

## TABLE OF CONTENT

<b>ORIGINAL STATEMENT PAGE</b> .....	<b>i</b>
<b>ABSTRACT</b> .....	<b>ii</b>
<b>PREFACE</b> .....	<b>iii</b>
<b>FOREWORD</b> .....	<b>iv</b>
<b>TABLE OF CONTENT</b> .....	<b>vi</b>
<b>TABLE OF APPENDIX</b> .....	<b>viii</b>
<b>TABLE OF FIGURES</b> .....	<b>ix</b>
<b>TABLE OF TABLES</b> .....	<b>x</b>
<b>GLOSSARY</b> .....	<b>xi</b>
<b>TABLE OF ABBREVIATIONS AND SYMBOLS</b> .....	<b>xiii</b>
<b>Chapter I Introduction</b> .....	<b>1</b>
I.1 Background .....	1
I.2 Problems Formulation .....	4
I.3 Research Objective .....	4
I.4 Research Boundaries .....	4
I.5 Research Benefits .....	5
I.6 Research Systematic Writing .....	5
<b>Chapter II Literature Review</b> .....	<b>7</b>
II.1 Container .....	7
II.2 Ship Equilibrium .....	10
II.3 Container Ship .....	10
II.4 Container Ship Structure .....	11
II.5 Stowage Planning .....	14
II.6 Container Stowage Problem .....	15
II.7 Basis Mathematical Model <i>Container Stowage Problem (CSP)</i> .....	16
II.8 Cost Structure of Stevedoring Activity .....	20
II.9 Tabu Search Algorithm .....	21
<b>Chapter III Research Methodology</b> .....	<b>26</b>
III.1 Conceptual Model .....	26
III.2 Systematics Problem Solving .....	27
III.2.1 Initial Stage .....	28

III.2.2	Data Collection and Identification .....	29
III.2.3	Data Processing .....	30
<b>Chapter IV</b>	<b>Data Collection and Identification .....</b>	<b>32</b>
IV.1	Data Collection .....	32
IV.1.1	Description of PT XYZ .....	32
IV.1.2	Shipping System .....	34
IV.1.3	Stowage Planning .....	38
IV.2	Operational Cost of Shipping .....	41
IV.3	Data Processing .....	45
IV.3.1	Containers Stowing Rules on the Ship .....	45
IV.3.2	Stowage Planning Mathematical Model .....	46
IV.3.3	Determining Initial Solution of Stowage Planning .....	51
IV.3.4	Determining Optimal Solution by Tabu Search Algorithm .....	54
IV.3.5	Stowage Planning Generate by Tabu Search Algorithm .....	58
IV.3.6	Operation Cost of Port (Proposed) .....	60
<b>Chapter V</b>	<b>Analysis .....</b>	<b>61</b>
V.1	Verification .....	61
V.2	Validation .....	68
V.3	Analysis of Stowage Planning by Tabu Search Algorithm .....	69
V.4	Analysis of Number of Shifting .....	70
V.5	Analysis of Operational Cost of Port .....	70
V.6	Sensitivity Analysis .....	73
<b>Chapter VI</b>	<b>Conclusion and Recommendation .....</b>	<b>74</b>
VI.1	Conclusion .....	74
VI.2	Recommendation .....	74
<b>REFERENCE</b>	<b>.....</b>	<b>75</b>