

MANAGEMENT OF VARIATION ORDER IN PUBLIC WORKS DEPARTMENT
MALAYSIA CONSTRUCTION PROJECT

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DEPARTMENTS MALAYSIA CONSTRUCTION PROJECT**

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DEDICATION

To my beloved family...

Thank you for all the love and sacrifice you had for me from the very beginning.

To all lecturers ...

Thank you for all the knowledge, guidance and encouragement you had given me.

To all my friends and rivals...

Thank you for all your helps and cooperation. You guys are simply the best.

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*Thank you for the never ending moral support and motivation, my wife Dr. Sharifah
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ABSTRACT

Construction industry is frequently related with variation order and the project holders have to believe that no construction method is free of variation. A document review that was done on three (3) building and road construction projects in Public Works Department Malaysia during the period of Ninth Malaysian Plan from 2006-2010 shows the poor management of variation order and cost overruns. In line with the problem identified, this study is coming up with the several objectives such as to identify the causes of variation, the effect of variation on project performance and to identify strategies to minimize them. The method of this study involved literature review, document study, interview and questionnaire. Based on the literature review, there are eight root causes of variation are found to be design errors, client requirement, contractor proposed change, construction change, discrepancies between work and statutory, extra work, design change and plan deficiency. Meanwhile, the effect of variation order as found in the study are cost overruns, time overruns, professional relations, delay in payment, increase overhead expenses, procurement delay, additional payment for contractor, progress effected without any delay, poor safety condition, dispute among professionals and completion schedule delay

ABSTRAK

Industri pembinaan masa kini sering berkait rapat dengan arahan perubahan kerja dan penglibatan semua ahli di dalam projek percaya bahawa tiada kaedah pembinaan adalah bebas daripada arahan perubahan kerja. Satu kajian dokumen yang telah dilakukan ke atas tiga (3) projek bangunan dan pembinaan jalan raya di Jabatan Kerja Raya Malaysia dalam tempoh Rancangan Malaysia Kesembilan (2006-2010) yang menunjukkan kelemahan pengurusan arahan perubahan kerja dan pertambahan kos. Selaras dengan masalah dan kelemahan yang dikenal pasti, kajian ini merangkumi beberapa objektif seperti mengenal pasti punca-punca arahan perubahan kerja, kesan arahan perubahan kerja pada prestasi projek dan untuk mengenal pasti strategi bagi mengurangkan arahan perubahan kerja tersebut. Kaedah kajian ini melibatkan kajian literatur, kajian dokumen, temu bual pakar yang berkaitan dan soal selidik. Berdasarkan kajian literatur, terdapat lapan punca arahan perubahan kerja didapati seperti kesilapan reka bentuk oleh perunding, keperluan pelanggan untuk mengubah kerja, perubahan kerja yang dicadangkan oleh kontraktor, perubahan skop pembinaan, percanggahan antara kerja dan keperluan berkanun, penambahan kerja di luar kontrak, perubahan reka bentuk dan kekurangan pelan tindakan. Sementara itu, kesan arahan perubahan kerja yang terdapat dalam kajian ini adalah lebihan kos, masa yang digunakan terlalu lama, hubungan professional tidak seimbang, kelewatan dalam pembayaran kepada kontraktor, meningkatkan perbelanjaan pengurusan, kelewatan perolehan kontrak dari segi unjuran kewangan, bayaran tambahan untuk kontraktor, kemajuan dilaksanakan tanpa sebarang kelewatan, keadaan keselamatan yang lemah, pertikaian di kalangan profesional dan penyiapan kerja lewat dari perancangan.

TABLE OF CONTENT

CHAPTER	TITLE	PAGE
	DECLARATION	ii
	DEDICATION	iii
	ACKNOWLEDGEMENT	iv
	ABSTRACT	v
	ABSTRAK	vi
	TABLE OF CONTENTS	vii
	LIST OF TABLES	xi
	LIST OF FIGURES	xiii
	LIST OF ABBREVIATIONS	xv
	LIST OF SYMBOLS	xvi
	LIST OF APPENDICES	xvii
1	INTRODUCTION	
	1.1 Introduction	1
	1.2 Problem Statement	2
	1.3 Aim & Objective	3
	1.4 Scope of Research Study	3
	1.5 Summary of Research Methodology	4
	1.6 Significance of Findings	6
2	EFFECT AND SOURCES OF VARIATION ORDER	
	2.1 Introduction	7

