

**PROPOSAL FOR  
STRATEGIC ROADMAP  
FOR  
DESIGN IN INDIA**

**Deloitte Touche Tohmatsu India Private Limited**

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## **1.0 Introduction**

Design is of significant importance. It improves the quality, competitiveness and demand for products and services in the global market place, thereby promoting welfare and employment. This leads to economic development. Design also generates product, service and production innovations.

Design promotes citizen's well-being by creating aesthetically high-quality user-friendly products. In addition, design promotes the development of production methods and enhances economic efficiency.

Design should be based on high-standard know-how, should take into account the progress in manufacturing and the delivery processes. It must acknowledge changes in consumer markets, should have a user-centered approach and use culture bound innovations in product and service development.

The development of design know-how of the highest standard requires strong inputs into research and close cooperation between education and industry. This cooperation will promote nation's innovation capabilities, competitive production, improve quality of products and service, and will create new jobs.

The importance of design in the society and the economy entails that every stakeholders has to be responsible towards promoting the use of professional designs in enhancing the quality of life and contribute this cause.

Design to make an impact should be looked more closely in application. It should be considered as a problem solving discipline. Design should act as a solution to real business problems and create opportunities. It should not remain a '*A Thing of Beauty*'. Design should have a strategic focus and add strategic value to the success of business, society at large and the economy. The key challenge remains in creating a design culture in the country that would enhance the standard of life, its competitiveness in the global market place and sustaining it for a very long period. Design should make economic sense. *Design as an industry means 'Design' as a business.*

## **2. Preamble**

2.1 Dept of Industrial Policy and Promotion, Ministry of Commerce desires to develop a Strategic Road Map for Design in India with a view to improving Manufacturing and Export competitiveness.

2.2 The department, along with National Institute of Design (NID) as the nodal agency, proposes to award an assignment for this purpose.

2.3 Design is a Strategic and Intellectual asset responsible for the success of the firm, the corporate world and thereby the economy as a whole.

### **3. Object of the Study**

The broad objectives of the study can be divided into three sections. A brief outline of the objectives of the study is as follows:

- 3.1. To assess the current status of the Design industry in India in terms of
  - a. Its significance in the various sectors of the economy
  - b. Capabilities in adding value to different segments of the economy
  - c. International benchmarking to understand the requirement and match up to the global standards
  - d. Its drivers of growth, component-inputs.
  
- 3.2. To develop medium term and long term goals of design industry and outline a roadmap for it in terms of contributions and commitment of various stakeholders.
  - a. Medium-term: taking design into strategic planning in business and other sectors
  - b. Long-term: use of professional design as part of business operation and also in operations of other sectors
  
- 3.3. To delineate the emerging scenario and future prospects of the industry.
  - a. Global Industry trends
  - b. Factors triggering change, growth
  - c. Structural changes
  - d. Design as an independent industry

### **4. Scope of the Study**

The scope of the study as outlined in the request paper has been grouped into different sections. This is based on a preliminary assessment of the work envisaged and to make the methodology more structured and meaningful.

#### **4.1. Section-1: Context**

- 4.1.1. Design, its relevance to business and society at large
- 4.1.2. Impact of design on various sectors of the economy.
- 4.1.3. Key sector where impact is immediate
- 4.1.4. Current status of design in India vis-à-vis other major countries
- 4.1.5. Assessment of percentage value-addition of “*design as a component-input*” in a product/ service in the domestic market and the international market

## **4.2. Section-2: Nurturing Design Culture**

- 4.2.1. Awareness
  - a. Current level of awareness in India and how to improve it
  - b. Benchmarking with developed countries and taking learning from them
  - c. Methods of improving awareness among the various groups
- 4.2.2. People Development
  - a. Skill development and training
  - b. Current level of activities
  - c. Requirement in the medium-term and in the long-term
- 4.2.3. Design-Infrastructure
  - a. Present status of design-infrastructure in India
  - b. Benchmarking with developed countries
  - c. Future requirements and how to achieve them
  - d. Creating a 'Knowledge Pool' and mechanism of dissemination
  - e. Networking of institutions, organizations and industry

