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UNIVERSITI TEKNOLOGI MALAYSIA

BORANG PENGESAHAN STATUS TESIS♦

JUDUL: QUALITY PERFORMANCE OF ISO 9000/2001 CERTIFIED CONTRACTORS

SESI PENGAJIAN: 2006/2007

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Alamat Tetap:
19, Lorong 4B, Taman Mabel,
Jalan Laksamana Cheng Ho,
93350 Kuching, Sarawak.

IR. DR. ROSLI MOHAMAD ZIN

Nama Penyelia

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Signature	: .....
Name of Supervisor	: Ir. Dr. Rosli Mohamad Zin
Date	: .....

QUALITY PERFORMANCE OF ISO 9000/2001 CERTIFIED CONTRACTORS

GUI HUN CHUEN

A project report submitted in partial fulfillment of the requirements for the award of the degree of Master of Science (Construction Management)

Faculty of Civil Engineering
Universiti Teknologi Malaysia

JULY 2007

I declare that this project report entitled
"*Quality Performance of ISO 9000/2001 Certified Contractors"*
is the result of my own research except as cited in the references.
The report has not been accepted for any degree
and is not concurrently submitted in candidature of any other degree.

Signature	: .....
Name	: Gui Hun Chuen
Date	: .....

DEDICATION

To:

Lord Jesus,

My Beloved Family,

&

Soo Lin.

Thank you for your love and support.

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ABSTRACT

This research is dealing with the issues of quality performance of ISO certified contractors in Malaysia. This research focused on evaluating the quality performance of these contractors. Hence, the objectives of this study were (a) to identify the benefits experienced by contractors after having ISO 9000/2001 certification, (b) to identify the factors affecting contractor's quality performance, and (c) to identify the monitoring and controlling tool used by contractors in assessing their quality performance. The collection of primary data has been done by using a questionnaire survey. Frequencies statistical analysis and average indexing technique were used in data analysis with the help of SPSS 13.0 and Microsoft Office Excel 2003. In general, the overall levels of achievements by contractors after ISO certification were considered satisfactory. Nearly all contractors benefited from having ISO certification. The most significant factor that can affect contractors' quality performance was on-time delivery of projects to their clients. By having ISO certification, the majority of contractors had improved their average delay and average wastage from 10% to 5% each. There are still rooms for improvements at the monitoring and controlling aspect, such as not all contractors prepared PQP and ITP. In addition, the majority of contractors did not adopt PDCA methodology in performing data analysis and did not develop Quality Performance Indicator (QPI) that can be used to reflect their quality performance. It is hoped that this research will contribute to ISO 9000 certified contractors in their quest for continuous improvement in quality and becoming a core business success for their organisation.

ABSTRAK

Penyelidikan ini adalah mengenai isu-isu prestasi kualiti kontraktor ISO di Malaysia. Penyelidikan ini memberi tumpuan kepada penilaian prestasi kualiti kontraktor-kontraktor tersebut. Oleh itu, objektif penyelidikan ini adalah (a) untuk mengenalpasti faedah-faedah yang dinikmati oleh kontraktor setelah mendapat pengiktirafan ISO 9000/2001, (b) untuk mengenalpasti faktor-faktor yang boleh mempengaruhi prestasi kualiti kontraktor dan (c) untuk mengenalpasti kaedah pengawasan dan pengawalan yang digunakan oleh kontraktor dalam menilai prestasi kualiti mereka. Data primer telah dikumpulkan melalui kaedah tinjauan borang soal-selidik. Analisis statistik frekuensi dan teknik indeks purata digunakan dalam menganalisis data dengan bantuan perisian SPSS 13.0 dan Microsoft Office Excel 2003. Secara amnya, tahap pencapaian keseluruhan kontraktor setelah mendapat pengiktirafan ISO boleh dikatakan mencapai tahap yang memuaskan. Hampir kesemua kontraktor mendapat manfaat daripada persijilan ISO. Faktor yang paling mempengaruhi prestasi kualiti kontraktor adalah penyerahan projek mengikut tempoh masa kepada klien. Dengan memperolehi pengiktirafan ISO, kebanyakan kontraktor berjaya memperbaiki purata kelewatan serta pembaziran mereka dari 10% ke 5%. Dari aspek pengawasan dan pengawalan, masih terdapat ruang untuk diperbaiki, antaranya seperti tidak semua kontraktor menghasilkan PQP dan ITP. Tambahan pula, kebanyakan kontraktor tidak mengamalkan metodologi PDCA dalam melaksanakan analisis data dan tidak menghasilkan suatu petunjuk prestasi kualiti yang boleh digunakan untuk menggambarkan prestasi kualiti mereka. Diharap penyelidikan ini dapat memberi sumbangan kepada kontraktor ISO dalam usaha mempertingkatkan kualiti kerja serta dapat menjadi asas kepada kejayaan organisasi mereka.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Quality is receiving attention around the world on an unprecedented scale. Rising customer expectations and competition are setting new benchmarks for quality in every sector. To a large extent, the changing political and economic climate in the nineties has given quality assurance a new impetus. This trend has continued into the new millennium. The reduction of the communist threat has opened up new markets and resources, especially the People's Republic of China. The creation of regional trading groups, starting from the west with European Union, the more recent Asean Free Trade Area (AFTA) and various budding equivalents in the Asia Pacific region are altering the factors of competition and rewriting the rules of international trade.

