



TABLE OF CONTENTS

TITLE PAGE	i
HALAMAN PENGESAHAN.....	ii
PERNYATAAN BEBAS PLAGIASI	iii
FOREWORD	iv
ABSTRACT.....	v
ABSTRAK	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	ix
LIST OF FIGURES	ix
LIST OF APPENDICES	xi
CHAPTER 1	1
1.1 Research Background.....	1
1.2 Problem Statement.....	4
1.3 Research Question.....	5
1.4 Research Objectives	6
1.5 Research Benefits	6
1.6 Research Contribution.....	7
1.7 Research Assumption and Limitation.....	8
1.8 Thesis Structure	10
CHAPTER 2	12
2.1 Literature Review.....	12
2.1.1 Best Practices in Outpatient Clinic Operations.....	12
2.1.1.1 Ancillary Service.....	12
2.1.1.2 Simulation	13
2.1.2 Challenges in Outpatient Clinic Operations; Waiting time and patient satisfaction.....	15
2.1.3 Efficiency Improvement Strategies in Healthcare	16
2.1.3.1 Lean in Healthcare.....	16
2.1.3.2 Six Sigma	17
CHAPTER 3	19
3.1 Research Design	19
3.2 Research Strategy.....	21
3.3 Population and Sample.....	21
3.4 Research Instrument.....	22
3.4.1 Data Collection Instruments.....	22
3.4.2 Data Analysis Instruments	23
	vii



3.5 Data Collection	24
3.5.1 Primary Data	24
3.5.2 Secondary data	28
3.6 Data Analysis	28
3.6.1 Discrete-event Simulation	29
3.6.1.1 Process Time	29
3.6.1.2 Start Time	30
CHAPTER 4	31
4.1 Company Profile	31
4.1.1 Company's Current Practices.....	33
4.1.1.1 Registration	34
4.1.1.2 <i>Visus</i> (Visual Acuity Test)	34
4.1.1.3 Examination	35
4.1.1.4 Check-out	35
4.1.1.5 Scribe or Documentation.....	35
4.1.1.6 Pharmacy	35
4.1.2 Proposed Solution	43
4.1.2.1 Scenario 1: pharmacy and check-out working in parallel	45
4.1.2.2 Scenario 1 Variability Testing Using Discrete-Event Simulation	47
4.1.2.3 Scenario 2: Parallel system with separate documentation process.....	49
4.1.2.4 Scenario 2 Variability Testing Using Discrete-Event Simulation	51
CHAPTER 5	53
5.1 Conclusion	53
5.2 Limitation	55
5.2.1 Recommendation.....	56
5.2.1.1 Recommendation for Netra Clinic	56
5.2.1.2 Recommendation for Future Research	57
BIBLIOGRAPHY	58
APPENDIX	63



LIST OF TABLES

Table 4.1 Netra Clinic's weekly doctor's schedule	36
Table 4.2 Patient flow monitoring result	38
Table 4.3 Patient flow monitoring results	39
Table 4.4 Final Discrete-event Simulation Result	48
Table 4.5 Netra Clinic Behavior withing all 3 Scenarios.....	52



LIST OF FIGURES

Figure 3.1 Five-step procedure chart	20
Figure 3.2 Layout of the clinic	26
Figure 3.3 Patient Value Stream	27
Figure 4.1 Netra Clinic Building.....	32
Figure 4.2 Patient and resource interaction chart.....	40
Figure 4.3 Process Time vs Wait Time Distribution Chart, in minutes.....	41
Figure 4.4 Current State RBC for Doctor 1 (Patient 4 and 5), in minutes	43
Figure 4.5 Compact Frequency Table	44
Figure 4.6 Patient flow and Resource cycle simulation.....	44
Figure 4.7 Current State RBC, with parallel system for doctor 1 (Patient 4 and 5), in minutes	46
Figure 4.8 Current State RBC, with separate documentation process for doctor 1 (Patient 4 and 5), in minutes	51
Figure 4.9 Patients able to be seen per day in correlation to different scenarios, minutes to patients	52



LIST OF APPENDICES

Appendix 1. Data Collection Table (Microsoft Excel)	63
Appendix 2. Doctor's Schedule Table	64
Appendix 3. Discrete-event Simulation of Current State.....	65
Appendix 4. Discrete-event Simulation of Scenario 1	72
Appendix 5. Discrete-event Simulation of Scenario 2.....	73