## **4.3. Section-3: Policy Issues**

- 4.3.1. Think Tank, Creation of
- 4.3.2. Design Commission
- 4.3.3. IPR issues
- 4.3.4. Relevance of Locarno Treaty, WIPO Geneva Act and other international legislations
- 4.3.5. Policy Documents- Long term and Short term Planning; Vision & Mission
- 4.3.6. Government supports and Programs: Scope and necessity of subsidizing inputs, tax rebates, etc. required to develop design sector in the country
- 4.3.7. Scope for strategic alliance/ collaboration/ networking with multilateral agencies, international design institutions etc.
- 4.3.8. Monitoring & Verification; Certification; Statutory authorities; organization setup
- 4.3.9. Legislation: Design Act

## **4.4. Section-4: Stake-holders**

- 4.4.1. Government's role
- 4.4.2. Role of the Corporate Sector
- 4.4.3. Role of NGOs
- 4.4.4. Educational and Training Institutions
- 4.4.5. Perception of Design by each stakeholder
  - a. Current status
  - b. Benchmarking with developed countries
- 4.4.6. Responsibility of each stake-holder

#### **4.5. Section-5: Future Scenario**

- 4.5.1. Key driving forces of design related changes in each sector
- 4.5.2. Emerging scenario
- 4.5.3. Key elements of the Road Map
- 4.5.4. Forecasting of Design Demand in the
  - a. Domestic Market
  - b. International Market
- 4.5.5. Design as an Industry
  - a. domestic prospects
  - b. Export prospects
  - c. Prospect of Exclusive Design Labs/ Studios

The final scope of work can be determined on basis of a mutual agreement, considering the immediate needs of the study.

#### **5. Approach and Methodology of the Study**

The broad approach and methodology for the study will be to

- (1) Understand the current status
- (2) Assess the future scenario
- (3) Help develop a roadmap for the Indian Design Industry

This is proposed to be carried out in the following manner:

- 5.1. The approach will be to make an overall assessment of design and its impact on the economy as a whole.
  - 5.1.1. Study the history and the process of evolution in India and abroad
- 5.2. Identifying a few key sectors where the impact of design will be immediate and significant.
- 5.3. These sectors will be studied in detail.
  - 5.3.1. Survey/ study of case-histories of specific products or organizations in India and abroad
  - 5.3.2. In depth discussion with industry experts , structured and unstructured questionnaires
  - 5.3.3. Survey/ study of target segments (end-users) of Designs and/or designed products
    - 5.3.3.1. Perception of design as a component of a product/ service
    - 5.3.3.2. Willingness to pay for it
  - 5.3.4. The methodology will consist of the following:

- 5.3.4.1. Literature survey
- 5.3.4.2. Survey through questionnaires
- 5.3.4.3. Interview of experts in functional areas (industry specific) and in design. The interviews will be both structured and unstructured
- 5.3.4.4. Brainstorming workshops of industry specific experts to ascertain various aspects of the industry and the emerging trends

5.4. This learning and experience will be replicated in other sectors in the descending order of perused priority. The key sectors, as per our initial assessment, can be grouped as follows:

- B. Industrial Design
  - i. Civil
  - ii. Architectural
  - iii. Construction
  - iv. Process industry
  
- C. Industrial products
  - i. Large sized corporate
  - ii. Medium sized corporate
  - iii. SSIs
  
- D. Consumer Products
  - i. Durable
  - ii. Non-durable
  
- E. Packaging
  
- F. Craft
  - i. Textile (fabric)
  - ii. Apparel and accessories
  - iii. Furniture and upholstery

5.5. The members will work as a team with demarcated functions and obligations.

The methodology may be reworked to suit the final scope of work and deliverables, considering the timeframe for the study

## 6. **Support required from the Nodal Agency**

Industry associations viz. CII, FICCI, regional industry associations, industry specific associations can be requested to support the consulting team in carrying out the study. The support will be sought in the following manner:

- 6.1. Facilitation in collection of Data
- 6.2. Conduct of workshops during the study

## **7. Estimated Time frame for the Study**

It is estimated that the study would be spread over 30 months subject to trouble free run.

## **8. Profile of the Team**

### **8.1. Delloite**

Profile of the Company and the team is enclosed in Annexure – I.

### **8.2. ICFAI Business School, Ahmedabad**

The ICFAI Business School (IBS), a constituent of the ICFAI University is established to promote quality education, research, training and consultancy in management.

Team Members from ICFAI Business School, Ahmedabad

1. Prof. P. Balabhaskaran, Director
2. Prof. Amiya K. Sahu, Faculty

Profile of the institute and the team members is enclosed in Annexure - II

### **8.3. Dr. Arabinda Tripathy, Professor, IIM, Ahmedabad**

Profile enclosed in Annexure – III

## **9. Consolidated fees**

Estimated professional fees, subject to the final scope of work, would be Rs.20 million (Rupees Twenty Million) inclusive of out of pocket expenses and service tax.

