

INTI INTERNATIONAL UNIVERSITY

**EXTENSION OF TIME IN
CONSTRUCTION INDUSTRY**

BY

TAN YING XUAN

**DISSERTATION SUBMITTED AS A PARTIAL
REQUIREMENT FOR THE DEGREE OF
BACHELOR OF SCIENCE (HONS) IN
QUANTITY SURVEYING**

**FACULTY OF SCIENCE, TECHNOLOGY,
ENGINEERING AND MATHEMATICS**

NOVEMBER, 2013

ACKNOWLEDGEMENT

Firstly, I would like to thank Inti International University for giving this opportunity to do this dissertation to improve our knowledge about the construction industry.

Besides, I also wish to send my grateful for those who giving me fully support, help and encourage by lecturers from Inti International University, senior Wong Wei Fong who is studying his master program at University of Salford, UK and Quantity Surveyor Miss Teo from Eastern Group.

Secondly, I would also like to thank my Dissertation Supervisor who is Miss Nurulhuda for her helping hand and the experience guidance within the whole process of dissertation.

Lastly not excluding for the peoples including my course mates, friends especially Tee Choon Lei who study at Ngee Ann Polytechnic and my family for sure because they had sacrificed their precious time to help me when I'm facing any problems and always giving me their fully supports and encouragement during the process of preparing the dissertation.

DECLARATION BY THE CANDIDATE

I *Tan Ying Xuan* confirm that the work in this report is my own work and the appropriate credit has been given where references have been made to the work of other researchers.



A handwritten signature in black ink, appearing to read 'Tan Ying Xuan', is written over a horizontal line. To the right of the signature, the year '2013' is written.

Student Name : Tan Ying Xuan

Student ID : I09003994

Date : 22th November 2013

ABSTRACT

Delay is the most common activities in the construction industry and it might be because of some relevant events caused by the owner, consultants, contractor, subcontractors and etc. These delays not only will cause the construction works beyond the period of completion and they might cause the overall project beyond the budget.

All of the parties have the ability to prevent the EOT happen in the project in order to reduce any loss and expense of the client or themselves as well. For example, if the delay is caused by the contractor then he/she needs to take the responsibility for the LD. In other way, the contractor will be given the additional time to complete the defaults as well as the remaining work if the delay is not contractor's fault.

The main purpose to produce this research is to understand the EOT, identify the specification of the EOT, the factors of EOT as well as the prevention of EOT. Besides, this research also carried out a questionnaire survey with the experience personnel and contract administrative in order to understand more about the causes of EOT and try to find the way to reduce the probability of EOT happen in the construction industry.

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	<i>ACKNOWLEDGEMENT</i>	<i>i</i>
	<i>DECLARATION</i>	<i>ii</i>
	<i>ABSTRACT</i>	<i>iii</i>
	<i>TABLE OF CONTENTS</i>	<i>iv</i>
	<i>LIST OF TABLES</i>	<i>x</i>
	<i>LIST OF GRAPH</i>	<i>xi</i>
	<i>LIST OF DIAGRAMS</i>	<i>xii</i>
	<i>LIST OF CHARTS</i>	<i>xiii</i>
	<i>GLOSSARY OF TERMS</i>	<i>xiv</i>
1	INTRODUCTION	
	1.1 Introduction	1
	1.2 Background of Extension of Time	2

1.3	Problem Statement	3
1.4	Research Questions	4
1.5	Research Objectives	4
1.6	Scope and Limitations of Research	5
1.7	Significance of Research	5
1.8	Research Methodology	6
1.9	Structure of Dissertation	7
1.9.1	Chapter 1 – Introduction	7
1.9.2	Chapter 2 - Literature Review	7
1.9.3	Chapter 3 - Research Methodology	7
1.9.4	Chapter 4 - Findings and Analysis	7
1.9.5	Chapter 5 - Conclusion and Recommendation	7
1.10	Summary	8
2	LITERATURE REVIEW	
2.1	Introduction	9
2.2	Construction Risk	9

2.3	Delay and Extension of Time	12
2.3.1	Time at Large	13
2.3.2	Types of Delays	15
2.3.2.1	Excusable Delays	17
2.3.2.2	Non-excusable Delays	19
2.3.2.3	Concurrent Delays	22
2.4	Extension of Time Clauses in Construction Contracts	24
2.4.1	PAM Form (2006)	24
2.4.2	CIDB Standard Form of Contract (2000)	25
2.4.3	PSSCOC Conditions of Contract (2004)	27
2.4.4	FIDIC Conditions of Contract (1999)	28
2.5	Relevant events of Extension of Time	30
2.6	Principles to prevent the Extension of Time	37
2.7	Methods/Tools to access the Extension of Time	39
2.7.1	Collapsed As-Built Analysis (But-For Analysis)	39
2.7.2	Impacted As-Planned Analysis (What-If Analysis)	41