2.2	Definition of Variation Order	8
2.3	Delays in Construction Projects	10
2.4	Sources of Variation Order	10
2.4.1	Contract Document	13
2.4.2	Drawing Information Not Clear	13
2.4.3	Design Error	13
2.4.4	Client Requirement	13
2.4.5	Design Change	14
2.4.6	Contractor Proposed Alternative Design	14
2.4.7	Construction Change	14
2.4.8	Works and Statutuory Requirement Discrepancies	14
2.4.9	External Force	15
2.4.10	Extra work or Unticipated Need	15
2.5	Variation Order Potential Effect to the Project	19
2.5.1	Cost Overruns	19
2.5.2	Time Overruns	21
2.5.3	Professional Relation	21
2.5.4	Increase in Overhead Expenses	22
2.5.5	Delay in Payment	22
2.5.6	Procurement Delay	23
2.5.7	Disputes among Professional	23
2.5.8	Poor Safety Conditions	23
2.5.9	Progress Affected Without Any Delay	23
2.5.10	Completion Schedule Delay	24
2.5.11	Additional Payment for Contractor	24
2.6	Procedure in Variation Order	28
2.6.1	Power to Instruct Variation Order	28
2.6.2	Method of Claim for Variation Order	30
2.6.3	Valuation of Variation Procedure under PWD Standard Form 203 Rev 2010	31
2.7	Literature Review Summary	33

3**METHODOLOGY**

3.1	Introduction	34
3.2	Research Design	34
3.3	Research procedure	36
3.4	Stage 1: Literature Review Study	37
3.5	Stage 2: Questionnaire, Interview Session and Document Study	38
	3.5.1 Interview Session	38
	3.5.2 Questionnaire	40
3.6	Recommendation and Conclusion	44
3.7	Summary	44

4**ANALYSIS AND RESULT**

4.1	Introduction	46
4.2	Document Study for Validation Purpose of Findings	46
	4.2.1 Case Study Project 1	47
	4.2.2 Case Study Project 2	50
	4.2.3 Case Study Project 3	52
4.3	Result and Discussion	54
4.4	Information of Respondent	58
4.5	Research Findings the Sources of Variation Order for Interview with Expert Panel	60
4.6	Research Findings the Sources of Variation Order for Questionnaire	61
4.7	Research Findings the Effect of Variation Order for Questionnaire	70
4.8	Steps to Minimize Variation Order Based on Researched Findings	80
4.9	Summary	82

5	CONCLUSION AND RECOMMENDATION	
5.1	Introduction	84
5.2	Conclusion	84
5.3	Conclusion 1: To study the sources of variation Order in construction industry	84
5.3.1	Client’s perspective	86
5.3.2	Consultant’s perspective	86
5.3.3	Contractor’s perspective	86
5.3.4	Overall perspective	86
5.4	Conclusion 2: The effects of variation order in construction industry	87
5.4.1	Client’s perspective	87
5.4.2	Consultant’s perspective	87
5.4.3	Contractor’s perspective	87
5.4.4	Overall perspective	88
5.5	Conclusion 3: Suggestion on Steps to Minimize Variation Order by Involving Party	88
5.6	Recommendations	90
	REFERENCES	91

LIST OF TABLES

TABLE NO	TITLE	PAGE
2.1	Variation Order Types and Reason Table	10
2.2	Sources of Variation Order	17
2.3	Effect of Variation Order	26
3.1	Do and don't during interview	39
3.2	Types of interview	40
3.3	Steps to design and manage questionnaire	41
3.4	Questionnaire research design	42
3.5	Average Index Category Classification	44
4.1	Variation sources of Project 1	48
4.2	Variation sources of Project 2	51
4.3	Variation sources of Project 3	53
4.4	Document study finding of sources variation order	54
4.5	The effect of variation order – Cost overruns	56
4.6	The major effect of variation order – Time overruns	57
4.7	Sources of variation order by client	62
4.8	Sources of variation order by client with rating scale	63
4.9	The sources of variation order by Consultant	64
4.10	Sources of variation order by consultant with rating scale	65
4.11	The sources of variation order by Contractor	66

4.12	Sources of variation order by contractor with rating scale	67
4.13	The sources of variation order by overall respondent	68
4.14	Sources of variation order by overall respondent with Rating scale	69
4.15	The effect of variation order by client	71
4.16	The effect of variation order by client with rating scale	72
4.17	The effect of variation order by consultant	73
4.18	The effect of variation order by consultant with rating Scale	74
4.19	The effect of variation order by contractor	75
4.20	The effect of variation order by consultant with rating Scale	76
4.21	The effect of variation order by overall respondents	77
4.22	The effect of variation order by contractor with rating scale	78
4.23	The best score of the effect variation order by all Respondents	79
5.1	Top five (5) of sources of variation order in case study documents	85

