s Alpha for employee performance, recognition and reward system and opportunity for promotion is 0.84 which indicates that the items used are of good reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.2%	19.8%	72.8%	6.2%	100.0

Table 6.56c: Views on the relationship between multitasking and promotion

6.3.4.13 Customer Needs and Satisfaction (Customer Focus)

To discover respondents' opinion on customer needs and satisfaction, 5 items were presented to them. They are:

i. Top management encourages employees to consider customers' needs and expectations
ii. Customer needs and feedback are integrated into the service development design and process
iii. The company carries out market studies to determine its customers' needs and wants
iv. The company carries out studies to measure customer satisfaction
v. The company has a system to collect and manage customers' complaint.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

Based on group analysis on all 5 items, 77% of respondents at Company B agree or strongly agree with the above statements on customer needs and satisfaction while 23% strongly disagree or disagree. The Cronbach's Alpha for customer needs and satisfaction is 0.84 which indicates that the items used are of good reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.3%	21.5%	77.2%	0%	100.0

Table 6.57: Views on customer focus

6.3.4.14 Supplier Relations

With regard to relationship with suppliers, two statements were asked to the respondents:

i. The company works in close collaboration with suppliers to improve processes
ii. The company treats its suppliers as partners

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

90% of Company B's respondents agree or strongly agree that their company works in close collaboration with suppliers to improve processes.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	10.1%	84.8%	5.1%	100.0

Table 6.58a: Views on collaboration with suppliers

As to whether the company treats its suppliers as partners, 56% at Company B agree or strongly agree while a substantial percentage of 44% disagree with the statement. Twenty respondents answered 'Not Applicable' to the statement as they did not deal with the subcontractors/suppliers and therefore cannot form an opinion on the matter. Out of this figure, 7 are lower managers, 4 supervisors and 9 non-managerial staff. Twelve of them are from the Maintenance Operations, 5 from Logistics and Machinery and the rest are from various departments.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	44.3%	47.5%	8.2%	100.0

Table 6.58b: Views on suppliers as partners

6.3.4.15 Documentation

In terms of documentation, two statements were presented to the respondents of both companies to gauge their opinion. The statements are:

i. The company has a clear documentation procedure
ii. The company has a clear set of work instructions.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

For statement (i), 99% of Company B's respondents agree or strongly agree with it while for statement (ii), 98% at Company B feel the same way.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	1.3%	93.8%	5.0%	100.0

Table 6.59a: Views on documentation structure

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	2.5%	93.8%	3.7%	100.0

Table 6.59b: Views on work instruction

6.3.4.16 Measurement, Information and Data Analysis

4 statements concerning measurement, information and data analysis were asked to the respondents such as:

i. The company collects and analyses data related to its activities
ii. The company harnesses information to improve its key processes and services.
iii. The company measures and control quality.
iv. The company uses statistical tools and techniques to measure and control quality.

Based on a five-point Likert scale, the group analysis on the 4 items shows that 89% respondents of the company agree or strongly agree with the statements. The Cronbach's Alpha for measurement, information, and data analysis is 0.88 which indicates that the items used are of good reliability.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
2.5%	8.6%	86.4%	2.5%	100.0

Table 6.60: Views on measurement, information and data analysis

6.3.5 Opinion on ISO 9000 Maintenance, its Benefits and Impact on the Organisation.

6.3.5.1 Opinion on ISO Maintenance

To obtain their opinion on ISO maintenance, respondents of both companies were presented with the following statements:

i. It takes a lot of hard work to maintain the ISO 9000 certification.
ii. ISO 9000 QMS places more demands on everybody's time
iii. The ISO 9000 QMS is maintained effectively by the company
iv. Maintaining a quality system is not easy for me.
v. Maintaining a quality system is time-consuming.

Based on a five-point Likert scale, the result of group analysis shows that 90% respondents at Company B agree or strongly agree with the above statements.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
0%	10.1%	86.1%	3.8%	100.0

Table 6.61a: Views on ISO 9000 maintenance

Although most of the respondents feel that it takes a lot of hard work to maintain the ISO 9000 certification, ISO 9000 QMS places more demands on their time, it

is time-consuming and it is not easy for them to do it, 99% of employees at Company B feel that the ISO 9000 is maintained effectively by the company.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.3%	0%	87.3%	11.4%	100.0

Table 6.61b: Views on the effectiveness of ISO 9000 maintenance

6.3.6 Benefits of ISO 9000

Six statements were presented to respondents to discover the benefits of ISO based on their perspectives. They are:

i. Having the ISO 9000 certification is good for the organisation
ii. ISO 9000 QMS can control and monitor change
iii. ISO 9000 QMS helps the company measures how we are meeting our customers' requirements on an ongoing and continuous basis.
iv. ISO 9000 QMS allows us to constantly improve our efficiency.
v. ISO 9000 QMS encourages improvement of the process, service and system.
vi. The company gains a lot of benefits as a result of obtaining ISO 9000 certification.

Based on the five-point Likert scale, the result of the group analysis shows that 96% respondents of Company B agree or strongly agree with the above statements.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.3%	2.5%	88.6%	7.6%	100.0

Table 6.62: Views on the benefits of ISO 9000

6.3.7 Impact of ISO 9000 Maintenance

The respondents were asked their opinion on the impact brought by the ISO 9000 maintenance in terms of improvement on the quality of service provided by the company. Using the five-point Likert scale, 99% of Company B's respondents agree or strongly agree that effective maintenance of ISO 9000 will improve the quality of their company's service.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strong Agree	
1.3%	0%	57.7%	41.0%	100.0

Table 6.63a: Views on ISO maintenance's impact on service quality

And since the implementation of ISO 9000 in their organisation, 96% of Company B's respondents agree or strongly agree that quality of the company's service has indeed improved.

Scale				Total (%)
Strongly disagree	Disagree	Agree	Strongly Agree	
1.3%	2.6%	74.4%	21.8%	100.0

Table 6.63b: Views on service quality improvement

It could be said that there is a strong agreement on the positive impact brought by the ISO 9000 implementation and maintenance on the improvement of service quality of the company.

6.3.8 Critical Success Factors and Problems Associated with ISO Maintenance

6.3.8.1 Factors in ISO 9000 Maintenance

To identify the factors in ISO 9000 maintenance from the employees' perspectives, five statements were presented to them:

i. Maintaining the certification in line with the ISO 9001:2000 needs the involvement of everybody in the organisation
ii. Top management commitment and support is important in motivating employees to maintain the ISO 9000 QMS.
iii. Employee involvement and participation is important in maintaining a quality management system like ISO 9000.
iv. Recognition and reward is important in motivating employees to maintain the ISO 9000 QMS.
v. Application of quality tools and techniques is important for quality improvement and maintenance.

They were asked to base their answer on a five-point Likert scale with 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree, and 5=Not Applicable.

The result of group analysis for the above items indicates that 92% respondents at Company B agree or strongly agree with the above statements.

Scale				Total (%)
Strongly Disagree	Disagree	Agree	Strongly Agree	
0%	7.7%	73.1%	19.2%	100.0

Table 6.64: Views on factors in ISO maintenance

6.3.8.2 Critical Success Factors of ISO 9000 Maintenance

When asked to rank the critical success factors of ISO 9000 maintenance in descending order (1= most important, 2= second most important, 3= third most important and so forth), the average rankings (scale 1- 6) shows that at Company B, top management commitment is ranked as the most critical success factor. Second is employee involvement. The third most important factor is reward and recognition. Teamwork took the fourth place. Continuous improvement took the fifth place and quality culture the last.

Rank	Factor	Percentage (%)
1	Top management commitment	1.16
2	Employee involvement	2.03
3	Reward & recognition	3.07
4	Teamwork	4.70
5	Continuous improvement	4.91
6	Quality culture	5.06

Table 6.65: Critical success factors in ISO 9000 maintenance

6.3.9 Problems in ISO 9000 Maintenance

When asked about the problems in ISO 9000 maintenance, Company B respondents said that people problems faced by company are lack of commitment (33.3%), lack of cooperation and teamwork (33.3%), and lack of participation(11.1%), lack of awareness, knowledge and understanding on the importance of ISO (11.1%), and information received by staff not consistent or accurate (11.1%).

Documentation-wise, the problems are related to documentation system is not satisfactory (60.0%) and inconsistency in supervisor's instruction with job requirement (40%).

With regards to process, 66.7% feel there are too many processes for each element, and 33.3% say that lack of understanding of the process is their problem.

100% of the respondents feel that frequent system changes create lack of concentration on employees' part. Table 6.66 shows the survey result.

Problem	Company B (%)
People	
Lack of commitment	33.3
Lack of cooperation /teamwork between people	33.3
Lack of awareness/ understanding/knowledge on ISO 9000	11.2
Information received by staff not consistent or accurate.	11.1
Lack of acceptance by lower level staff	-

Problem	
Work culture	-
Lack of interest from people	-
Lack of participation	11.1
Lack of communication	
Lack of effort to continuously improve system	-
Lack of education	-
Late updating documents	
Total	100.0
Documentation	
Documents not updated	-
Documentation system not satisfactory	60.0
Inconsistency in supervisor's instruction with job requirements.	40.0
Information received late by staff	-
Lack of access to documents	-
Too many documents	-
Lack of information on documents	-
Instruction & procedures are vague	-
Total	100.0
Process	
Bureaucratic & lengthy process	
Too many procedures delay the process	
Too many processes	66.7
Ineffective distribution/dissemination of information from the top	
Lack of continuous commitment from staff	
Lack of understanding of the process	33.3
Total	100.0
System	
Frequent system changes create lack of employee concentration	100.0
Systems need to be updated	-
Using the old system	-
Lack of ISO knowledge and courses	-
Total	100.0

Table 6.66: Problems associated with ISO 9000 maintenance

The suggestions forwarded by the respondents to solve the above problems are as follows:

a. Obtain suggestion and support from all people in the organisation (60%).
b. Educate and train staff on ISO (20%).
c. Effective communication between top management and staff (20%).

6.4 Analysis of the Two Case Studies

6.4.1 Questionnaire Response Rate

Out of 300 questionnaires, 192 were returned. 58% are from Company A and 42% are from Company B. The overall return or response rate of this study is 64% with Company A 74% and Company B 54%. All return questionnaires are usable.

Company	Total questionnaires distributed (frequency)	Total questionnaires returned (frequency)	Total Usable Questionnaires (frequency)	Total Usable Questionnaires Rate (%)
Company A	150	111	111	74
Company B	150	81	81	54
Total	**300**	**192**	**192**	**64**

Table 6.67a: Questionnaire return rate by companies

Some examples of response rates of other quality management studies using quantitative approaches are shown by Table 6.3.1b

Researcher	Questionnaires distributed	Questionnaires returned	Response rate (%)
Bhuiyan & Alam (2004)	200	102	52.0
Rodriguez-Escobar et al. (2006)	275	131	48.0
Feng et al. (2006)	2822	613	22.0
Terziovski & Power (2007)	1500	400	27.0
Demirbag & Sahadev (2007)	1000	522	52.0

Table 6.67b: Response rate in quality management studies

Thus, the overall response rate of 64% for this study is considered satisfactory for subsequent analysis. Note that in the discussion which follows, it is assumed that the respondents are a representative sample from the companies.

6.4.2 Background of Respondents

The Chi-Square test reveals there is no significant difference in terms of the age profiles of the two companies' respondents where more than half are between 35-44 years and the rest from the 25-34 age group (p=0.834). As for the job level, Company B's organisation structure is heavier at lower management level compared to Company A while being about the same at the supervisor level and lighter at the staff level. Therefore, there is a significant difference in the job status of respondents between the two companies (p=0.000). Too many managers mean a taller organisation structure which could create problems in communication.

In terms of education, Company B's employees are better educated than Company A's employees at all levels (p=0.000). As for the length of tenure with their companies, there is a significanct difference in the years worked between the two companies' employees (p=0.003). Company A has the higher percentage of respondents working over 10 years (68%) in comparison to Company B (46%). The result also shows that Company B lower managers are more experienced in terms of work while Company A's supervisors and non-managerial employees

have the edge. Length of time spent working with the company may affect employees' motivation that will impact their involvement and participation in the quality system maintenance.

With regard to working hours, there is a significant difference between the two companies (p=0.000) whereby most of Company A's employees worked shifts while most of Company B's employees worked regular hours. Working on shifts might affect the communication in the company as regular hours are considered the main working hours and shifts come second. Appendix E shows the result of Chi-Square tests.

6.4.3 Views on Quality and Motivation for Certification

The mean scores for both companies of 3.48 and 3.43 respectively on the statement 'Quality is very important to me' is quite close and this indicates that both companies employees' feeling about the importance of quality is almost similar. A *t*-test finds no significant difference (p=0.496).

As for the statement 'What differentiates one company from the other is its quality of service', the mean scores of 3.56 for Company A and 3.36. The outcomes suggest employees of both companies feel strongly about quality in a positive way and they realise that the quality of their service will set them apart from others. The t-test shows the score is higher in Company A (p=0.011).

As for motivation for certification to ISO 9000, Table 6.68 shows that except for having a proper documentation and to penetrate global market, there is a difference in motivation with regards to improvement, as a marketing tool, to satisfy customers, and as a requirement to do business between the two companies. Company B also has a higher number of respondents who do not know the company's reason for being certified to ISO 9000 compared to Company A. This certainly will affect the achievement of company's objective as people are supposed to know the objectives before striving to achieve them especially as a few of them are in supervisory level. The continuing prosperity of a firm is likely to be enhanced by employees who hold attitudes, values and expectations that are closely aligned with the corporate vision (Cable and Parsons, 2001).

Motive	Company A (%)	Company B (%)
For improvement	89.2	69.6
To satisfy customers	81.1	64.6
To penetrate global market	73.9	68.4
As a marketing tool	62.2	32.9
To have proper documentation	58.6	55.7
A requirement to do business	57.7	34.2
Don't know	1.8	12.7

Table 6.68: Motivation for ISO 9000 certification of both companies

6.4.4 Perceptions on Quality Management Practices

The average scores of both companies indicated that Company A's average scores are better than Company B's on all the statements. The scores of 3.0 and above reflect that employees at Company A agree positively on their top management commitment and involvement in the ISO 9000 maintenance, that communication within the company is effective, employees are empowered and suitably rewarded for their efforts, employee training is continuously provided, processes and system are continuously improved, relationship with suppliers is close, the organisation is customer- focused, people in the company works as a team, performance is measured and data is analysed, and statistical tools and techniques are used for quality improvement. However, score of less than 3 (3= agree, 2=disagree) were obtained on matters regarding employees feedback and employee satisfaction. Although employees agree that they are rewarded for their efforts, the degree of agreement is less when it comes to whether reward is linked to their performance.

Statement	Comp. A	Comp. B	*t*-test *p-value*
Top management commitment			
Top management is involved in quality improvement.	3.12	3.09	
Top management is committed to ISO 9000 maintenance.	3.30	3.11	
Top management provides necessary resources to carry out activities effectively.	3.16	3.07	
Resources are adequate to carry out business and quality system activities.	3.14	3.01	
Management actively displays an ongoing commitment to quality improvement.	3.08	2.96	
Average per category	***3.16***	***3.05***	***0.042***
Internal communication			
Quality policy & objectives are communicated/disseminated to all employees.	3.16	2.98	
I know and understand the quality policy & objectives of my organization.	3.15	2.93	
Communication in the organisation is effective.	3.06	2.88	
It's easy to communicate about work with my superior.	3.11	2.86	
Important information is presented/transmitted to staff.	3.11	2.99	
Average per category	***3.12***	***2.93***	***0.001***
Teamwork			
In this organisation, we work as a team.	3.27	3.01	

Statement	Comp. A	Comp. B	*t*-test *p-value*
Work groups are common in this organisation.	3.23	2.95	
Average per category	***3.25***	***2.98***	***0.001***
Process approach			
The organisation adopts a process management approach.	3.06	2.91	
Average per category	***3.06***	***2.91***	***0.022***
Continuous improvement			
Processes are continuously improved.	3.13	2.91	
The quality system is improved continuously.	3.17	3.01	
Average per category	***3.15***	***2.96***	***0.002***
QM practices & tools			
The organisation uses quality circles/improvement teams.	3.13	2.95	
Multi-tasking is practised by the organization.	3.04	2.79	
The company uses quality programmes to improve its quality.	3.11	3.01	
The company uses statistical tools & techniques to measure and control quality.	3.16	3.00	
Average per category	***3.10***	***2.94***	***0.003***
Organisational structure			
There is a little bureaucracy (formal hierarchy, procedures and detailed rules) in the organisation.	2.93	2.79	
Average per category	***2.93***	***2.78***	***0.120***
Customer needs & satisfaction (customer focus)			
Top management encourages employees to consider customer needs & expectations.	3.12	2.91	
Customer needs & feedback are integrated into the service development design and process.	3.07	2.95	
The company carries out market studies to determine its customer needs and wants.	3.14	2.93	
The company carries out studies to measure customer satisfaction.	3.14	3.00	
The company has a system to collect and manage customer's complaints.	3.08	2.98	
Average per category	***3.11***	***2.95***	***0.003***
Supplier Relations			
The company works in close collaboration with its suppliers.	3.08	2.95	
The company treats its suppliers as partners.	3.09	2.64	
Average per category	***3.08***	***2.83***	***0.000***
Documentation			
The company has a clear documentation procedure.	3.19	3.04	
The company has a clear set of work instructions.	3.08	3.01	
Average per category	***3.13***	***3.03***	***0.084***
Measurement, information & data analysis			
The company collects/analyses data related to its activities.	3.06	2.99	
The company harnesses information to improve its key processes and services.	3.07	2.99	
The company measures and control quality.	3.16	2.99	
Average per category	***3.09***	***2.99***	***0.067***
Employee training			
The company provides continuous training for its staff.	3.16	2.81	
Training needs and training are always evaluated.	3.14	2.75	
Employees are trained in the use of statistical tools & techniques.	3.01	2.93	
Average per category	***3.11***	***2.83***	***0.000***

Statement	Comp. A	Comp. B	*t*-test *p-value*
Employee empowerment & participation			
Employee feedback is always sought.	2.95	2.60	
Employees are encouraged to participate and be involved in the company's activities.	3.10	2.80	
Employees are encouraged to make decision with regards to their job.	3.01	2.58	
Management lets employees participate in achieving organizational objectives.	3.06	2.68	
Employees are responsible for tasks they perform, and inspect their own work.	3.25	2.61	
Average per category	***3.07***	***2.66***	***0.000***
Employee satisfaction			
Employee satisfaction is measured.	2.83	2.60	
Average per category	***2.83***	***2.61***	***0.021***
Employee performance, recognition & reward			
Employee performance is measured.	3.10	2.70	
There is a performance measurement system in this company.	3.13	2.93	
Reward is linked to performance.	2.95	2.70	
There is a reward system to encourage new ideas from employees.	3.23	2.63	
Recognition is given to high achievers.	3.13	2.83	
Skills and knowledge acquired from multi-tasking increase employee's opportunity for promotion.	3.09	2.84	
Average per category	***3.11***	***2.77***	***0.000***

Table 6.69: Perception on quality management practices - Average score

**For standard deviation of each item, please refer to Appendix F.*

For Company B, the areas that were perceived less by the employees in terms of agreement (score of 2.80 and lower) are with regards to encouragement for employee participation and involvement in the company's activities, employee participation in achieving organisational objectives, employee decision making with regards to their job, evaluation of training needs and training, employee feedback, measurement of employee satisfaction and performance, the link of reward to performance, practice of multi-tasking, and relationship with suppliers.

When aggregation or averaging of responses are done on items with similar themes, the *t*-tests revealed that there are statistically significant differences between the two case companies on top management commitment (p=0.042), internal communication (p=0.001), teamwork (p=0.001), process approach (p=0.022), continuous improvement (p=0.002), quality management practices and tools (p=0.003), customer focus (p=0.003), supplier relations (p=0.000), employee training (p=0.000), employee empowerment and participation (p=0.000), employee satisfaction (p=0.021), and employee performance and

recognition (p=0.000) Some of these differences might explain the maintenance performance and the effectiveness of ISO 9000 maintenance of the two case companies.

6.4.5 Effectiveness of ISO 9000 Maintenance

There is an agreement by both companies that their ISO 9000 quality system is maintained effectively. However, the employees also feel that it takes a lot of hard work to maintain it, it places more demands on everybody's time, it is time consuming and it is also not easy for them to maintain it.

6.4.6 Benefits of ISO 9000

The mean score of 3.41 for Company A and 3.17 for Company B shows that respondents at both companies agree or strongly agree that having ISO 9000 certification is good for the organisation, it can control and monitor change, it helps the measurements of customers' requirements on a continuous basis, ISO allows for efficiency improvement, and it encourages process, service and system improvement. The respondents of both companies also agree that their company has gained a lot of benefits as a result of obtaining the ISO 9000 certification. The *t*-test shows there is a significantly higher level of agreement with the statement on the benefits of ISO 9000 at Company A than at Company B (p=0.009).

6.4.7 Impact of Effective ISO 9000 Maintenance

Both companies' respondents agree or strongly agree that effective maintenance of ISO 9000 will improve the quality of their company's service. Since the implementation of ISO 9000, they feel that the quality of their company's service has improved. There is a strong agreement on the positive impact brought by the ISO 9000 implementation and maintenance on the improvement of service quality of the companies. *T*-tests performed on both items indicated no significant difference in the respondents' opinions on the impact of ISO 9000 maintenance between the two companies (p= 0.799, p=0.120).

6.4.8 Critical Success Factors of ISO Maintenance

The findings show that employees of both companies feel that maintaining the ISO 9000 certification needs the involvement of everybody in the organisation. Employee involvement and participation is important and therefore top management commitment and support is important in motivating employees to

maintain the quality system. In order to motivate employees, they also are in the opinion that there should be a recognition and reward system for employees. At the same time, application of quality tools and techniques is important for quality improvement and maintenance. Table 6.70 shows the average rankings on the 1-6 scale of the critical factors for successful ISO 9000 maintenance by the employees of both companies.

Rank	Factor	Company A	Rank	Factor	Company B
1	Top management commitment	1.75	1	Top management commitment	1.16
2	Employee involvement	2.41	2	Employee involvement	2.03
=3	Teamwork	3.61	3	Reward & recognition	3.07
=3	Reward & recognition	3.66	4	Teamwork	4.70
5	Continuous improvement	4.67	5	Continuous improvement	4.91
6	Quality culture	4.99	6	Quality culture	5.06

Table 6.70: Average rankings of critical success factors of ISO 9000 maintenance

An analysis of variance confirms that the rankings differ between the companies. The essential difference is in the opinions about reward versus teamwork. In Company A, these two factors are rated equally whereas Company B respondents rate reward as clearly more important than teamwork.

