

## TABLE OF CONTENTS

<b>APPROVAL SHEET .....</b>	<b>i</b>
<b>INTELLECTUAL PROPERTY STATEMENT FORM.....</b>	<b>ii</b>
<b>ABSTRACT</b>	<b>iii</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>v</b>
<b>TABLE OF CONTENTS.....</b>	<b>6</b>
<b>LIST OF FIGURES .....</b>	<b>10</b>
<b>LIST OF TABLES .....</b>	<b>12</b>
<b>TERMINOLOGY .....</b>	<b>13</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>14</b>
<b>LIST OF APPENDICES .....</b>	<b>15</b>
<b>CHAPTER I INTRODUCTION.....</b>	<b>16</b>
I.1    Background .....	16
I.2    Problem Identification .....	21
I.3    Research Objective .....	21
I.4    Research Limitations .....	21
I.5    Research Benefits .....	21
I.6    Writing Systematics .....	22
<b>CHAPTER II LITERATURE REVIEW.....</b>	<b>24</b>
II.1    Warehouse .....	24
II.1.1    Warehouse Definition .....	24
II.1.2 Functions of Warehouse.....	24
II.1.3 Types of Warehouse.....	25

II.1.4 Operational Activities of Warehouse .....	27
II.1.5 Order Batching (Picking) .....	29
II.1.6 Stock Keeping Units (SKU's).....	31
II.1.7 SKU's Area.....	31
II.2 Replenishment Policies.....	31
II.2.1 Assumptions .....	32
II.2.3 Notations .....	32
II.2.4 Stock Replenishment Policies .....	33
II.2.5 <i>Stock-Needs Rule (SNR)</i> .....	34
II.2.6 Stockout (0-Picks).....	34
II.3 Inventory Management .....	34
II.4 Kanban.....	37
II.4.1 Kanban Definition.....	37
II.4.2 Kanban Function .....	38
II.4.3 Kanban Classification .....	40
II.4.5 Kanban Types.....	41
II.4.6 e-Kanban .....	42
II.5 Analysis Tools .....	43
II.5.1 Check Sheet.....	43
II.5.2 Bar Chart .....	43
II.6 Standard Time Calculation .....	44
<b>CHAPTER III RESEARCH METHODOLOGY .....</b>	<b>45</b>
III.1 Conceptual Model .....	45
III.2 Problem Solving Systematics .....	47

III.2.1	Introduction and Identification Phase .....	48
III.2.2	Data Collecting Phase .....	48
III.2.3	Data Processing Phase.....	48
III.2.4	Analysis and Conclusion Phase .....	50
<b>CHAPTER IV DATA COLLECTING AND PROCESSING.....</b>	<b>51</b>	
IV.1	Data Collecting.....	51
IV.1.1	Research Object .....	51
IV.1.2	Job Description .....	55
IV.1.3	Replenishment Process Time .....	57
IV.1.4	Demand .....	57
IV.1.5	Product in The Bin .....	58
IV.1.6	Product and Bin Dimension .....	58
IV.2	Storing & Order Picking Process Analysis .....	59
IV.2.1	Calculating Product Quantity in Forward Area from Reserve Area .....	60
IV.3	Stock Level Identification .....	61
IV.3.1	Stock and Demand Comparison .....	61
IV.3.2	Stock in Forward Area and Demand Comparison.....	62
IV.4	0-Pick Problem Identification .....	63
IV.5	Prioritizing Replenishment of Stock in Bin .....	65
IV.5.1	Stock-Needs-Rule .....	65
IV.6	Determining Min & Max Stock Level .....	68
IV.6.1	Lead Time .....	68
IV.6.2	Normality Test.....	69
IV.6.2	Replenishment Point or Minimum Stock Level Determination .....	70

IV.6.5 Average and Maximum Stock Level Determination.....	72
IV.6.5 Minimum, Average and Maximum Stock Level Determination.....	73
IV.7 Triggering Replenishment System Design.....	74
IV.7.1 Number of Kanban Card Calculation .....	74
IV.7.2 Kanban Card Design.....	76
IV.7.3 Design Mechanism to Using the Kanban System .....	77
IV.7.4 e-Kanban System Design.....	86
<b>CHAPTER V ANALYSIS .....</b>	<b>93</b>
V.1 Proposed Suggestion Analysis .....	93
V.1.1 Replenishment Priority.....	93
V.1.2 e-Kanban System.....	94
V.1.2.1 Stock Level .....	94
V.1.2.2 Application.....	95
V.2 Existing and Suggested Condition Analysis.....	96
V.2.1 Stock Level Condition .....	96
V.2.2 Number of 0-Picks .....	103
V.2.2 Comparing Existing and Suggested System .....	106
<b>CHAPTER VI CONCLUSION AND SUGGESTION .....</b>	<b>108</b>
V.1 Conclusion.....	108
V.2 Suggestion .....	108
V.2.1 For the Company.....	108
V.2.2 For Further Research.....	109
<b>BIBLIOGRAPHY .....</b>	<b>110</b>