

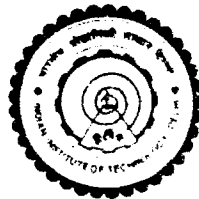
**STRATEGIC TRANSFORMATION
OF
TECHNOLOGY BASED INDIAN ORGANISATIONS
*EXPLORING THE FRAMEWORKS OF FLEXIBILITY UNDER TURBULENCE***

by

Jayanta Chatterjee
Department of Management Studies

Submitted
in fulfillment of the requirements of the degree of
Doctor of Philosophy

To the

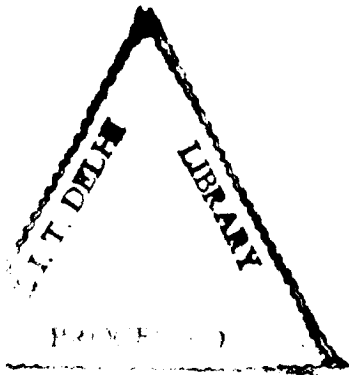


**INDIAN INSTITUTE OF TECHNOLOGY, DELHI
HAUZ KHAS, NEW DELHI - 110 016
INDIA**

June, 1998

I. I. T. DELHI.
LIBRARY
5TH-2670

TH
658.312(540)
CHA-S



CERTIFICATE

The thesis entitled ***Strategic Transformation Of Technology Based Indian Organisations – Exploring The Frameworks Of Flexibility Under Turbulence***, being submitted by Mr. Jayanta Chatterjee to the Indian Institute of Technology, Delhi, for the award of the degree of Doctor of Philosophy (Ph.D.) is a record of bonafide research work carried out by him. He has worked under my guidance and supervision, and has fulfilled the requirements for the submission of this thesis which has attained the standard required for a Ph.D. degree of the Institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.

Date : 30/6/98



(Dr. Sushil)
*Modi Foundation Chair Professor
of Strategic Management and Head
Department of Management Studies
Indian Institute of Technology, Delhi,
Hauz Khas, New Delhi – 110 016.*

ACKNOWLEDGEMENTS

It was a great privilege to have worked with Dr. Sushil, Modi Foundation Chair Professor of Strategic Management and Head, Department of Management Studies, a pioneer in the area of Flexible Systems Methodology. His supervision and constant encouragement helped me to pursue this multifaceted longitudinal exploration without losing track.

My special thanks also go to Dr. D.K. Banwet who guided this project during the initial years and to all the other faculty members of the Department of Management Studies. I also take this opportunity to express my gratitude to all my teachers, past and present. And similarly, I am grateful to my many students at IIT, Kanpur and many enthusiastic participants at the Management Development Programmes to whom I presented these concepts for knowledgeable feed back. Their constructive criticism and discussions were very valuable.

I am grateful to all those executives who spared their valuable time in providing the data and spending their time for the interviews. I must specially thank my colleagues at Allen-Bradley India who gladly participated in many of the experiments and programmes and helped me to crystalise the concepts. That longitudinal exploration is at the core of this study.

Management of Allen-Bradley, Rockwell International as well as Crompton Greaves and my seniors, namely, Mr. William D. Fletcher and Mr. K.K. Nohria allowed me to pursue this part time research and continuously encouraged me and also lent me their vast experience and insight on number of critical points. I am deeply indebted to them.

I also most gratefully acknowledge the self-less contribution from my colleagues, P.S. Vinod Kumar, Pankaj Ganguly, K.V. Raghavan and V. Krishnaanand in organising the final report in a professional manner. They have spent many hours with me beyond the office time to make this final submission in its present form possible.

I must admit that I could not have finished this interesting but very involved work without tremendous support from my family. Particularly, my daughters Joyee and Jeeya and their dear friend Gauri Malhotra helped me quite knowledgeably to organise the references from my copious notes.

Last but not the least, I am grateful to my many friends and professional peers who directly or indirectly contributed to this research. And I dedicate this study to my parents who gave me the spirit of inquiry and taught me the power of dialectical thinking.

