

THE RELIABILITY AND EFFECTIVENESS OF DEPARTMENT ESTIMATE IN
TENDER EVALUATION.

CHE KU SUFIAH BT CHE KU ABDULLAH

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

Faculty of Civil Engineering

MAY 2011

ACKNOWLEDGEMENT

First and foremost, I would like to thank to Allah S.W.T. for giving me the strength and blessing to complete this project. It is really a great pleasure after working on this study completely. Alhamdulillah.

I would also like to address my sincere appreciation to my thesis supervisor, Prof. Dr. Aminah bt. Md Yusof for her guidance, advice and invaluable assistance to successfully complete this project.

I would also like to take this opportunity to extend my gratitude to the staff of PWD and individuals who are involved directly and indirectly for their assistance and cooperation in giving relevant information while conducting this project.

Last but not least, a special thanks is forwarded to my family and friends for giving me the moral support throughout my study.

ABSTRACT

The selection of tender is a very significant process during the pre-contract stage and need to assess meticulously. Hence, Public Works Department (PWD) has introduced a statistical method called as cut-off system to guide the selection of tender. Department estimate as one of the data need to be incorporated in the system and also become as a basis to guide the selection of tender. However, the department estimate used is considered unreasonable by certain parties when there is a high divergence with the cut-off level. Today, most of the tender also awarded based on the cut-off level and ignoring the level of department estimate. Therefore this study will be conducted to investigate the function of department estimate, the reliability of department estimate and the effectiveness of department estimate in cut-off system. The objectives of the research are to study the process of evaluating the tender in PWD, to review the process and procedures in the preparation of department estimate in PWD and to assess the effectiveness of department estimate in the tender evaluation. Expectantly, the study will assist the estimator to enhance the reasonableness of the department estimate and often take into consideration the department estimate as a basis to select the most qualified contractor.

ABSTRAK

Proses pemilihan tender merupakan satu proses yang sangat penting di peringkat pra-kontrak dan memerlukan pertimbangan serta penilaian yang wajar dan berhati-hati. Oleh yang demikian, Jabatan Kerja Raya (JKR) telah memperkenalkan satu sistem statistik yang dikenali sebagai sistem ‘cut-off’ untuk membantu proses pemilihan tender yang lebih efektif. Anggaran Jabatan adalah sebagai salah satu data untuk menghasilkan harga ‘cut-off’ dan menjadi asas dalam pemilihan tender. Walau bagaimanapun, sejak kebelakangan ini Anggaran Jabatan yang digunakan dianggap tidak munasabah oleh sesetengah pihak memandangkan terdapatnya perbezaan yang ketara diantara Anggaran Jabatan dan paras harga ‘cut-off’. Pada hari ini, kebanyakan tender yang menggunakan sistem ‘cut-off’ dipilih berdasarkan paras harga ‘cut-off’ tanpa mengambilkira kedudukan Anggaran Jabatan. Justeru, kajian ini dilaksanakan untuk mengkaji fungsi, kebergantungan dan keberkesanan Anggaran Jabatan didalam sistem ‘cut-off’. Antara objektif-objektif dalam kajian ini adalah untuk mengkaji proses penilaian tender yang dipraktikkan di JKR, untuk melihat proses dan prosedur penyediaan Anggaran Jabatan dan menilai keberkesanan Anggaran Jabatan dalam penilaian tender yang menggunakan sistem ‘cut-off’. Hasil daripada kajian ini diharapkan dapat membantu untuk meningkatkan kemunasabahan Anggaran Jabatan dan sentiasa mengambilkira Anggaran Jabatan sebagai salah satu asas untuk memilih petender yang paling berkelayakan bagi melaksanakan sesuatu projek.

CHAPTER 1

INTRODUCTION

1.1 Introduction

The construction industry in Malaysia generally can be divided into two areas. The first area is general construction such as residential, non-residential and civil works. Meanwhile, the second area is special trade or specialist work such as electrical, mechanical, carpentry and metal work. Basically, the construction industry is a very important industry in supporting and complementing other industries. This is proven when other industries require building and infrastructure to operate their activities and they are provided by construction industry. Construction industry also is considered very unique industry since it produces a variety type of product in terms of design and specification. The construction product varies depending on customers demand, regulation requirement, environmental needs and external factors. Therefore it involves many processes to fulfill these criteria. The construction process generally will go through the planning process, design, procurement, implementation, testing and demolition process.