## **10. Validity**

Our offer is valid for your acceptance upto a period of 120 days from date hereof.

For Deloitte Touche Tohmatsu India Pvt Ltd

Place: Ahmedabad  
Date : 10<sup>th</sup> Sept, 2004

Authorised Signatory



## **Annexure -I**

### **Deloitte Touche Tohmatsu India Private Limited (Deloitte)**

DTTIPL is a member firm of Deloitte Touche Tohmatsu (DTT). Deloitte Touche Tohmatsu is an organisation of member firms devoted to excellence in providing professional services and advice. DTT is focused on client service through a global strategy executed locally in nearly 150 countries. With access to the deep intellectual capital of 120,000 people worldwide, its member firms, including their affiliates, deliver services in four professional areas: audit, tax, consulting and financial advisory. The member firms of DTT serve more than one – half of the world’s largest companies, as well as large national enterprises, public institutions, and successful, fast growing global companies.

Deloitte Touche Tohmatsu is a Swiss Verein (association), and , as such neither Deloitte Touche Tohmatsu nor any of its member firms has any liability for each other’s act or omissions. Each member firm is a separate and independent legal entity operating under the names of “Deloitte,” “Deloitte & Touche”, “Deloitte Touche Tohmatsu,” or other names. The services described herein are provided by the member firm and not by the Deloitte Touche Tohmatsu Verein.

#### **Team members:**

- 1. Mr. D. C. Choksi**
- 2. Mr. Ashvin Parekh**
- 3. Mr. D. D. Mehta.**
- 4. Mr. Ashwin Rathi**

**Profile of Team members:**

Name	DILEEP CHINUBHAI CHOKSI
Date of birth	26 December 1949
Education	<ol style="list-style-type: none"><li>1. B.Com. (Hons.), Special subject Accounting &amp; Auditing in March 1970</li><li>2. FCA – Fellow of Institute of Chartered Accountants of India. Qualified in November 1972. Rank holder at the Intermediate and Final Examination of the Institute.</li><li>3. GRAD CWA from the Institute of Cost &amp; Works Accountants of India in 1973.</li><li>4. Completed 3 year course in Law – passed from the Government Law College in 1974.</li></ol>
Designation	<p><u>Partner:</u></p> <p>C.C. Chokshi &amp; Co., Mumbai, Ahmedabad, Vadodara, New Delhi, Panaji Goa.</p> <p>Touche Ross &amp; Co., Mumbai, Chennai, Ahmedabad, Vadodara.</p> <p>Deloitte Haskins &amp; Sells, Mumbai</p> <p><u>National Director</u> Deloitte Haskins &amp; Sells</p> <ul style="list-style-type: none"><li>- Corporate Finance and Tax</li></ul>
Area of Specialization	<ul style="list-style-type: none"><li>- Direct Taxes including analyzing tax consequences of various instruments</li><li>- Tax planning including for expatriates and representation before the Income-tax authorities and Income-tax Appellate Tribunal</li><li>- Structuring holdings and financing, keeping in view relevant legislation</li></ul>

Related Professional  
Work

- Corporate restructuring like amalgamations and mergers, cross border structuring and analyzing tax impact of various instruments
- Finalizing collaborations and suggesting advisable structures for investing or participating in business in India. Consultancy services to power sector clients with regards to structuring of investments in India and related direct tax issues.
- Assistance in the preparation of the most prominent book on Tax Laws in India by Mr.Nani Palkhiwala.
- Authored several articles on taxation related topics.
- Visiting faculty member of the Jamnalal Bajaj Institute of Management Studies, Bankers Training College and Reserve Bank of India
- Contributed various papers on mergers and acquisitions, valuation of business enterprises, company law and taxation at various seminars and conferences organized by the Bombay Chartered Accountants' Society and the Institute of Chartered Accountants and other forums.

**NAME :** MR. ASHVIN PAREKH

**QUALIFICATIONS:** B.Com (Hons), (Bombay), A.I.C.W.A (India)  
F.C.A (India), A.C.S (India)

**SERVICE LINES :** Business Consulting

**JOB PROFILE:**

- Presently with Deloitte Touche Tohmatsu India Private Limited as Executive Director
- Former Senior Partner, Business Consulting- Arthur Andersen, India
- Former Head of Consulting- PwC Management Consultancy, India
- Former Head of management consultancy services, -KPMG India
- Seconded to the Middle East, Australia and UK by KPMG India
- Overall 26 years experience including 21 in business consulting.

