

CONTENTS

COVER PAGE	i
DUAL DEGREE PROGRAM STATEMENT	ii
RECOMMENDATION FORM	iii
QUALIFICATION FORM	i
LETTER OF APPROVAL	v
DECLARATION	vi
DEDICATION	vii
FOREWORD	viii
ACKNOWLEDGEMENT	ix
CONTENTS	x
LIST OF TABLES	xiii
LIST OF FIGURES	xiv
LIST OF APPENDICES	xvi
LIST OF NOTATIONS AND ABBREVIATIONS	xvii
INTISARI	xviii
ABSTRACT	xix
CHAPTER I INTRODUCTION	1
1.1. Research Background	1
1.2. Problem Formulation	3
1.3. Research Objectives	3
1.4. Research Assumption and Constraints	4
1.5. Research Benefits	5
CHAPTER II LITERATURE REVIEW	6

CHAPTER III THEORETICAL BACKGROUND	13
3.1. Sound	13
3.2. Attribute of Sound	13
3.2.1. Frequency	14
3.2.2. Intensity of Sound	15
3.3. Sound of Quality	16
3.3.1. Method of Sound of Quality	17
3.3.2. The Ranking Procedure	17
3.3.3. The Semantic Differential Rating Scale	18
3.3.4. Category Scaling	18
3.3.5. Magnitude Estimation	19
3.4. Acoustical Parameter in Sound of Quality	20
3.4.1. Pitch	21
3.4.2. Timbre	23
3.4.3. Loudness	26
3.4.4. Tempo	28
3.5. Structural Equation Modeling	28
3.5.1. Model Fit Criterion	29
3.6. Partial Least Square (PLS)	30
3.6.1. Measurement Model Criteria	31
3.6.2. Structural Model	31
3.7. Audio Analysis Software	32
CHAPTER IV RESEARCH METHOD	34
4.1. Participant and Experiment Apparatus	34
4.2. Sound Collection	34
4.3. Semantic Differential Scale	36

4.3.1. Sound of Quality (Evaluation of Sound)	37
4.3.2. Pitch	37
4.3.3. Timbre	38
4.3.4. Loudness	38
4.3.5. Rhythm (Tempo)	38
4.4. Structural Equation Modeling	39
CHAPTER V RESULTS AND DISCUSSION	40
5.1. Pairwise Comparison Results	40
5.2. Physical Properties of Sound	41
5.2.1. Acoustical Parameters of Sound	46
5.3. Structural Equation Modeling	48
5.3.1. Structural Equation Modeling for Sound of Quality Evaluation	48
5.4. Discussion	64
CHAPTER VI CONCLUSIONS AND RECOMMENDATIONS	66
6.1. Conclusions	66
6.2. Recommendations	68
REFERENCES	69
APPENDICES	74