However, overall the results confirm the earlier studies' findings which found that top management commitment and employee involvement as the top two most critical factors for ISO 9000 maintenance (Low and Omar, 1997; Cheng and Tummala, 1998; Chin et. al., 2000). Recognition and reward and teamwork were also found to be critical to ISO 9000 maintenance in Chin et al. (2000) and Low and Omar (1997) studies. In contrast to other studies, continuous improvement and quality culture seem to be two other critical success factors of ISO 9000 maintenance for service organisations from the employees' perspective.

Although there is a slight variation in ranking with regards to reward and teamwork in the two companies, the top six critical success factors of ISO 9000 based on the employees perspectives are top management commitment, employee involvement, reward and recognition, teamwork, continuous improvement, and quality culture.

6.4.9 Problems Associated with ISO Maintenance

The problems associated with ISO maintenance can be divided into people, documentation, process, and system as shown by Table 6.71. For Company A,

the survey result shows that more than a quarter of employees feel that lack of cooperation between people or teamwork as the main problem in ISO 9000 maintenance followed by the lack of commitment by people in the organisation (16.3%). The survey result also shows that lack of awareness/knowledge on ISO as one of the problems in ISO maintenance (16.3%).

In terms of documentation, the biggest problems are documents not being updated, documentation system is not satisfactory and inconsistency in supervisor's instruction with job requirements. The problems with regards to documentation might also be caused by the lack of knowledge/training on documentation and ISO 9000 requirements, due to people's attitude towards ISO or lack of communication especially when documents are changed and new documents are issued in replacement.

Process-wise, the employees feel that the process was bureaucratic and long, has too many procedures which causes delay, there were too many processes and ineffective distribution/dissemination of information from the top. With regards to the system itself, the employees found that frequent system changes creates lack of employee concentration, the systems need to be updated, using the old system, and lack of ISO knowledge and courses as problems.

For Company B, the survey result supports the findings from interviews in terms of lack of commitment as it indicate that employees feel that the two main problems in ISO maintenance at the company are the lack of commitment from people and the lack of cooperation between people/teamwork. The survey result also shows that documentation-wise, the problems are in terms of documentation system not satisfactory and inconsistency in supervisor's instruction with job requirements. As for the process, there are too many processes and the lack of understanding of the process by people. All respondents feel that frequent system changes create lack of concentration on the employee part.

Problem	Company A (%)	Company B (%)
People		
Lack of cooperation /teamwork between people	28.6	33.3
Lack of commitment	16.3	33.3
Lack of awareness/ understanding/knowledge on ISO 9000	16.3	11.2
Information received by staff not consistent or accurate.	-	11.1
Lack of acceptance by lower level staff	10.2	-
Work culture	6.1	-
Lack of interest from people	6.1	-
Lack of participation	4.1	11.1

Lack of communication	4.1	-
Lack of effort to continuously improve system	4.0	-
Lack of education	2.1	-
Late updating documents	2.1	-
Total	100.0	100.0
Documentation		
Documents not updated	28.6	-
Documentation system not satisfactory	19.0	60.0
Inconsistency in supervisor's instruction with job requirements.	14.3	40.0
Information received late by staff	9.5	-
Lack of access to documents	9.5	-
Too many documents	9.5	-
Lack of information on documents	4.8	-
Instruction & procedures are vague	4.8	-
Total	100.0	100.0
Process		
Bureaucratic & lengthy process	38.5	-
Too many procedures delay the process	15.4	-
Too many processes	15.4	66.7
Ineffective distribution/dissemination of information from the top	15.4	-
Lack of continuous commitment from staff	7.7	-
Lack of understanding of the process	7.7	33.3
Total	100.0	100.0
System		
Frequent system changes create lack of employee concentration	33.3	100.0
Systems need to be updated	33.3	-
Using the old system	16.7	-
Lack of ISO knowledge and courses	16.7	-
Total	100.0	100.0

Table 6.71: Problems associated with ISO 9000 maintenance

To overcome the problems, employees of both companies agree that management should obtain suggestion and support from all people in organisation, educate and train staff on ISO, and have an effective communication between top management and staff.

6.5 Chapter Summary

The aim of this chapter was to present the findings of Company A's and Company B's employees on the views on quality, motivation for certification to ISO 9000, top management and their own commitment and involvement in ISO maintenance, internal communication of both companies, and the quality management practices used by both companies to aid them in their improvements. The outcomes suggest employees of both companies feel strongly about quality in a positive way and they realised the importance of quality to their organisations. As for motivation for certification to ISO 9000, analysis shows that for Company A, the reasons are for improvement (90%),

customer satisfaction (81%) and global market penetration (74%) being the top three motives. Company B's motivations for ISO-certification are for improvement (70%) to penetrate global market (68%), and customer satisfaction (65%). Penetrating global market is more important to Company B than satisfying customers.

On top management commitment and involvement in maintaining the ISO 9000, employees of both companies feel that their top management commitment and involvement are satisfactory. Based on the results, Company A shows a higher percentage of employees (56%) agreeing that internal communications is effective compared to Company B (3.7%). Most of Company B employees (89%) feel that communication within the company is mostly effective. Further analysis on statements related to internal communication shows that at Company B, the percentage of disagreement is quite significant (32%).

The findings show that in all areas surveyed, Company A's mean scores are higher compared to Company B. This indicates that Company A' employees have a higher level of agreement to all statements in comparison to Company B. However for both companies, the general level of agreement is lower in matters regarding employee feedback and satisfaction, and the link of reward to their performance. At Company B, other matters of lower level of agreement are pertaining to employee participation and involvement, training, multi-tasking of employees, and relationship with suppliers/contractors.

This chapter also has explored the staff opinion on ISO 9000 maintenance, its benefits and impact on both organisations together with the critical success factors and problems faced in maintaining the quality system. The results show that employees of both companies feel that the QMS is maintained effectively by their companies and by having the ISO 9000, a lot of benefits have been obtained by the companies. They also feel that by having this ISO 9000 certification, their quality of service has improved. Overall, both companies ranked top management commitment, employee involvement, reward and recognition, teamwork, continuous improvement and quality culture as critical success factors to ISO 9000 maintenance. Problems faced by Company A and Company B in maintaining the quality system are almost similar and are related to people, documentation, process, system and infrastructure.

The next chapter, Chapter 7 will summarise the results of interviews supported by the findings from document review and questionnaire survey.

CHAPTER 7 - SUMMARY OF RESULTS

7.1 Introduction

Since chapter 5 and 6 gave a lengthy description of findings, this chapter summarises the result of this research based on the interviews, document reviews and questionnaires survey presented in Chapter 5 and 6. Based on the findings, similarities and differences between the case companies are identified to enable the researcher to explain the reasons for these similarities and differences. Based on this, an assessment on the maintenance performance of these case companies is conducted to enable the researcher to establish the level of maintenance achieved by the companies according to the ISO 9000 requirements. Next, the strengths and weaknesses of each company are presented and analysed. Then, the summary of critical success factors, problems in ISO 9000 maintenance and the change and improvements obtained as a result of maintaining ISO 9000 by the two companies are summarised.

7.2 Background of Respondents

In terms of the average number of years spent with the company, top management of Company A have been with the company longer compared to top managers of Company B. Company A also has a higher percentage of employees working over 10 years in comparison to Company B. As the implementation of ISO 9000 started in 2004 at Company A, top management of the company who are the ones who designed the quality system have had the opportunities to operate the quality system and most of the employees also should be familiar with the quality system. In Company B, as the implementation of the quality system took place in 1999, then it could be said that only a few of its top management have had the opportunity to design and operate the quality system and almost half of the employees should be familiar with the quality system. However, both companies' MDs being relatively new to the company have not had the opportunity to learn much about the quality system in place.

7.3 Views on Quality

Based on the interview findings, both companies' top managers understood the importance of quality to their organisations. The views given by the Managing

Directors of both companies on making their partners look good and customers satisfied also reflect the importance and value of partners and customers to them and hence ensuring quality service delivery. The outcomes of the survey also suggest employees of both companies feel strongly about quality in a positive way and they realise that the quality of their service will set them apart from others.

7.4 Motivation for Certification

The analysis of the motives for certification to ISO of both companies shows that for Company A, the main motivation for certification was to improve its operations' efficiency. This is supported by the survey result which found that 89% of employees of Company A think that the motivation for certification was for improvement. Company B's main motivation for certification to the standard was due to client's requirement and as a marketing tool for market expansion. This is consistent with survey result which shows 68% of Company B employees thought the reason for certification to ISO was for global market penetration. However, both companies have similar motives in terms of the establishment of a systematic, documented and standardised documentation as the intent of certification to the standard and this is supported by the survey results. Some of the external reasons for certification to ISO 9000 which are similar for the two companies are to satisfy customers, to enhance company's image and perception of customers, it is the norm or requirement to do business, it is a recognised, universal, international certification, customers/clients'/potential clients' requirement, to be competitive, to gain competitive advantage and as a marketing tool.

7.5 Views on ISO 9000 and its Effectiveness

All interviewed at Company A think that ISO 9000 is a good quality system while only most thought so at Company B. The survey result shows that the level of agreement is higher at Company A. Respondents at both companies agree or strongly agree that having ISO 9000 certification is good for the organisation, it can control and monitor change, it helps the measurements of customers' requirements on a continuous basis, ISO allows for efficiency improvement, and it encourages process, service and system improvement. The respondents of both companies also agree that their company has gained a lot of benefits as a result

of obtaining the ISO 9000 certification. On the effectiveness of ISO 9000 maintenance, based on the interviews, all respondents at Company A feel that the company's quality management system is effectively maintained. In contrast, there is a mixed feeling about the effectiveness of the company's ISO 9000 maintenance on the top managers' part in Company B. For both companies, those who believed that ISO 9000 is effectively maintained based their views on four main reasons namely; the audit results, compliance to ISO requirements, improvement carried out in people, process, documentation and performance, and the existence of a formal unit or post looking after the quality system. The result of survey indicates there is an agreement by both companies that their ISO 9000 quality system is maintained effectively. However, the employees also feel that it takes a lot of hard work to maintain it, it places more demands on everybody's time, it is time consuming and it is also not easy for them to maintain it.

7.6 Similarities and Differences between the Case Companies

Based on the interview results, there are similarities and differences observed in how the two case companies maintain their ISO 9000 in terms of how they view and manage the aspects that are closely associated with ISO 9000 maintenance. Table 7.1 displays the aspects in which the two companies are similar and different.

No.	Aspect	Similar	Different	Remark
1.	Motivation for certification		√	For Company A, the real motive was to improve its operation's efficiency as it was making losses. For Company B, the motive was as a tool for market expansion. Company B does not include improvement on people aspect as a motive for certification.
2.	Views on quality	√		
3.	Views on ISO 9000	√		
4.	View of the top management's role	√		
5.	Documentation structure		√	Company A has 4 levels, Company B has 3.
6.	Number of procedures		√	Company A outnumbered Company B by 20 procedures.
7.	Setting & reviewing of Quality Policy & objectives	√		
8.	Handling of Management Review Meeting		√	The meeting at Company B chaired by HOD, at Company A by the MD.
9.	Appointment of Management Representative (MR)		√	At Company A, from within the company. Company B's MR is from its parent company.

No.	Aspect	Similar	Different	Remark
10.	Resource planning & management		√	Company A applies multi-tasking of its employees.
11.	Training needs identification	√		
12.	Service realisation process		√	Company B's more complex than Company A's due to its nature of business.
13.	Relationship with contractors/suppliers		√	Company B has an adversarial relationship with its contractors. Company A has better relation with its subcontractors/suppliers .
14.	Measurement of performance	√		
15.	Customer satisfaction & feedback		√	Company A has better customer satisfaction survey and complaints handling system.
16.	Improvement initiatives	√		
17.	Employee empowerment &, feedback	√		
18.	Employee satisfaction	√		
19.	Recognition & Reward system		√	Company A has a clear recognition & reward system.
20.	Employee involvement		√	Employees at Company A are more involved in quality activities such as in procedure development.
21.	Continual improvement (CI)		√	Company A has a more structured plan for CI.

Table 7.1: Similarities and differences between Company A and Company B.

The aspects in which they are similar are with regards to views on quality and ISO 9000, the role of top management, setting and reviewing of quality policy and objectives, training needs identification, measurement of performance, improvement initiatives, employee empowerment and feedback, and employee satisfaction.

Meanwhile, the aspects in which they differ are on the motivation for certification, documentation structure, number of procedures, handling of management review meeting, appointment of management representative, resource planning and management, service realisation process, relationship with subcontractors/suppliers, customer satisfaction and feedback, recognition and reward system, employee involvement, and continual improvement.

7.7 Maintenance Performance of Case Companies

Based on the analysis of interview and document review findings on how the two case companies maintain their ISO 9000, an assessment was conducted on their

maintenance performance. This assessment is not an audit as it is different in several ways. First a quality audit involves identifying the areas of non-conformance based on the requirement of the standard. Second, the number of non-conformance is then recorded. Lastly, the result of audit will state the nature of non-conformances and classify whether they are minor, major, or observations. On the other hand, this assessment involved using the scoring system based upon the performance of the company that has already met the requirements of the standards which means that it has already obtained the ISO 9001:2000 certification. For this assessment, a score of 1 to 3 is given to each clause/sub-clause of the ISO 9001:2000 standards. The score indicator is as follows:

1= poor; meeting the basic requirements of the standards with lapses observed, 2= satisfactory; meeting the basic requirements of the standards with initiatives for improvement observed, 3= good; exceeding basic requirements with continual improvement observed.

It should be noted that the assessment is based on the fact that both companies have achieved ISO 9000 certifications. However, the areas involved will be considered weak or poor in terms of ISO 9000 maintenance if some lapses are found based on the internal and external audit reports and interview responses. Table 7.2 shows the result of the analysis carried out on the maintenance performance of Company A and Company B.

ISO 9001:2000 Clause	**Company A**	**Company B**
Quality Management System:		
- Quality Policy	2	2
- Quality Procedures	2	2
- Control of Documents & Records	1	1
	5	**5**
Management Responsibility		
- Management Commitment	3	2
- Setting & Reviewing of Quality Policy, Objectives & Procedures	2	2
- Communication of Quality Policy & Objectives	2	2
- Management Review	2	2
- Responsibility, Authority & Communication	2	2
- Internal Communication	2	1
	13	**11**
Resource Management		
- Strategic Planning	2	2
- Planning of Resources	2	2
- Competence, Awareness & Training	2	1
	6	**5**
Product(Service) Realisation		
- Service Planning	2	2
- Service Realisation process	3	2
- Supplier/Sub-Contractor Evaluation & Relations	2	1
	7	**5**

ISO 9001:2000 Clause	Company A	Company B
Measurement, Analysis & Improvement		
- System & operations' performance	3	3
- Customer Satisfaction Survey	2	1
- Customer Complaints	2	1
- Internal Quality Audit	2	2
- Analysis of Data	1	1
- Continual Improvement	3	2
- Use of Practices & Tools for Improvement	2	2
- Corrective & Preventive Action	1	1
	16	**13**
Total Score	47	39
Average Score	**2.04**	**1.70**

Table 7.2: Maintenance performance of Company A and Company B

Based on the average score obtained, Company A is better at maintaining the ISO 9000 compared to Company B. Company B are weaker than Company A in areas such as management commitment, internal communication, competence, awareness and training, service realisation, customer satisfaction survey, customer complaints, and continual improvement. Company B was not stronger than Company A in any of the 23 categories listed but both are good with regards to system and operations's performance. At the same time, both companies are also weak in areas such as control of documents and record, analysis of data, and corrective and preventive action. The following paragraphs give detailed justification and analysis for the performance assessment results.

Control of Document

Based on the interview and document review, both companies have established, documented and maintained their quality management system by developing and reviewing their quality policy, objectives, and procedures as required by the standard. Generally companies do not have many difficulties in establishing documents required by the standards. The real problem as found by the two companies lie in the control of documents. These include updating, changing and communicating these documents to the people of the organisation. This is similar to the findings by Chin et al. (2000) study in Hong Kong manufacturing sector that found document and data control as one of the problems in ISO 9000 in manufacturing companies in Hong Kong.

Analysis of Data and Corrective and Preventive Action

According to the interview respondents, for both Company A and Company B, data collected from its key activities and processes is analysed and results discussed in the daily, or unit/departmental meetings. However, it was voiced out

by the Document Controller at Company A that data analysis is a problem because some units have not done it even though the company collects raw data. This has resulted in corrective and preventive actions not being raised since the root cause for non-achievement was not known. Even when corrective actions were taken, results from external audits show that they were not effective and identification of potential nonconformities for preventive action was not specified. This might be due to lack of knowledge to identify problem areas, to perform data analysis and lack of commitment to monitor corrective and preventive actions taken on the part of management and employees. Chin et al. (2000) study found corrective and preventive action to be the most critical issue in maintaining the ISO 9000 quality system when they conducted a study on Hong Kong electronics manufacturing companies.

As for Company B, not identifying and specifying potential nonconformities for preventive action implies that detailed root cause analysis was not done in order for it to provide effective solution to correct or prevent the non-conformances. The results of external audit show that although work orders for all regions were very high due to delays at start, there was no proper analysis done to indicate the root cause and the preventive action taken to mitigate the delay. This might be due to employees busy doing their core jobs and therefore having no time to analyse data. It might also be attributed to employees not having the knowledge (tools and techniques) to do data analysis.

Management Commitment

Based on the interviews, top management of Company A and Company B feel they are *highly* committed to ISO 9000 maintenance with Company A's top management displaying *high* and Company B *satisfactory* involvement in its activities and programmes. This perception coincides with the employees' as a high percentage of employees of Company A and Company B positively agree with a set of statements pertaining to top management commitment. However, the result is slightly different when they were asked to rate their top management commitment. Most of the companies' employees (Company A 60%, Company B 85%) feel that their top management commitment is *satisfactory* although a significant percentage (30%) of Company A's employees also rated them *high*.

Although Company A's audit reports state that management review was not effectively used to ensure the QMS is implemented as it should be and corrective

actions taken were not effective, in terms of top management commitment, the areas that top management commitment at Company B were found lacking are much bigger. For instance, apart from the above weaknesses, Company B also must review their quality objectives and Key Operational Performance Index, set a more challenging target, show evidence of management's response, acceptance, approval and suggestions/output in the management review, and corrective actions must be agreed upon. Management of Company B also has failed to set up a proper store for products. In terms of providing the resource to maintain the quality system, Company B is having a problem with the number of internal quality auditors which currently consists of 6 auditors to audit its nineteen departments and 5 site offices. This implies an acute shortage of auditors that would affect the effectiveness of internal audits carried out. Having adequate resources is important to maintain a QMS like ISO 9000.

Internal Communication

As for internal communication, the average score for Company A (3.92) is higher compared to Company B (3.71) with most of the management interviewed at Company A rated it *effective (4)* compared to Company B. This is consistent with employees' perception based on the survey which found that although 68% of Company B's employees positively agree/strongly agree with the statements concerning internal communication of the company, when asked to rate the effectiveness of internal communication, most (89%) of Company B employees feel that communication within the company is *mostly effective*. Less than 4% found it *effective.* Further analysis on the statements related to internal communication shows that at Company B, the percentage of disagreement was quite significant (32%) and those who disagree came from all departments and had spent at least 6 years with the company. This means that to a certain extent, internal communication has not much improved within the last 6 years at Company B.

Competence, Awareness, and Training

With regard to competence, awareness and training, although Company A has a sufficient number of trained internal quality auditors, some of them still lack the knowledge and experience to do internal quality auditing. On the other hand, Company B does not have a sufficient number of internal quality auditors to perform the job. As for Engineering and Logistics & Machinery departments, technology and technical training is inadequate for supervisors and machine

operators. Such training is important for them to be competent and knowledgeable especially for new technology and machinery for pavement works.

Service Realisation

The service realisation process of Company A is more structured, standardised and straight forward compared to Company B's as its core business is one; cargo transportation. In contrast, Company B provides many categories of services such as routine maintenance, mechanical, electrical and electronics works (MEE), preventive maintenance, upgrading and repair works, pavement, traffic management and facilities to maintain the highway. Each process is different and sometimes complex in its interactions. In addition, Company A's operations are located at one place while Company B's operations are scattered at various sites. When reviewing the companies' Quality Manual, it was easy to find the business process flow chart that shows the sequence and interactions of quality management system processes of Company A. Company B's Quality Manual is lacking in this area.

Customer Satisfaction Survey

The customer satisfaction survey at Company A was done by a consultant firm and the results of the survey were communicated to the respondents. In the case of Company B, the survey conducted on PB (main client) section managers was carried out by Company B on MEE and Civil Works Units of Maintenance Operations only. The satisfaction survey on the highway users, the end and real customers were conducted by the Malaysian Highway Authority (MHA) and the result was disclosed to PB but not to Company B. To find opportunities for improvement, Company B must know and analyse the results of the customer satisfaction survey.

Customer Complaints

When comparing the two companies, there is a major difference in the approach employed by Company A and Company B in handling customer complaints. Company A treats its key customers as priority compared to its other customers. Their problems are being listened to and they are treated as partners. As Company B has only one major customer, PB, the complaints handling approach adopted by the company is reactive and dictated by its customer. At the same

time, Company A categorised and analysed its customer complaints. Company B did not.

Continual Improvements

Based on the interviews and documents reviews, in the process of maintaining their ISO 9000 QMS, both companies have carried out continual improvements. However, Company B does not have a structured plan for continual improvements when compared to Company A. Further, Company A monitors its improvement progress regularly.

7.8 Perceptions on Quality Management Practices

In section 6.4.4, the survey result of employees' perceptions on quality management practices is presented by Table 6.69. Based on the average scores of both companies, it indicates that Company A's average scores are better than Company B's on all the statements. The scores of 3.0 and above reflect that employees at Company A agree positively on their top management commitment and involvement in the ISO 9000 maintenance, that communication within the company is effective, employees are empowered and suitably rewarded for their efforts, employee training is continuously provided, processes and system are continuously improved, relationship with suppliers is close, the organisation is customer-focused, people in the company works as a team, performance is measured and data is analysed, and statistical tools and techniques are used for quality improvement. However, a score of less than 3 (3= agree, 2=disagree) was obtained on matters regarding employees feedback and employee satisfaction. Although employees agree that they are rewarded for their efforts, the degree of agreement is less when it comes to whether reward is linked to their performance.

For Company B, the areas that were perceived less by the employees in terms of agreement (score of 2.80 and lower) are with regards to encouragement for employee participation and involvement in the company's activities, employee participation in achieving organisational objectives, employee decision making with regards to their job, evaluation of training needs and training, employee feedback, measurement of employee satisfaction and performance, the link of reward to performance, practice of multi-tasking, and relationship with suppliers.

Overall, the interview and document review results of the maintenance performance analysis is consistent with the results of the survey although the degree of agreement in all areas is stronger in Company A's employees than Company B's. Survey results also supported the interview outcomes that there is a difference between the two companies on aspects such as customer satisfaction, employee recognition and reward, employee involvement/participation, continual improvement, and subcontractor/supplier relations.