**EXPERTISE & EXPERIENCE:**

- Business strategies, corporate planning and business structures
- Finance & financial services, including banking, insurance, pension and capital markets
- Power sector including privatization and reforms
- Management control systems
- Information technology
- Financial, cost and management accounting systems
- Business laws

**SIGNIFICANT ASSIGNMENTS as Advisor ::**

- to the World Bank and the Asian Development Bank in financial services
- to the Reserve Bank of India in Process and technology solutions
- on strategy and Institutional capability building to :
  - Bank of Ceylon
  - Ministry of Finance & Central Bank of Kirgistan
  - Ministry of Finance & Central Bank of Poland
  - Jammu & Kashmir Bank (J& K Bank)
  - Nedungandi Bank
- to Bank of Rajasthan on strategy and performance improvement
- to Times Bank on Business planning
- to Centurion Bank as Engagement Partner on Merger integration of Twentieth Century Finance Ltd. with Centurion bank
- on Strategic Finance Management to
  - Dena Bank
  - Reserve Bank of India
  - Development Credit Bank
  - Unit Trust of India

- Banque Nationale de Paris
  - Diwanchand group-Bangkok, Thailand
  - General Insurance Corporation on Insurance
  - A.V.Birla Group of Companies
  - BUPA, UK
  - Gerling Konzern, Germany
- on Performance Improvement to :
  - Citibank N.A
  - ANZ Grindlays Bank
- on Strategy Study to General Insurance Corporation
- to the Stock Exchange, Mumbai on Strategy study (strategy plan 2005)
- to the Stock Exchange, Mumbai on Strategy study (Vision Articulation and Diagnostic)
- In the Power Sector to :
  - Central Electricity Authority on reforms in the power sector including tariff and unbundling of assets
  - Madhya Pradesh Electricity Board on implementation of commercial accounting system and recast of financial statements
  - Karnataka State Electricity Board on implementation of commercial accounting system and recast of financial statements
- Other Key Assignments on Strategy Study:
  - Usha Group of Companies-selection of entry decisions
  - Hindustan Construction group
  - A.V.Birla Group of Companies
  - Venkateshware Hatcheries Ltd.
  - Birla Growth Fund Ltd.
  - Andhra Pradesh Industrial Development Corporation
  - Industrial Development Bank of India
  - Citibank N.A
  - IndusInd Bank
  - Ranbaxy Group
  - State Bank of India
  - Reserve Bank of India
  - Hongkong & Shanghai Banking Corporation-India Strategy
  - American Express bank
  - Barclays Bank PLC
  - NMB-Bank
  - Essar Group of Companies
  - Kotak Mahindra Finance Ltd.
  - Bank of India
- Was member of committees set up by the Ministry of Finance, RBI, IRDA and SEBI.
- Active at CII and FICCI
- Participant at conferences and seminars

## **DHIMANT D. MEHTA**

### Recognitions:

- Placed 23<sup>rd</sup> on the All India Merit List at the Final C.A. Exam held in November, 1974
- Received “Outstanding Manager of the Year” award for 1989 from Ahmedabad Management Association

### Directorship :

- GVFL Trustee Co. Ltd.

### Work Experience:

- **2001 – Present**
  - ◆ Partner with Deloitte Haskins & Sells, Chartered Accountants, one of the Big Four Accounting Firms.
  - ◆ Major assignments executed:

- Valuation	- IPCL Baroda
- Debt Restructuring	- The Arvind Mills Limited
- Compensation	- TELCO
- Strategic Partner	- Adani Containers Limited

- **1999-2000**

Advised on:

- ◆ High Priority Infrastructure Mixed Use Technology Resource Park project
  - Estimated cost US\$1.05 billion
  - Obtained FIPB and CCFI approvals
  - Technical and financial tie ups
- **1981-1998**
  - A) Electric Control Gear (India) Limited

As CEO

- ◆ Dynamic leadership
- ◆ Dedication
- ◆ Personal involvement
- ◆ Healthy work culture
- ◆ Result oriented approach
- ◆ Turn around strategies

Resulting into seven-fold organization growth in eight years

B) Piramal Financial Services Ltd.