Date: 30/6/98


Jayanta Chatterjee

ABSTRACT

Strategy in today's world is increasingly dynamic. The linear, sequential framework of the Mission – Objective – Strategy – Tactics (M.O.S.T) can easily go awry due to unexpected global competitive moves or radical new technology developments. Strategic success also depends on how effectively an organisation adapts and transforms itself in response to such turbulence and how it constantly recreates itself (in anticipation of the future) while seeking growth.

A fundamental question in contemporary research agenda on organizational strategy is how firms behave when faced with turbulent times. What are the modes of coping and trajectories of strategic transformation at times of great change.

The period of this research, 1992 to 1997, offered an opportunity to study such questions in the Indian context, as never before. For the first time most industries in India were suddenly opened to the deluge of foreign competition when most tariff and competitive entry barriers disappeared in the wake of radical economic reforms in India. This happened in an environment of great changes in the socio-political and technological paradigms of the world.

Punctured equilibrium during turbulence makes it difficult for rigidly structured organisations to survive for long 'like rigid buildings in an earthquake' (Collins and Porras, 1994). Flexibility is demanded from the very foundation of the organisation. This leads to a paradoxical situation. Because, a successful organisation of today must continue to compete effectively in its current core business and at the same time to avoid obsolescence, the organisation must create new capabilities to innovate ahead of competition. Each organisation is thus faced with its own paradox of dynamically balancing Focus on Current vs. Robust for Future strategies. In Technology Based Organisations in India (TBIOS) in addition to these dilemmas, the simultaneous new pressures on price, quality, design and logistics made multifaceted, versatile and radical new strategies imperative. There were very few studies available during early'90s on strategic trajectories that Indian organisations followed or could follow to successfully transform in such a situation. During the first forty years post independence, while Indian industries grew substantially in many sectors and developed significant resource and competence, the competitive environment was never intense to demand continuous, ceaseless transformation at strategic level.

The specific objective of this study therefore, is to understand strategic themes, alternatives and practices of Technology Based Indian Organisations (TBIOS) during 1992 to 1997, so as to cluster them in different trajectories to understand how strategy transforms under turbulence. Understand the interplay of different contradictory factors and how TBIOS view strategic paradoxes. A sub-objective is to evolve an exploratory methodology to study dynamic aspects of strategy transformation.

The methodology for this research has been influenced by two contextual frameworks. The first is the framework of flexible systems methodology (FSM)(Sushil, 1994). The second is the Action Learning or Actors Approach based

on a dialectical inquiry system (Nutt, 1992; Arbnor and Bjerke, 1997; Mumford, 1997).

The first step in the study was a Quasi-experimental and exploratory study on the challenges posed by frame breaking environmental shift in the Indian context, conducted at Allen-Bradley India Ltd. (ABIL) during 1992 to 1996, where this researcher was then the CEO. This was followed by a macro study conducted through interviews, mini case studies and study of secondary material to characterise the Situation – Actor – Provocation framework for the target population (TBIOs).

A series of Synectics exercises in laboratory situations, which were designed as interactive creative problem solving experiments, was the next step to build a framework of organising for success that could encompass different patterns of strategic behaviour under uncertainty. The result was robust to fit the macro studies and the initial longitudinal experiments at ABIL.

However, to improve the rigor of this research, as per the FSM framework, the distinguishing attributes of the two earlier steps were used to design questionnaire instruments for two surveys. Nearly two hundred and fifty respondents from about hundred organisations participated in the two surveys. The statistical analysis of the results from the two surveys show that growth and change are indeed the two faces of the new Janusian thinking among Indian Organisations. The espoused strategies equally emphasise expansion and innovation. But in actual strategy practices when it comes to action, tolerance for ambiguity and dynamic management of paradoxes are yet to become significant. The criteria of inner tension and creative turmoil does not sufficiently distinguish the TBIOs from other organisations in India but the flexibility elements are coming to the fore in the strategy thinking of all organisations. Creative innovational characteristics are yet to balance the focus on efficiency and productivity in the average TBIO but enough exceptions and strong trends are found among the Electronic and Software based Indian Organisations to show that this duality and the flexibility to manage both simultaneously will be the emerging pattern of transformation. In the Multiple Reality Inquiry System adopted in this study, the decision maker is the operator in the system that is he or she is subjected to the acutely opposing views on the strategic issues where both may be valid options (paradox) so that the synthesised new position is a current but transient position of a changing continuum of Thesis → Anti-thesis → Synthesis → New Thesis →. In this turbulent time many secondary patterns will continuously enrich this central strategic transformation trend.