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
1.1	Research Methodology Chart	6
2.1	Source of Variation Origin	12
2.2	Sources of Variation Order Theoretical Framework	16
2.3	Diagram Illustrating the Sources of Variation Order	18
2.4	Effect of Variation Order Theoretical Fact	25
2.5	Diagram Illustrating the Potential Effect of Variation Order	27
2.6	Variation order process change by Contractor	32
3.1	Main Appearance Method of Research Design	35
3.2	General Research Procedure	37
3.3	Five ordinal measures of agreement of Likert Scale	43
3.4	Flowchart of research methodology	45
4.1	Document study finding of sources variation order chart	55
4.2	Percentage of Implication of Variation Order- Cost overruns	57
4.3	Percentage of Implication of Variation Order – Time overruns	58
4.4	Two Types of Respondent Categories	58
4.5	The respondent chart according to organization	59
4.6	The respondent chart according to experience	60

LIST OF ABBREVIATIONS

A.I	Average Index
BOMBA	Fire & Rescue Department Malaysia
BQ	Bill of Quantities
CPM	Critical Path Method
IEM	Institution Engineers Malaysia
JBA	Jabatan Bekalan Air
JKR	Jabatan Kerja Raya
PWD	Public Works Department
RM	Ringgit Malaysia
SMK	Sekolah Menengah Kebangsaan
S.O	Superintendent Officer
TM	Telekom Malaysia Berhad
TNB	Tenaga Nasional Berhad
UBBL	Uniform Building by Law

LIST OF SYMBOLS

Σ	Sum
a_i	Number of sample
x_i	Frequency of each scale
\leq	Less than or equal
\geq	More than or equal
$>$	More than
$<$	Less than
$\&$	And

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Questionnaire Survey	6

CHAPTER 1

INTRODUCTION

1.1 Introduction

The complexity of project involving many causes and factors that is predictable and unpredictable such as from human, non human and might be commonly variable (Arain et al, 2004). As a result the projects may have uncertainties, long duration for completion and complex relationship between project participant. To enhance the project performance and implementation some potential variations should be analyzed early as possible. (Ibbs et al, 2001).

Variation order can be in form of changes or substitution in term of quantity, quality and schedule of work. The building contractor would have agree to erect or build without any changes that shown in the drawings and bill of quantities. (Segawa et al, 2002).

The variation order is a part of contractual and all the term and condition apply if the works changed. It will also contribute to the extension of time and site condition. A variation in construction project is normal and common. (Fisk et al, 1997). The factor of variation order is different and varies between each project (Kaming et al, 1997). The most important aspect to control is the design phase because it can be influence the variation

in the future when project implemented (Arian and Low, 2005). Variation order can cause the project value increased in term of contract value adjustment, extra additional cost such as direct and indirect cost (Ibbs et al, 1997).

1.2 Problem Statement

The variation might be arising in construction projects in many ways. It's usually occurring during the work progress and seldom before the projects start. The impact of the variation will give impact to all parties involve especially in the project sector. The common implication of this variation will lead to time overrun and cost. The critical part of variation usually occurs when there have major changes in the contract in terms of quantities during construction works.

The variation orders are unwanted, but in fact it is unavoidable in any construction project. The changes of variables and unpredictable factor from different sources may influence the construction project process. (Mokhtar et al, 2000). The performance of construction parties, resources, environmental condition and other contractual item. As a result of all the sources involved the construction project might be having some problems such as project completion time will delay (Arain et al, 2004).

Variation order is very familiar in the construction projects. The variation order can lead to the changes of contract duration and cost. Most of Public Work Department Malaysia, General Building Branch and Road Branch project were dealing with the variation order that increase the original contract and may cause project delay to complete. The implication of the variation order shows that, the total value of adjustment for three (3) projects

would be RM 12 Million and the total number of variation works is around 50 items. The variation order seldom occur when major changes in contract during construction and any extra works and the most extreme effects of variation were increasing project cost and time overrun.

1.3 Aim and Objective

The aim of this project is to study the variation order sources and to strategies to minimize them. To achieve it the following objectives have been identified as follows:-

- a) To determine the sources of variation order.
- b) To determine the variation order effects on the project.
- c) To identify strategies to minimize variation order.

1.3 Scope of Research Study

The research scope of this study is only focusing on Public Work Department Malaysia (PWD) Projects. This review only consist Ninth Malaysian Plan from 2005 to 2009 projects. There are three (3) projects that have been selected in this research which is one (1) building project and two (2) road projects. The research study would be affected on the total value of three (3) projects in the additional of RM 12,000,000. This research also will be conducting in two parts which is consists interview and questionnaire survey with the relevant parties selected.

1.5 Summary of Research Methodology

The research methodology part is very important in order to analyzed the data obtain, collection data method and various information for determination of variation sources. There are three stages will be involved in this part starting from data collection to conclusion part:-

i. Stage One

Research starting with the literature review study. The data will be obtained from the reading material such as books, magazine, article, journal, web site and other published information supporting the topic of variation order.

ii. Stage Two

Preparing the data collection through document study, interview session, and questionnaires. Generally, data is collected from the professional parties who are involved directly in construction process. The data will be used the qualitative and quantitative method. The document study of PWD projects documents and questionnaire survey will be covered as primary and secondary data sources.

iii. Stage Three

The conclusion and recommendation will be define based on the reference from objective and data analysis through the document study, questionnaire survey and interview.