After 4 years of being ISO-certified, Company A is satisfactorily maintaining its ISO 9000 QMS but at a barely satisfactory level. Company B on the other hand, is still poor at maintaining the QMS even after obtaining ISO 9000 certification for more than 9 years. Therefore being certified to ISO 9000 longer does not mean that a company will maintain it better. The maintenance of ISO 9000 depends on how a company manage the aspects closely associated with it. These include both the technical aspect of ISO 9000 and the human aspects of quality management. To go beyond ISO 9000 maintenance, the human resource aspects are important to support the technical requirements in order to strive for excellence.

7.9 Critical Success Factors of ISO 9000 Maintenance

The result from the interviews which represents the management perception shows that for both companies, top management and employee involvement are equal in their position as the most critical success factors of ISO 9000 maintenance. There is a difference in the third place with motivation and reward for Company A and teamwork for Company B. Continuous improvement also is third place at Company B but fourth at Company A. Equal third at Company B is understanding of the QMS. Other factors critical to ISO 9000 maintenance for Company A are ISO-certified vendors, correct measures for process improvement, the right people, quality culture, and use of the standards as reference. On the other hand, other factors considered critical to ISO maintenance at Company B by its management are reward, consistency of procedures, measures and exchanging of feedback, translating vision into targets, and management representative.

Rank	Company A	Rank	Company B
1	Top management commitment	1	Top management commitment
=1	Employee Involvement	=1	Employee Involvement
3	Motivation & Reward	3	Teamwork
4	Continuous Improvement	=3	Continuous Improvement
5	Teamwork	=3	Understanding of QMS

Table 7.3a: Critical success factors - interview results

The result of the survey which represents employees' perceptions indicates that top management commitment is ranked as the most important factor for ISO 9000 maintenance in both companies, employee involvement second, while reward and recognition being third, teamwork being equally third in Company A but fourth in Company B, continuous improvement fifth and quality culture, sixth for both companies. What is clear is that employees are sure of the first three factors they consider critical to ISO 9000 but the distinction is not so apparent between the fourth, fifth and sixth places.

Rank	Factor	Company A	Rank	Factor	Company B
1	Top management commitment	1.75	1	Top management commitment	1.16
2	Employee involvement	2.41	2	Employee involvement	2.03
=3	Teamwork	3.61	3	Reward & recognition	3.07
=3	Reward & recognition	3.66	4	Teamwork	4.70
5	Continuous improvement	4.67	5	Continuous improvement	4.91
6	Quality culture	4.99	6	Quality culture	5.06

Table 7.3b: Critical success factors – survey results

The above results indicate that management and employees' perspectives on the critical success factors of ISO 9000 maintenance are very similar. The management of both companies realised the importance of their commitment and support in ISO 9000 maintenance. Equally important to management is the involvement of employees in order to make it happen. As for employees, they need top management to be committed and lead by example before they involve themselves in the process. At the same time, management recognised that employees need to be motivated and rewarded for their efforts. To successfully maintain ISO certification also needs teamwork and continuous improvement and this will be greatly aided by understanding of the QMS and having a quality culture in place. The study result on the critical success factors of ISO 9000 maintenance is not unexpected and is consistent with the findings of previous studies on ISO 9000 implementation and maintenance except for continuous improvement factor. This indicates that both the management and employees of the case companies are aware and recognised continuous improvement must be implemented for the quality system to be maintained successfully.

7.10 Problems and Challenges in ISO 9000 Maintenance

Based on the interviews, the problems and challenges associated with ISO 9000 maintenance by Company A are summarised by Table 7.4a below. Please refer to Table 6.33 for survey results.

	Problems
1.	Identifying problem areas to correct it.
2.	Maintaining momentum to sustain the ISO 9000 quality system.
3.	Difficult to get commitment and support from staff because they are busy with their day to day work and lack the sense of importance.
4.	Updating and distributing new documents.
5.	To get people complying with the standards.
6.	Incorrect reporting of non-conformances
7.	Corrective action
8.	Analysis of data
9.	People are afraid of change
10.	To sustain adequate resources especially manpower.
11.	Lack of knowledge on the part of internal auditors to conduct audits.

Table 7.4a: Problems and challenges in ISO 9000 maintenance – Company A's interview results

Having problems with maintaining momentum to sustain the quality system, commitment and support from staff, updating and distributing new documents, taking corrective action and people afraid to change can be due to lack of cooperation between and commitment from staff and management. This is supported by the survey results which show that more than a quarter of employees (29%) feel that lack of cooperation between people or teamwork as the main problem in ISO 9000 maintenance followed by the lack of commitment by people in the organisation (16.3%).

While having problem to identify problem areas, incorrect reporting of non-conformances and not analysing data that indicate the lack of knowledge or training on the part of:

i.internal quality auditors to carry out internal audits

ii.staff to do data analysis

iii.staff to do the measurement of quality objectives

iv.staff to take corrective action when necessary.

The survey result also shows that lack of awareness/knowledge on ISO is one of the problems in ISO maintenance (16.3%).

Based on the interviews, on the documentation side for example, problems arose in terms of updating the changes to documents and distributing of new documents. The survey results also revealed that in terms of documentation, the

biggest problems are documents not being updated, documentation system is not satisfactory and inconsistency in supervisor's instruction with job requirements. The problems with regards to documentation might also be caused by the lack of knowledge/training on documentation and ISO 9000 requirements, due to people's attitude towards ISO or lack of communication especially when documents are changed and new documents are issued in replacement. For Company A, communication of changes to documents down the line is a challenge.

Process-wise, the employees feel that the process was bureaucratic and long, has too many procedures which causes delay, there were too many processes, and ineffective distribution/dissemination of information from the top. With regards to the system itself, the employees found that frequent system changes creates lack of employee concentration, the systems need to be updated, using the old system, and lack of ISO knowledge and courses as problems.

As for Company B, Table 7.4b shows the problems and challenges in maintaining the quality system of the company based on the interviews. Please refer to Table 6.66 for survey results.

	Problems
1.	Informing change to process to ground workers.
2.	Lack of communication due to disperse in location.
3.	Lack of employee understanding on the policy and procedures.
4.	Internal audit not taken seriously.
5.	Audit performance not disclosed to employees.
6.	Lack of staff motivation.
7.	Lack of operator's competency in Logistics & Machinery department to do machine inspection.
8.	Lack of commitment from lower level staff.
9.	Lack of commitment from people (management & staff)
10.	Following old procedures.
11.	Not following procedures, use shortcuts.
12.	Monitoring subcontractors/suppliers performance.

Table 7.4b: Problems and challenges in maintaining the ISO 9000 – Company B interview results

Most of the problems identified (1, 2, 5, 6, 10 and 12) are due to the lack of communication, which is supported by the survey findings on the effectiveness of communication of the company. In terms of communication within the company, it is a problem as most staff are at the ground/site. The scattered location creates difficulties in communication of information from top to the bottom. In addition, Company B also has many subcontractors and suppliers and monitoring their work and performance has taken a lot of the company's resources.

Problem number 4, 8, 9, and 11 indicate lack of commitment from and lack of cooperation between people in the organisation. The survey result supports the findings from interviews in terms of lack of commitment as it indicate that employee feel that the two main problems in ISO maintenance at the company are the lack of commitment from people (33.3%) and the lack of cooperation between people/teamwork (33.3%).

Problem number 3, and 7 on the other hand occurred because of lack in employee/management awareness/knowledge and training on specific area and on ISO 9000 as agreed by the employees.

The survey result also shows that documentation-wise, the problems are in terms of documentation system not satisfactory and inconsistency in supervisor's instruction with job requirements. As for the process, there are too many processes and the lack of understanding of the process by people. All respondents feel that frequent system changes create lack of concentration on the employee part. Table 6.71 shows the survey results of both companies.

In short, the two companies' main problems can be summarised as:

a. Lack of cooperation between people
b. Lack of commitment
c. Lack of awareness and understanding on ISO 9000
d. Lack of communication

To overcome these problems, both the management and employees of the companies have implemented and suggested measures as specified in Chapter 5 (Table 5.14 & Table 5.28) and Chapter 6 (Sect.6.2.9 & Sect. 6.3.9). However, the effectiveness of these measures in solving the problems remains to be seen. Further discussion on this will be carried out in Chapter 8.

7.11 Changes and Improvements due to ISO 9000

In the process of maintaining the ISO 9000 both Company A and Company B have carried out a lot of improvements on its processes, documents and system (See Table 5.9 & Table 5.23). They also used a lot of practices and tools to help them in their quality improvement efforts (See Table 5.8, 5.10 & 5.24). Both companies are also moving towards an online computerised system in their core

activities and documentation. The companies are also being continually profitable for the past years since the implementation of ISO 9000 as shown by Table 7.5.

Company/Year	**2004 (RM)**	**2005 (RM)**	**2006 (RM)**	**2007 (RM)**
Company A	224,400,000	67,500,000	179,500,000	136,000,000
Company B	44,873	67,401	61,967	60,160

Table 7.5: Profit before tax for Company A & Company B (Source: Company A's Finance Department & Company B's Management Representative)

In Company A, employees are more aware of policy and procedures as shown by the survey result. All ranks and levels are involved in maintaining the quality system as indicated by the interview result. The survey result also indicates that the majority of employees at Company A feel that they are satisfactorily involved and a significant percentage highly involved in maintaining the quality system. Other impacts of ISO 9000 are the company managed to simplify and reduce the number of activities in some of the processes and tracing of processes becomes easier, the root cause of problems is easier to detect, work errors are minimised, there is transparency in doing business, the number of complaints has reduced, and cargo mishandling rate has also dropped.

As for Company B, the main changes that can be seen as a result of continual improvement are the existence of a more formal performance measurement system with the setting up of a performance monitoring unit, statistical data is collected thus enabling analysis of data for better monitoring of process and system performance, the mechanism for monitoring suppliers and subcontractors' quality is improved, and the scope of business and client base has also broaden.

The survey results show that there is a strong agreement on the positive impact brought by the ISO 9000 implementation and maintenance on the improvement of service quality of the companies.

CHAPTER 8 - DISCUSSION & IMPLICATIONS

8.1 Introduction

The previous chapters, Chapter 5 and 6 have described and analysed how the case companies maintained their ISO 9001:2000 based on the technical requirements and how they have gone beyond fulfilling that requirements by adopting the human resource aspects and the ISO 9000 principles to better maintain the quality system in order to strive for excellence, the critical success factors of ISO 9000 maintenance, the problems associated with it and the measures to overcome them. The summary of these findings then is presented in Chapter 7. Now this chapter will discuss the results of this research and its implication based on the research objectives and questions identified earlier. Comparison with the literature will also be carried out.

Section 8.2 of the chapter begins with a discussion on the finding of the first main research question 'How do Malaysian service organisations maintain their ISO 9000?' The discussion is centred on several other research questions that arose from the main research question such as whether there are similarities or differences in how the companies maintain their ISO 9000, the level of ISO maintenance of both organisations; motivation for certification, the quality orientation of people, and the approach used by the organisations to maintain the quality system. It also discusses the impact of commitment and involvement of people, human resource aspects of quality management, quality culture and structure on ISO 9000 maintenance. Section 8.3 then discusses the finding of the second research question 'What are the critical success factors of ISO 9000 maintenance for these companies?' Next, section 8.4 follows with the discussion on the finding of the third research question 'What are the problems and challenges associated with ISO 9000 maintenance in these organisations and how are they addressed?' At the end of this section, a summary of critical success factors, problems, and measures to overcome them based on the previous literature and the current study were presented, compared and discussed. Section 8.5 addresses the fourth research question of this study by discussing the changes and improvement made as the result of ISO 9000 maintenance. Based on the discussion of all the sections mentioned above, section 8.6 then presents a framework for effective ISO 9000 maintenance in service. The implications to managers were discussed in section 8.7. Section 8.8

concludes the findings of the study. Lastly, section 8.9 points out the contributions of the research to the literature, research design and methodology, organisations and management practitioners, and to the ISO 9000 technical committee.

8.2 The Maintenance of ISO 9000 in Case Study Organisations

This section offers insights into the first research question of 'How do Malaysian service organisations maintain their ISO 9000?' The findings of this study highlight that there are similarities and differences in how these companies maintain their ISO 9000. Most of the items analysed measure the degree of compliance to a large number of ISO 9000 technical requirements. Exceptions are motivation for certification, quality orientation and culture, organisational structure, and some aspects of human resource management. The aspects in which they are similar are with regards to views on quality and ISO 9000, the role of top management, setting and reviewing of quality policy and objectives, training needs identification, measurement of performance, improvement initiatives, employee empowerment and feedback, and employee satisfaction. They differ with regards to employee involvement, employee recognition and reward, customer satisfaction, continual improvement, management commitment, internal communication, and supplier relations. Therefore, this study shows that although the same ISO 9000 requirements and principles are shared by the case organisations, they are being implemented and maintained in similar and different ways.

Moreover, the maintenance assessment result shows that even when the case companies have achieved their ISO 9000 certifications, the level of maintenance varies between them due to the above differences. The difference in the degree of implementation in maintaining the quality system is uneven across aspects of the standard requirements. For example, in terms of top management commitment, Company A is perceived to be better than Company B because top management of Company A involved themselves more in ISO 9000 activities such as the MD chairing the ISO 9000 Management Review meeting, providing sufficient resources to carry out internal audits, and providing training for competency to relevant employees. Due to their greater participation and better resource provision, Company A has better maintenance outcomes in terms of operation efficiency, profitability, employee satisfaction, relationships with suppliers and customers, continuous improvement plan, internal communication,

and employee training. The results of this study is in line with Lee et al. (2009) who showed that certified firms differ in the degree of adoption of ISO 9000 principles and those with higher levels of adoption outperformed those with relatively lower level of adoption. Instead of using the principles of ISO 9000, the current study measures the firms' maintenance against the ISO 9001:2000 requirements.

The study also found that Company A maintains the quality system at a satisfactorily level with initiatives for improvement observed while Company B implements the clauses to just complying with the requirements of the standard. To a certain extent, this confirms the finding of Lee et al. (2009) study that suggest some organisations implement the principles of ISO 9000 just to the extent that the certification can be obtained while others are highly committed to implementing the principles to levels beyond the standard requirements and therefore difference in performance occurs between ISO 9001-certified organisations. However, the difference in the scores obtained by the two case studies is not much while the Lee et al.'s results suggest that the implementation levels of all ISO 9000 quality principles are highly significantly different between the two groups of organisations. It was also discovered that the length of experience with ISO does not affect how these companies maintained their ISO 9000

The findings of the study suggest that there are several general factors associated with effective ISO 9000 maintenance as shown by Figure 8.1. The remainder of this section addresses each of the factors to show how they operate in influencing maintenance performance and outcomes.

8.2.1 Motivation for Certification

Although both companies have different real and main motives for certification to ISO 9000, the findings of the study showed that both have achieved their objectives of certification to the standard. For Company A, it has been successful in reducing the number of defects and complaints from customers therefore improving its operation efficiency while Company B has been able to expand its client base and business volume, hence ISO certification has been used successfully as a marketing tool.

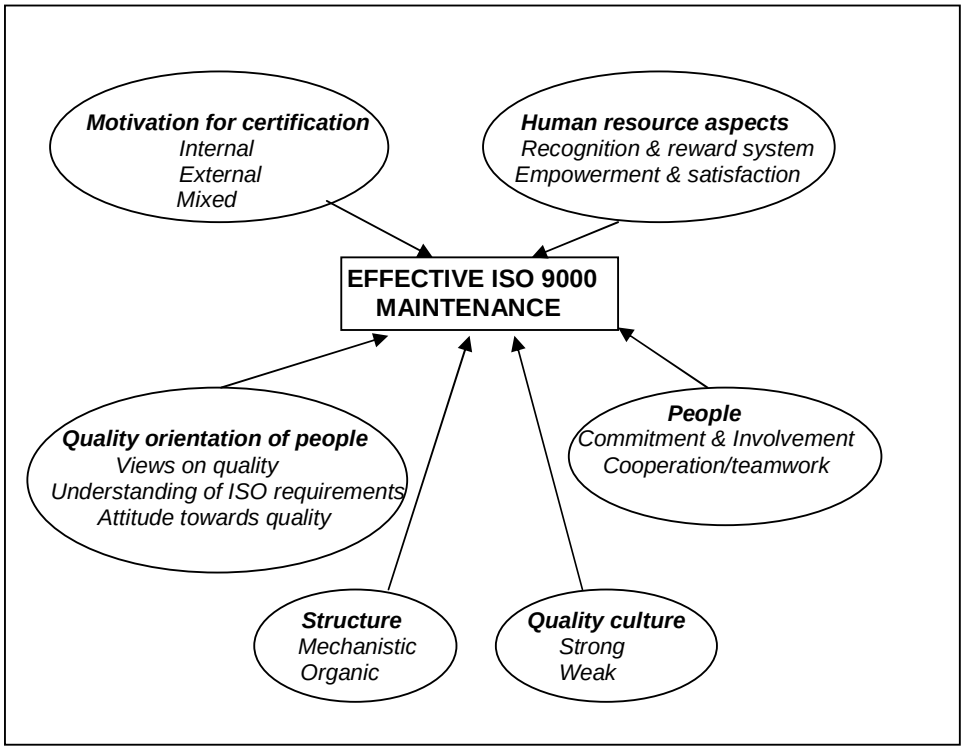

Figure 8.1: Factors associated with effective ISO 9000 maintenance

The finding on the real motive for certification of Company A which is to improve its operations efficiency is similar to other studies' findings such as Magd (2008), Naveh and Marcus, (2004), Wiele et al. (2001), Alkhalifa and Aspinwal (2000), and Fuentes et al. (2000). Just as the main reason for Company B which is because of clients' requirement and as a marketing tool is similar to the findings from other studies such as Hughes et al. (2000) study which mentioned that pressure from clients/customers as one of the main motivation for ISO 9000 certification and as a marketing tool (Magd, 2008; Magd et al., 2003; Alkhalifa and Aspinwall, 2000) and to expand the business (Singh and Mansour Nahra, 2006).

Both companies also have cited both the internal and external motives for certification to ISO 9000. The internal motive for ISO 9000 certification of the companies is the improvement on documentation and system. This is similar to other studies (Santos and Escanciano, 2002; Fuentes et al., 2000; Lipovatz et al., 1999) which state that one of the main reasons of ISO 9000 certification is to improve the system by establishing a formal system in the organisations and simplifying procedures. Other reason for certification to ISO 9000 given by Company A is to improve its people in terms of changing employees' mindsets, to

develop employees, and to have a clear line of responsibility. A study conducted by Magd (2008) found that failures to define responsibility and authority for personnel are regarded as barriers to effective implementation of ISO 9001:2000.

In terms of external motives to ISO 9000 certification, both companies have stated customers' requirement, to satisfy customers, as a marketing tool and to enhance company's image as some of the reasons. This is consistent with findings from other studies such as Awan and Bhatti (2003), Santos and Escanciano (2002), and Wiele et al. (2001).

The motivation for certification to ISO 9000 for the case organisations includes both the external and internal reasons which are similar to that of the manufacturing organisations (Magd, 2008; Lee and Palmer, 1999). This finding is consistent with the finding from Singh et al. (2006) study on ISO 9000 in manufacturing and service organisations in Australia whereby the study found that the motivation for certification for service and manufacturing organisations is similar.

The results from the maintenance performance elaborated in section 7.7 indicate that Company A has a better overall performance than Company B on management responsibility, resource management, product realisation, and measurement, analysis and improvement elements. This shows that the real motive for certification has an impact on how a company maintains its ISO 9000 certification by influencing its maintenance approach. For example, because Company A seeks improvement in its process and operations, it realises the need for obtaining feedback from its customers and hence executes the customer satisfaction survey systematically and the results were also analysed to improve performance. It also realises that to improve performance, employees need motivation and hence it has a clear recognition and reward system to satisfy its employees in order to motivate them to be involved. At the same time, the company has a structured continual improvement plan to increase its operations' efficiency and performance. This shows that organisations motivated by internal reasons to obtain certification like Company A will achieve more effective ISO 9000 maintenance and greater benefits and better performance compared to organisations which did it for external reasons. This is consistent with Wiele et al. (2001) who mentioned that organisations that adopt ISO 9000 due to internal pressure such as to improve internal organisational efficiency and effectiveness

experience both the short-term and long-term benefits as it involved change and continuous improvements to the business processes. In this case, on a short-term basis, Company A has been making profits and on the long-term basis, it has been able to reduce the number of defects in its operation and obtains a higher employee involvement and participation in maintaining the quality system. On the other hand, organisations pressured by external pressures to adopt certification experienced fewer benefits as the benefits derived are only short-term in nature. When the motivation for certification is external, organisations will not emphasise on the human resource aspects of quality management. This can be seen in Company B which has also managed to be profitable but is experiencing lower level of involvement from its employees. Although so far no research has been conducted on the impact of motivation for certification on its maintenance performance, this finding is consistent with the literature by Gotzamani and Tsiotras (2002) which states that the motives driving companies to ISO 9000 certification are particularly significant for its real contribution since it was proved that they influence both the companies' performance improvement and their overall benefits from certification. They also added that the long-term effectiveness and real value of the quality assurance standards is not based on their content and requirements but on the way that companies adopt and implement these requirements and the key for their success lies in the companies' real commitment to quality improvement and their true motives for certification, which finally dictate the way and depth to which the standards are implemented. Therefore, initial motivation is important because it moulds how the company approaches and manages the quality system and the factors related to its maintenance. Initial motivation also will determine the benefits derived by the company from the certification as shown by this study.

8.2.2 Quality Orientation of People

The findings of the study show that views on and attitude towards quality and understanding of ISO 9000 requirements affect the maintenance of ISO in these organisations. Quality orientation here includes general attitudes towards quality; level of commitment and involvement by managers; involvement by employees; and understanding of quality and ISO 9000 requirements. It was found that when quality orientation of people is positive, organisations will maintain ISO 9000 better.

Both companies have positive views on quality. However, the top management differ on their attitudes towards quality. Company A's top management display a high level of commitment towards quality as evidenced by the MD leading the Management Review meeting and their involvement in other quality activities and programmes. They also rated themselves *high* on both commitment and involvement in ISO maintenance. On the other hand, Company B's top management are not so hands-on in their attitude towards quality. This can be seen by the general way they described their involvement in the quality programmes and activities, by not providing adequate internal auditors to conduct internal audit, and by not providing training to employees in order for them to be competent to do their job. Therefore, their commitment to maintaining the quality system is questionable. Top managers in Company A have greater involvement in and commitment to quality than those in Company B. Survey results show that employees are aware of these levels of managerial commitment and they appear to follow suit with respect to their own involvement.

