

UNIVERSITI TEKNOLOGI MARA

**FRAMEWORK DEVELOPMENT OF
QUALITY CONTROL FOR
CONSTRUCTION SITE INSPECTION**

NUR NABIHAH BINTI ABD RAZAK

Thesis submitted in fulfillment
of the requirements for the degree of
Master of Science

Faculty of Civil Engineering

August 2017

ABSTRACT

The quality of the Malaysian construction projects is still the main problem. The relationship between the quality and the construction projects has been directed on the implementation of quality control techniques during construction. Several quality control techniques were developed with the implementation during site inspection in mind. Hence, the aim from this study was to develop the applicable framework for quality control implementation during site inspection. In order to do so, four objectives have been expressed such as *identifying the current practices of quality control in Malaysia construction projects, the barriers for implementation of quality control techniques, the strategies for better implementation of quality control techniques and development of model for quality control during site inspection*. In this study, a mixed method was used for data collection namely interview section and questionnaire distribution. Interview section was carried out to obtain the information regarding the current practices of quality control in Malaysia construction projects. The total set of 100 questionnaires was distributed by hand and email and it was returned with 82 useable set of questionnaire. Later, the result was analysed using content analysis (interview section), frequency analysis, mean ranking, relative importance index (RII), factor analysis and lastly Partial Least Square (PLS) for model development. The results indicated the current practices such as Inspection Test Plan (ITP), Project Quality Plan (PQP), ISO 9000, IBS and QLASSIC was implemented for quality control in Malaysian construction projects. The barriers for implementation of quality control techniques such as ITP, PQP and Checklist were investigated and outlined. The attitudes of personnel involved in construction projects, the documentation and the construction operations make the main barriers for quality control techniques implementation. Automated system was introduced as the strategies for the quality control techniques. Therefore, the strategies required to introduce this system into Malaysian construction projects are the development of suitable automated system, giving training to workers, an initiative from government and encouragement from the top management. As for the model of quality control, there was a significant relationship between the quality control techniques with the barriers. In addition, the respondents' position in construction projects which act as a moderator indicated the effect of barriers factor on the implementation of ITP, PQP and Checklist. The result also showed the same with respondents' years of experience in construction projects as a moderator. It is hoped that this study would give reference for more improvement in quality control especially during site inspection, the exposure regarding automated system that require commitment and encouragement from all personnel involved, which is needed to provide better quality control for construction projects that fulfil customers' satisfaction as well as to enter international market.

ACKNOWLEDGEMENT

First and foremost, this research is finally done with the guidance and the blessing of Allah s.w.t.for having given me the strength to keep going despite the difficulties that were encountered, Alhamdulillah. Without the faith, this research might not achieve its objective. Next, it is great appreciations to Prophet Muhammad saw for his strong will attitude and patience that has been an inspiration to follow in the accomplishment of this research.

I would like to express my sincere gratitude for the teaching, patience, understanding, and knowledgeable guidance from my supervisor Dr Intan Rohani Binti Endut and my co-supervisor Associate Professor Dr Siti Akmar Binti Abu Samah. Their advice and insights have been vital and sharp towards completing this thesis.

I am very grateful to both my beloved and devoted parents, Abd Razak Bin Sudin and Suwaibah Binti Omar for their consistent encouragement. Due to that as well as the support from my beloved siblings, this research was able to achieve its goals, regardless of how big the obstacles have been.

Last but not least, thanks to my friends in research and all of whom have helped and provided a strong support throughout the journey. Thank you very much.

TABLE OF CONTENTS

	Page
CONFIRMATION BY PANEL OF EXAMINERS	i
AUTHOR'S DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES	x
LIST OF FIGURES	xii
LIST OF ABBREVIATIONS	xiii
CHAPTER ONE: INTRODUCTION	
1.1 Research Background	1
1.2 Problem Statement.	2
1.3 Research Questions	4
1.4 Research Aim and Objective	4
1.5 Research Scope and Limitation	5
1.6 Structure of Thesis	5
CHAPTER TWO: LITERATURE REVIEW	
2.1 Introduction	8
2.2 Definition	
2.2.1 Definition of Quality Control	8
2.2.2 Definition of Quality Control System	9
2.2.3 Definition of Site Inspection	10
2.3 An Overview of Quality Control System	
2.3.1 Manufacturing Industry	11
2.3.2 Automotive Industry	12
2.3.3 Pharmaceutical Industry	13
2.3.4 Construction Industry	14
2.3.5 Malaysia Construction Projects	20
2.4 The Importance of Quality Control System	22
2.5 An Overview of Quality Control during Site Inspection	25

2.5.1	Site Inspections' Activities	
2.5.1.1	Plan and Preparation	25
2.5.1.2	Conducting the Site Inspection	26
2.5.1.3	Recorded and Evaluated the Obtained Data	29
2.5.2	Site Inspections' Process	30
2.5.3	Documents for Quality Control during Site Inspection	31
2.5.3.1	Project Quality Plan (PQP)	32
2.5.3.2	Inspection Test Plan (ITP)	33
2.5.3.3	Checklist	35
2.6	Barriers for its Implementation during Site Inspection	36
2.6.1	Documentation	36
2.6.2	Top Management Support and Commitment	37
2.6.3	Workers	38
2.6.4	Financial and Time Aspect	39
2.7	Strategies to Improve Quality Control	40
2.7.1	Development of new system	40
2.7.2	Authority	41
2.7.3	Management	41
2.8	Existing Framework for Quality Control	42
2.9	Proposed Framework	44
2.10	Summary	46

CHAPTER THREE: RESEARCH METHODOLOGY

3.1	Introduction	47
3.2	Research Framework	47
3.3	Research Process	49
3.4	Research Methods	
3.4.1	Qualitative Method	50
3.4.2	Quantitative Method	50
3.5	Literature Review	51
3.5.1	Literature Reviews'Sources	51
3.6	Semi - Structured Interview	52
3.6.1	Sampling Technique and Population	53
3.6.2	Interview Planning and Scheduling	53