Therefore, harmonisation of standards is one of the strategies adopted to facilitate trade within regions, and perhaps restrict entry from external suppliers unless their products or services meet the same standards (Lam et al., 1994). One international standard seems to be pervading all regions and industries. This

standard is quality assurance and it is increasingly recognised by buyers and suppliers. Quality concepts are not new. They started emerging in the fifties mainly from the United States which had undisputed economic domination outside the then communist bloc. In the sixties, the Japanese, well-known for inferior products, seriously embraced quality principles, mainly from American quality pioneer Deming. The Total Quality Control (TQC) approach was established and vigorously pursued. Within a decade, the Japanese had caught up and began to surpass the West in terms of product types, technologies, as well as quality. Today, the Japanese are so renowned for their pursuit of quality that every product in the market with the label "Made in Japan" is an assurance of top quality for all consumers!

While knowledge of quality began to spread, there were different perceptions for both suppliers and consumers. Consumers who were insistent on quality had to understand the quality approach if their potential suppliers, who often adopted principles and practices from one quality guru (Lam et al., 1994). A breakthrough came when ISO 9000 quality standards were introduced to the world.

1.2 Issues and Problem Statements

The construction industry is a main industry which relates closely to the country's economic growth. When the economy booms, the construction industry will follow in order to fulfil increasing demand. This is because the effective demand for products and services will increase in relation to the increase of the population and also when the income of the people increases. Therefore, various development projects are carried out by the government and as well as the private sectors. Among the mega construction projects carried out and completed since the slow recovery of our economic downturn are such as Kuala Lumpur International Airport (KLIA), Kuala Lumpur City Centre (KLCC) and Petronas Twin Tower,

Sepang Formula 1 Circuit, Stormwater Management And Road Tunnel (SMART), and so on. These engineering breakthrough mega-projects have increasingly put Malaysia on the international arena.

With the rapid development of the industry, the issues of quality and safety are also rapidly gaining awareness from the public. Among these common issues are such as inferior quality of construction materials, too many defects, delays in completing works, carelessness in supervising site safety, high accident rates, and the recent environmental impact issues. With the recent tragedies happening to some local construction projects, the public's confidence towards the image of our construction industry has greatly reduced. Among the quality issues in our local construction are such as the famous collapse of the Highland Tower Block A on 11th of December 1993, the RM120 million Middle Ring Road 2 which requires an additional RM70 million for repair works, the RM198 million Navy Recruit Training Centre (Pularek) which had 7,032 defects which needed an additional RM13 million to rectify, as well as the falling of a steel formwork which killed a company executive on 30th December 2005. According to Second Finance Minister Tan Sri Nor Mohamed Yakcop and deputy Auditor-General Anwari Suri, the main reasons are the contractors did not hire skilled and competent workers and the plans for the projects were sub-standard (New Sunday Times, 4th February 2007).

All these incidents clearly give us an indication that there is still work to be done to improve the quality of works in our construction activities. Some time ago on 15th January 1993, the board of SIRIM has introduced the MS ISO 9000, a quality standard system recognised throughout the world, to our local construction industry (Wan Yusoff and Norizan Mansor, 1996). Realising the importance of Quality Management System (QMS), some contractors are beginning to make application to be certified, mainly through the board of SIRIM as well as others. In addition, in order for contractors to 'survive' in a highly competitive market, they need to fulfil all requirements by producing quality products within a competitive cost as well as using minimal time. If they fail to achieve the required standard of quality, chances are they are most likely to face the consequences of losing future projects. The level

of performance achieved by contractors will be determined by clients, independent bodies, the organisation itself, and also by surrounding competitors.