The research methodology can be summarized in figure 1.1 below.

This figure shows the process of research methodology.

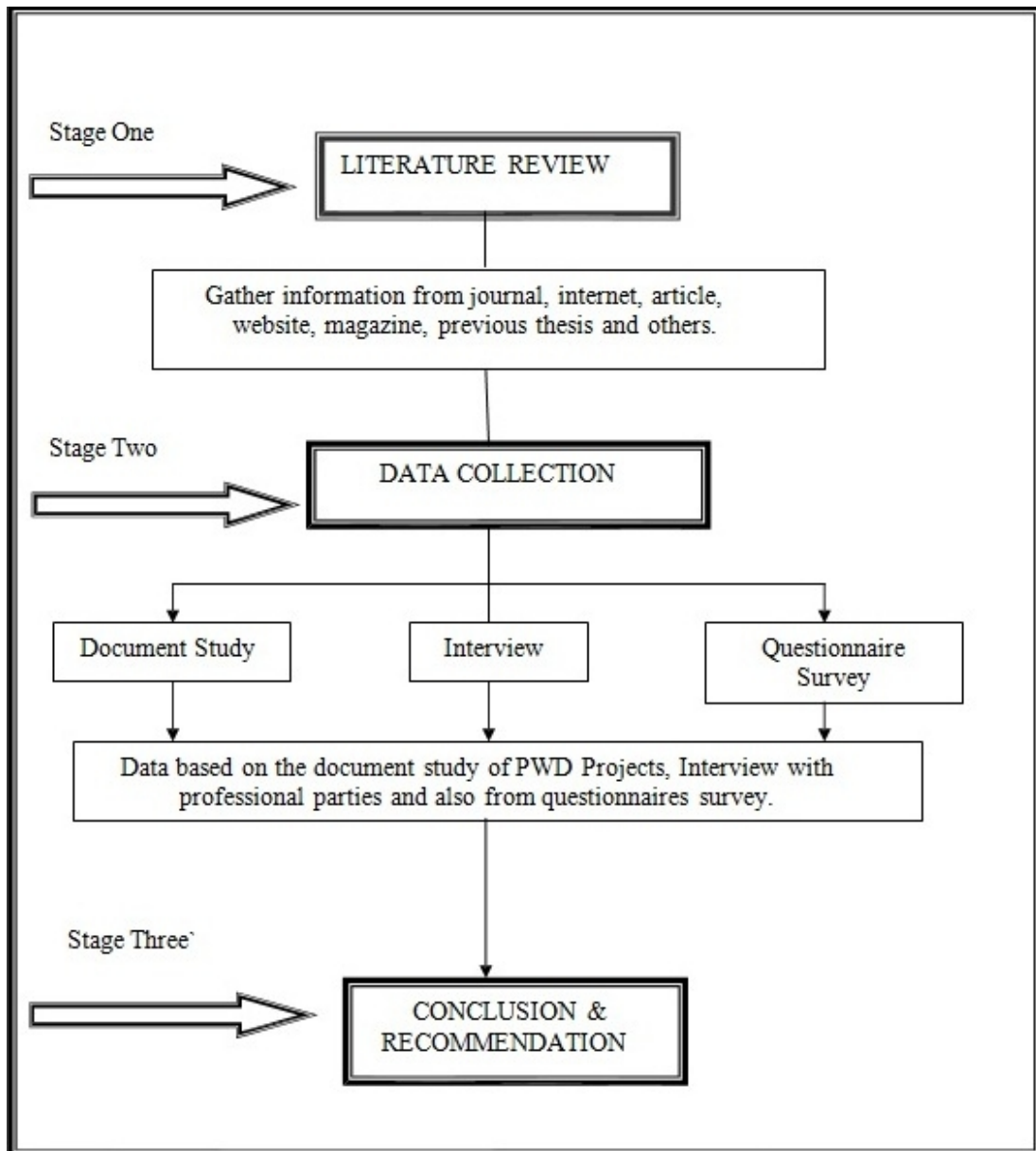


Figure 1.1: Research Methodology Chart

1.6 Significance of Findings

The variation orders can be categorized as an major effects in construction especially in the cost and project schedule. This research is very important to identify the sources involved which directly related to the variation orders and the effects of it during the project implementation in the construction, which can be helped all the construction personnel and professional taking mitigation measures to decrease all the impacts of variation order. This study will provide some valuable information to the relative important of minimize or control the variation orders.

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