

# TABLE OF CONTENTS

<b>Particular</b>	<b>Page No.</b>
<b>Abstract</b>	<b>i</b>
<b>Acknowledgement</b>	<b>v</b>
<b>List of tables</b>	<b>x</b>
<b>List of figures</b>	<b>xii</b>
<b>Acronyms</b>	<b>xiv</b>
<b>Chapter 1: Introduction</b>	<b>1-21</b>
1.1 The Context	1
1.2 Indian Scenario	3
1.3 West Bengal Scenario	5
1.4 North Bengal Scenario	5
1.5 Problem Perspective and Statement of the Problem	6
1.6 The Review of Literature	8
1.6.1 The International Context	8
1.6.2 The Indian Context	13
1.6.3 The West Bengal Context)	15
1.7 Objectives of the Study	16
1.8 Research Questions of the Study	17
1.9 Hypothesis of the Study	17
1.10 Data, Variables and Sample Method	18
1.11 Methodology of the Study	18
1.12 Research Gap	20
1.13 Chapterisation Scheme	20
<b>Chapter 2: A Brief overview of the Fishery Sector in India vis-á-vis West Bengal</b>	<b>22-50</b>
2.1 Introduction	22
2.2 The Inland and Marine Water Resources	23
2.3 Growth of Fish Production in India	24
2.4 Contribution of the Fisheries Sector to GDP	27
2.5 Inland Fisheries Resources by States and Union Territories	31
2.6 State-Wise Fish Production in India	35

2.7	West Bengal Scenario	41
2.8	Type of Fisheries in West-Bengal	43
2.9	Source-wise Inland Fish Production	43
2.10	District-wise Fish Production	45
2.11	Demand and Production of Fish	47
2.12	Summary of Findings	49
<b>Chapter 3: The Present Scenario of the Fishery Sector of North Bengal</b>		<b>51-69</b>
3.1	Introduction	51
3.2	Objective of the Study	52
3.2.1	District-wise Status of Water Resources	53
3.2.2	District-wise Fish Seed Production	57
3.2.3	District-wise Fish Production in North Bengal	60
3.2.4	Fish Production under Fish Farmers' Development Agencies (FFDA)	63
3.2.5	Productivity of North Bengal Fishery	66
3.3	Welfare Scheme Adopted by the Government	67
3.4	Challenges	68
3.5	Suggestive Measures for the Development of the Inland Fishery Sector in the Region	68
3.6	Conclusion	68
<b>Chapter 4 Current Position of Fish Market and Marketing in North Bengal</b>		<b>70-94</b>
4.1	Introduction	70
4.2	Drivers of Domestic Market	71
4.3	Domestic Fish Market of West Bengal	71
4.4	The Domestic Fish Marketing in North Bengal	72
4.5	Objectives of the Study	74
4.6	Data and Methodology	75
4.7	Results and Discussion	76
4.7.1	Marketing Infrastructure	76
4.7.2	Supply-Demand Analysis of Fish in North Bengal	79
4.7.3	District-wise Analysis of Fish Import	83
4.7.4	Marketing Channnels	87
4.7.5	Analysis of Marketing Efficiency	88

4.7.6 Price Spread (Gross Marketing Margin)	92
4.7.7 Percentage share of Fishermen in the Consumer Rupee (PSFCR)	93
4.8 Conclusion	94
<b>Chapter 5 An Overview of Measurement of Efficiency</b>	<b>95-108</b>
5.1 Introduction	95
5.2 The Notion of a Production Function and a Production Frontier	96
5.3 Introducing the Notion of Technical efficiency	97
5.3.1 Theoretical Framework for the Measurement of Production Efficiency	98
5.3.2 Inputs-oriented Model	99
5.3.3 Output-Oriented Efficiency Measures	101
5.4 Models of Efficiency Measurement	103
5.4.1 Non-Parametric Frontier Model	103
5.4.2 Parametric Frontier Model	105
5.4.2.1 Deterministic Model	105
5.4.2.2 Stochastic Frontier Analysis	106
5.4.2.2.1 Stochastic Production frontier Model	106
<b>Chapter 6 Technical Efficiency of Pond Fishery in Uttar Dinajpur and Dakshin Dinajpur Districts of North Bengal- A Stochastic Frontier Regression</b>	<b>109-120</b>
6.1 Introduction	109
6.1.1 Contextualizing the Study of Efficiency Measurement	110
6.2 Materials and Method	111
6.3 Analytical Framework	111
6.4 Empirical Model	112
6.5 Results & Discussion	113
6.5.1 Socioeconomic Characteristics of Fish Farmers	113
6.5.2 Production Function Analysis	116
6.5.3 Determinants of Technical Inefficiency in Fish Production	117
6.5.3.1 Distribution of Farms(or Fishermen) According to Technical Efficiency Score	118
6.6 Conclusion	119
<b>Chapter 7 Efficiency Analysis of Pond Fishery in Uttar Dinajpur and Dakshin Dinajpur District of North Bengal- A DEA Approach</b>	<b>121-150</b>

7.1	Introduction	121
7.2	Objective of the Study	122
7.3	Data Collection	123
	7.3.2 Analytical Framework	125
	7.3.3 Model Specification	126
7.4	Results and Discussion	127
	7.4.1 Summary Statistics of Inputs and Output Variables	127
	7.4.1.1 DEA Results of Uttar Dinajpr and Dakshin Dinajpur	128
	7.4.1.2 Return to Scale	132
	7.4.1.3 Gains of Cost Economics	134
	7.4.1.4 Zone-wise Efficiency Results of DMUs	134
	7.4.1.5 Sources of Technical Inefficiency	136
	7.4.1.6 Potential Average Improvement of Inputs and Output of Uttar Dinajpur District	140
	7.4.1.7 Combined DEA Results (When Uttar Dinajpur and Dakshin Dinajpur are merged together)	142
	7.4.1.8 Source of Technical Inefficiency	145
7.5	Limitations of the Study	149
7.6	Conclusion and Recommendations	150
	<b>Chapter 8: Summary of Findings and Conclusion</b>	<b>151-160</b>
	<b>References</b>	<b>161-171</b>
	<b>Index</b>	<b>172-174</b>
	<b>Appendices</b>	<b>175-287</b>