The SAP – TAP – LAP framework using the Actors approach proposed in this research is likely to be useful to strategist managers and researches to continue the fascinating exploration of this continuum.

<i>Abstract</i>	<i>i</i>
<i>List of Tables</i>	<i>vii</i>
<i>List of Figures</i>	<i>x</i>
<i>List of Appendices</i>	<i>xii</i>
<i>Abbreviations</i>	<i>xiii</i>

Chapter 1		
1.1	Introduction	2
	1.1.1 <i>Intellectual Competence and Creative Continuity</i>	2
1.2	Lasting Competitive Advantage	3
1.3	Research Query	4
	1.3.1 <i>Knowledge Creation and Application</i>	4
	1.3.2 <i>Revolution or Evolution</i>	4
1.4	An Indian Perspective	5
	1.4.1 <i>Paradigm Shift</i>	5
	1.4.2 <i>Internal and External Flexibility</i>	6
1.5	Backdrop of this Research	6
1.6	Research Assumption	8
1.7	Relevance of the Research	9
1.8	Research Objective and Proposition	11
1.9	Issues Covered	12
1.10	Scope of the Study and Boundaries	13
1.11	Methodology of the Study	14
1.12	Organisation of the Thesis	16
1.13	Concluding Remarks	21

Chapter 2		
2.1	██████████	████
2.2	Basis of the Present Review	24
2.3	Strategy – The Key Dimensions	25
	2.3.1 <i>Military Origins</i>	25
	2.3.2 <i>External View and M.O.S.T</i>	25
	2.3.3 <i>Internal View and Resource Competence</i>	26
2.4	Turbulence and Uncertainty in Technology Views	32
2.5	Duality and Paradox – Emerging Strategy Views	35
2.6	Innovation and Perpetual Transformation	41
2.7	External and Internal Flexibility – Strategy Paradigm for Perennial Renaissance	44
2.8	A Chronological Review on Strategy	50
2.9	Current State of the Research	53
2.10	Concluding Remarks	65

Chapter 3		
METHODOLOGY AND DESIGN OF THE STUDY		
3.1		
3.2	The Design Issues for Strategy Research	67
3.3	Flexible Systems Methodology for Strategy Research	69
3.4	Flexible Systems Methodology and the Actors Approach	71
	3.4.1 <i>The Methodology Origin</i>	71
	3.4.2 <i>The Actors Approach and Dialectics</i>	73
3.5	Applying the Actors Approach to Strategy Research Design	77
3.6	The Longitudinal And Dialectical Cycles of Strategy Dynamics	79
3.7	Proposing the SAP-TAP-LAP Framework as the Dialectical Progression in Cascading Loops	83
3.8	Proposing the Methodology for this Research	84
3.9	Matching Techniques and Different Attributes of the Research Sequence	86
3.10	Concluding Remarks	88

Chapter 4		
4.1	Introduction	
4.2	Scope of the Chapter	92
4.3	The 'Situational' View and the Emerging Paradoxes	94
4.4	Macro View of Post Reform Growth in Indian Economy	95
	4.4.1 <i>GDP Growth</i>	95
	4.4.2 <i>Industrial Growth</i>	96
	4.4.3 <i>Growth of the TBIOs – Triggers for Restructuring</i>	97
4.5	A General View of Indian Corporate Restructuring Programmes	98
4.6	Situation for TBIOs – A Particular View of Transformation Imperatives	99
4.7	Indian Machine Tool Industry – Preparing for Revitalization	100
4.8	Automotive Component Industry – Towards Global Quality	102
4.9	Indian Automobile Industry – Competition and Rapid Growth	104
	4.9.1 <i>Engine of Growth</i>	104
	4.9.2 <i>Capacity Races with Demand</i>	104
	4.9.3 <i>Evolving Strategy Agenda of Automobile Industry</i>	106
4.10	The Electronics, Electrical and Software Industries – Rapid Growth, Global Arena	108
4.11	An Analytical Exploration – Which way to World Class?	113
4.12	Concluding Remarks	118