Therefore, the root issue in quality performance is why it needs to be measured and how? There are a few famous phrases from quality management gurus such as *"What gets measured gets done"* and "*If you can't measure it, you can't manage it"*, which in turn gives an answer to the root issue as mentioned. According to Mokthar Abdullah (1996), *"Quality improvement without measurement is like hunting ducks at midnight without a moon – lots of squawking and shooting with only random results and with a high probability of damage"*. While principles from quality pioneer Deming stress that quality measurements need to be assessed from what is being done and not from what is being planned or termed as missions or objectives.

In order to evaluate the quality performance, contractors need to set targets, measure what has been achieved and compare with a set of standards, plus determine the position of their competitors. Without evaluating the quality performance, all efforts will be aimless and most of the time will only be subject to contractors' own taste or preference. As a result, it will be difficult for contractors to know whether they are left behind in the competition or whether their products and services achieve the quality standards that are currently being practiced.

In the construction industry, every project completed needs to be measured so that the overall quality system can be improved. Currently, contractors are using their own systems to measure their quality performance. Therefore, research needs to be carried out to focus on a system that can effectively measure the quality performance of ISO 9000 certified contractors. Besides, this also serves to evaluate how far have they maintain their quality performance in the construction industry.

1.3 Research Objectives

(a) To identify the benefits experienced by contractors after having ISO 9000/2001 certification.

(b) To identify the factors affecting contractor's quality performance.

(c) To identify the monitoring and controlling tool used by contractors in assessing their quality performance.

1.4 Research Scopes and Limitations

Basically, this research project focuses on reviewing the Quality Management System (QMS) of ISO 9000/2001 certified contractors registered with the Construction Industry Development Board (CIDB) of Malaysia. The survey area will cover the whole of Malaysia, but focus will be primarily on the central region, especially contractors from the federal territory of Kuala Lumpur and the state of Selangor.

1.5 Research Significance

CIDB as a statutory body established by the Malaysian Federal Government back in 1994, plays an extremely important role in the continuous development of

the Malaysian construction industry. The *Lembaga Pembangunan Industri Pembinaan Malaysia* Act 1994 has paved the way for the empowerment of CIDB Malaysia to:

- Create a climate for a more vigorous development in the construction industry.

- Carry out its functions as the enabling authority to help construction industry Players overcome bureaucratic obstacles.

- Play the role of facilitator by addressing the current and future needs of the Construction Industry

In short, the Act serves to encompass and embody the roles and functions of CIDB Malaysia plus an instrument to monitor the development of the construction industry via CIDB's initiatives that are focused on charting a planned and systematic growth of the industry. By utilising ISO 9000/2001 QMS, CIDB aims to improve the quality along with the image of the industry as a whole. Without an effective QMS, products or services are likely to face problems in meeting client's satisfaction.

Hence, there is a need for an effective quality performance measurement system with the target of continuous improvement. This research will bring benefits to those directly involved in the construction industry, especially to the authorities such as CIDB and also to all contractors, as well as to clients and consultants to a certain extent. This research will also help CIDB identify the level of performance by ISO 9000 certified contractors as well as factors that can affect quality performance. Hopefully, this research will also contribute to ISO 9000 certified contractors in their quest for continuous improvement in quality and becoming a core business success for their organisations. Furthermore, it can act as a guideline for clients and consultants in selecting the most competent contractors to carry out their projects successfully and for the public to gain full confidence from the contractors' end products.

1.6 Research Approach

(a) Preliminary Research/ First Stage Literature Review

Analysis of documents from various sources such as text books, journals, acts, electronic medias, internet, reports, conference papers, previous research, etc to gain a better understanding of the issues and problems to be studied.

(b) Data Collection

This includes utilising questionnaire to collect primary data. Questionnaire will be designed and sent to all ISO 9000/2001 certified contractors in Malaysia. In addition, a more thorough second stage literature review will be carried out to collect secondary data.

(c) Data Analysis

Data collected will then be analysed either manually or by using computer softwares such as SPSS and Microsoft Office Excel. Analysis methods will be determined according to the suitability of each variable. Among the methods to be used are such as average indexing analysis, frequencies statistical analysis, and so forth. The purpose of data analysis is to answer and explain the stated research objectives in the form of graphs, charts, tables, writings, etc.

(d) Writing-up

This will be the final stage. This includes the process of documentation together with summaries, conclusion, and future research recommendations relevant to this topic.

1.6.1 Research Methodology Flow Chart