## TABLE OF CONTENTS

The page		
Certificate of approval		
Certi	ificate	iii
Decl	aration	iv
Ackı	nowledgement	v
Abst	ract	vii
Cont	tents	
List o	f Symbols and Abbreviations	xii
Chap	ter -1 Introduction	1-15
1.1	Background	1
1.2	History and evolution	2
1.3	Definition of Six Sigma	5
1.4	Deployment of Six Sigma	6
1.5	Six Sigma Project	7
1.6	Motivation for the study	9
1.7	Objectives and scope of the research	10
1.8	Research Methodology	11
1.9	Organisation of the thesis	12
Chap	ter- 2 Review of Literature	16-38
2.1	Introduction	16
2.2	Research Trend	17

2.3	Critica	al Success Factors (CSFs) for successful deployment of Six	
	Sigma	· · · · · · · · · · · · · · · · · · ·	19
2.4	Six Si	gma Project Selection Process	22
	2.4.1	Project identification	23
		2.4.1.1 Sources of Project Identification	23
		2.4.1.2 Tools and Methods for Project Identification	24
	2.4.2	Project Selection	26
		2.4.2.1 Project Selection Criteria	27
		2.4.2.2 Tools and Methods for Project Selection	29
2.5	A	comparative analysis of all the methods	33
2.6	Cı	ritical appraisal of surveyed literature	35
2.7	Co	onclusion	38
Chap	ter- 3 D	Delphi Study on Implementation of Six Sigma	39-65
3.1	Introdu	action	39
3.2	Study	outline	40
3.3	Instrur	nent design and implementation	41
3.4	Data a	nalysis	42
3.5	Delphi	Respondents	43
3.6	About	various rounds of Delphi	43
	3.6.1	Round I Data Analysis	44
	3.6.2	Round II Data Analysis	45
	3.6.3	Round III Data Analysis	45
	3.6.4	Shifting the panel responses from Round II to Round III	45
3.7	Summa	ary of Delphi Findings	48
3.8	Analys	sis of results	48
	3.8.1	Business issues organisations addressing through Six Sigma	48
	3.8.2	Key Factors for successful implementation of Six Sigma	55
	3.8.3	Common Problems in implementation of Six Sigma in Indian	_
		Industries	55
	3.8.4	Measures to overcome these problems	56
	385	Criteria for selecting Six Sigma projects	57

	3.8.6 Benefits of organizations after implementing Six Sigma	58
	3.8.7 Limitations of Six Sigma	59
	3.8.8 Future challenges of Six Sigma	61
3.9	Practical Implications	61
3.10	Delphi findings and project selection	64
3.11	Conclusion	65
Cha	pter 4 Real Option Based Six Sigma Project Selection Model	66-84
4.1	Introduction	66
4.2	Risks in six sigma project	67
	4.2.1 Private Risk	67
	4.2.2 Public Risk	68
4.3	Evaluation of projects: Application of real options on projects	69
4.4	Application of Real Options to Six Sigma projects	71
	4.4.1 Six Sigma Projects as Real Call Options	71
	4.4.2 Six Sigma Projects as Real Put Options	72
4.5	Mapping Black-Scholes-Metron Variables to Six Sigma Project	72
	Investment	
4.6	Proposed methodology	75
4.7	Proposed Steps for Project Portfolio Selection	76
	4.7.1 Categorization of the projects	76
	4.7.2 Collection of the project related information	76
	4.7.3 Determination of the option value of each project	76
	4.7.3.1 Identification of Real Options in the Project	78
	4.7.3.2 Modelling the Uncertainties through Binomial Method	78
	4.7.4 Project Portfolio Selection	80
	4.7.4.1 A combined approach to optimisation	81
4.8	Benefits of the proposed model	84
49	Conclusion	8/1

Chap	ter 5 A <sub>l</sub>	oplication of Project Selection Model - A Case Study	85-103		
5.1	Introdu	ction	85		
5.2	Company Background				
5.3	Objective of the study				
5.4	Methodology adopted				
5.5	Categorisations of the project				
5.6	Collection of the project related information				
	5.6.1	Project description	89		
5.7	Projec	t evaluation using real option analysis	92		
	5.7.1	Estimation of the input parameter	92		
	5.7.2	Estimation of the option parameter	94		
	5.7.3	Generation of the bionomial tree	94		
		5.7.3.1 Calculation of the asset values at each node of the tree	94		
		5.7.3.2 Calculation of the option value at each node of the tree	96		
5.8	Sensit	ivity Analysis	97		
5.9	Option	n value of the project	98		
5.10	) Projec	t portfolio selection	99		
5.1	l Assun	nptions and limitations	101		
5.12	2 Conclusion				
CII.			104 110		
Chap	iter 6 Si	ummary of findings, conclusions and scope of future research	104-110		
6.1	Revie	w of Major Results	104		
6.2		ic contributions of the research	106		
6.3	•	ation of the study	107		
6.4	Scope	for future research	108		
6.5	Concl	usion	109		
Refe	rences		111-123		
Appe	ndix A.	Delphi Questionnaire	124-129		
Appe	ndix B.	Lingo programming for Project Portfolio Selection	130		
Curr	iculum `	Vitae	131		