5.1	Introduction	121
5.2	Case Methodology	122
5.3	Turbulent Situation and Coping Trajectories of Actors	122
5.4	Indian Control and Instrumentation Industry	125
5.5	The Allen-Bradley India Case – Fusion of Vision and Action	129
5.6	Indian Electrical Equipment Industry	145
5.7	The EMCO Transformer Case – Let Flowers Bloom	148

5.8	Indian Capital Goods Industry	151
5.9	The Thermax Case – Purposeful Innovation	152
5.10	Indian IT and Software Industry	157
5.11	The Infosys Case – Knowledge Federation	159
5.12	Indian Power Electronics Industry	161
5.13	The Hi-Rel Case – Customer Focused Flexibility	162
5.14	Common Themes from the Cases	166
5.15	Concluding Remarks	167

Chapter 6		
6.1	Introduction	■
6.2	Strategic Provocations and Attributes for Survival	171
6.3	Attributes of Relentless Success	172
6.4	Creative Modelling of the Problem	173
6.5	Paradox of the Future	181
6.6	Generating Alternatives – Synectics	185
6.7	Choosing a Model of Enduring Success	191
6.8	Paraphrased Idea from the Synectics Sessions	194
6.9	Validation and Feedbacks	194
6.10	Concluding Remarks	195

Chapter 7		
■	■	198
7.2	Development and Deployment of Instrument	199
	7.2.1 <i>Choosing the Deployment Arena</i>	199
	7.2.2 <i>Development of Questionnaire</i>	203
	7.2.3 <i>Validating the Questionnaire</i>	204
	7.2.4 <i>Pretesting the Questionnaire</i>	205
	7.2.5 <i>Description of the Final Questionnaire</i>	206
7.3	Methodology for Analysis – External and Internal Flexibility Factors	207
7.4	Actor Industries vs Other Industries – Comparing the Significant Variables	208
7.5	Comparing Perceptions of Top Management vs. Junior Management	212
7.6	Findings and Observations	214
7.7	Factor Analysis	217
	7.7.1 <i>Category-wise Factor Analysis</i>	217
	7.7.2 <i>Combined Factor Analysis of Differences</i>	223
7.8	Concluding Remarks	224

Chapter 8

EXPLORING THE PARADOX ISSUES		
8.1	Introduction	227
8.2	Paradox and Organisation	228
8.3	Paradox and Technology Based Organisation	232
8.4	Strategy Response to Paradox	233
8.5	Empirical Evidence of Paradox in Strategy	237
8.6	Paradox in Strategy – The Indian Evidence	239
8.7	Designing the Paradox Questionnaire	240
8.8	Choosing the Deployment Arena	244
8.9	Reconfirming Some Trends	246
8.10	Response Patterns and Observations	247
8.11	Discussion on Results	259
8.12	Concluding Remarks	261

Chapter 9

9.1	Introduction	264
9.2	The Cognitive Dimension – Managerial Thought and Strategic Action	264
9.3	Mechanistic and Organic – Strategy as Seeing	268
9.4	Exploring the Two Flexibility Axes	270
9.5	Interpretation of the Strategy Quadrangles	275
9.6	Plotting Differential Flexibilities	275
9.7	Satisfaction Level with Strategising and Trend for Programic Panacea	283
9.8	Correlation Analysis of the Paradox Questionnaire	283
9.9	Strategy Revolution – Quo Vadis	284
9.10	Concluding Remarks	286

Chapter 10

10.2	Summary of the Learning	291
10.3	Major Recommendations	296
10.4	Significant Research Contributions	298
	10.4.1 At Methodology Level	298
	10.4.2 At Empirical Level	299
	10.4.3 At Conceptual Level	299
10.5	Limitations of the Present Research	300
10.6	Suggestion for Further Research	301
10.7	Concluding Remarks	302

References	303
Appendices	
Curriculum Vitae	