In order to accomplish these processes it requires many stakeholders and parties in multi disciplines to produce building and infrastructure. Every stakeholder and party involve has their own responsibility and liability to ensure the project completed within the stipulated design, specification, time, cost and quality. One of the significant processes in the construction industry is procurement process and one of the elements in the procurement process is the selection of the contractor. The selection of competent contractor and competitive price among the bidders are the challenges need to be faced by the evaluator in the assessment of tender. Meanwhile, contractor also faces problems in preparing and compiling the documentations required within the restricted time and need to compete with other contractors.

The selection of tender is a very significant process during the pre-contract stage and need to assess meticulously. Hence, every party involves in the evaluation of tenders regardless the private or public sector, has their own system and technique to evaluate the tender effectively. Generally, the basis of evaluation and factor of consideration should be similar.

Traditionally, tenders have been assessed based on the lowest price offered by the contractor. This probably led to bidders reducing their tender price at the first place for the sake of winning the tender. Furthermore, they will increase the price through variations of works and claims. Essentially, the lowest tender price will result in low quality of building and infrastructure. Therefore we cannot only judge the lowest price as the most qualified bidders and ignoring other consideration. In essence, tender must be assessed based on the value for money and meet the client's requirement.

The most important criteria in determining the rationality of the tender price is through the department estimate and this method had been practiced by the Public Works Department (PWD) previously. However, there was an issue when the estimate

is unreasonable and any amendment towards the department estimate is only giving advantage to the certain contractors. Therefore the PWD has introduced a method that approach on the statistical method in which the reasonableness of the tender price is compared to the level of cut-off.

1.2 Problem statement

Public Works Department (PWD) has been using cut-off method since 2002 for evaluating the tender price offered by the contractors. The level of cut-off will be determined by the statistical method and the tender price will be compared with the cut-off level. The cut-off level is considered as the lowest price by taking into consideration the current market price. Therefore, the tender price is considered too low if its position is below than cut-off level and it possibly will affect the contractor's performance. Department estimate is one of the data or price to be incorporated in this statistical system.

Previously before 2009 the privilege criteria had been used for the tender price below the cut-off level as a basis for evaluating the tender. The tender below the cut-off level can be considered if it fulfills the requirement in terms of experience, financial and the performance of the current job in hand must be excellent. However this method has been superseded by the Treasury's Instruction Letter date 15 January 2009. According to the Treasury's Instruction Letter date 15 January 2009, tender below the cut-off level can be considered if it is fulfilling all the evaluation requirements, the price offered should be not less than 15% the builder's work mean and the position of the bidder must be the nearest to the cut-off level. This is to ensure that the contractor capable to implement the project by considering the fluctuation of price in the future. This circular

has become a guideline for the PWD on the tender using the cut-off method when selecting the contractor. Department estimate is an important data to be incorporated in the cut-off system. Furthermore, this estimate is also functioning as a basis for comparing the tender price submitted by the contractors and to ensure the tender rate is relevant to be accepted.

According to the Director General Of Public Works Department Instruction Letter date 13 Mei 2009, the assessment of tender must be made towards the tender prices offered until (-)15.99% of the builder's work mean. Formerly the evaluation was only carried out for those who offer the price (-)15% of the builder's work and above. By referring to the Director General's Letter, the Board of Acquisition of the Public Works Department has more space and alternative to select the contractor.

The department estimate is prepared based on the architectural drawing and structural detail drawing after the tender closing date. This estimate is also prepared by collecting the quotations from the suppliers particularly for the special item and prepare the build-up rate to obtain a single rate. However, when the department estimate is incorporated into the cut-off system it will indicate a high divergence between the cut-off level and department estimate. Therefore, the department estimate is considered unreasonable when the difference between the cut-off level and department estimate is high since the cut-off level is considered as the lowest level to be assessed. Occasionally the department estimate is below than the cut-off level and less than 15% of the builder's work mean which is cannot be considered as according to the Treasury's circular. Additionally, the department estimate is not effective to guide the selection of the contractor since the difference between cut-off level and department estimate is high.