- ◆ Conceptualized Company formation
- ◆ Obtained Registrations
- ◆ Ranked as one of the top ten in Gujarat
- ◆ Independently audited by RBI without any adverse qualifications

- **1977-1981** - Maheshwari Mills Limited
  - ◆ Financial Controller-cum-Company Secretary
  - ◆ Candidature approved by IDBI and IFCI
- **1975-1977** – Premier Tyres Limited
  - ◆ Chief Internal Auditor
  - ◆ Head Office, Factory & 16 Branches

Age : 51 years

- Educational background :
- ◆ 1967-68 & 1968-79 : Elphinstone College, Mumbai
  - ◆ 1969-70 & 1970-71 : Institute of Science, Mumbai (Formerly known as Royal Institute of Science)
  - ◆ 1971 : Graduated - B.Sc. (Honours) with Physics-Mathematics – Ranked 3<sup>rd</sup> in University in the subject
  - ◆ 1971-74 : Articleship with M/s. Bansi S. Mehta & Co., Chartered Accountants, Mumbai
  - ◆ 1974 : Qualified as Chartered Accountant from The Institute of Chartered Accountants of India, New Delhi



Name : **Ashwin J. Rathi**

Contact Details : Office : +91-79-7582542-43 (Extn. 139)  
Mobile : +91-9825162535  
Email : [asrathi@deloitte.com](mailto:asrathi@deloitte.com),  
[ashwinrathi@icenet.net](mailto:ashwinrathi@icenet.net)

Languages known : English, Hindi and Gujarati

Educational qualification:

- Master of Business Administration with specialization in Finance from M.S. University of Baroda in June 1989.
- Bachelor of Commerce with specialization in Accounts from Gujarat University in May 1987.

Experience :

1. August 2001 – till date :  
Asst. Director (Corporate Finance) with Deloitte Haskins & Sells, Ahmedabad, a member firm of Deloitte Touche & Tohmatsu.
2. January 1997 to July 2001 :  
Self employed.
3. July 1994 to December 1996 :  
Asst. Vice President in Vadilal Financial Services Ltd., a Vadilal Group Company.
4. June 1989 to June 1994 :  
Management Trainee to Manager in Gujarat Lease Financing Ltd.

Job knowledge:

- Corporate Advisory Services :  
Capital Structuring, Partner Search, Valuations, Business Restructuring.
- Investment Banking :  
Debt Raising and Equity placements.
- Retail finance :  
Conceptualization, designing of systems, marketing.

Training Programs Attended :

- 3 weeks 'Funds Manager' course related to Mutual Funds at UTI Institute of Capital Markets, Navi Mumbai in June 1993.
- Various seminars on Capital Market, Corporate Finance, etc.

## Annexure -II

### **1. Prof. P. Balabhaskaran, Director, ICFAI Business School, Ahmedabad**

#### **Academic Affiliation**

B Tech from IIT Madras in 1972  
PGDM from IIM Bangalore 1976  
CFA from ICFAI Hyderabad 1992  
CMC [Certified Management Consultant] , IMCI 1999

#### **Professional Affiliation**

From Sept. 1972 to Oct. 1974, Tata Merlin and Gerin Limited, Mumbai  
From Jan. 1977 to Jan. 1980, BICICO Limited, Patna  
From Feb. 1980 to Jun. 1981, Jyoti Limited, Baroda  
From Jul. 1981 to Aug. 1994, GIIC Limited, Ahmedabad  
From Jun. 1995 onwards, ICFAI Business School, Ahmedabad

#### **Area of Interest**

Financial Planning and Restructuring  
Feasibility Studies  
Business Strategy

#### **Consulting Assignments Handled**

- i. Business Plan for ESCO, Syntex Industries Limited
- ii. Term Loan Evaluation of a mini-cement project for Dena Bank
- iii. Technical assessment of the plant of SLM Maneklal Inds Ltd for acquisition
- iv. Expansion plan and loan syndication of a kraft paper plant from 15 tpd to 60 tpd.
- v. Revamping and financial restructuring of a refractory plant at Mehsana, Gujarat.
- vi. Expansion, Diversification and funding of a cotton yarn plant
- vii. Feasibility study of a glazed tile plant and its loan syndication.

