TABLE OF CONTENTS

	Page		
	Supervisor's Certificate	ii	
	Declaration	iii	
	Acknowledgements	iv	
	Abstract	V	
	List of Tables	viii	
	List of Figures	xii	
	Abbreviations	xiii	
CHAPTER 1: INTRODUCTION			
1.1	INTRODUCTION	1	
1.2	SOFTWARE QUALITY	3	
1.3	SOFTWARE TESTABILITY	4	
1.4	TESTABILITY-A KEY FACTOR TO SOFTWARE QUALITY	5	
1.5	OBJECT ORIENTED DESIGN	6	
	1. 5.1 Design Properties	7	
1.6	TESTABILITY FACTORS	8	
	1.6.1 Testability Measurement of Object Oriented Software	9	
	1.6.2 Testability Measurement at Design Phase	10	
1.7	PROBLEM STATEMENT, ITS SOLUTION AND IMPACT OF		
	PROPOSED RESEARCH	10	
1.8	IMPACT / SIGNIFICANCE OF PROPOSED RESEARCH		
	WORK	13	
1.9	THESIS OUTLINE	14	
1.10	SUMMARY	15	
CHAPTER 2: LITERATURE SURVEY			
2.1	INTRODUCTION	16	

	2.2	RELATED WORK					
		2.2.1	Testability at Analysis Phase	17			
		2.2.2	Testability at Design Phase	17			
		2.2.3	Testability at Source Code Level	22			
		2.2.4	Testability at Testing Phase	27			
		2.2.5	Testability at Development Life Cycle	29			
	2.3	TEST	ABILITY FACTORS	34			
	2.4	LITEF	RATURE SURVEY ON MODIFIABILITY	36			
	2.5	LITEF	RATURE SURVEY ON FLEXIBILITY	38			
	2.6	2.6 OBJECT ORIENTED DESIGN PROPERTIES					
	2.7	MAPPING DESIGN PROPERTIES TO TESTABILITY FACTOR42					
	2.8	QUAI	LITY CRITERIA OF COMMONLY ACCEPTED				
		TEST	ABILITY FACTORS	44			
	2.9	RELE	VANT FINDINGS	47			
	2.10 SUMMARY						
Cł	IAPTE	R 3: TE	ESTABILITY MEASUREMENT FRAMEWORK	49-54			
	3.1	INTRO	ODUCTION	49			
	3.2	MOTIVATION		49			
	3.3	FRAMEWORK SIGNIFICANCE		50			
	3.4	TESTABILITY MEASUREMENT FRAMEWORK					
		3.4.1	Recognition of Testability Factor	51			
		3.4.2	Object Oriented Software Characterization	51			
		3.4.3	Recognition of Metric	51			
		3.4.4	Correlation Establishment	53			
		3.4.5	Testability Measurement	53			
		3.4.6	Finalization	53			
		3.4.7	Design Review	53			
		3.4.7 3.4.8	Design Review Review and Revision	53 53			

CHAPTER 4: MODIFIABILITY: A KEY FACTOR TO

	TESTABILITY	55-65
4.1	INTRODUCTION	55
4.2	MAPPING BETWEEN MODIFIABILITY AND DESIGN	
	PROPERTIES	55
4.3	MODIFIABILITY MEASUREMENT MODEL	56
4.4	STATISTICAL SIGNIFICANCE BETWEEN MODIFIABILITY	
	AND OBJECT ORIENTED DESIGN PROPERTIES	59
4.5	EMPIRICAL VALIDATION	62
4.6	SUMMARY	65
CHAPTI	ER 5: FLEXIBILITY: A KEY FACTOR TO TESTABILITY	66-76
5.1	INTRODUCTION	66
5.2	MAPPING BETWEEN FLEXIBILITY AND DESIGN	
	PROPERTIES	67
5.3	FLEXIBILITY MEASUREMENT MODEL	67
5.4	STATISTICAL SIGNIFICANCE BETWEEN FLEXIBILITY	
	AND OBJECT ORIENTED DESIGN PROPERTIES	70
5.5	EMPIRICAL VALIDATION	74
5.6	SUMMARY	76
CHAPTH	ER 6: TESTABILITY MEASUREMENT MODEL	78-87
6.1	INTRODUCTION	78
6.2	MODEL DEVELOPMENT	78
6.3	STATISTICAL SIGNIFICANCE AMONG TESTABILITY,	
	MODIFIABILITY AND FLEXIBILITY	82
6.4	EMPIRICAL VALIDATION	84
6.5	COMPARATIVE ANALYSIS BETWEEN TMM ^{OOD}	
	AND MTMOOD	87
6.6	SUMMARY	87

СНАРТЕ	R 7: CONCLUSION AND FUTURE WORK	89-92
7.1	CONCLUSION	90
7.2	FUTURE WORK	92
	Appendix I	93
	Appendix II	96
	Appendix III	98
	References	99
	List of Publications	109