2.7.3	Windows Techniques (Time-Slice Analysis)	44
2.7.4	Summary	50
2.8	Case Study – Yap Boon Keng Sonny v Pacific Prince International Pte Ltd	51
2.8.1	Introduction of the case	52
2.8.2	Problem Analysis & Final Judgement	53
2.9	Summary	63
3	RESEARCH METHODOLOGY	
3.1	Introduction	64
3.2	Research Strategy	65
3.3	Purpose of Research	65
3.3.1	Pure Research	65
3.3.2	Primary Research	66
3.3.3	Secondary Research	66
3.4	Research Process	68

3.5	Data Collection Method	69
3.6	Data Analysis	71
3.7	Pilot Study	71
3.8	Summary	72
4	DATA ANALYSIS & FINDINGS	
4.1	Introduction	73
4.2	Overall Response Rate	73
4.2.1	Overall Response Rate	74
4.2.2	Response Rate for Each Set of Questionnaire Survey	75
4.2.3	Response Rate of Each Group	76
4.3	Questionnaire Data Analysis	77
4.3.1	Respondent's Details	78
4.3.2	Respondent's Profiles	78
4.3.2.1	Level of Experience of Respondent	79
4.3.2.2	Position and Number of Respondents	80

4.3.3	Questions	81
4.4	Summary	94
5	CONCLUSION & RECOMMENDATION	
5.1	Introduction	95
5.1.1	To study the extension of time	96
5.1.2	To analysis the factors that caused the EOT	97
5.1.3	To determine the requirements to grant the EOT	98
5.1.4	To evaluate the case study of EOT in different countries	101
5.2	Recommendations	103
	REFERENCES	104
	BIBLIOGRAPHY	106
	APPENDICES	
	Appendix 1 – Yap Boon Keng Sonny v Pacific Prince International Pte Ltd	108
	Appendix 2 – Questionnaire Survey Form Sample	169

LIST OF TABLES

2.1	Risks that influence the achievement of the project	11
2.2	Ranked Top 20 Causes of Non-excusable Construction Delays	21
2.3	Summary of Analysis Method	50
2.4	Items to be claimed	53
2.5	Counterclaim	55
3.1	Comparison between quantitative research and qualitative research	70

LIST OF GRAPHS

4.1	Categories of Respondents Involvement	76
4.2	Relevant Events caused the EOT	84
4.3	Percentages % of successful to grant EOT	89
4.4	Requirements to apply the EOT	92

LIST OF DIAGRAMS

1.1	Research Methodology	6
2.1	Types of Delays	16
2.2	Project Management Triangles	37
2.3	But-For Analysis	40
2.4	What-If Analysis (Original Schedule)	42
2.5	What-If Analysis (Completion Work Schedule)	43
2.6	Time-Slice Analysis (After 3 months)	45
2.7	Time-Slice Analysis (After 6 months)	46
2.8	Time-Slice Analysis (After 9 months)	47
2.9	Time-Slice Analysis (After 12 months)	48
2.10	Time-Slice Analysis (After 15 months)	49
3.1	Research Process	68

LIST OF CHARTS

4.1	Overall Response Rate	74
4.2	Overall Response Rate for the Questionnaire Survey	75
4.3	Numbers of Respondents	77
4.4	Levels of Respondent's Experience	79
4.5	Categories of Respondents Involvement	80
4.6	Location of the Respondents	81
4.7	Types of Contract Form	82
4.8	Probability of EOT in Construction Industry	83
4.9	Tools to access the EOT	86
4.10	Program used to access the EOT	87
4.11	Avenue used to prove the EOT in disruption claim	88
4.12	Percentage % of successful to grant EOT	89
4.13	Actions of contractor if the approval of EOT is delay	91
4.14	Respondents' Opinions to EOT	93

GLOSSARY OF TERMS

AI:	Architect's Instruction
CAI:	Confirmation of Architect Instruction
COC:	Conditions of Contract
CIDB:	Construction Industry Development Board
EOT:	Extension of Time
FIDIC:	International Federation of Consulting Engineers
LA:	Letter of Acceptance
LD:	Liquidated Damages
NS:	Nominated Suppliers
NSC:	Nominated Sub-Contractors
PAM:	Pertubuhan Akitek Malaysia
PSSCOC:	Public Sector Standard Conditions of Contract
v:	Versus