

CONTENTS

ABSTRACT	7
PREFACE	9
FIGURES	13

1. ANALYTICAL EXPOSITION

1.1 Introduction	15
1.2 Competitive Capacity	22
1.3 Properties and Capabilities of a Productive System ..	25
1.4 Productivity	30
Definition 30; Physical Principles of Productivity 33; Measuring Productivity 34; Cost of Productivity 41; Dilemma Productivity – Innovation as a Pro- blem of Strategic Thinking 44; Planning Produc- tivity 48	
1.5 Flexibility	53
Definition 53; Physical Principles of Flexibility 55; Measuring Flexibility 59; Cost of Flexibility 61; Relationship between Flexibility and Productivity 63; Flexible Manufacturing Systems 66; Increasing Demand on Flexibility 69; Planning Flexibility 71	
1.6 Quality	73
Definition 73; External and Internal Aspects of Quality 74; Aggregate Quality 76; Manufacturing and Marketing Quality 80; Cost of Quality 83	

1.7 Aggregate Quality Improvement Program 87
General 87; Quality Assurance System 88; Failure
Elimination 91; Statistical Process Control 94

2. CRITICAL CONTEXT

2.1 Current Views of Quality 97
2.2 Quality in the Company 102
2.3 Total Quality Concepts 106

3. INTEGRATIVE CONCLUSIONS

3.1 Aggregate Quality as Functional Capability 109
3.2 Conclusion 116
3.3 Recommendation for Complementary Studies 117
REFERENCES 119

FIGURES

Fig. 1. Total Productivity Index	37
Fig. 2. Cumulative Volume and Labor Cost Variances	40
Fig. 3. Handling of Fertilizers	50
Fig. 4. Material and Energy Costs of Naphta Cracking ..	52
Fig. 5. Model of System Flexibility	56
Fig. 6. Production System Control Loop	58
Fig. 7. Project Completion Costs	62
Fig. 8. Costs of Flexibility	64
Fig. 9. Dedicated and Flexible Systems	70
Fig. 10. Symbols of Aggregate Quality	81
Fig. 11. Costs of Quality	86
Fig. 12. Risk Analysis Flow Chart	93
Fig. 13. Defects and Costs Development	104