The study results also indicate that lack of understanding on the requirements of ISO 9000 as one of the sources for problems with documentation that are faced by the case companies. Top managers of both companies appeared to place great reliance on delegation of most responsibility for the performance of the quality system to a Management Representative or a Quality Assurance Unit. This may explain the repeated occurrences of failures in such technical areas as document control, data analysis, and corrective and preventive action which were uncovered in both companies even though they have been discovered by both the internal and external audits before. In both case study companies, top management believed that their ISO 9000 is effectively maintained because the MR or the Quality Assurance Unit is looking after the quality system. In this instance, they might think that they do not have to know or understand the requirements of ISO 9000 fully as there are people in their companies employed to do this job. This once again reflects their attitude towards quality and their poor quality orientation. Yeung et al. (2003) found that the effectiveness of the ISO 9000 depends on senior management's correct understanding of and their attitudes to the standard. This will then be reflected in how they prioritise and manage their time, effort and resource to this change initiative. In addition, lack of understanding on the requirements of ISO 9000 will pose difficulties for employees to take corrective and preventive action as they might not know what they are supposed to do when non-conformities occur. Therefore, the results of

the study indicate that the quality orientation of people in the case organisations is important to effectively maintain the ISO 9000 as it is linked to a widespread understanding among members of the organisation about the importance of quality, a well-established quality policy and practices and systems that are oriented to achieve the basic tenants of the policy.

8.2.3 Human Resource Aspects of Quality Management

8.2.3.1 Employee Performance and Reward System

Based on the interviews and survey, both companies have their own performance measurement and reward system. Management of both companies said that employees are rewarded for their performance. For example, at Company A, rewards are linked to performance through staff performance bonus of between 1-3 months and promotion. To encourage employees to seek improvement initiatives and to appreciate those who have done it, several recognition and reward programmes have been implemented in the forms of cash, paid holiday packages, and commendation certificates. It also has a programme to recognise employees for their contribution such as 'Employee of the month' and 'Employee of the year'. At Company B, management said that employees were rewarded in terms of monetary reward such as bonus, performance bonus, promotion and special increment but not much on recognition. However, the survey result of Company B indicates that employees of the company disagree that there is a reward system to encourage new ideas from employees and they did not view the reward system as encouraging participation in quality improvement activities. This is reflected in what the MR said about only half of the employees are motivated to maintain the ISO 9000 certification while the other half was not motivated due to employees feeling that there is not enough recognition and reward given to those who have taken the extra mile towards ISO 9000 maintenance. At Company B, employees want more recognition and reward and at present, they are not satisfied. To a certain extent, this impacts the initiatives for continual improvement and employee participation as already experienced by Company B. The people of the organisation are important as they are simultaneously internal customers and process owners and they need both the intrinsic (sense of importance and belonging by being involved) and extrinsic motivation (recognition and reward) to make them feel good in order for them to contribute optimally to their organisations. The implication from the matter is that to support the ISO 9000 technical requirements, employees need to be

recognised and rewarded for their efforts or their support for ISO 9000 will erode. Low and Chia (2008) found a fair reward system to be the most important motivational factor for supervisory staff to support ISO 9000 at Singaporean architectural firms. In short, employees need to be recognised and rewarded to motivate them to maintain IS0 9000 more effectively.

8.2.3.2 Employee Empowerment and Satisfaction

The results of interviews indicate that there is no formal employee satisfaction survey conducted by either case study companies on their employees. Employees were expected to give their feedback through the normal communication channels used by their company. The interview respondents said that both companies empower their employees by giving them responsibilities once targets were set by the bosses, encouraging them to make decisions pertaining to their jobs and participating in the companies' activities. However, the survey result of Company B implies that employees disagree that they are encouraged to make decision with regards to their job, management lets them participate in achieving organisational objectives, and they are encouraged to participate and be involved in the companies' activities. Obviously, there is a difference in perceptions between top management and employees on these three aspects which affects employee involvement and participation in ISO maintenance as they might feel that management do not welcome their involvement and participation in activities and in contributing to the organisational objectives. This 'unwelcomeness' will create a feeling of being 'unwanted', no sense of belonging and distance from the process or work as employees feel that they are not encouraged to make decision pertaining to their job, hence the feelings of being less responsible for tasks they performed as shown by the result of employee survey. The impact of human resources in organisation is dependant on the empowerment given to employees (Oakland, 2003; Dale, 2003). Empowerment removes the conditions that contribute to feelings of powerlessness and creates a work environment that strengthens employees' feeling of self-efficacy (Conger and Kanungo, 1988). The findings of the study show that employees need to be empowered and satisfied to maintain ISO 9000 more effectively as this would encourage employees to contribute ideas, solve problems and initiate continuous quality improvement which is needed for effective maintenance of ISO 9000 in organisations.

8.2.4 People

8.2.4.1 Top Management Commitment and Employee Involvement

Both companies' top management agree that top management commitment and support are one of the most important factors for successful implementation and maintenance of the ISO 9000 in any organisation. Based on the findings, top management of both companies have gone to a great length to involve themselves in quality activities in order to show their commitment to ISO maintenance. However, there are still gaps between management and employees perceptions in terms of top management commitment and involvement in ISO 9000 maintenance for both companies. This might be due to the action and attitude of top management which is seen to be conflicting with their professed commitment to ISO 9000 maintenance. In company B for example, employees are not satisfied with the recognition and reward system of the company. This is clearly expressed by one of the employees who said that reward is more towards monetary rather than recognition and employees should be rewarded for their efforts in maintaining the quality system. Also, top management is reluctant to release them to do internal audits and incentive was not given to people who conduct internal audits. At the same time, on management's instruction, the number of internal auditors has been reduced and this creates an acute shortage of auditors that resulted in inadequate resources to maintain the quality system. These actions have to a certain extent demotivated the employees of Company B from participating in ISO 9000 related activities which is important to its maintenance such as in analysis of data and continual improvement. Moreover, if resources (e.g. internal auditors) are not adequately provided, then the company is clearly not fulfilling the requirement of Clause 6 - Resource Management of the ISO 9000 standards. This raises the issue of the third party audits reliability and the accuracy of their report as this issue was not discovered during the external audit by the third party auditor(s). This clearly shows that although top management say they are committed to maintaining the ISO 9000, their actions and attitudes in reality speak a different language and in this case, 'actions speak louder than words'. These actions indicate the lack of commitment on the part of top management as how they prioritise their time and resources reflect their attitude and commitment to ISO 9000. Askey and Dale (1994) found that managers tended to revert to their traditional practices once ISO 9000 certification is achieved and this means no permanent change in attitude and behaviour had been achieved. Paying lip service to quality does not pay as employees will sense that their bosses do not

practise ‘walk the talk’ and they might not participate and be involved in something their bosses are not serious about. Without management support, the behaviour of personnel is difficult to change (Ashire and O’ Shaughnessy, 1998). Top management must be the architect and the driver of all quality management and planning activities (Taormina, 2002). The personal commitment demonstrated by senior management could encourage employees to participate and could reduce existing barriers (Dale, 2003; Juran, 1988; Crosby, 1979). Therefore, the study shows that top management commitment is crucial to maintain ISO 9000 effectively.

All interview respondents at Company A agreed that employees are involved and participated in the maintenance of ISO 9000 of the company either because of the anticipation of reward or punishment if they did not. From the survey, the majority of Company A’s employees feel that they have either been *satisfactorily* or *highly* involved in ISO maintenance of their company. For Company B, the anticipation of reward is stated by linking the ISO 9000 related issues to the performance measurement system. Top management agreed that employees are involved and participated in maintaining the company’s quality system. However, involvement of employees is lacking in data analysis and continual improvement aspects. The MR of Company B said that only half of employees are motivated to maintain the ISO 9000 while one of the lower managers said they are supportive of ISO but employees just do not participate. Although the survey result shows that the majority of employees are in the opinion that their involvement is satisfactory, the involvement and participation of employees in maintaining the quality system as explained by the MR and lower manager might be related to how employees perceived management treat them as reflected by their negative perceptions with regards to their participation and involvement in the company’s activities, in achieving organisational objectives, in decision making, and in seeking their feedback as explained before. It might also be due to the lack of training and insufficient recognition and reward the employees received. Employee involvement is one of the soft factors found to be significantly related to the measures of quality improvement and organisational performance (Abdullah et al., 2008). The results of the study indicate that employee involvement and participation is important for effective maintenance of ISO 9000 as they are the ones who work the process. Also, when employees are recognised, rewarded, empowered and satisfied, they will be more involved in ISO 9000 maintenance. Further, to motivate employees to be involved in

maintaining the ISO 9000, top management must be able to convince them of their own commitment. According to ISO 9004:2000, involvement of people will lead to people being motivated, committed and eager to participate in and contribute to continual improvement.

8.2.4.2 Cooperation between People/Teamwork

Both companies have developed Initiative and Creative Circle (ICC) to encourage teamwork and improvement. Although the majority of employees believed that they worked as a team, they are also of the opinion that there is a lack of cooperation between people to maintain the ISO 9000. Due to this reason, Company A was having problems with maintaining the momentum to sustain the quality system, updating and distributing new documents and taking corrective action while Company B was also having problems with internal audits not being taken seriously and employees not following procedures. The lack of cooperation and teamwork might be the result of the lack of communication between top management and employees. According to Gunasekaran (1999), communication is important for effective teamwork. When there is a lack of communication within the organisations, ISO 9000 will not be maintained effectively. Problem solving teams that involved everyone in the organisation provide a strong relationship between management and workers, thus reducing the existing gap between the two levels (Bou and Beltran, 2005; Snape et al., 1995). To work as a system, there must be teamwork as it is an essential contribution to the optimisation of any system (Deming, 1986). Teamwork is important for effective ISO 9000 maintenance in the case companies as it requires the cooperation of all people in the whole organisation to make it work.

8.2.5 Quality Culture

Company A has been certified to ISO 9001:2000 for 4 years. It has a developing quality culture and has obtained strong benefits from certification to ISO. On the other hand, Company B which has been ISO-certified longer, experiences a weaker benefit from certification and also has an immature quality culture which is clearly mirrored by problems with employee participation and involvement, documentation, communication, and subcontractors faced by Company B in maintaining the ISO 9000. Normally, these sorts of problems are associated with the implementation phase of the quality systems. During the maintenance phase, these problems should have lessened a great deal. If the same problems still

exist, it means that the foundation for change has not been properly laid before the introduction of the ISO 9000 into the company. In short, quality culture has not permeated and enveloped the whole organisation.

According to Goetsch and Davis (2000), quality culture is embedded in an organisation when the behaviour of people matches its slogan, customer input is actively sought to continually improve quality, employees are involved and empowered, work is done in teams, top management are committed and involved, there are sufficient resources for continual improvement of quality, education and training are provided to employees, reward and promotion system are based on contributions to quality improvement, employees are viewed as internal customers and suppliers are treated as partners. These characteristics apply more to Company A than Company B. Quality culture is not mentioned by Company B's management as critical to ISO maintenance. This implies that management does not really think that quality culture is important when dealing with a change initiative like ISO 9000. Although they seemed to understand that the understanding of ISO 9000 is critical to maintain the certification, they also seemed to be unaware that in order for change to take place successfully, employees and the organisation as a whole has to be prepared before change is introduced and expected to be successful. Both management and employees have to be ready. The study shows that companies with stronger or mature quality culture maintain ISO 9000 more effectively than organisations with weaker or immature quality culture as people in the former companies are more ready to participate and be involved in the quality system.

8.2.6 Structure

Hazman and Jasmine (2009) suggest that the compatibility of the standard with the organisation structure might affect how these organisations maintain their ISO. The two case studies are service companies and subsidiaries of government-linked companies (GLCs) where both are bureaucratic and their systems are rather highly formalised. Typically, Company B has a mechanistic structure whereby it is synonymous with bureaucracy, centralised, has extensive departmentalisation, high formalisation, mainly downward communication and little participation by low-level employees in decision making. This is especially evidenced in Company B where employees are not encouraged to make decision with regards to their job and approval for expenses that involved a large amount

of money will have to go through several approval channels such as the top management of the company, the client, the parent company, and the government. This implies that to take an expensive corrective and preventive action to correct/prevent non-conformances and to satisfy customers, will take a long time in Company B as it involves a lot of processes. Further, the parent company will decide the amount of budget to be spent on training without knowing the implication this has on Company B. This control and intervention by external organisations (the client, the parent company and the government) negates the control and order which is characterised by implementing a quality system like ISO 9000 because it creates a damper on the decision making and timeliness of the action taken to correct or prevent non-conformance which in turn affects the efficiency of the system by prolonging the problem solving process that is so critical to customer satisfaction especially in the service sector. For Company B, having a mechanistic structure does not necessarily mean that it is perfectly suited to ISO 9000 as proposed by the literature. This is because the benefits that are being sought by implementing and maintaining the ISO 9000 quality system is being adversely affected by the control and intervention by others on the company. This also defeats the purpose of privatisation through the setting up of GLCs by the government in order to make the companies more independently operated as business concerns.

Company A on the other hand has both the mechanistic and organic structure characteristics and is more flexible as seen by the employee involvement and participation in decision making and the two way communication that existed within the company. Authority is also decentralised to middle management and first-line managers to encourage them to take responsibility and to respond effectively to the unexpected and fast changing environment. The company seeks improvement of its processes in order to improve its business efficiency and therefore found ISO 9000 quite friendly as the standards have made continual improvement as one of its requirements. The company also has a well-planned and structured continual improvement. Due to these characteristics, ISO 9000 is more compatible with Company A as it has the mechanistic structure to create discipline and order and at the same time is flexible enough to quickly respond to the change in the environment which helps in problem solving and customer satisfaction. Therefore, the finding of the study is in contrast with the literature which of the opinion that ISO 9000 is perfectly suited to organisations where there is a rather defined, hierarchical or mechanistic structure as is

evidenced in many manufacturing sectors (Mallak et al., 1997; Walgenbach, 2001; Jabnoun et al., 2003; Gosen et al., 2005; Anwar and Jabnoun, 2006). This study highlights that ISO 9001:2000 is suited for organisations with both mechanistic and organic structure as the ISO 9001:2000 standard requires the involvement of people in decision making and to carry out continual improvement. This is in line with the nature of service which requires higher customer contact and interaction as compared to manufacturing. Further, the mechanistic structure was suitable to ISO 9001:1994 as the requirement for continual improvement was then not stated by the standard.

As for the ISO 9001:2000 standard itself, although it can be considered as leaning more towards a mechanistic orientation as it is full of policy, procedures, process flowcharts and work instructions, it can also be considered as having an organic orientation as the standard itself is generic rather than prescriptive in nature. Moreover, the ISO 9001 requirements are more proactive in a sense that it requires organisation to obtain feedback from the environment (e.g. customers and suppliers for instance), measures processes, products/services, and customer satisfaction, and analyse them for continuous improvement. Top management of the organisation are required to conduct strategic planning and review the suitability of its quality policy and objectives (which in reality is part of its business policy and objectives) to address the change in the environment in which it operates.

Overall, the results of the study on motivation and orientation of people confirmed the literature on the antecedents of quality commitment (Demirbag and Sahadev, 2008; Tari, 2005) while the people and human factors are components of successful total quality management (Claver et al., 2003; Tari 2005).

8.3 Critical Success Factors of ISO 9000 Maintenance

Section 8.2 has described the general factors associated with ISO 9000 maintenance performance. In this section, the study answered the second research question ‘What are the critical success factors of ISO 9000 maintenance for the service companies?’ by identifying the critical success factors of ISO 9000 maintenance of Company A and Company B. Further analysis shows that there are six critical success factors of ISO 9000 maintenance such as top management commitment, employee involvement, recognition and reward,

continuous improvement, teamwork and quality culture. These factors are considered critical because they determine the firms' ISO 9000 maintenance performance and outcomes.

The interview results show that the top two critical success factors for ISO 9000 maintenance are top management commitment and employee involvement as stated by 10 out of 13 respondents at Company A and 10 out of 12 respondents at Company B respectively. These two factors are equal in their criticality as success factors of both companies. The survey result show a slight variation with the interview result in terms of the rank where top management commitment is the top critical success factor and employee involvement second. The results of the study confirm the earlier studies' findings which found that top management commitment and employee involvement as the top two most critical factors for ISO 9000 maintenance (Low and Omar, 1997; Cheng and Tummala, 1998; Chin et. al., 2000). They also agree with Abdullah et al. (2008) who found that management commitment and employee involvement as among soft factors of quality management that make the strongest contribution to quality improvement and firms performance. Top management commitment and employee involvement are critical because the processes and systems cannot be managed without the involvement and understanding of people (Poksinska et. al, 2006). Without people commitment and involvement, audit reports will not be treated seriously as a means to correct and prevent non-compliance and improve the quality system. They will always be seen just as one of the ways to fulfil the requirements of ISO 9000. As a result, there will be no improvement on the process, people, and system. ISO 9000 certification then is just an end in itself and the organisations will not obtained any real benefits. This can be seen on the continued weaknesses in document control, data analysis, and corrective and preventive action faced by the two case companies as a result of top management and employees not taking the external and internal audits reports seriously.

The study also found that recognition and reward is one of the critical success factors of ISO 9000 maintenance. This finding is supported by Sohal and Terziovski (2000) study on Australian manufacturing companies which found that developing appropriate performance indicators and rewards at all levels of the organisation as part of performance review system to be one of the factors critical to TQM success. Inconsistent reward systems and lack of recognition is also a

barrier to ISO 9000 implementation in many organisations (Ngai and Cheng, 1997). Little recognition, respect and reward for good performance is a barrier to ISO 9001:2000 implementation and maintenance in Singapore (Low and Ling Pan, 2004).

Based on the interview result, it indicates that the management of Company A understand the importance of recognition and reward as a factor of motivation for employees' performance and contribution. At Company B, reward is the sixth critical success factor in terms of its importance to its management. As management do not think reward as important as other factors to maintain an effective quality system, most of its employees ranked recognition and reward as the third most important factor for ISO 9000 maintenance after top management commitment and employee involvement. The amount and success of improvements carried out depends on employee involvement and participation which is spurred by the recognition and reward they received. This is supported by Abdullah et al. (2008) who found that reward and recognition to be one of the strongest factors contributing to quality improvement in Malaysian electrical and electronic firms.

Continuous improvement is another critical success factor in maintaining a quality management system. This outcome is different from other studies on the critical success factors of ISO 9000 maintenance. However it is not surprising because continual improvement is one of the requirements of the standards and in order to improve, continuous improvement must be initiated and carried out by the organisation. Otherwise the organisation's system will remain stagnant. Terziovski and Power (2007) found that organisations that seek ISO 9000 certification with proactive approach driven by a continuous improvement strategy are more likely to derive significant business benefits as a result. This is reflected in Company A which has experienced better business benefits than Company B in terms of operations efficiency and profitability. To maintain ISO 9000 effectively, continuous improvement can be carried out by having improvement projects and initiatives. Further, customer satisfaction data must be collected and analysed to show areas for improvements (Nanda, 2005).

The other critical ingredient for successful ISO 9000 maintenance identified by this study is teamwork. This finding is in line with other studies' literature on critical success factors of ISO 9000 maintenance such as Chin et al. (2000)

which found that teamwork approach has proven to be effective for identifying and solving problems in the maintenance phase of ISO 9000 implementation. The finding is also consistent with the finding from Low and Omar (1997) who described teamwork as productive relationships. Previous research also showed that there is considerable evidence to support the contention that effective teams can achieve substantial levels of success in achieving quality related goals in product development or service operations (Jayaram et al., 1999; Wagemen, 2001; Demirbag et al., 2006a). According to Demirbag and Sahadev (2008), while working in an effective team where work is appropriately distributed and there is an increased coordination and cooperation, employees are in greater position to comprehend the contribution of quality in achieving the overall goals and objectives of the organisation. The study has shown that teamwork is critical to maintain ISO 9000 effectively because it encourages active participation from everybody in the organisation and improves internal communication and cooperation between people because people will interact which each other more often.

For Company B, its management also identified the understanding of the ISO 9000 QMS as critical to ISO 9000 maintenance by placing it at the third place together with teamwork and continuous improvement. This is consistent with Yeung et al. (2003) study which found that the effectiveness of the ISO 9000 depends on senior management's correct understanding of and attitudes to the standard. Nwankwo (2000) in a study on small business organisations found that the results achieved from ISO 9000 are influenced by people's understanding of quality and quality systems. The finding is also in tandem with the reasons why companies failed the surveillance audits (that is carried out as part of maintenance of the system) which are mostly due to top management understanding of ISO 9000 requirements for the companies' quality systems (McCullough and Laurie, 1995; Dzus and Sykes, 1993). At Company B, the lack of knowledge and understanding of ISO 9000 by employees and management has resulted in problems associated with people, documentation and communication within the company. This shows the importance of knowledge and understanding of ISO which can be enhanced through training on ISO 9000, skills and competency.

Other critical factor for ISO maintenance mentioned by Company A's management and employees and Company B's employees is quality culture.

Briscoe et al. (2005) found that a proactive quality culture reduces the behavioural reticence to ISO implementation and that companies that build a culture that values quality are much more effective at internalising ISO practices. In support, Terziovski et al. (2003) found that the maturity of the quality culture is a significant predictor of the benefits derived from ISO certification which is consistent with the finding of this study. To maintain ISO 9000 effectively, an organisation has to assess its present culture and determine if it is supportive and compatible with ISO 9000 quality system before embarking on ISO certification. If it is not compatible, actions need to be taken to make the environment supportive of this quality management initiative if success is wanted. A strong or mature quality culture would be able to overcome the behavioural barriers to ISO maintenance such as document maintenance, corrective action implementation, management commitment, not following procedures, employee resistance to change, and lack of employee training faced by the two case companies. When there is a strong quality awareness and culture in an organisation, data will be analysed and its result used to support planning and decision making, therefore displaying the factual approach to decision making. For this to happen, there is a need for internalisation of quality principles to guide both management and employee behaviour. According to Tata and Prasad (1998), the role of culture is crucial for the institutionalisation of a quality management practice because quality management consists of certain underpinning values such as customer satisfaction, leadership commitment, full participation of employees, education and training, facts based decision making, continuous improvement, etc. Successful implementation according to them requires that these values of quality management practices be aligned with the values of the organisation. Kanji (1998) suggests the need for a general diffusion of quality culture among employees for better quality performance. The quality management system implementation and maintenance thus requires a strong common culture that fosters the learning process and steers various functions in a coherent direction.

The results of the study on the critical success factors support the literature on the critical factors for successful quality management derived from the quality gurus, empirical research, and evaluation model (Kanji, 2001; Zhang, 2000). Also see section 2.3.3. Implementing these aspects will allow ISO 9000 not to be just a passing fad but encourages improvement culture that promotes business improvement over time. However, the literature considered employee participation/involvement and recognition and reward are secondary factors for

successful quality management which differs from the current study findings which found them critical to effective ISO 9000 maintenance. This might be one of the reasons why quality management initiatives are slow to take off and once they took off, some employees are still reluctant to support their implementation and maintenance.

