CONTENTS

Chapter No.	Title	Page No
I	Introduction	1-24
1.1	The Control Chart	1
1.2	Economic Design of Control Chart	4
1.3	The Formulation of the Cost Model	5
1.4	A Short History of the Work done on Economic Design of Control Charts	9
1.5	The Criticism on the Economic Design of Control Charts	14
1.6	The Scheme of the Work Presented in the Thesis and Achievements	15
1.7	Research work either published or presented at the conferences related to this thesis	23
II	Economic Design of np-Control Charts	25-55
2.1	-	25
2.2	The Basis for the Construction of the Expected Cost Models	25
2.3	The Single Assignable Cause Model	29
2.4	Multiple Assignable Cause Model	42
III	Economic Design of Control Charts for Variables with Known and Unknown Sigma	56-69
3.1	- (56
3.2	Economic Design of x̄-Control Charts Under σ known	56
3.3	Economic Design Under Unknown σ	62

IV	Use of Curtailed Single Sampling and Double Sampling Plans in the Economic Design of np-Control Chart	70-100
4.1	_	70
4.2	Use of Fully-Curtailed Sampling Plan in the Economic Design of np-Control Chart	71
4.3	Use of Double Sampling Plan in the Economic Design of np-Control Chart	89
4.4	Comparision of Complete, Semi-Curtailed and Fully-Curtailed Sampling Policies for the Economic Model developed in Chapter II	97
۷	Use of More Powerful Decision Rule on Economic Design of x-Control Charts	101-123
5.1	-	101
5.2	Knappenberger and Grandage's (1969) Cost Model	102
5.3	Use of More Powerful Decision Rule	104
5.4	Comparision of the two Decision Rules from the Cost Point of View	105
5.5	More Exact Comparision	109
VI	Economic Design of Multivariate Control Charts	124-147
6.1	-	124
6.2	Multivariate Quality Control	124
6.3	Hotelling T ² -Control Chart	127
6.4	Development of Economic Model for T ² -Control Chart	131
6.5	Solution Method and Numerical Example	135
6.6	Determination of Out-of-Control Variables	140

VII	Economic Design of np-Control Charts with Different Control Limits for Different Assignable Causes	148-172
7.1	. —	148
7.2	Need for the Proposed Control Chart	149
7.3	The Production Process and the Inspection Procedure	151
7.4	The Expected Cost Model	154
7.5	Solution Method and Numerical Example	160
7.6	Comparision with the Traditional Single Upper Control Limit Model	161
7.7	Use of Curtailed Sampling Policy in Two Control Limits - Two Responses Model	165
VIII	The Miscellaneous Problems	173-194
8.1	The Semi-Economic Design of np-Control Chart	173
8.2	Some Corrections in the Knappenberger and Grandage's (1969) Model for x-Chart	179
8.3	Some Modifications in the Montgomery's (1975) Expected Cost Model for np-Control Chart	182
8.4	Graphical Presentation Used in Curtailed Sampling and Inspection	188
	References	195-198