The department estimate in addition is considered as not according to the current market price when there is a huge divergence between the cut-off level. This situation probably can happen when the time is very limited to prepare the estimate. The

department sometimes merely uses the existing rate and mark up the rate using the percentage particularly for the normal item. Hence, the selection of tender tends to rely on cut-off level and ignoring the department estimate.

On the other hand, contractors may possibly manipulate the price of tender among of them which will be affecting the position of department estimate. Consequently, the department estimate probably lower than cut-off level or less than 15% of the builder's work mean. As a result, the department estimate is considered unreasonable as according to the Treasury's Circular. The Board of Acquisition also has realized this matter when they found that the contractor who is qualified to be awarded offer the price enormously higher or lower than department estimate. They give rise to the several issues such as how the cut-off level has been determined in practice? And to what extend the department estimate contribute to the cut-off determination? A study need to be carried out to investigate what is the function of department estimate, the reliability of department estimate and the effectiveness of department in cut-off system. It is important to see how they will affect the credibility of the department estimate.

1.3 Aim and Objective

The aim of this study is to analyze the use, effectiveness and reliability of department estimate in tender evaluating process. In order to achieve this aim the following objectives have been determined:

- 1) To study the process of evaluating the tender in Public Works Department (PWD).
- 2) To review the process and procedures in the preparation of department estimate in Public Works Department (PWD).

- 3) To assess the effectiveness of department estimate in the tender evaluation.

1.4 Scope of study

Previously the study regarding the cut-off system and estimate had been carried out. One of the study is “Keberkesanan Sistem Anggaran Kos Yang Dipraktikkan Oleh Jurukur Bahan Di Malaysia” completed in 2005. The study focused on the current estimating system used by QS firms in Malaysia in aspect to identify the effectiveness of the current estimating system practiced by QS firms in Malaysia, problems faced by the QS and also methods to minimize the problems faced and the effectiveness of the system. Furthermore, a study regarding the ‘cut-off’ system had been carried out entitled “Contractor’s Perception of The Use of Statistical Approach In The Tender Process At The Public Works Department, Malaysia” and completed in 2006. This study focused on the contractor’s perception towards the use of cut-off system in the evaluation of tender whereby the analysis had been done to find out whether the contractor agree with this system. In 2008 another study regarding the cut-off system had also been carried out in the title of “Kajian Ke atas Penggunaan ‘Cut-Off’ Dalam Sistem Penilaian Tender JKR”. The study focused on the method of using the cut-off system in the evaluation of tender and the problems faced by the user.

Nevertheless, the scope of this study is to focus and confine to the reliability and effectiveness of department estimate in the selection of tender that using the cut-off method. The study will be restricted to:

- i) Tender for conventional work.
- ii) Cut-off system in the Public Works Department
- iii) Preparation of estimate by the Public Works Department

1.5 Research Methodology

The study will be conducted in several stages to achieve the objectives of the study. The first stage is establish the problem statement, aim and objectives of the study to be carried out. The second stage is identifying the scope of study. The third stage is the preparation of literature review to give a preliminary understanding regarding the topic of study. Basically, the literature review will explain in relation to the estimating and tender evaluation. The literature review will be prepared in accordance with the theory from the reference books, guideline issued by the PWD, Circular of Treasury and PWD, information obtained from the internet and PWD website. Furthermore, the study will be continued by collecting the information from the previous documents. The information obtained will be analyzed to find out the result of the study. Additionally, the interview among the estimators in PWD also will be carried out in order to enhance the information required consecutively will be supporting the finding of the study. The interview will be covering the topic on how the cut-off level is determined in practice, a real method of preparation of the department estimate practiced by the estimator in PWD and factors of high divergence between department estimate and cut-off level. Finally, the conclusion will be done and the recommendation will be proposed based on the result obtained. A flowchart of the process can be illustrated in Figure 1.1.