8.4 Problems and Challenges in ISO 9000 Maintenance

This research has identified the problems faced by Company A and B in maintaining their ISO 9000, thus addressing the third research question 'What are the problems and challenges associated with ISO 9000 maintenance in the service organisations and how are they addressed?' The feedback from management and employee respondents show that the main problems faced by both companies associated with ISO 9000 maintenance are lack of commitment from top management and staff, lack of cooperation between people, lack of knowledge and training, and lack of communication. For Company A, these people-related problems creates difficulties in maintaining momentum to sustain the quality system, obtaining commitment and support from staff, updating and distributing new documents, taking corrective action, and changing people. For Company B, lack of commitment from people also is one of the main problems in ISO maintenance and it has led to internal audit not being taken seriously, and people not following procedures. The finding on lack of commitment on the part of top management is consistent with the finding by Magd (2008) which found that top management commitment as one of the barriers to effective implementation of the ISO 9001:2000 in the Egyptian manufacturing sector. According to the study, the most important barrier was perceived as top management commitment as without top management commitment, employees tend to put a low priority on the quality management system and the quality management system becomes static. Other studies by McCullough and Laurie (1995) and Dzus and Sykes (1993) mentioned that one of the problems associated with ISO 9000 implementation are mostly due to the lack of top management involvement in ISO 9000 companies' quality systems. In addition, lack of top management commitment and involvement are inhibiting factors in implementing QMS in Australia, New Zealand and New Jersey state organisations (Samson, 1997; Bin Srinidhi, 1998). Lack of management commitment is one of the reasons for withdrawal of ISO 9000 certification given by the head of a certification body in Malaysia. To overcome the problem caused by the lack of top management

commitment, Company A has provided appropriate leadership and management commitment while Company B has sent its leaders to UM Leadership Centre for training.

Magd (2008) also reveals that apart from top management, employee participation and involvement is the key for ISO 9000 implementation. Although the management of Company A agreed that employees are involved and participated in ISO 9000 maintenance, one of the middle managers pointed out that employees are forced to do so in order to continue working with the company. This 'do' or 'go' ultimatum leaves the employees with no other choices. The survey result of this research also implied that quite a substantial percentage (23%) employees at Company A feel that they are not being empowered in their job, they are not encouraged to participate in the company's activities and in achieving organisational objectives, or encourage to make decision pertaining to their job. The survey result of Company B on the same matter is worse with more than half of the employees feeling the same way and there are mixed feelings by management at the MR, QA Executive, and lower management level on employees' involvement and participation. According to the Management Representative of Company B, only half of employees are motivated to maintain the ISO, the rest are not. The finding is consistent with Low and Ling Pan (2004) study on the ISO 9001:2000 implementation and maintenance in Singaporean organisations. 15% of Company B long-time employees are not motivated to maintain the QMS according to one of the managers who deals directly with these employees. Mann and Kehoe (1995) found that it is very difficult to change the mind of employees who have worked for a long time in a specific culture and to accept quality activities and their accompanying changes. Further, young employees usually can accept changes quicker than elderly employees. The findings of the current study suggest that employees need to feel they are empowered and involved in order for them to be motivated to participate in making ISO 9000 works in the long-run. As Oakland (1989, p.298) put it:

'Everyone in the organisation from top to bottom, from offices to technical service, from headquarters to local sites must be involved. People are the source of ideas and innovation and their expertise, experience, knowledge and co-operation have to be harnessed to get these ideas implemented'.

To increase employee involvement Company A has administered a proper reward system, empower employees and constantly remind employees of their roles/duties towards ISO 9000. Company B on the other hand, has implemented employee performance measurement to overcome the lack of employee involvement.

Another major problem faced in maintaining the ISO 9000 QMS is related to documentation. This is similar to Lee et al. (1999), Mo and Chan (1997), Carlsson and Carlsson (1996) studies which found that documentation is a barrier in implementing ISO 9000. Also Chin et al. (2000) and Yahya and Goh (2001) found that document and data control as one of the main issues in ISO 9000 maintenance in Hong Kong and Malaysian manufacturing organisations. Problems associated with documentation for Company A are such as updating changes to documents, distributing new documents, using obsolete documents and communication of changes to documents down the line. For Company B, problems pertaining to documentation are such as not following procedures, following old procedures and use of shortcuts. These documentation problems might be caused by the lack of knowledge and training on ISO 9000 and not understanding its requirements, people's attitude towards ISO or lack of communication when changes are made to documents. By overcoming these other problems would also contribute to less documentation problems faced by these two case companies. According to Magd (2008), if people were involved in defining the work methods and participated in the creation of procedures or instructions required by ISO 9000, it will then be easier for them to comply. The issue of people not following procedures and not understanding them then will be minimised as they were the ones who wrote them. In the case of Company B, procedures were prepared by the Head of Departments without the employees being involved and once they were approved, employees on the field or ground workers are expected to follow them. The ground workers as process owners sometimes found the procedures too long and not realistic on application. The survey result also discloses that employees of these companies feel that there are too many processes and procedures which delay the process and they are bureaucratic. This has resulted in Company B's ground workers using shortcuts while doing their jobs especially in jobs they classified as emergencies. This is consistent with the findings from a study conducted by Lee and Palmer (1999) on both large and small ISO 9000 registered manufacturing companies in New Zealand. Their findings show that the major challenge of maintaining ISO 9000

QMS regardless of size, are related to the execution of its procedures. It appears that ISO 9000 certified companies have difficulties in relating to ISO 9000 requirements to their work as the paperwork involved does not reflect what people actually do. For Company B, this is made worse by the fact that the supervisors' instructions were not consistent with the job requirements. This implies the lack of knowledge on the part of supervisors and this is not well-regarded by employees. On the part of management, Lee and Palmer (1999) also mentioned that management finds it difficult to monitor people's day-to-day adherence to the ISO procedures and the study found that ISO 9000 programme on its own is not fully productive in either small or large companies.

From the interviews with management, lack of knowledge/training and awareness on ISO 9000 and its requirements also contributed to company A's problems in the quality management system maintenance. This is consistent with Siu (2000) who found that lack of training courses in quality management as one of the barriers to ISO 9000 implementation in Chinese organisations. Lack of knowledge/training on the part of internal quality auditors to carry out internal audits, staff to do data analysis, staff to do the measurement of quality objectives, and staff to take corrective action when necessary lead to difficulties in identifying problem areas and other problems such as incorrect reporting of non-conformances, not analysing data and ineffective corrective action in Company A. This is partly supported by Chin et al. (2000) study which found that corrective and preventive actions as the most critical issue in maintaining the ISO 9000 system. McCullough and Laurie (1995) and Dzus and Sykes (1993) studies also identified the lack of effective internal corrective measures as one of the problems in ISO 9000 implementation. For Company B, lack of employee/management training/knowledge and awareness on specific area and on ISO has led to employee not understanding the policy and procedures and operators not competent to do machine inspection in Logistics & Machinery department. This finding is in line with Magd (2008) study which states that lack of qualified personnel and insufficient quality education and training as among barriers to effective implementation of ISO 9000. Cheng and Tummala (1998) and Low and Omar (1997) found that people having the right attitude and behaviour is critical in the implementation and maintenance of ISO 9000 QMS in Hong Kong and Chinese companies and in the construction industry in Singapore. According to them, in order to have the right attitude which is underpinned by behaviour, would require both management and employees to be

educated and trained on the ISO 9000 QMS so that they would understand what is required of them to support the maintenance of the QMS. This would enhance company-wide commitment and at the same time generate teamwork.

To overcome the problems associated with documentation and lack of knowledge/training and awareness on ISO 9000, Company A has provided training on documentation and ISO 9000 awareness, internal audit, corrective and preventive action and skill training for employees outside the workplace and retrain old employees. Meanwhile, to combat the same problems, Company B has assessed training requirement to establish operators' competency and conducted skill and competency training for operators and carried out training on awareness and understanding of ISO 9000 for employees. Brown et al. (1998) found that training of employees and managers is one of the primary methods of dealing with problems faced by organisations during the development of quality management systems.

From the feedback of the respondents, another problem faced by the two case organisations in maintaining the ISO 9000 QMS is communication. This finding is similar to Low and Omar (1997) study which found that communication and coordination became a barrier between departments and levels due to adopting the formal hierarchy structure by the organisations. Lack of communication appears to be one of the barriers to effective ISO 9000 implementation in Swedish (Carlsson and Carlsson, 1996) and Yemeni (Al-Zamany et al., 2002) organisations. One of top managers at Company A said that certain decisions made at the top were not cascaded down the line on time. This is consistent with Low and Omar's (1997) study on the Singaporean construction industry which found that information and resources are limited and concentrated at the top and middle management levels. Feedback from respondents indicate that although communication is not as problematic in company A as it is in Company B, communication of changes to documents to employees is a challenge in Company A and this add to other problems with documentation faced by the company such as documents not being updated and documentation system is not satisfactory.

For Company B, results of management interview implied the company internal communication is a problem that is caused by the scattered location of its offices and staff not communicating with one another. The different sites create

difficulties to management in informing ground workers of change to process and obtaining their feedback which resulted in employees following old procedures and not following procedures as they do not know of the new process or understand the process. This is consistent with Schemenner (1986) who said that managers of mass service organisations will face challenges in terms of control of far-flung locations due to the many sites. In addition, audits performance was not disclosed to employees resulting in staff not knowing the areas for improvement and work performance. This has to a certain extent contributed to lack of staff motivation in the company as they did not appreciate being kept in the dark especially after their perceptions of management not wanting and welcoming their contribution after they have satisfactorily involved themselves. For both companies, the employee survey results show that those who feel that communication within the companies is not effective attributed it to the lack of understanding on ISO 9000 and lack of cooperation/interaction between people (management and staff) within the organisations.

To address the problem of lack of communication, Company A has conducted daily and weekly departmental or unit meetings, worked as a team, employed two-way communication, and cascaded down the information and changes to people through several channels while Company B has made its Quality Policy and Procedures bilingual in Bahasa Malaysia and English, placing a person-in-charge at regional level, and highlighting problematic matters in meetings, implemented non-conformance report and work order notice, briefings on Quality Policy and Procedures by HOD, and use of short messaging system and emails for internal communication. In order to enhance quality commitment, managers must convey their priorities and expectations to their employees through well designed communication instruments (Demirbag and Sahadev, 2008).

Another problem indicated by the survey result is the impact of constant system change on employees. Frequent system changes create lack of employee concentration as systems need to be updated constantly and this disrupts and interfere with their core jobs. In addition, some of the employees were still using the old system. Employees also found ISO 9000 troublesome and took too much of their time. This finding is similar to Singh and Sareen (2006) on the problems faced by the Indian educational institutions during ISO 9000 certification. The results of the study revealed that Indian institutions are most bothered by scarcity of time and commitment and lack of obligations as they feel

that ISO is time consuming and paper intensive. This is consistent with findings from Scott and Collins (1998) study which reported that both managers and supervisors found that the problems of ISO 9000 are generated by too much paperwork.

Based on feedback given by management of company A, another problem they faced in maintaining the QMS at their organisation is to sustain adequate resources especially manpower due to the economic downturn. The finding is consistent with Low and Omar (1997) which found that resources as one of the issues in ISO maintenance in the construction industry in Singapore. The lack of resources is also one of the reasons why ISO 9000 certificates were withdrawn or terminated in Malaysia according a head of a certification body.To overcome this problem, Company A has provided the staff with knowledge and cross functional training to expand their knowledge so they would be multi-skilled, can be deployed anywhere in the company, and could be promoted when the time comes. Promotion from within would increase employee morale and motivation.

The results of the interview also revealed that management of Company B feel that another problem in ISO 9000 maintenance is the monitoring of subcontractors' and suppliers performance as there are many of them. Having too many suppliers is a barrier to effective ISO 9000 implementation in India, China and Mexico (Zhao et al., 1995). When asked about subcontractor/supplier relations, nearly half of employees at the company feel that the company does not treat its subcontractors as partners. Results from management interview suggest that Company B has a rather an adversarial relationship with some of its subcontractors as one of the top managers said that his department has to constantly monitors the subcontractors' work in order not to be short-changed. This implies the lack of trust on the part of Company B on its subcontractors which does not bode well for the company as mutually beneficial supplier/subcontractor relationship is one of the principles of quality management. Lack of cooperation from suppliers is a barrier to ISO 9000 implementation in Spanish organisations (Fuentes et al., 2000). To overcome the lack of commitment from its subcontractors/suppliers, Company B has established a Subcontractor/Supplier Performance and Monitoring System.

Table 8.1 summarises the critical success factors, problems and measures taken in order to maintain ISO 9000 quality management system based on the literature and from the current study.

Study/Element	Critical Success Factor	Problems & Challenges	Measures taken to maintain ISO
Low & Omar (1997) (Construction)	Top management commitment & support Technical aspects of quality management Socio-cultural aspects of quality management Productive relationships	Organisation structure Employer's attitude Employee's attitude Resources Education & training Supervision Performance of suppliers & contractors Engineering & construction problems Coordination & communication	Use of documentation Use of corrective actions Use of preventive actions Use of internal quality audit Use of training Use of management reviews
Cheng & Tummala (1998) (Manufacturing)	Employee involvement (management, supervisory, staff, and operator level)	Not specified.	Management commitment, involvement & support Development of communication channels Provision of training & education Establishment of audit team, management reviews & other work teams Formation of quality improvement teams Adoption of appropriate leadership skills.
Chin et al. (2000) (Manufacturing)	Management commitment & support Teamwork Company-wide ISO recognition	Corrective action Preventive action Document & data control Internal audit Quality system Management responsibility	Strengthen internal quality audit Management support & participation Training & education Regular management reviews Improve employee communication /feedback Enhance improvement culture by teamwork Effective corrective & preventive actions Additional resources
Current study Company A (Service factory)	Top management commitment Employee involvement Recognition & reward Continuous improvement Teamwork Quality culture	Identifying problems areas Lack of motivation Maintaining momentum to sustain ISO Lack of commitment from people Updating & distributing new documents People not complying with the standard Incorrect reporting of non-conformances Corrective & preventive action Analysis of data Sustaining adequate manpower Lack of knowledge – internal auditors	Provide training to employees on ISO, skill, competency and knowledge. Leadership & ISO awareness training for management Provide appropriate leadership & management commitment Improvement project teams Administration of proper reward system Improve internal communication Empower employees Multi-tasking of employees Working as a team
Company B (Mass service)	Top management commitment Employee involvement	Changing the culture & attitude of management, employees,	Leadership & ISO awareness training for management

Study/Element	Critical Success Factor	Problems & Challenges	Measures taken to maintain ISO
	Teamwork Continuous improvement Recognition & reward Understanding of ISO 9000 Quality culture Exchanging of feedback	subcontractors (Lack of cooperation & commitment from people) Not enough auditors to do internal audits Cascading information down the line (Lack of communication) Improving staff motivation Improving & simplifying documents Establishing operators' competency.	Improvement project teams Improve skill & competency of employees by training Modify, simplify and improve work processes & documentation Improve subcontractors & suppliers monitoring system Use of performance measurement & monitoring system

Table 8.1: Critical success factors, problems and measures in ISO 9000 maintenance - Summary

Looking at the table, there seems to be similarities in terms of top management commitment and employee involvement being the top two critical success factors of ISO 9000 maintenance in all the studies conducted regardless whether they are in construction, manufacturing or service. In the current study, teamwork is also considered to be one of the critical success factors in ISO 9000 maintenance and this finding is consistent with the findings from the studies by Chin et al. (2000) and Low and Omar (1997). Further, the current study found that recognition and reward as another critical success factor in maintaining the quality system. This is similar to Chin et al. (2000) study which found company-wide ISO recognition is critical to ISO maintenance in manufacturing companies while Low and Omar (1997) in their study on the construction industry called it a socio-cultural aspect of quality management. In addition, Company B, a mass service identifies understanding of ISO 9000 and exchanging of feedback as two other critical success factors of ISO maintenance which is similar to Low and Omar (1997) who found that the technical and socio-cultural aspects of quality management as important factors for quality improvement in the Singaporean construction industry. In contrast to the other studies on ISO maintenance, the current study found continuous improvement and quality culture as critical success factors of ISO 9000 maintenance in service organisations. This is not surprising since continuous/continual improvement is one of the requirements of the standard. Once the system is in place, both management and employees will notice that in order for their companies to remain competitive and to maintain their quality system; improvement of service, process, system and people must be continuously done. At the same time, these companies have realised that to carry out continuous improvement and maintain ISO 9000 smoothly, quality culture must be embedded in their companies. If not, they will continue to face

the same difficulties that they did during the implementation phase when the quality culture of most companies were still at the developing stage and some were non-existent.

Most of the problems identified by all the studies in maintaining the ISO 9000 appear to be similar to each other which seem to point to lack of cooperation/teamwork between people, lack of commitment from people, lack of knowledge/training and ineffective/lack of communication as root causes. Therefore, the problems faced by the two service companies, manufacturing, and construction companies in maintaining the ISO 9000 are the same. This is consistent with the finding of Singh et al. (2006) which found that there are similarities on difficulties faced by service and manufacturing organisations in implementing ISO 9000. Also, although the measures taken to overcome these problems were not exactly similar between one study and another, it can be seen that all of them emphasised the improvement of process, people, and system.

8.5 Changes and Improvement due to ISO 9000

To address the last research question 'What are the changes and improvements made as a result of ISO 9000 maintenance?', the study has also identified the changes and improvements obtained as the result of maintaining the ISO 9000 by the case companies. A lot of changes and improvements can be seen in the work processes, documentation, and system of the companies as shown by tables 5.9 and 5.23. Company A obtained an extra benefit in terms of its people whereby they are more positive about the quality system and their morale have improved resulting in higher involvement and participation in maintaining the ISO 9000. Both companies' people however gained awareness of and become more knowledgeable on ISO 9000. These findings are consistent with Magd (2008) and Bhuiyan and Alam (2005) studies' on the benefits of implementing ISO 9001:2000 in manufacturing companies. Although Singh et al. (2006) found that there are differences between manufacturing and service firms in terms of benefits gained from being certified to the standard, their study was conducted to establish the level of each benefit (low, medium or high) in manufacturing and service firms. The benefits obtained by both sectors were still the same.

8.6 Development of Framework for Effective ISO 9000 Maintenance in Service

Based on the above discussion, a framework for effective ISO 9000 maintenance in service is developed and presented in Figure 8.2. This framework is adopted from Kanter's (1994) theoretical model of an integrative organisation for maintaining a QMS. The proposed new model is different in terms of its emphasis on data analysis and empowerment which were absent from Kanter's model. The former model did place an importance on feedback but not on the analysis of data and did not mention empowerment that is so crucial for employee involvement and participation in the quality system maintenance as found by the current study. The results of this study suggest that ISO 9000 in these two Malaysian service organisations were maintained based on the technical requirements of the standard while the human resource aspects which help to promote employee participation and involvement in order to go beyond ISO 9000 maintenance were under emphasised.

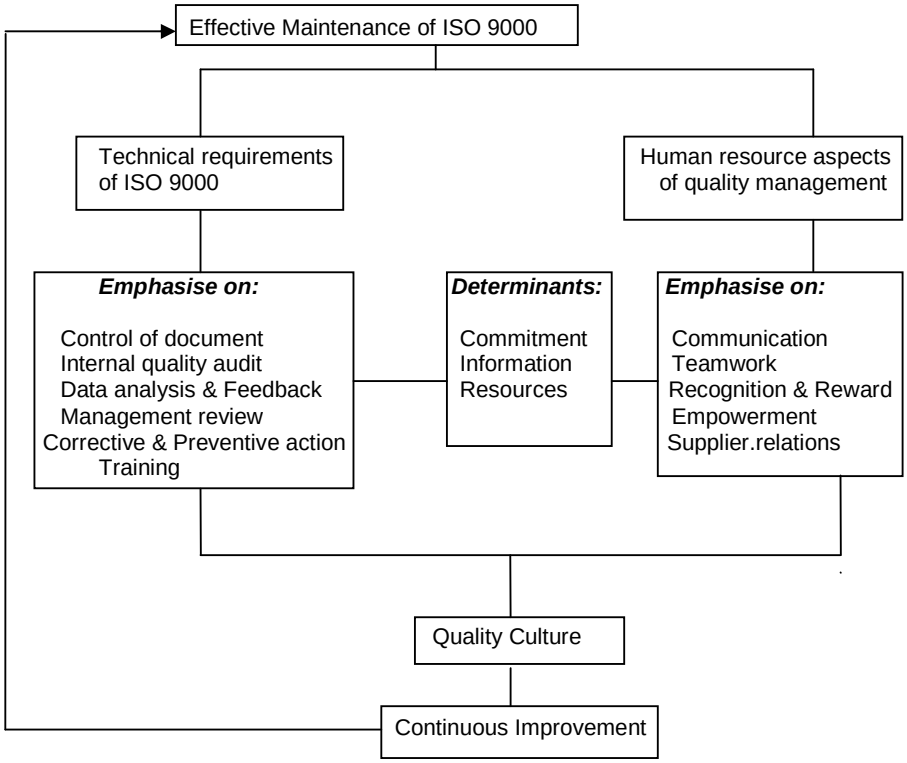

Figure 8.2: Proposed framework for effective ISO 9000 maintenance in service

The human resource aspects are important to support the technical system and the two therefore must be integrated to achieve an effective ISO 9000 maintenance and for companies to go beyond maintenance in order to strive for excellence. The study found that the technical requirements of ISO 9000 such as data analysis, control of document, and corrective and preventive actions were poorly implemented by the case companies. To maintain ISO 9000 more effectively, data on process and system performance and feedback from customers must be analysed and discussed in the management review meeting in order to detect potential opportunities for continuous improvement and corrective and preventive actions. Documents must be controlled in terms of updating, changing and communicating them to others in the organisation so that the right documents are used in running of the quality system. To implement corrective and preventive action effectively, corrective and preventive action mechanisms must be used. Therefore, top management commitment as expressed by providing adequate resources such as training and necessary information for effective communication is needed to carry out activities related to maintaining the quality system. At the same time, results of internal audits must be reviewed seriously in the management review meeting to look for further improvement opportunities. By doing this, failure in operational and document control can be minimised.

In addition, suppliers must be treated as partners and this again reinforces the importance of communication and people commitment to ensure mutual beneficial relationship with suppliers in order to produce quality service and to maintain the quality system more effectively. To achieve greater effectiveness, the human resource aspects such as communication, teamwork, recognition and reward, and empowerment should be emphasised as it will help to promote a quality culture that is conducive to continual improvement. By emphasising on these aspects will enable the organisations to innovate its structure and culture that is more suitable for continuous improvement to be carried out in order to effectively maintain the ISO 9000.

8.7 Lessons Learnt and the Managerial Implications

There are several lessons learnt from the findings of the study which has present important implications to managers.

