



## TABLE OF CONTENT

<b>ACKNOWLEDGEMENT</b> .....	<b>i</b>
<b>DECLARATION</b> .....	<b>ii</b>
<b>LIST OF FIGURES</b> .....	<b>vi</b>
<b>LIST OF TABLES</b> .....	<b>vii</b>
<b>LIST OF APPENDIX</b> .....	<b>ix</b>
<b>ABSTRACT</b> .....	<b>x</b>
<b>CHAPTER I INTRODUCTION</b> .....	<b>1</b>
1.1 Background of research topic .....	1
1.2 Problem statement and research question.....	2
1.3 Objectives .....	3
1.4 Research Limitation.....	3
1.5 Methodology.....	3
1.6 Action plan of the research .....	4
<b>CHAPTER II LITERATURE REVIEW</b> .....	<b>5</b>
2.1 Security and port security .....	5
2.2 Supply chain security .....	7
2.2.1 Supply chain security challenge .....	8
2.2.2 Points of vulnerability in supply chain .....	9
2.2.3 Cost and benefit security related supply chain .....	11
2.2.4 Assessing supply chain security .....	12
2.3 Regulation regarding port facility assesment .....	14
2.4 Transport security technology .....	16
2.4.1 Access control.....	16
2.4.2 Biometric .....	17
2.4.3 Detection system.....	17
2.5 Radiation Portal Monitor (RPM).....	18
2.6 Closed Circuit Television (CCTV).....	19



2.7 Security measurement for transport technology .....	20
2.8 Summary of the literature review .....	23
<b>CHAPTER III RESEARCH METHODOLOGY .....</b>	<b>23</b>
3.1 Introduction .....	23
3.2 Research strategy .....	23
3.3 Overall Equipment Effectiveness .....	24
3.3.1 Three main factors in OEE .....	24
3.3.2 World class OEE standard .....	26
3.3.3 Six big losses in OEE .....	27
3.4 Framework of data analysis .....	31
<b>CHAPTER IV DATA PRESENTATION AND ANALYSIS .....</b>	<b>32</b>
4.1 Overview of Belawan International Port .....	32
4.2 Supply chain of Belawan International Port .....	33
4.3 Radiation Portal Monitor as security technology in Belawan Port .....	33
4.3.1 Lay out of Radiation Portal Monitor In Belawan International Port .....	34
4.3.2 Stakeholders of RPM .....	35
4.3.3 Operating concept of RPM .....	35
4.3.4 Activities and responsibility of each stakeholder .....	38
4.3.5 Technical operation and maintenance of RPM .....	44
4.3.6 Component which contribute to six big losses .....	45
4.3.7 OEE calculation for Radiation Portal Monitor .....	45
4.4 CCTV as security technology in Belawan Port .....	48
4.4.1 Lay out of CCTV In Belawan International Port .....	48
4.4.2 Standard operating procedure of CCTV .....	49
4.4.3 Component which contribute to six big losses .....	50
4.4.4 OEE calculation for CCTV .....	51
<b>CHAPTER V DISCUSSION AND FINDING .....</b>	<b>58</b>
5.1 Result for Overview of Belawan International Port .....	58
5.2 Supply Chain in Belawan International Port .....	58
5.3 Radiation Portal Monitor and CCTV In Belawan International Port .....	59
5.4 Result of Radiation Portal Monitor analysis .....	60



5.5 Finding for Radiation Portal Monitor.....	61
5.6 Result of CCTV analysis .....	64
5.7 Finding for CCTV .....	65
<b>CHAPTER VI CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>66</b>
6.1 Conclusions .....	66
6.2 Recommendations .....	69

## **REFERENCES**

## **APPENDICES**