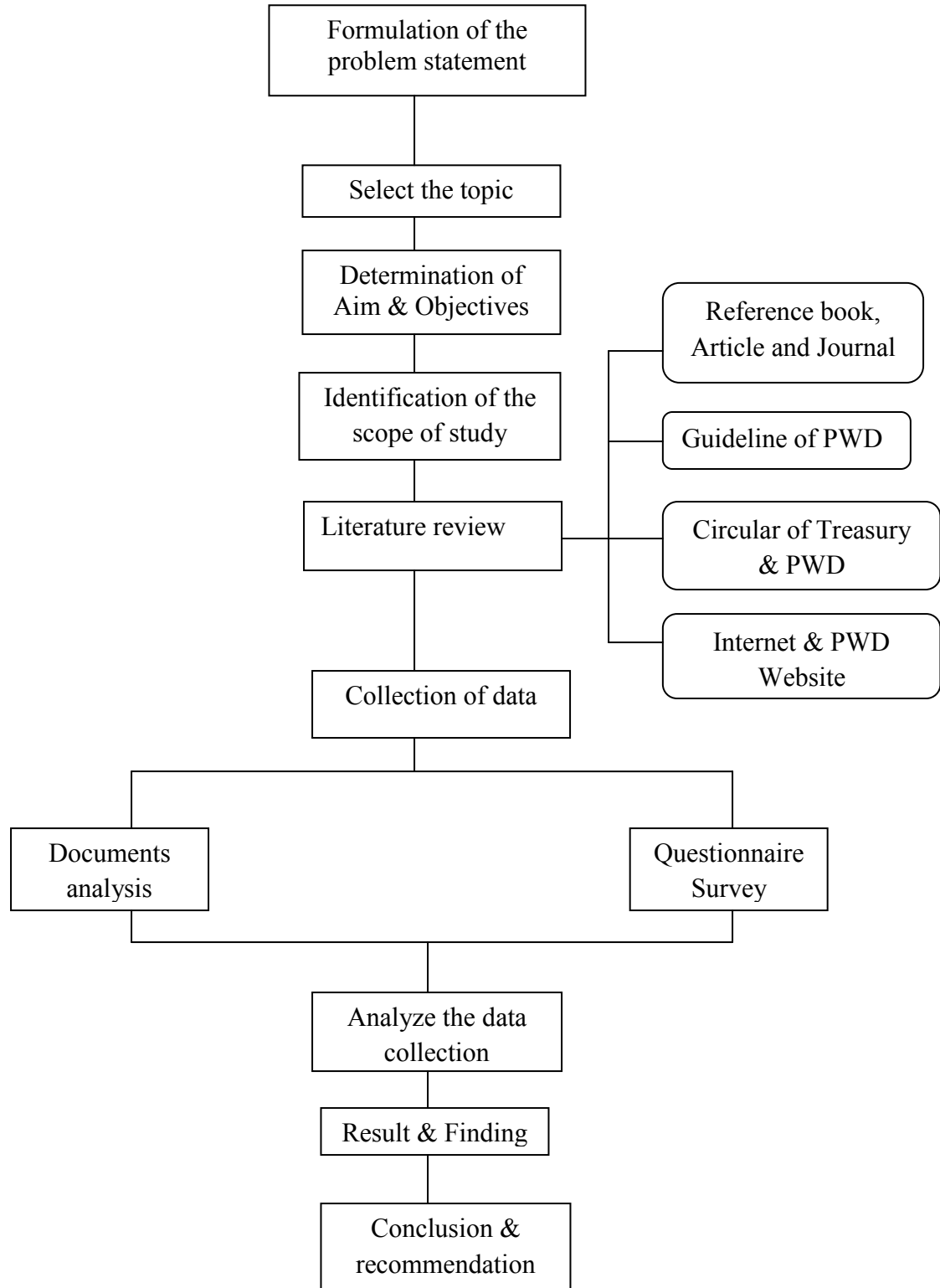


Figure 1.1 : Research Methodology Flow chart

REFERENCES

- Abd Shukor Ibrahim. Pendekatan Kaedah Statistik Di Dalam Penilaian Dan Perakuan Tender JKR. *QS National Convention 2003*. 18-19 August, 2003. JKR: Cawangan Kontrak & Ukur Bahan. 2003
- Cawangan Kontrak & Ukur Bahan (2008). *Penyediaan Anggaran Dan Pembangunan Sistem Maklumat Kos* (PTK 2008). JKR: Cawangan Kontrak & Ukur Bahan
- Cawangan Kontrak & Ukur Bahan (2008). *Perolehan Kerajaan* (PTK 2008). JKR: Cawangan Kontrak & Ukur Bahan
- D.R. Ogunsemi and I.O.Aje. Journal of Financial Management of Property and Construction. *A Model For Contractor's Selection In Nigeria*. 2006. 11 (1) : pp33-43
- Department of Transportation. Ready-To-List and Construction Contract Award Guide (RTL Guide). California, Section 7. 2010
- Federal Highway of Administration. *Guideline On Preparing Engineer's Estimate, Bid Reviews And Evaluation*. U.S Department Of Transportation, TA T 5080.4 and 5080.6. 2004
- Ivor H. Seeley. (1996). *Building Economics*. (4th ed.). London: Palgrave Macmilan
- I.O.Aje, K.T. Odusami and D.R. Ogunsemi. Journal of Financial Management of Property and Construction. *The Impact of Contractors' Management Capability On Cost and Time Performance of Construction Projects In Nigeria*. 2009. 14 (2) : pp171-187
- Jabatan Kerja Raya. *Penggunaan Dan Penetapan Harga 'Cut-Off' Berdasarkan Kaedah Statistik Di Dalam Penilaian Dan Perakuan Tender*. Pejabat Ketua Pengarah Kerja Raya, (93)dmlm.JKR.KPKR.020.050/03 Klt.5. 2004

Jabatan Kerja Raya. *Prosedur Perolehan Kerja*. JKR Malaysia. JKR.PK(0).03. 2005

Jabatan Kerja Raya. *Garis Panduan Penilaian Tender Semakan April 2010*. Cawangan Kontrak & Ukur Bahan, Surat Arahan Bil.2/2010. 2010

Kementerian Kewangan Malaysia. *Penilaian Tender Menggunakan Kaedah Cut-Off Serta Kriteria Istimewa*. Bahagian Perolehan Kerajaan, S/K.KEW/PK/PP/700 /00000023/21/A-5 Jld.13(17). 2009

Malaysia – German Chamber of Commerce. *Market Watch Malaysia 2010 Construction Industry*. Malaysia: Market Report. 2010