8.7.1 Top Management Commitment Must Be Visible and Supported by Action

Top management commitment is critical to ISO 9000 maintenance as it determines the smooth deployment of quality philosophy and policy of an organisation which is core to the quality system. The quality improvement process associated with maintaining the quality system must begin with the top management's own commitment to quality since it is the leadership who create the organisational systems that determine how services are designed and produced. Moreover, the extent of top management commitment will determine the organisation quality culture. Due to these reasons, top management commitment needs to be highly visible. For examples, top management should increase their involvement in activities associated with the quality system such as by joining employees in the internal audit course, being the trainer for documentation course, being a member of improvement team, and being more active in deciding the corrective and preventive action that needs to be taken and its follow-ups during the management review meeting. Apart from those activities, top management should also be involved in more open discussions, dialogues and meetings with employees especially at the lower level so as to get their views and feedback and to show them that top management are serious and committed to this quality effort. This will foster a closer relationship between top management and employees which at present employees feel is lacking. It will also improve communication between management and employees and this will create a better relationship for both parties. Further, under the guise of continuous improvement, top management also can visibly and verbally support an environment focused on continuous improvement which are supported by a formal strategy, goals and plan. These strategy, goals and plan must be communicated to employees at all levels in the organisation so that they will have the chance to understand and embrace them. Being included in the plan would mean that employees are being informed of the roles they are expected to play in making the change a success. This will indirectly create a sense of importance and belonging in the employees as the success of change is partly in their hands. To further enhance the effectiveness of communication and enhance quality commitment, there should be adequate communication devices provided to employees who worked at scattered locations and the communication language used must be understood by employees at all levels. Employees also need to be informed of audit results so that they will know what actions need to be done on their part to contribute to the achievement of quality objectives. Further, top

management must also provide adequate resources such as manpower and budget for employee training to show their commitment to maintaining the quality system.

8.7.2 Recognising and Rewarding Performance

"What gets rewarded gets done". Implementing and maintaining the ISO 9000 quality system involved a lot of hard work on the part of everybody in the organisation. To motivate people to work and to encourage continuous improvement, people need to be trained, recognised, and rewarded for their efforts. This will spur the amount and speed of execution of continuous improvement activities and progress. To keep motivation going, some forms of recognition and reward should be introduced. Recognition and reward should commensurate with the effort and performance shown by the employees in keeping the quality system running. Recognition can be in the form of appreciation letter, commendation letter and certificate while reward can be in the form of salary increment, bonus, incentive, paid holiday package, share certificates and extra leave for examples. For internal auditors which are from the employees, incentive such as hourly and travelling allowance should be given when they carry out an audit. Although they are employees of the company, still the effort and training that they have to undergo before being qualified as an auditor requires something extra and this shows their commitment to the company. This sort of commitment should be rewarded. If incentives for change are absent within the organisation, the rate of change will be slower as employees will feel they are being taken for a ride by management.

8.7.3 To Better Maintain ISO 9000, People Must Be Prepared and Ready

People which include both management and employees need to understand the requirements of ISO 9000 in order to maintain it effectively. Most of the problems in maintaining the quality system discussed earlier in this chapter are due to lack of awareness and training. This is actually the root cause of problems associated with procedures, documentation, people and system. To change attitude which is underpinned by behaviour, the people of the organisation need to be educated and trained on ISO 9000 to increase their understanding on the standards and its requirements. Top management has to understand the requirements of the standards and knows what they mean in order to be able to digest the importance of their commitment and involvement. This would mean that training needs to be of priority as it reflects the top management commitment and at the same time

arming both the management and employees with skills, knowledge and tools to face the change. An assessment needs to be made on the required skills and compared to the existing skills to identify training and development needs of the organisation. Generally, employees should be educated and trained on core knowledge of their job, skills and competency. In addition, they also have to be educated on the ISO 9000 especially on the awareness of the ISO 9000, documentation, corrective and preventive action, data analysis, and internal audit. The corrective action system and internal auditing process system are partners in the development and improvement of the overall quality system (Chin et al., 2000). Also, by analysing data, it can pinpoint areas for corrective and preventive actions which are important for continuous improvement. Tools and techniques for measurement of process and improvement of the system should also be taught to relevant employees so that they can apply them in their jobs. By educating and training people will contribute to the fulfilment of their job requirement which also lead to an efficient and effective process, one of the main objectives of obtaining ISO 9000 certification.

Apart from document control, operational control is also found to be one of the problems identified by the internal and external audits of the companies. Some of the non-conformances that have been found indicating the lack of operational control were seen in the control of nonconforming product, control of production and service provision, monitoring and supervision, and ineffectiveness of measurement on some processes. The training on skills, competency, ISO 9000 and job specific knowledge would to certain extent help towards reducing the non-conformances associated with operational control. This would increase the effectiveness and efficiency of the quality management system.

In addition, subcontractors/suppliers should be trained regularly especially when there are changes to the company's processes or a new process is introduced. This way, subcontractors/suppliers will be included in the production process of the service by the company. This will certainly improve communication and trust between the company and their subcontractors/suppliers that would lead to a mutually beneficial relationship as stated in the 8 guiding principles of ISO 9000.

8.7.4 Integrating the Technical and Human Resource Aspects

To maintain ISO 9000 effectively and to go beyond maintenance, the human resource aspects of quality management must be given the same priority as the

technical requirements of ISO 9000. Therefore, employee involvement and customer-focused organisation are principles of ISO 9000 that need to be adopted if a firm wants to strive for excellence. Employees need to be empowered so that they can make decisions pertaining to their jobs, unleash their creativity and realise their potential. This is very important for service firms as they need to interact with their customers. Real-time response and action requires employees of service firms to think on their feet which can only happen if they are empowered. Although the case companies employ both the technical requirements and human resource aspect to quality management when maintaining their quality management system, the human resource aspect of quality management was treated as secondary to the technical requirements of ISO 9000. This finding is similar to Low and Omar (1997) study on the Singaporean construction industry and Tari (2005) study on TQM in ISO 9000 certified firms in Spain. Clearly, the change in the standard from the 1994 version to the 2000 version does not seem to improve this matter despite the 2000 version being closer to TQM. Thus, the later standard did not really change the way top management of these organisations view the human resource aspect. Management failed to realise that people are the ones who perform these operations. As a result, continued weaknesses are found in control of document, corrective and preventive action, and data analysis. Although providing training is important to equip employees with skill, knowledge and tools to do the job, training alone is not enough. Employees need both the intrinsic and extrinsic motivation to work. They need to be able to feel the sense of belonging to their work and workplace. In this sense, management must empower and encourage their participation by involving them in decision making, processes and procedure development for example. There must be a proper recognition and reward system for performance that support the maintenance of the quality system and continuous improvement by employees. Otherwise, employees would not be motivated to maintain certification and to go beyond ISO maintenance. As ISO 9000 standard does not place a strong emphasis on this aspect, companies should take their own initiatives to improve the human resource aspect of quality management in order to improve ISO 9000 maintenance and its outcomes.

8.7.5 Resource and Infrastructure to Maintain ISO 9000

It is pointless to ask employees to maintain the ISO 9000 if resources needed are not adequately provided as the allocation of resources be it manpower or infrastructure, is usually a good indicator of top management's commitment to

ISO. Therefore, necessary resources must be provided adequately to show that management are committed to maintain the quality system. In situation where there is a shortage of human resource in certain unit/department within the company and an excess in another, human resource or employees can be trained to do multiple jobs to manage the problem. Multi-tasking will help employees be multi-skilled. Apart from being flexible, employees are developed so that they can do multiple jobs. This is crucial for a service factory like Company A especially during peak seasons when it is busiest. At these times, manpower and scheduling service delivery become a challenge for managers at the company. By multi-tasking, employees also are highly involved and this will indirectly increase their understanding of processes and their interactions. As a result, employees can see a more holistic picture of their company's operations, thus enabling them to be better at identifying and solving work related problems. Moreover, as employees are developed to their full potential, this indirectly will help management to identify candidates for promotion and succession plan. However, care should be taken not to 'overstretch' the human resource as this might create fatigue and resentment that would produce a negative impact on productivity. In addition, computers, soft wares, machines, tools, equipment and space that are required by the process and to run the quality system need to be provided adequately by management.

8.7.6 Relationships with Subcontractors

A good relationship with subcontractors/suppliers is important if high quality of service is to be achieved. Implementing the performance measurement and monitoring system is only one of the ways of monitoring and evaluating subcontractors or suppliers performance. In order to improve the relationship with subcontractors/suppliers, the purchaser has to move away from the 'upper hand' mentality and treats subcontractors/suppliers as partners rather than as adversaries. Further, too many suppliers/subcontractors will burden the purchaser as it will be time-consuming to assess and monitor them. Company B should consider reducing the number of subcontractors under each category of work it subcontracts out and concentrates on developing a more collaborative relationship with them.

8.7.7 Quality Culture

A strong quality culture is critical to maintain the ISO 9000 quality system. Without a strong quality culture, people will not be ready to commit and involve

themselves fully in ISO maintenance. As a result, continued weaknesses are observed in document control, corrective and preventive action, analysis of data, communication, and the human resource aspects of quality management of both companies. Although the two companies maintain their ISO 9000 with one company at a poor and the other at a satisfactory level, the difference is not much. To better maintain the ISO 9000, companies need to develop a strong quality culture as this would increase the commitment and involvement of people. Management needs to determine a match between organisational culture and espoused ISO 9000 values and strategy. During the course of implementation and maintenance of ISO 9000, managements' behaviour and emergent culture must become consistent over time with the quality system philosophy or employees will become cynical. This would undermine commitment and results in the collapse of the ISO 9000 quality system. A strong quality culture also would greatly aid the initiatives for continuous improvement as the people of the organisation will have a strong quality orientation.

8.8 Conclusions

The findings of the study show there is a lot more to be done by Malaysian service firms to effectively maintain their ISO 9000 and to go beyond maintenance in order to obtain the long-term benefits of being certified to the standard. As the number of ISO-certified companies increases day by day, having the ISO 9000 certificate is no longer an exception. It has become a commodity as everybody seems to have it. What can differentiate one company from another is how they leverage their maintenance of the quality system so that it can create a competitive edge over others. The study found that an organisation with higher level of ISO 9001:2000 requirements adoption outperformed the one with relatively lower level of adoption in both operational and business performance. It seems that higher management commitment and employee involvement, better employee recognition and reward system, planned and structured continual improvement, better internal communication, and good relationship with subcontractors/suppliers has contributed to a higher level of ISO 9000 requirements adoption by the service organisation. The existence of these elements has also made for a stronger quality culture. Firms that embrace a higher level of the human resource aspects were also found to experience better maintenance performance and outcomes than those that do not. The study also found that the length of time being certified to ISO 9000 does not determine the

effectiveness of ISO 9000 maintenance and its outcomes. However, motivation for certification, quality orientation of people, human resource aspects, people, quality culture and the structure of the organisation are factors that impacted on the performance of ISO 9000 maintenance in service firms.

It was found that the motives for certification to ISO 9000 are similar between service and manufacturing. Also, the real motive for seeking ISO 9000 certification determines whether the benefits obtained are short or long-term in nature. Firms that seek ISO certification in order to improve its operations efficiency obtained more benefits than firms that seek it for marketing purposes or customer demand.

It appears that in these two service firms, factors that are critical to successful maintenance of ISO 9000 are top management commitment, employee involvement, recognition and reward, continuous improvement, teamwork and quality culture which is similar to critical success factors of ISO 9000 implementation. In contrast to the other studies on ISO maintenance (manufacturing and construction), the current study found continuous improvement and quality culture as critical success factors of ISO 9000 maintenance in service organisations.

The maintenance phase is about control and monitoring to ensure the quality system is running effectively and therefore, data about the process, system, and customers need to be collected and analysed, management review and internal and external audit reports must be taken seriously by the top management as they are the prerequisites to effective corrective and preventive actions and also continuous improvement. For service firms with many disperse locations, exchanging of feedback and good communication are critical to ISO 9000 maintenance.

The main problems associated with ISO 9000 maintenance are similar between the manufacturing, construction, and the two service companies. They are lack of commitment from people, lack of cooperation between people, lack of knowledge and training and lack of communication. To overcome these problems would involve a major overhaul on top management's orientation towards quality and ISO 9000 as this orientation will affect the quality orientation of other managers and employees and the organisation's quality culture. The study found that the

measures taken to overcome the problems associated with ISO 9000 maintenance were not exactly similar between manufacturing, construction, and the two service companies but all of them emphasised the improvement of process, people, and system. However, the effectiveness of these measures depends on the commitment and involvement of people, communication and relationship between people and their understanding of ISO 9000 requirements.

In addition, contrary to previous literature that found the standard perfectly suited to organisations with mechanistic structure typically presented by manufacturing, this study found ISO 9000 is suited for organisations with both the 'organic' and 'mechanistic' characteristics as the mechanistic structure creates discipline and order to carry out the technical requirements of the standard and the organic characteristic provides flexibility to the change in the environment as employees can quickly respond to customer needs through their empowerment in decision making when dealing with customers. This is due to the nature of service whereby it requires higher customer contact and interaction as compared to manufacturing. Further, centralised organisations with high intervention and control from other parties (e.g. the client, parent company, government) will face extra difficulties in maintaining the ISO 9000 quality system certification as the intervention and control will limit the amount of control and authority of these organisations to independently and effectively operate and maintain their quality system.

The study concludes that the implementation and continued maintenance of ISO 9000 have brought a lot of positive changes and improvements to the service organisations and if it is maintained effectively, ISO 9000 can bring much more benefits to the organisations. These changes and improvements gained by the two service firms are similar to the benefits obtained by the manufacturing companies. However, to be competitive and strive for excellence, ISO-certified firms have to go beyond ISO 9000 maintenance by integrating its people and human resource aspects into its quality management system.

8.9 Research Contributions

8.9.1 Contribution to the Literature

The novelty and uniqueness of this research lies in the fact that there are very few studies in the published literature that specifically delves into the

maintenance of ISO 9000 quality management system in service organisations. Few have addressed the maintenance of ISO 9000 in manufacturing and construction companies. This research is an empirical study that specifically investigated the maintenance of ISO 9000 in Malaysian service organisations. The findings that emerge from this study such as the effect of ISO 9000 requirements adoption on its maintenance and organisational performance, the critical success factors and problems of ISO maintenance, and the improvements and changes brought by the continued maintenance of ISO 9000 will be a useful addition and at the same time enrich the existing literature on ISO 9000 in the service sector and in general. There are three main contributions to the literature resulting from this study. Firstly, the critical success factors as found by this study such as continuous improvement and quality culture have not been identified as critical factors by other studies on ISO 9000 maintenance. Second, the study found that ISO 9000 is suited to firms with both mechanistic and organic structures while previously ISO 9000 is thought only to be suited to firms with mechanistic structure. The third contribution of the study is the proposed framework for effective ISO 9000 maintenance in service which can be further tested and compared with different industry frameworks of ISO 9000 maintenance in future.

8.9.2 Contribution to Research Design and Methodology

Operations management researchers have traditionally used large-scale survey questionnaires, but more recently there has been a change in emphasis to more qualitative and case-based research designs (Azizan, 2007). This change marks a movement from quantifying and testing relationships between variables to acknowledging that operations management is an imprecise activity, and that an in-depth understanding of the phenomenon is needed. Also by using quantitative approach to support qualitative data that is set in the context of a multiple case method, the study has been able to provide a rich contextual understanding of the maintenance of ISO 9000 in the case organisations.

All of the research carried out to investigate the critical issues and approaches used in the ISO 9000 maintenance have used interviews and questionnaire surveys as their method for collecting data. The respondents of these techniques are people responsible for quality in the companies such as the Management Representative, quality directors, and quality assurance/system managers. This is a rather narrow and one-sided approach as the employees and management

of the companies are the actual participants in maintaining the quality system and therefore their views are actually important to present a more encompassing perspective on this issue. This research has taken this into account and as a result, apart from people with quality responsibility, top management, middle management, operations managers/lower management, and employees were also included as respondents. In addition, apart from interview and questionnaire survey, this research had also used documentary evidence as part of its data gathering process. This documentary evidence obtained from the internal and external audit reports and other quality documents for example, provides a more accurate picture of ISO 9000 maintenance in the case companies. At the same time, it strengthens the validity and improves the quality of this research.

8.9.3 Contribution to Organisations and Management Practitioners

This study has identified the lessons learnt and the implications for managers and practitioners in order to effectively maintain the ISO 9000 by looking at the success factors and problems of ISO 9000 maintenance. The proposed framework for effective ISO 9000 maintenance in service is significant in that it can be used to guide the maintenance of ISO 9000 in service by providing areas to emphasise on. Also, the study will help service organisations that have already been ISO-certified to think about the suitability and effectiveness of their current approach in maintaining the ISO 9000 in their organisations. For companies thinking about applying for ISO 9000 certification, the study will help them to think about their real motive for seeking certification. It will also aid them to look into the readiness of their companies to embrace ISO 9000.

8.9.4 Contribution to ISO 9000 Technical Committee

This research also contributed inputs to the technical committee of ISO 9000 by proposing to the committee to review the adequacy of the current auditing system especially the ‘fail and pass’ grading which would be better replaced with a scoring system to track continual improvement carried out by certified companies over time (See 9.2.5).

8.10 Chapter Summary

This chapter has discussed the findings of this study, its implications and compared them to the literature. Based on the discussion, several conclusions are drawn. Last but not least, the research contributions to the literature, research

design, organisations and management practitioners, and the ISO 9000 technical committee are outlined.

The next and final chapter will conclude the study, outlines its implications and recommends further work for future research.

CHAPTER 9 - CONCLUSION

9.1 Conclusions

The implementation of ISO 9000 in an organisation is always greeted with confusion and chaos by management and employees of any organisation. Once an organisation has obtained the prized certification, many would think the worst is over. However, for many companies, maintaining certification can be just as great a challenge as obtaining certification (Motwani et al., 1996).

Prior research in the ISO 9000 has examined at length and identified the critical factors, barriers and problems to successful ISO 9000 implementation. From the literature review, gaps were identified that lead to the research questions. This research seeks to investigate how Malaysian service organisations maintain its ISO 9000 quality management systems and therefore to understand the factors that are closely related to and associated with ISO 9000 maintenance in the service organisations in Malaysia. The research addressed the first research question “How do Malaysian service organisations maintain their ISO 9000?” by outlining the views on quality and ISO 9000 and the real motivations for certification as presented by management and employees of the companies as these two factors impact how companies maintain their ISO 9000.

Similarities and differences in approaches used by the case companies in maintaining the quality system based on the requirements of the ISO 9001:2000 are then identified. The assessment on the maintenance performance shows that control of document, corrective and preventive action, and analysis of data to be poorly addressed by the case companies. The differentiating factors that affect the maintenance level of ISO 9000 in these two case companies are identified as management commitment, employee involvement, employee recognition and reward, customer satisfaction, continual improvement, internal communication, and subcontractor/supplier relations.

Although the companies employ both the technical and human resource aspects to maintain the ISO 9000, the human resource aspect is implemented at a lesser extent than the technical aspect. The research has shown that although fulfilling the requirements of ISO 9000 is important in order for companies to obtain and maintain the ISO 9000 certification, the human resource aspects such as

employee empowerment, satisfaction, recognition and reward are equally important to motivate and spur employee involvement and participation in the process in order to support and go beyond ISO 9000 maintenance. Thus, a holistic approach which includes the integration of both the technical and human resource aspects must be adopted if effective maintenance of ISO 9000 and excellence is sought.

The second research question " What are the critical success factors of ISO 9000 maintenance for the service companies?" identified top management commitment and employee involvement as being equal in their criticality as the top critical success factors of both companies. Obviously to effectively maintain ISO 9000 would require top management commitment as this commitment will drive employee involvement and participation. Top management commitment and employee involvement come hand in hand together and without one another, maintaining ISO 9000 in an organisation will be impossible. Other critical factors identified by the study are continuous improvement, reward, teamwork, understanding of the ISO 9000 and quality culture. The study found that there is not much difference between the service and manufacturing organisations with regards to the critical success factors for ISO 9000 maintenance. However, in contrast to the previous studies of ISO 9000 maintenance, the current study found that quality culture and continuous improvement of process, people, and system is critical to keep the quality system alive in the case companies. Likewise, there is not much difference in terms of critical success factors for ISO 9000 maintenance and implementation in the service and manufacturing sector.

The third research question "What are the problems and challenges associated with ISO 9000 maintenance in the service companies and how are they addressed?" outlined the types of problems that arise in maintaining the quality system such as lack of commitment, lack of cooperation, lack of knowledge and training, and lack of communication which contributed to problems with people, documentation, process and system. Apart from control of document and corrective and preventive action, data analysis is also found to be a problem in ISO maintenance of these companies. Previous studies carried out on ISO maintenance have not identified data analysis as a problem because those studies were based on ISO 9000:1994. Some of the measures outlined to overcome the problems include closer interaction between people, training both the management and employee on ISO 9000 and related subject, skill and

competency, and better communication and infrastructure in order to fulfill the requirements of ISO 9000 while maintaining the quality management system.

Last but not least, the fourth research question 'What are the changes and improvements made as a result of maintaining the ISO 9000 by the service organisations?' shows that by implementing and maintaining the ISO 9000, both companies have obtained improvements in their documentation, processes, and system. This study has met its objectives by addressing all of the research objectives and questions specified on page 7 and 68 respectively.

9.2 Implications

9.2.1 Implications for Other Researchers

The results of the study provide useful guidelines for future action. While the two case studies provide useful insights into the maintenance of ISO 9000 in the service sector, they may not be fully applicable to other service sectors. Other researchers should use this study as a platform to conduct similar studies in other service sectors such as banks, hotels, and other public utilities service or by the nature of service such as service shop, service factory, mass service and professional service to determine whether these findings have a more general application. (See 9.3 - Recommendation for further work).

9.2.2 Implications to Organisations and Management Practitioners.

The results of this study suggest that there are many factors that are associated with the effectiveness of ISO 9000 maintenance in these case organisations. Apart from the critical success factors, the effectiveness of a quality management system like ISO 9000 also depends on the quality orientation of its people, the real motivation for certification and the maintenance approach used. Top management must actively steer their companies away from just satisfactorily maintaining the quality system but go beyond the maintenance if continual improvement is to be achieved and ISO 9000 is to be more effectively maintained. This would mean that people aspects have to be improved as people are the driver of continual quality improvement and excellence in any organisation. In addition, there is a need to improve the quality culture of the organisation as a strong quality culture would foster continuous improvement.

9.2.3 Implications to Research Design

Previously, survey questionnaires were used to conduct research in operations management. However, the need for in-depth investigation of phenomenon has led to a more flexible approach as applied in this research. The leading philosophy of this research is qualitative, but to enhance the validity of the research and to avoid superficial treatment of phenomena (Saunders et al., 2003) quantitative data was also used to support the finding of qualitative data. In short, this study offers new insights into the use of mixed methods and of adopting a holistic approach to investigate service organisations especially those engaging complex and contradicting change like ISO 9000.

