

## Table of Contents

APPROVAL SHEET .....	ii
INTELLECTUAL PROPERTY STATEMENT FORM .....	iii
ABSTRACT.....	v
<i>ABSTRAK</i> .....	vi
PREFACE .....	vii
Table of Contents .....	ix
List of Figures .....	xiv
List of Tables.....	xv
List of Abbreviations.....	xvi
List of Symbols .....	xvii
Terminology .....	xviii
Chapter I Introduction .....	1
I.1    Research Background.....	1
I.2    Problems Definition.....	4
I.3    Research Objectives .....	4
I.4    Research Limitation.....	5
I.5    Benefits of Research.....	5
I.6    Writing Systematics.....	5
Chapter II LITERATURE REVIEW .....	8
II.1    Supply Chain Management .....	8
II.1.1    Inventory .....	8
II.1.1.1    Definition of Inventory.....	8
II.1.1.2    Types of Inventory .....	9
II.1.1.3    Inventory Costs.....	9
II.1.2    Deterministics Inventory Model .....	10

II.1.2.1	Economic Production Quantity Model.....	11
II.1.2.2	Economic Production Quantity Formulation.....	11
II.1.2.2.1	EPQ Single Item .....	11
II.1.2.2.2	EPQ Multi Items .....	13
II.1.3	Fuzzy Logic.....	14
II.1.3.1	Fuzzy Definition.....	14
II.1.3.2	Fuzzy Logic .....	14
II.1.3.3	Fuzzy Sets.....	15
II.1.3.4	Membership Function.....	16
II.1.4	Warehousing .....	19
II.1.5	Warehouse Classification.....	20
II.1.6	Objective of warehousing .....	21
II.1.7	Hardware in Warehouse .....	22
II.2	The Method Reasoning.....	22
II.3	Previous Research .....	23
Chapter III	RESEARCH METHODOLOGY .....	25
III.1	Conceptual Model .....	25
III.2	Problem Solving Systematics .....	26
III.2.1	Initial Stage .....	28
III.2.2	Collection and Processing Data Stage.....	28
III.2.2.1	Identification and Collection Data.....	28
III.2.2.2	Calculation Number of Production.....	29
III.2.3	Analyze Data Stage .....	30
III.2.3.1	Analysis of existing condition and proposed condition.....	30
III.2.3.2	Inventory Total Cost Analysis .....	30
III.2.3.3	Sensitivity Analysis .....	31

III.2.4	Conclusion Stage.....	31
Chapter IV	COLLECTING AND DATA PROCESSING.....	32
IV.1	Company Profile.....	32
IV.2	Vision, Mission and Company Goals.....	32
IV.2.1	Vision.....	32
IV.2.2	Mission.....	32
IV.3	Collecting Data Stage.....	33
IV.3.1	Demand Data.....	33
IV.3.2	Holding Cost.....	34
IV.3.2.1	Labour Cost.....	34
IV.3.2.2	Facility Cost.....	34
IV.3.2.3	Electrical Cost.....	36
IV.3.3	Setup Cost.....	37
IV.3.4	Production Cost.....	38
IV.3.5	Lead Time Production.....	38
IV.4	Data Processing Stage.....	38
IV.4.1	Calculate Existing Inventory Cost.....	39
IV.4.1.1	Existing Production Cost Calculation.....	39
IV.4.1.2	Existing Holding Cost Calculation.....	40
IV.4.1.3	Existing Setup Cost Calculation.....	41
IV.4.1.4	Existing Total Inventory Cost.....	43
IV.5	Calculating Inventory Cost using Fuzzy Economic Production Quantity	43
IV.5.1	Demand Fuzzification.....	43
IV.5.2	Demand Defuzzification.....	45
IV.5.3	Fuzzification EPQ formula.....	46

IV.5.4	Defuzzification EPQ formula.....	47
IV.5.5	Calculate Lot Production using Fuzzy EPQ Formula .....	48
IV.5.6	Calculate Reorder Point .....	49
IV.5.7	Comparing Fuzzy EPQ and Crips EPQ .....	49
IV.5.8	Sensitivity Analysis.....	52
IV.5.8.1	Decreasing and increasing the fuzzy demand variable.....	52
IV.5.8.2	Decreasing and increasing setup cost by 5%-25% .....	53
IV.5.8.3	Decreasing and increasing production cost by 5%-25% .....	54
IV.5.8.4	Decreasing and increasing holding by 5%-25% .....	55
Chapter V ANALYSIS .....		56
V.1	Analysis of Selected Method Based on Total Inventory Cost.....	56
V.2	Total Inventory Cost Saving Analysis.....	58
V.3	Analysis of Reorder Point .....	59
V.4	Sensitivity Analysis .....	59
V.4.1	Fuzzy demand variables.....	59
V.4.2	Sensitivity Analysis for Production Cost .....	60
V.4.3	Sensitivity Analysis for Setup Cost.....	61
V.4.4	Sensitivity Analysis for Holding Cost.....	62
V.5	Analysis of Implementation of Fuzzy Economic Production Quantity at <i>PT.XYZ</i> Products.....	62
Chapter VI CONCLUSION .....		64
VI.1	Conclusion.....	64
VI.2	Suggestions.....	64
VI.2.1	Suggestions for the Company .....	64
VI.2.2	Suggestions for Next Research .....	65
References.....		66

APPENDIX A Demand Data .....	68
APPENDIX B Total Production Data .....	72
APPENDIX C Inventory Cost Component .....	77
Demand And Production Rate .....	77
APPENDIX D Fuzzification .....	81
APPENDIX E Defuzzification .....	88
APPENDIX F Existing Inventory Cost Component .....	93
APPENDIX G Crips EPQ Inventory .....	97
APPENDIX H Fuzzy EPQ Inventory .....	101
APPENDIX J Error Level .....	105
APPENDIX K Sensitivity Analysis .....	108
APPENDIX L Savings Cost .....	144