Robert L. Peurifoy and Garold D. Oberlender. (2002). *Estimating Construction Costs*. (5th ed.). New York: McGraw-Hill

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	TITLE PAGE	i
	DECLARATION	ii
	ACKNOWLEDGEMENTS	iii
	ABSTRACT	iv
	ABSTRAK	v
	TABLE OF CONTENTS	vi
	LIST OF TABLES	xi
	LIST OF FIGURES	xii
	LIST OF ABBREVIATIONS	xiv
	LIST OF APPENDICES	xv
1	INTRODUCTION	
	1.1 Introduction	1
	1.2 Problem statement	3
	1.3 Aim and Objective	5
	1.4 Scope of study	6
	1.5 Research Methodology	7

2	TENDER EVALUATION	
2.1	Introduction	9
2.2	Types of tender	9
2.2.1	Open tender/Bumiputera open tender	10
2.2.2	Selected tender	10
2.2.3	Direct negotiation tender	11
2.2.4	Pre-qualification	11
2.2.5	‘Perbelanjaan Darurat tender’	12
2.3	Process of conventional acquisition in PWD	13
2.3.1	Process of acquisition of open tender (conventional)	14
2.3.2	Process of acquisition of Selected Tender (conventional)	17
2.4	The criteria of tender evaluation	19
2.5	Process and criteria of tender evaluation in PWD	20
2.5.1	First Level of Evaluation	20
2.5.2	Second level of evaluation	22
2.5.3	Third level of evaluation	27
2.6	Cut-off price	27
2.6.1	Freak	28
2.7	Summary	29
3	ESTIMATING	
3.1	Introduction	30
3.2	Estimate and Purpose of Estimating	30
3.3	Types of Estimate	31
3.3.1	Approximate Estimate	32

3.3.2	Detailed Estimate	33
3.4	Contractor's Estimate	33
3.4.1	Site visit	34
3.4.2	Construction method	34
3.4.3	Construction schedule	35
3.4.4	Quantity takes off	35
3.4.5	Calculation of cost	36
3.5	Preparation of estimate	36
3.5.1	Fluctuation of cost	37
3.5.2	Traffic condition	37
3.5.3	Restrictive work hours or method of work	37
3.5.4	Small quantity of works	38
3.5.5	Separated operation	38
3.5.6	Handwork and inefficient operations	39
3.5.7	Accessibility	39
3.5.8	Geographic location	39
3.5.9	Construction season	40
3.5.10	Material shortage	40
3.6	PWD Estimate	40
3.6.1	Department estimate	41
3.6.2	Preparation of department estimate	42
3.6.2.1	Locality	43
3.6.2.2	Urgency of the project	43
3.6.2.3	Complexity of the project	43
3.6.2.4	Site condition	44
3.6.2.5	Material supply	44
3.6.2.6	Increasing of commodity price	44
3.6.2.7	Construction technology	45