9.2.4 Implications to Policy Makers (Government and Parent Companies)

The Malaysian government has introduced the privatisation of companies with the objectives of making the companies more independent as business concerns. This concept was then translated into what is known as GLCs. The GLCs and their subsidiaries are supposed to be independent in operating their businesses, but in reality, they faced interventions from the government. The findings of this research should help these policy makers to see the problems brought by their interventions and control. They should know that to implement a change initiative like ISO 9000 would require them to be more knowledgeable of the requirements of the standard so that they could help the companies to conform to the ISO 9000 requirements instead of going against them. These policy makers should reduce bureaucracy in order to quickly respond to the changing environment and especially in implementing corrective and preventive action as this would contribute to improved efficiency and customer satisfaction.

9.2.5 Implications for ISO 9000 Technical Committee

One of the requirements of ISO 9000 is continual improvement. Normally, to maintain the ISO 9000 certificate would require organisations to show that there is continual improvement in the organisations' product, process and system. The result of the study has indicated that there is a difference in the level of ISO 9000 maintenance between the two case organisations. However, looking at the maintenance performance score, it is not really encouraging and the difference between the two case companies is not much. Again, looking at the number of years these companies have obtained certification and the amount of improvements achieved, it is obvious that there is a need to 'push' these companies forward. The current pass or fail system of reporting the audit or

surveillance audit results was not enough to encourage organisations to carry out continuous improvement that would produce remarkable outcome. For companies to maintain the ISO 9000 QMS more effectively, they need to be aware of their positions with regard to the ISO 9000 requirements. Currently, many ISO-certified firms are taking a very pragmatic approach to the standard and take actions that are minimalist to fulfil the requirements of ISO 9000. In order for companies to go beyond ISO 9000 maintenance and gain the long-term benefits associated with being certified to the standard, ISO 9000 needs to move from just a pass or fail grading system and the description of the non-conformances. It needs to provide a barometer as to where the company is against the ISO 9000 requirements so that the company can know where it stands and therefore it can move towards continual improvement and excellence. Although the ISO 9004 provides guidelines for performance improvements, in this sense a scoring system would greatly enhance the current system to reflect where the company is with regards to its quality management system before it can improve its performance.

Second, the results of the study and previous studies have indicated that the human resource aspect has been treated as secondary to the technical aspect of ISO 9000. Although the standard does address the training and competency of human resource, the overall well-being which is core to any human being such as empowerment and satisfaction is not addressed by the standard. In other words, the standard asked the organisations to train and make employees competent to work for them, but it does not impose any requirement on the organisations to measure employee satisfaction and make employees satisfied. In this respect, ISO 9000 has to evolve and incorporates the human resource element into the standard if it wants better support from the people who in reality are the ones who can ‘make’ or ‘break’ an organisation’s quality system. This would enforce the definition of employees as customers as one of the goals for certification to ISO 9000 is to satisfy the customers.

Third, although the ISO 9000 principles are closer to TQM, the ISO 9001:2000 requirements are tailored to the manufacturing and do not incorporate the human resource aspects of quality management into it. This does not work well with service firms as their nature requires higher level of customer contact and interaction that make decision making and fast response crucial to their service quality. Therefore, apart from training for competency, the ISO 9001:2000

requirements need to incorporate more of its principles especially employee involvement and be more customer focused. To motivate employees to be involved and participate, facets of human resource aspects such as employee empowerment, recognition and reward, and internal customer satisfaction must be integrated into the standard.

9.3 Limitations of the Study

This research is not free of limitations. The limitations of this research are as follows:

a. The interpretive case study approach is chosen for this research. Therefore, there is a possibility that the research undertaken could be subject to other researcher's interpretations. However, the researcher has outlined the measures taken to minimise this problem in Section 3.5.

b. The cases being researched are Malaysian service organisations which are involved in the transportation industry. Therefore, the result of this research may be less applicable to service organisations in other industries.

c. The study focused on the factors in ISO 9000 maintenance of two service companies in Malaysia. The results of this research emerged from the analysis of data collection in this area and may not be generalisable beyond this as it is very specific.

d. The results of the study might not be applicable or less applicable to other countries due to the difference in culture.

e. Both cases have sustained their ISO 9000 quality management system and therefore their certification. Due to this, only literal replication will result as the lack of instances of failure to sustain will mitigate against theoretical replication being possible.

f. The new theoretical framework for effective ISO 9000 maintenance in service is limited in its applicability as it has not been empirically tested.

g. Due to the availability of time and funds to conduct the research, the scope of the study by which research is undertaken is limited. For Company A, the study covers its cargo operations at Advanced Cargo Centre, Kuala Lumpur International Airport while for Company B, the research covers the company's Central Region and Kuala Lumpur Head Office only.

9.4 Recommendations for Further Work

This study is conducted based on the ISO 9001:2000 not the current ISO 9001:2008 version. However, since there is no new requirement to the new version, the difference between them is minimal. The study acts as a base for future research in ISO 9000 maintenance and beyond especially in the service sector as very few has been specifically conducted so far. This study has been conducted on two service organisations in Malaysia which can be classified as in the transportation industry. Therefore, further studies are required to extend this research to other service sectors/industries and to other countries. Further research work is recommended on areas as follows:

i. The difference between ISO 9000 implementation and maintenance in service organisations. This is important because the current literature does not really differentiate and define the difference(s) between the two phases.
ii. The maintenance of ISO 9000 in professional service, mass service, service factory, and service shop. It might be interesting to investigate more on the similarities and differences that might exist among the service classification in terms of how each type of service sustain their QMS.
iii. The maintenance of ISO 9000 in other countries across the world. The outcome of the study might be moderated by the culture of each country.
iv. Critical success factors in ISO 9000 maintenance in different service sectors. This is needed to examine the differences and similarities of factors that are critical to ISO 9000 maintenance in different service sector to enrich the literature on maintenance.
v. Problems and challenges in ISO 9000 maintenance in different service sectors. The need for this research is the same as in (iv).
vi. Improvement obtained by maintaining the ISO 9000 in service companies. There is a need to find out the improvement that can result by maintaining the ISO 9000 quality system by other service companies.
vii. The impact of human resource aspects on ISO 9000 maintenance. Previous literature has found that human resource aspects have been treated as secondary when it comes to maintaining the ISO 9000. The current study has found that they are important to the success of ISO 9000 maintenance in the two case organisations.
viii. The level of ISO 9000 maintenance in certified organisations (manufacturing and service). There is a need to investigate the level or

degree of ISO 9000 maintenance in ISO 9000-certified organisations. This is necessary as they can vary among the companies. The result of the study will also be important in order to see and monitor the continual improvement carried out and the level of ISO 9000 principles and requirements adoptions by the companies.

ix. The reasons why companies failed to maintain ISO 9000 certification. It is interesting to examine the reasons why companies failed to maintain their ISO 9000 certification to see whether the reasons are similar based on the various version of ISO 9000 standards.

x. Beyond ISO 9000 maintenance in other sectors. This is more to do with 'What's next?' once certification and maintenance are achieved and efforts by companies towards excellence.

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Appendix A – Interview Questions

#	Interview questions		Level			
		Top Mgt	MiddleMgt	LowerMgtt	Training /HR Mgr	MgtRep/QAExec
1.	What is your comment on top management commitment and support is considered as one of the most important factors to successful implementation and maintenance of a quality system?	√	√	√		√
2.	How do you show your commitment and support to ISO 9000 maintenance in your organisation?	√	√	√		√
3.	On a scale of 1-5, how would you rate your commitment to the maintenance and improvement of the ISO 9000 QMS? (1=very low, 5=very high)	√	√	√		√
4.	On a scale of 1-5, how would you rate your involvement in the maintenance and improvement of the ISO 9000 QMS? (1=very low, 5=very high)	√	√	√		√
5.	Describe your involvement in the QMS program in your organization and how that impacts on its success.	√	√	√		√
6.	On a scale of 1-5, how would you rate top management commitment to the maintenance and improvement of the ISO 9000 QMS? (1=very low, 5=very high)		√	√		√
7.	On a scale of 1-5, how would you rate top management involvement in the maintenance and improvement of the ISO 9000 QMS? (1=very low, 5=very high)		√	√		√
8.	What is your definition of quality?	√	√	√		√
9.	How important is quality to you and to your organisation?	√	√	√		√
10.	Would you like to elaborate on the organization's motivation for the ISO 9001:2000 certification?	√	√	√		√
11.	How regularly do you review the adequacy of your QMS?	√	√			√
12.	How do you identify resource requirement?	√	√	√		√
13.	How do you ensure that adequate resources are provided for the running and maintenance of your organization's activities and quality system?	√	√	√		√
14.	How do you develop your quality policy and objectives?	√	√			√
15.	How do you communicate your quality policy and objectives to your staff?	√	√			√
16.	How do you make any changes to your quality policy and objectives?		√	√		√
17.	What happens if quality objectives are not met?					√
18.	In your opinion, is communication in the company effective?	√	√	√		√
19.	How do you communicate with your staff?	√	√	√		√
20.	If you are asked to rate from 1-5 (1= not effective, 5= very effective), how would you rate communication in your company?	√	√	√		√
21.	Do you think your current organisational structure support the QMS? Please elaborate.	√	√	√		√
22.	Do you empower your employees? How?	√	√			√
23.	Is your staff adequately trained to do their job?	√	√	√	√	√
24.	Do you conduct training needs analysis?				√	
25.	What types of training have you attended?	√	√	√		√
26.	Do you conduct staff feedback/satisfaction survey?	√	√	√		√
27.	How is your organization performance measured?	√	√			√
28.	How do you set your performance target or standard?		√	√		√
29.	How do you ensure your performance targets are achieved?		√	√		√
30.	Is staff performance measured?	√	√	√		√
31.	How do you motivate your staff?	√	√	√		√

32.	How is teamwork emphasized in this organization?	√	√	√		√
33.	Tell me about the changes and improvements that have been made in the organization since the implementation of the ISO 9000 QMS in your organization..	√	√	√		√
34.	Apart from ISO 9001:2000 QMS, tell me about other quality management practices or improvement programmes/initiatives being adopted by the company to improve your process and system.	√	√	√		√
35.	Tell me about the tools and techniques used for quality improvement in your organization.	√	√	√		√
36.	Based on your experience, what are the critical success factors for ISO 9000 QMS maintenance for a service organization like yours?	√	√	√		√
37.	What are other factors that might enhance the effectiveness of maintenance but not specified in the standard?	√	√	√		√
38.	Tell me about the main problems and challenges you encountered in maintaining the ISO 9000 QMS of your company.	√	√	√		√
39.	Do you have problems with people in maintaining the QMS?	√	√	√		√
40.	Are staff supportive and participative in maintaining the quality system?	√	√	√		√
41.	In your opinion, do you think the ISO 9000 QMS is effectively maintained? Why do you think so?	√	√	√		√
42.	Do you think that by having and maintaining the ISO 9000 improve the quality of your service? How?	√	√	√		√
43.	Does having and maintaining the ISO 9000 has a positive relationship with the company's profitability? How?	√	√	√		√
44.	How important is keeping the ISO 9000 certification and QMS to you? Why?	√	√			√
45.	What are your plans for the company for the next five years?	√				√
46.	In your opinion, what are the competitive advantages of your organisation? What makes it special?	√				
47.	Who are your customers?	√	√	√		√
48.	Do you measure customer satisfaction? How?	√	√	√		√
49.	Are your customers satisfied with your service?	√	√	√		√
50.	What type of complaints do you receive from customers?	√	√	√		√
51.	How do you handle customer complaints?	√	√	√		√
52.	From your perspectives, what is required in 'leadership for quality?	√	√	√		√

Appendix B – Survey Questionnaire

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THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

MANAGEMENT SCHOOL
Te Raupapa

THE MAINTENANCE OF ISO 9000 QUALITY MANAGEMENT SYSTEM IN MALAYSIAN SERVICE ORGANIZATIONS

Dear Valued Participant,

I am a PhD candidate at the University of Waikato, New Zealand. Currently, I am conducting the above research with the objective of trying to identify how Malaysian service organizations maintain their ISO 9000 quality management system, the quality management practices they adopted and the critical success factors, problems and challenges associated with ISO 9000 maintenance. The outcomes of this research would help other service organizations to maintain and improve their ISO 9000 quality management system on a long-term basis.

Your help and cooperation in answering this questionnaire is very important in order for me to be able to collect relevant data and carry out this research. Should you require further information, please do not hesitate to email me at roslinaaw1510@yahoo.com or call me at 03-55198176.

Thank you for your time and cooperation.

PENJAGAAN & PEMELIHARAAN SISTEM PENGURUSAN KUALITI ISO 9000 DI ORGANISASI-ORGANISASI PERKHIDMATAN MALAYSIA

Responden yang dihargai,

Saya adalah seorang calon PhD. di University of Waikato, New Zealand. Pada masa ini, saya sedang menjalankan kajian seperti yang tersebut di atas bertujuan untuk mengenalpasti bagaimana organisasi-organisasi perkhidmatan Malaysia menjaga dan memelihara sistem pengurusan kualiti ISO 9000 dalam organisasi mereka, amalan-amalan pengurusan kualiti yang digunakan, masalah-masalah yang timbul, serta cabaran-cabaran yang berkaitan dengan penjagaan dan pemeliharaan ISO 9000. Hasil dari penyelidikan ini akan membantu organisasi-organisasi perkhidmatan yang lain menjaga dan menambahbaik sistem pengurusan kualiti ISO 9000 mereka secara berterusan.

Maklumbalas dari anda sangat penting bagi saya untuk mengumpul data yang berkaitan dengan penyelidikan ini. Sekiranya anda memerlukan maklumat lanjut, sila email saya di roslinaaw1510@yahoo.com. atau talipon saya ditalian 03-55198176.

Terima kasih di atas masa yang anda luangkan dan kerjasama yang anda berikan untuk membantu menjayakan penyelidikan ini.

Roslina Ab Wahid

This questionnaire has FOUR (4) sections. Please complete ALL the sections.
Soal-selidik ini mempunyai EMPAT (4) seksyen. Sila lengkapkan SEMUA seksyen.

SECTION A: DEMOGRAPHIC INFORMATION
SEKSYEN A: MAKLUMAT DEMOGRAFIK
Please ***tick (√)*** the answer representing the most appropriate response for you in respect of the following items.
*Sila **tandakan (√)** jawapan yang anda rasa paling sesuai mengambarkan keadaan anda untuk perkara-perkara di bawah.*

1. Age (years)/*Umur (tahun)*

☐ 18-24

☐ 25-34

☐ 35-44

☐ 45-54

☐ 55 and above/55 dan keatas

2. Highest Completed Level of Education/*Tahap pengajian tertinggi dicapai*

☐ Primary school/Sekolah rendah

☐ SPM

☐ STPM

☐ Certificate/Sijil

☐ Diploma

☐ Bachelor/Sarjana Muda

☐ Master/Sarjana

☐ Other/Lain

3. Gender/*Jantina*

☐ Female/Perempuan

☐ Male/Lelaki

4. Job Status/*Status Pekerjaan*

☐ Lower Management/ Pengurusan bawahan

☐ Supervisor/Penyelia

☐ Staff (non- managerial)/ Kakitangan (bukan pengurusan)

5. Position/Jawatan

(Please specify)/(*Sila nyatakan*)

_____

6. Department/Unit /*Jabatan/Unit*

(Please specify)/(*Sila nyatakan*)

_____

7. Number of years worked in the company

Bilangan tahun bekerja dengan syarikat.

☐ Less than 1

☐ 1-2

☐ 3-5

☐ 6-10

☐ Over 10

8. Working Hours / *Waktu Kerja*

☐ Regular hours/ *Waktu biasa*

☐ Shift/*Syif*

SECTION B: STAFF PERCEPTIONS ON QUALITY MANAGEMENT PRACTICES
SEKSYEN B: TANGGAPAN KAKITANGAN (STAF) TERHADAP AMALAN PENGURUSAN KUALITI

B1.
Please **tick *(√)*** the number representing the most appropriate responses for you in respect of the following statements.
*Sila **tandakan (√)** nombor yang anda rasa paling sesuai mengambarkan maklumbalas anda terhadap kenyataan di bawah.*

		Strongly Disagree *Sangat Tidak Setuju* **1**☐	Disagree *Tidak Setuju* **2**☐	Agree *Setuju* **3**☐	Strongly Agree *Sangat Setuju* **4**☐	Not Applicable *Tidak berkenaan* **5**☐
1.	Top management is actively involved in quality improvement. *Pengurusan atasan terlibat secara aktif dalam penambahbaikan kualiti.*	1☐	2☐	3☐	4☐	5☐
2.	Top management is committed in maintaining the ISO 9000 quality system. *Pengurusan atasan komited dalam menjaga dan memelihara sistem kualiti ISO 9000.*	1☐	2☐	3☐	4☐	5☐
3.	Top management provides the necessary resources to carry out activities effectively. *Pengurusan atasan menyediakan sumber-sumber yang diperlukan untuk menjalankan aktiviti-aktiviti secara berkesan.*	1☐	2☐	3☐	4☐	5☐
4.	Resources are adequate to carry out business and quality system activities. *Sumber-sumber adalah mencukupi untuk menjalankan aktiviti perniagaan dan sistem kualiti.*	1☐	2☐	3☐	4☐	5☐
5.	Top management encourages employees to consider customers' needs and expectations. *Pengurusan atasan menggalakkan kakitangan untuk menimbang keperluan dan kehendak pelanggan.*	1☐	2☐	3☐	4☐	5☐
6.	Quality policy and objectives are communicated and disseminated to all employees. *Polisi dan objektif kualiti diberitahu dan disebarkan kepada semua kakitangan.*	1☐	2☐	3☐	4☐	5☐
7.	I know and understand the quality policy and objectives of my organization. *Saya tahu dan memahami polisi dan objektif kualiti organisasi*	1☐	2☐	3☐	4☐	5☐
8.	Communication in the organization is effective. *Komunikasi dalam organisasi ini adalah berkesan.*	1☐	2☐	3☐	4☐	5☐
9.	It is easy to communicate about work with my superior. *Adalah mudah berkomunikasi tentang kerja dengan pegawai atasan saya.*	1☐	2☐	3☐	4☐	5☐

		Strongly Disagree *Sangat Tidak Setuju* **1**☐	Disagree *Tidak Setuju* **2**☐	Agree *Setuju* **3**☐	Strongly Agree *Sangat Setuju* **4**☐	Not Applicable *Tidak berkenaan* **5**☐
10.	The organization adopts a process management approach. *Organisasi menggunakan pendekatan pengurusan proses.*	1☐	2☐	3☐	4☐	5☐
11.	In this organization, we work as a team. *Dalam organisasi ini, kami bekerja sebagai satu pasukan.*	1☐	2☐	3☐	4☐	5☐
12.	Work groups are common in this organization. *Kumpulan kerja adalah satu kebiasaan dalam organisasi ini.*	1☐	2☐	3☐	4☐	5☐
13.	Processes are continuously improved. *Penambahbaikan sentiasa dilakukan ke atas proses-proses.*	1☐	2☐	3☐	4☐	5☐
14.	The organization uses quality circles/quality improvement teams. *Organisasi menggunakan kumpulan meningkat mutu kerja/kumpulan penambahbaikan kualiti.*	1☐	2☐	3☐	4☐	5☐
15.	There is a little bureaucracy (formal hierarchy, procedures and detailed rules) in the organization. *Terdapat sedikit birokrasi (tahap rasmi, prosidur, peraturan terperinci) dalam organisasi.*	1☐	2☐	3☐	4☐	5☐
16.	The company provides continuous training for its staff. *Syarikat menyediakan latihan yang berterusan untuk kakitangan.*	1☐	2☐	3☐	4☐	5☐
17.	Training needs and training are always evaluated. *Keperluan latihan dan latihan selalu dinilai.*	1☐	2☐	3☐	4☐	5☐
18.	Employee feedback is always sought. *Maklumbalas kakitangan selalu diminta.*	1☐	2☐	3☐	4☐	5☐
19.	Employee satisfaction is measured. *Kepuasan kakitangan diukur.*	1☐	2☐	3☐	4☐	5☐
20.	Employee performance is measured. *Prestasi kakitangan diukur.*	1☐	2☐	3☐	4☐	5☐
21.	There is a performance measurement system in this company. *Syarikat ini mempunyai sistem pengukuran prestasi.*	1☐	2☐	3☐	4☐	5☐
22.	Reward is linked to employee's performance. *Ganjaran dikaitkan dengan prestasi pekerja.*	1☐	2☐	3☐	4☐	5☐
23.	Employees are encouraged to participate and be involved in the company's activities. *Kakitangan digalakkan untuk melibatkan diri dan mengambil bahagian dalam aktiviti-aktiviti syarikat.*	1☐	2☐	3☐	4☐	5☐

		Strongly Disagree *Sangat Tidak Setuju* **1**☐	Disagree *Tidak Setuju* **2**☐	Agree *Setuju* **3**☐	Strongly Agree *Sangat Setuju* **4**☐	Not Applicable *Tidak berkenaan* **5**☐
24.	Employees are encouraged to make decision with regards to their job. *Kakitangan digalakkan untuk membuat keputusan dalam melakukan kerja mereka.*	1☐	2☐	3☐	4☐	5☐
25.	Management lets employees participate in achieving organizational objectives. *Pihak pengurusan memberi peluang pada kakitangan mengambil bahagian dalam mencapai ojektif organisasi.*	1☐	2☐	3☐	4☐	5☐
26.	Employees are responsible for tasks they perform, and inspect their own work. *Kakitangan adalah bertanggungjawab terhadap kerja-kerja yang mereka lakukan, dan memeriksa sendiri kerja mereka.*	1☐	2☐	3☐	4☐	5☐
27.	There is a reward system in place to encourage new ideas from employees. *Terdapat sistem ganjaran dalam syarikat untuk menggalakkan idea-idea baru dari kakitangan.*	1☐	2☐	3☐	4☐	5☐
28.	In this company, recognition is given to high achievers. *Dalam syarikat ini, pengiktirafan diberikan kepada pekerja-pekerja cemerlang.*	1☐	2☐	3☐	4☐	5☐
29.	Multi-tasking of employees is practised by the organization. *Kepelbagaian-kerja oleh kakitangan diamalkan dalam organisasi.*	1☐	2☐	3☐	4☐	5☐
30.	Skills and knowledge acquired from multi-tasking will increase employee's opportunity for promotion. *Kemahiran dan pengetahuan yang diperolehi dari melakukan kepelbagaian-kerja akan meningkatkan peluang kakitangan untuk kenaikan pangkat.*	1☐	2☐	3☐	4☐	5☐
31.	The company works in close collaboration with suppliers to improve processes. *Syarikat berkerjasama rapat dengan pembekal-pembekal untuk menambahbaik proses-proses.*	1☐	2☐	3☐	4☐	5☐
32.	The company treats its suppliers as partners. *Pembekal-pembekal syarikat dilayan sebagai rakankongsi.*	1☐	2☐	3☐	4☐	5☐
33.	Customer needs and feedback are integrated into the service development design and process. *Keperluan dan maklumbalas pelanggan disatukan di dalam rekabentuk pembangunan perkhidmatan dan proses.*	1☐	2☐	3☐	4☐	5☐
34.	The company carries out market studies to determine its customers' needs and wants. *Syarikat menjalankan kajian pasaran untuk menentukan keperluan dan kehendak pelanggan.*	1☐	2☐	3☐	4☐	5☐

		Strongly Disagree *Sangat Tidak Setuju* **1**☐	Disagree *Tidak Setuju* **2**☐	Agree *Setuju* **3**☐	Strongly Agree *Sangat Setuju* **4**☐	Not Applicable *Tidak berkenaan* **5**☐
35.	The company carries out studies to measure customer satisfaction. *Syarikat menjalankan kajian untuk mengukur kepuasan pelanggan.*	1☐	2☐	3☐	4☐	5☐
36.	The company has a system to collect and manage customers' complaints. *Syarikat mempunyai sistem untuk mengumpul dan mengurus aduan pelanggan.*	1☐	2☐	3☐	4☐	5☐
37.	Management actively displays an ongoing commitment to quality improvement. *Pihak pengurusan secara aktif mempamirkan komitmen yang berterusan dalam penambahbaikan kualiti.*	1☐	2☐	3☐	4☐	5☐
39.	The company uses quality programmes to improve its quality. *Syarikat menggunakan program-program kualiti untuk menambahbaik kualiti.*	1☐	2☐	3☐	4☐	5☐
40.	The quality system in our company is improved continuously. *Sistem kualiti dalam syarikat kami sentiasa ditambahbaik secara berterusan.*	1☐	2☐	3☐	4☐	5☐
41.	The company has a clear documentation procedure. *Syarikat mempunyai prosidur dokumentasi yang jelas.*	1☐	2☐	3☐	4☐	5☐
42.	The company has a clear set of work instructions. *Syarikat mempunyai set arahan kerja yang jelas.*	1☐	2☐	3☐	4☐	5☐
43.	Important information is presented and transmitted to staff. *Maklumat penting dibentang dan diberitahu kepada kakitangan.*	1☐	2☐	3☐	4☐	5☐
44.	The company collects and analyzes data related to its activities. *Syarikat mengumpul dan menganalisa data berkaitan aktiviti-aktivitinya.*	1☐	2☐	3☐	4☐	5☐
45.	The company harnesses information to improve its key processes and services. *Syarikat mengumpul dan mengurus maklumat untuk menambahbaik proses-proses dan perkhidmatan-perkhidmatan utama.*	1☐	2☐	3☐	4☐	5☐
46.	The company measures and control quality. *Syarikat mengukur dan mengawal kualiti.*	1☐	2☐	3☐	4☐	5☐
47.	The company uses statistical tools and techniques to measure and control quality. *Syarikat menggunakan kaedah-kaedah dan teknik-teknik statistik untuk mengukur dan mengawal kualiti.*	1☐	2☐	3☐	4☐	5☐

		Strongly Disagree *Sangat Tidak Setuju* **1**☐	Disagree *Tidak Setuju* **2**☐	Agree *Setuju* **3**☐	Strongly Agree *Sangat Setuju* **4**☐	Not Applicable *Tidak berkenaan* **5**☐
48.	Employees are trained in the use of these statistical tools and techniques. *Kakitangan dilatih menggunakan kaedah-kaedah dan teknik-teknik statistik ini.*	1☐	2☐	3☐	4☐	5☐

B2.
Please **tick *(√)*** the number representing the most appropriate responses for you in respect of the following statements.
*Sila **tandakan (√)** nombor yang anda rasa paling sesuai mengambarkan maklumbalas anda terhadap kenyataan di bawah.*

		Very Low *Sangat Rendah* **1**☐	Low *Rendah* **2**☐	Satisfactory *Memuaskan* **3**☐	High *Tinggi* **4**☐	Very High *Sangat Tinggi* **5**☐
1.	How would you rate your top management's involvement in ISO 9000 maintenance? *Bagaimanakah anda menilai tahap penglibatan pengurusan atasan anda dalam menjaga dan memelihara ISO 9000?*	1☐	2☐	3☐	4☐	5☐
2.	How would you rate your top management's commitment in ISO 9000 maintenance? *Bagaimanakah anda menilai tahap komitmen pengurusan atasan anda dalam menjaga dan memelihara ISO 9000?*	1☐	2☐	3☐	4☐	5☐
3.	How would you rate your own involvement in ISO 9000 maintenance? *Bagaimanakah anda menilai tahap penglibatan anda sendiri dalam menjaga dan memelihara ISO 9000?*	1☐	2☐	3☐	4☐	5☐
4.	How would you rate your own commitment in ISO 9000 maintenance? *Bagaimanakah anda menilai tahap komitmen anda sendiri dalam menjaga dan memelihara ISO 9000?*	1☐	2☐	3☐	4☐	5☐

B3.
Please **tick *(√)*** the number representing the most appropriate responses for you in respect of the following statements.
*Sila **tandakan (√)** nombor yang anda fikir paling sesuai mengambarkan maklumbalas anda terhadap kenyataan di bawah.*

		Not Effective *Tidak Berkesan* **1**☐	Slightly Effective *Sedikit Berkesan* **2**☐	Mostly Effective *Kebanyakannya Berkesan* **3**☐	Effective *Berkesan* **4**☐	Highly Effective *Sangat Berkesan* **5**☐
1.	How would you rate communication within your organization? *Bagaimanakah anda menilai tahap komunikasi dalam organisasi anda?*	1☐	2☐	3☐	4☐	5☐

If you have rated the above between 1-3, please give your reason(s) and suggestion as how to improve communication in your organization.
Jika sekiranya anda menilai soalan di atas di antara 1-3, sila nyatakan sebabnya dan bagaimana caranya untuk membaiki komunikasi dalam organisasi anda.

Reason:

*Sebab:*_____

_____

_____

_____

_____

_____

_____

Suggestion:

Cadangan: _____

_____

SECTION C: STAFF OPINION ON ISO 9001:2000 & ITS MAINTENANCE
SEKSYEN C: PANDANGAN KAKITANGAN (STAF) TERHADAP ISO 9001:2000 & PENJAGAAN DAN PEMELIHARAANNYA

Please **tick *(√)*** the number representing the most appropriate responses for you in respect of the following statements.
*Sila **tandakan (√)** nombor yang anda fikir paling sesuai mengambarkan maklumbalas anda terhadap kenyataan di bawah.*

		Strongly Disagree *Sangat Tidak Setuju* 1☐	**Disagree** *Tidak Setuju* 2☐	**Agree** *Setuju* 3☐	**Strongly Agree** *Sangat Setuju* 4☐	**Not Applicable** *Tidak berkenaan* 5☐
1.	Quality is very important to me. *Kualiti sangat penting pada saya.*	1☐	2☐	3☐	4☐	5☐
2.	What differentiates one company from the other is its quality of service. *Apa yang membezakan sesebuah syarikat dari syarikat yang lain ialah kualiti perkhidmatannya.*	1☐	2☐	3☐	4☐	5☐
3.	It takes a lot of hard work to maintain the ISO 9000 certification. *Menjaga dan memelihara persijilan ISO 9000 memerlukan kerja keras.*	1☐	2☐	3☐	4☐	5☐
4.	Having the ISO 9000 certification is good for the organization. *Mendapat sijil pengiktirafan ISO 9000 adalah baik untuk organisasi.*	1☐	2☐	3☐	4☐	5☐
5.	ISO 9000 Quality Management System (QMS) places more demands on everybody's time. *Sistem Pengurusan Kualiti ISO 9000 menuntut lebih banyak pengorbanan masa dari semua orang.*	1☐	2☐	3☐	4☐	5☐
6.	ISO 9000 QMS can control and monitor change. *Sistem Pengurusan Kualiti ISO 9000 boleh mengawal dan memantau perubahan.*	1☐	2☐	3☐	4☐	5☐
7.	ISO 9000 QMS helps the company measures how we are meeting our customers' requirements on an ongoing and continuous basis. *Sistem Pengurusan Kualiti ISO 9000 membantu syarikat mengukur bagaimana kami memenuhi keperluan pelanggan secara berterusan.*	1☐	2☐	3☐	4☐	5☐
8.	ISO 9000 QMS allows us to constantly improve our efficiency. *Sistem Pengurusan Kualiti ISO 9000 membolehkan kami sentiasa memperbaiki kecekapan kami.*	1☐	2☐	3☐	4☐	5☐
9.	ISO 9000 QMS encourages improvement of the process, service and system. *Sistem Pengurusan Kualiti ISO 9000 menggalakkan penambahbaikan proses, perkhidmatan dan sistem.*	1☐	2☐	3☐	4☐	5☐

		Strongly Disagree *Sangat Tidak Setuju* 1☐	Disagree *Tidak Setuju* 2☐	Agree *Setuju* 3☐	Strongly Agree *Sangat Setuju* 4☐	Not Applicable *Tidak berkenaan* 5☐
10.	The company gains a lot of benefits as a result of obtaining ISO 9000 certification. *Syarikat mendapat banyak kebaikan hasil daripada pencapaian sijil pengiktirafan ISO 9000.*	1☐	2☐	3☐	4☐	5☐
11.	The ISO 9000 QMS is maintained effectively by the company. *Sistem Pengurusan Kualiti ISO 9000 dijaga dan dipelihara dengan berkesan oleh syarikat.*	1☐	2☐	3☐	4☐	5☐
12.	Maintaining a quality system is not easy for me. *Menjaga dan memelihara sistem kualiti bukanlah mudah untuk saya.*	1☐	2☐	3☐	4☐	5☐
13.	Maintaining a quality system is time-consuming. *Menjaga dan memelihara sesebuah sistem kualiti memerlukan banyak masa.*	1☐	2☐	3☐	4☐	5☐
14.	Maintaining the certification in line with the ISO 9001:2000 QMS needs the involvement of everybody in the organization. *Menjaga dan memelihara sijil pengiktirafan selaras dengan Sistem Pengurusan Kualiti ISO 9001:2000 memerlukan penglibatan semua orang dalam organisasi.*	1☐	2☐	3☐	4☐	5☐
15	Top management commitment and support is important in motivating employees to maintain the ISO 9000 QMS. *Komitmen dan sokongan Pengurusan Atasan adalah penting untuk menggalakkan kakitangan menjaga dan memelihara Sistem Pengurusan Kualiti ISO 9000.*	1☐	2☐	3☐	4☐	5☐
16.	Employee involvement and participation is important in maintaining a quality management system like ISO 9000. *Penglibatan dan penyertaan pekerja adalah penting dalam menjaga dan memelihara sebuah sistem pengurusan kualiti seperti ISO 9000.*	1☐	2☐	3☐	4☐	5☐
17.	Recognition and reward is important in motivating employees to maintain the ISO 9000 QMS. *Pengiktirafan dan ganjaran adalah penting untuk menggalakkan kakitangan menjaga dan memelihara Sistem Pengurusan Kualiti ISO 9000.*	1☐	2☐	3☐	4☐	5☐

		Strongly Disagree *Sangat Tidak Setuju* 1☐	Disagree *Tidak Setuju* 2☐	Agree *Setuju* 3☐	Strongly Agree *Sangat Setuju* 4☐	Not Applicable *Tidak berkenaan* 5☐
18.	Application of quality tools and techniques is important for quality improvement and maintenance. *Penggunaan alat-alat dan teknik-teknik kualiti adalah penting untuk penambahbaikan dan pemeliharaan kualiti.*	1☐	2☐	3☐	4☐	5☐
19.	Effective maintenance of ISO 9000 will improve the quality of our service. *Penjagaan dan pemeliharaan ISO 9000 yang berkesan akan meningkatkan kualiti perkhidmatan kami.*	1☐	2☐	3☐	4☐	5☐
20.	The quality of our service has improved since the implementation of ISO 9000 in our company. *Kualiti perkhidmatan kami telah meningkat semenjak sistem kualiti ISO 9000 dilaksanakan oleh syarikat.*	1☐	2☐	3☐	4☐	5☐

SECTION D: STAFF OPINION ON MOTIVATION FOR CERTIFICATION, CRITICAL SUCCESS FACTORS & PROBLEMS ASSOCIATED WITH ISO 9000 MAINTENANCE.
SEKSYEN D: PANDANGAN STAF TERHADAP MOTIF PERSIJILAN, FAKTOR KRITIKAL UNTUK BERJAYA DALAM MENJAGA DAN MEMELIHARA SISTEM KUALITI ISO 9000 DAN MASALAH-MASALAH YANG BERKAITAN DENGANNYA.

1. What is your organization's motivation for ISO 9000 certification? You may **tick (√)** more than one answer.
*Apakah motif organisasi anda mendapatkan persijilan ISO 9000? Anda boleh **tandakan (√)** lebih dari satu jawapan.*

For improvement	(☐)	Untuk penambahbaikan	(☐)
As a marketing tool	(☐)	Sebagai alat pemasaran	(☐)
To satisfy customers	(☐)	Untuk kepuasan pelanggan	(☐)
To have proper documentation	(☐)	Mewujudkan dokumentasi	(☐)
A requirement to do business	(☐)	Kemestian untuk berurusniaga	(☐)
To penetrate global market	(☐)	Untuk menembusi pasaran global	(☐)
Don't know		(☐) Tidak tahu	(☐)

Other (please specify) ……. (☐) Lain *(sila nyatakan)* ……..(☐)

……. ……

2. What do you think are the critical success factors in maintaining the ISO 9000 QMS in an organization like yours? Please rank them in descending order (1= most important, 2= second most important, 3= third most important and so forth).
Pada pandangan anda, apakah faktor kritikal untuk berjaya dalam menjaga dan memelihara sistem pengurusan kualiti ISO 9000 dalam organisasi anda? Sila nilai faktor-faktor berkenaan mengikut turutan menurun (1= paling penting, 2= kedua penting, 3= ketiga penting dan seterusnya).

Top management commitment	( )	Komitmen pengurusan atasan	( )
Employee involvement	( )	Penglibatan pekerja/staf	( )
Reward and recognition	( )	Ganjaran & Pengiktirafan	( )
Teamwork	( )	Semangat berpasukan	( )
Continuous improvement	( )	Penambahbaikan berterusan	( )
Quality culture	( )	Budaya kualiti	( )
Other (please specify)	( )	Lain (sila nyatakan)	( )

…….. ……

…….. ……

3. What problems have you encountered in maintaining and improving your quality system? Please **tick (√)** in the appropriate box and elaborate the problems.

Apakah masalah-masalah yang anda hadapi dalam menjaga dan memelihara serta menambahbaik sistem kualiti ini? Sila ***tandakan*** **(√)** *pada petak yang berkenaan dan terangkan masalahnya.*

☐ People/*Manusia*

_____

_____

_____

_____

☐ Documentation (policy, procedures, work instructions, forms, etc.)/*Dokumentasi (polisi, prosidur, arahan kerja, borang, dsbnya.)*

_____

_____

_____

_____

☐ Process/*Proses*

_____

_____

☐ System/*Sistem*

☐ Other/*Lain*

4. Do you have any suggestion to improve the maintenance of ISO 9000 quality management system in your organization? If you have, please share with me.
Adakah anda mempunyai cadangan untuk menambahbaik penjagaan dan pemeliharaan sistem pengurusan kualiti ISO 9000 organisasi anda? Sekiranya ada, sila kongsi dengan saya.

Suggestion:
Cadangan :

Thank You
Terima Kasih

Appendix C – List of Interviewees

	Position	Category	Interview date
1.	General Manager, Finance	Top management	11/01/ 2008
2.	Manager, Quality Assurance & Line Station/Management Representative	Management Representative	11/01/2008
3.	Manager, Human Resource	Top management	14/01/2008
4.	Senior Manager, Operations Line Station	Middle management	16/01/2008
5.	Senior Manager, Operations Commercial	Middle management	16/01/2008
6.	Head of Cargo Operations	Top management	16/01/2008
7.	Senior Manager, Information Technology	Middle management	17/01/2008
8.	Senior Manager, Operations Support	Middle management	17/01/2008
9.	General Manager, Sales & Business Development	Top management	18/01/2008
10.	Senior Manager, Corporate Affairs & Communication	Top management	18/01/2008
11.	Manager, Freighter Operations, Charter & Planning	Operation Manager	18/01/2008
12.	Executive, Quality Assurance	Quality Executive	18/01/2008
13.	Executive, Quality Assurance	Quality Executive	18/01/2008
14.	Document Controller	Controller	18/01/2008
15.	General Manager, Revenue Management	Top management	12/02/2008
16.	Managing Director	Managing Director	15/02/2008

Table 3.4a : List of Interviewees at Company A

	Position	Category	Interview date
1.	General Manager, Engineering Dept.	Top Management	22/01/08
2.	Senior Manager, Logistics & Machinery Dept.	Top Management	22/01/08
3.	Quality Executive	Quality Executive	22/01/08
4.	General Manager, Special Projects	Top Management	24/01/08
5.	Manager, Maintenance Operations Dept. (Civil)	Middle Management	24/01/08
6.	Deputy Senior Manager, Maintenance Operations Dept. (Performance Monitoring Unit)	Middle Management	25/01/08
7.	Senior General Manager, Contracts/Central Technical Dept.	Top Management	25/01/08
8.	Assistant Manager, Human Resource Dept. (Training)	Lower Management	25/01/08
9.	Management Representative	Management Representative	28/01/08
10.	Senior General Manager, Corporate Finance	Top Management	28/01/08
11.	Senior General Manager, Maintenance Operations Dept.	Top Management	28/01/08
12.	Senior Executive, Logistics & Machinery Dept	Lower Management	29/01/08
13.	Maintenance Operations Dept.(Mechanical & Electrical)	Middle Management	29/01/08
14.	Managing Director	Top Management	19/02/08

Table 3.4b : List of Interviewees at Company B

Appendix D – Questionnaire Tabulation

Department		No. of Employees	No. of Questionnaires Distributed
Operation Commercial	Import Breakdown	62	18
	Domestic/ Outbound Export/ Acceptance	126	35
	Ramp	51	14
	CPO	99	28
Operation Line Station	QA & Line Station	17	5
	Transshipment	21	5
Operation Support	Maintenance	28	8
	Animal Hotel	17	5
	Express Handling Unit	38	11
	Perishable	19	5
	Property	2	1
	System	17	5
	Operations Admin.	11	4
	ULD Logistic	13	3
Charter & Planning		11	3
TOTAL		**532**	**150**

Table 3.4c: Questionnaire tabulation by department – Company A

Department	No. of Employees	No. of Questionnaires Distributed
Maintenance Operation	299	102
Logistics & Machinery	65	22
Central Technical Support	19	7
Engineering	20	7
Administration	5	2
Treasury & Finance	13	4
Human Resource	7	2
Special Project	5	2
Director's Office	2	1
Health, Safety, Environment & QA Special Projects	3	1
TOTAL	**438**	**150**

Table 3.4d : Questionnaire tabulation by Department – Company B

Job level	Company A		Company B	
	No. of Employees	Questionnaires Distributed	No. of employees	Questionnaires Distributed
Lower Management	34	10	90	27
Supervisor	41	12	58	22
Staff	457	128	290	101

Table 3.4e: Questionnaire tabulation by job level

Appendix E – Chi-Square test result

Variable	p-value ($p<0.05$)
Age group	0.834
Job level/status	0.000
Education level	0.000
Length of tenure	0.003
Working hours	0.000

Appendix F – Standard deviation for perception on quality management practices

Statement	Comp. A	Comp. B
Top management commitment		
Top management is involved in quality improvement.	0.568	0.324
Top management is committed to ISO 9000 maintenance.	0.551	0.388
Top management provides necessary resources to carry out activities effectively.	0.580	0.380
Resources are adequate to carry out business and quality system activities.	0.625	0.335
Management actively displays an ongoing commitment to quality improvement.	0.454	0.333
Internal communication		
Quality policy & objectives are communicated/disseminated to all employees.	0.654	0.446
I know and understand the quality policy & objectives of my organization.	0.387	0.494
Communication in the organisation is effective.	0.524	0.556
It's easy to communicate about work with my superior.	0.665	0.542
Important information is presented/transmitted to staff.	0.604	0.438
Teamwork		
In this organisation, we work as a team.	0.659	0.559
Work groups are common in this organisation.	0.583	0.444
Process approach		
The organisation adopts a process management approach.	0.475	0.394
Continuous improvement		
Processes are continuously improved.	0.531	0.324
The quality system is improved continuously.	0.542	0.335
QM practices & tools		
The organisation uses quality circles/improvement teams.	0,560	0.472
Multi-tasking is practised by the organization.	0.555	0.467
The company uses quality programmes to improve its quality.	0.497	0.296
The company uses statistical tools & techniques to measure and control quality.	0.500	0.387
Organisational structure		
There is a little bureaucracy (formal hierarchy, procedures and detailed rules) in the organisation.	0.651	0.609
Customer needs & satisfaction (Customer focus)		
Top management encourages employees to consider customer needs & expectations.	0.602	0.427
Customer needs & feedback are integrated into the service development design and process.	0.428	0.418
The company carries out market studies to determine its customer needs and wants.	0.508	0.414
The company carries out studies to measure customer satisfaction.	0.489	0.387
The company has a system to collect and manage customer's complaints.	0.474	0.447
Supplier relations		
The company works in close collaboration with its suppliers.	0.458	0.389
The company treats its suppliers as partners.	0.418	0.633
Documentation		
The company has a clear documentation procedure.	0.516	0.248
The company has a clear set of work instructions.	0.668	0.249
Measurement, information & data analysis		
The company collects/analyses data related to its activities.	0.452	0.461
The company harnesses information to improve its key processes and services.	0.521	0.371
The company measures and control quality.	0.475	0.296
Employee training		
The company provides continuous training for its staff.	0.668	0.573
Training needs and training are always evaluated.	0.685	0.513
Employees are trained in the use of statistical tools &	0.528	0.380

Statement	Comp. A	Comp. B
techniques.		
Employee empowerment & participation		
Employee feedback is always sought.	0.658	0.585
Employees are encouraged to participate and be involved in the company's activities.	0.589	0.510
Employees are encouraged to make decision with regards to their job.	0.583	0.567
Management lets employees participate in achieving organizational objectives.	0.524	0.588
Employees are responsible for tasks they perform, and inspect their own work.	0.528	0.585
Employee satisfaction		
Employee satisfaction is measured.	0.692	0.585
Employee performance, recognition & reward		
Employee performance is measured.	0.635	0.624
There is a performance measurement system in this company.	0.619	0.587
Reward is linked to performance.	0.750	0.667
There is a reward system to encourage new ideas from employees.	0.536	0.558
Recognition is given to high achievers.	0.699	0.495
Skills and knowledge acquired from multi-tasking increase employee's opportunity for promotion.	0.695	0.535