3.7	Summary	45
4	DATA COLLECTION	
4.1	Introduction	46
4.2	Preparation of Questionnaire	47
4.3	Questionnaire survey	48
4.4	Document analysis	49
4.5	Content Analysis	50
4.6	Summary of Data	51
	4.6.1 Frequency analysis	52
	4.6.2 Average index	52
4.7	Summary	53
5	ANALYSIS AND RESULT	
5.1	Introduction	54
5.2	Analysis	55
	5.2.1 Questionnaire Analysis	55
	5.2.2 Document analysis	91
5.3	Summary	98
6	CONCLUSION AND RECOMMENDATION	
6.1	Introduction	99
6.2	Findings	99
	6.2.1 Objective 1 - To study the process of evaluating the tender in Public Works Department (PWD).	100

6.2.2	Objective 2 - To review the process and procedures in the preparation of department estimate in Public Works Department (PWD).	100
6.2.3	Objective 3 - To assess the effectiveness of department estimate in the tender evaluation.	101
6.3	Conclusion	102
6.4	Recommendation	103
REFERENCES		105
APPENDICES		
	Appendix A	107

LIST OF TABLES

TABLE NO.	TITLE	PAGE
4.1	Rating scale of Average Index	53
5.1	Time taken to prepare a department estimate	59
5.2	Factors of time required in preparing department estimate	62
5.3	Basis in preparing department estimate	64
5.4	Factors to be considered in the preparation of department estimate	67
5.5	Factors of accuracy of the department estimate	73
5.6	Revision of department estimate	76
5.7	Basis of cut-off price	78
5.8	Factors considered in the selection of contractor	81
5.9	Perception on department estimate and cut-off level	87
5.10	Department estimate and cut-off price	92

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
1.1	Research Methodology Flow chart	8
2.1	Process of conventional acquisition in PWD	14
2.2	Process of acquisition of open tender (conventional)	16
2.3	Process of acquisition of Selected Tender (conventional)	18
4.1	Five measures of scale based on Likert Scale	48
5.1	Working experience of respondent	55
5.2	Experience in preparing department estimate	56
5.3	Number of Department Estimate Prepared by Internal Department	57
5.4	Number of Department Estimate Prepared by External Consultant	58
5.5	Time taken to prepare a department estimate	59
5.6	Factors of time required in preparing department estimate	62
5.7	Basis in preparing department estimate	65
5.8	Factors to be considered in the preparation of department estimate	68
5.9	Factors of accuracy of the department estimate	73
5.10	Number of Revision of department estimate	76
5.11	Basis of cut-off price	78
5.12	Factors considered in the selection of contractor	82
5.13	Perception on department estimate and cut-off level	88

5.14	Cut-off Price and Department Estimate	93
5.15	The Percentage Difference Between Cut-off And Department Estimate	94
5.16	Position of Cut-off And Department Estimate	95
5.17	Range of Percentage of Department Estimate	97

LIST OF ABBREVIATIONS

ACDA	-	As Completed Detailed Abstract
AKM	-	Anggaran Kakitangan Minimum
ATDA	-	As Tendered Detail Abstract
BPU	-	Bahagian Pembangunan Usahawan
BQ	-	Bill of Quantity
CV	-	Coefficient of Variation
FRH	-	Faktor Rendahan Harga
JKR	-	Jabatan Kerja Raya
KB	-	Keupayaan Biayawan
KK	-	Kemudahan Kredit
KWSP	-	Kumpulan Wang Simpanan Pekerja
MP	-	Modal Pusingan
NTBK	-	Nilai Tahunan Baki Kerja
NW	-	Nett Worth
PDA	-	Preliminary Detail Estimate
PKK	-	Pusat Khidmat Kontraktor
PWD	-	Public Works Department
QS	-	Quantity Surveyor
WDTS	-	Wang Dalam Tangan Semasa

LIST OF APPENDICES

APPENDIX	TITLE	PAGE
A	Sample of Questionnaire	107