#### **Publications/ Articles/ Cases**

- i. Innovating for competitiveness, paper presented in International Conference held at Nirma Institute of Management, 2001. This was adjudged the best paper of the conference. Published in ICFAI Journal of Management Research, 2001
- ii. Project Identification – Strategic Perspectives, Projects and Profits, ICFAI Press, 2001

## **2. Prof. Amiya K. Sahu, ICFAI Business School, Ahmedabad**

### **Academic Affiliation**

M. B. A., Berhampur University

B. Sc., Berhampur University

### **Professional Affiliation**

From July 1997, IIM, Ahmedabad

From Nov. 1999, Dalal Consultants and Engineers Limited (Erstwhile), Ahmedabad

From Set. 2001, Gandhi Institute of Management Studies, Gunupur, Orissa

From July 2003, SK Patel Institute of Management and Computer Studies, Gandhinagar

From June 2004, ICFAI Business School, Ahmedabad

### **Area of Interest**

Business Innovations

Entrepreneurship/ Intrapreneurship

Financial Planning

### **Consulting Assignments Handled**

- Performance Based Reward System at HFCL, New Delhi
- Competitive Strategy Formulation for Torrent Group of Industries, Ahmedabad
- Job Evaluation Study for the Manasana Singh Wage Board for Newspaper Industry, ministry of labor, Govt. of India
- Materials management for Gujarat Water Supply Board, Govt. of Gujarat.

### **Publications/ Articles/ Cases**

1. Management Cases on Himachal Futuristic Communications Limited. Have written two cases on the concepts of: (A) Business Innovation and (B) Performance Based Reward System. The cases are co-authored by Prof. A. Tripathy, IIMA, and Dr. DVR. Seshadri, IIMB.
2. “ERP Implementation at BPCL”. The case study is co-authored by Prof. A. Tripathy, IIMA; and Dr. Anand Teltumbde, BPCL. The Case is accepted for publication in “*The Vikalpa*” the Journal of Indian Institute of Management, Ahmedabad.
3. “Opportunities for SMEs in the Global Market”, paper published in ‘*The Saket Industrial Digest*’, October, 2001, Ahmedabad.

## Annexure -III

**Prof. Arabinda Tripathy, IIM, Ahmedabad**

### **Academic Affiliation**

Ph.D. (Operational Research), London School of Economics.

M.Sc. (Operational Research), London School of Economics.

P.G.D.B.M. X.L.R.I. (Xavier's Labour Relations Institute), Jamshedpur, India.

B.Tech. (Hons.) Mech. Engg., Indian Institute of Technology, Kharagpur, India

### **Professional Affiliation**

**From Sept 1981:** Faculty, Indian Institute of Management, Ahmedabad

**From Nov 1995 to May 1996:** Associated with ISPAT International (UK)Ltd. in their Kazakstan Plant. working in the areas of Manpower Planning, HRD, Personnel and I.R, Development of Organizational Structure, Systems Studies etc.

**March 1980 to Sept 1981:** Member of Faculty, Administrative Staff College of India, Hyderabad

**Oct 1977 to March 1980:** Centre for Labour Economics & Dept of Statistics and Mathematical Sciences, London School of Economics and Political Science

**1966 to 1977:** The Tata Iron and Steel Company Limited in the area of Project Planning and Management of Energy and Utility Services

### **Area of Research**

Manufacturing Strategy/ Policy

Reinvention and Intrapreneurship

OR for Development

Operations Strategy for Process Industry

OR Modelling

Product Development/ Innovation

Improvement Initiatives

### **Publications/ Articles/ Cases**

#### **Awards/Fellowships**

National Scholarship, Government of India, 1961

J.N.Tata Endowment Award 1975-76

"Indo -EEC Exchange Fellowship" at London Business School, January to June 1990.

"The Worshipful Company of Chartered Accountant's Fellowship" by Association of Commonwealth Universities at London School of Economics and Political Science, from Sept to Dec 1990

Awarded Third world Proze in 1993 by The International Federation of Operational Research Societies(IFORS)

### **Books and Publications**

"Modelling and Analysis of Large System", Editor. Published by Oxford & IBH Publishing Co Pvt Ltd, New Delhi 1991. ISBN 81-204-0593-5

"Operational Research in Indian Steel Industry", Editor (Joint) Published by Wiley Eastern Limited, New Delhi, 1993. ISBN 81-224-0517-7

"Vendor Rating" Monograph-Indian Institute of Management, Ahmedabad, November 1993

"Operational Research for Development", Editor (Joint) Published by New Age International Publishers, New Delhi, 1996. ISBN: 81-224-1016-2

Published around 40 papers in books, national and international journals and conference proceedings.

Presented around 60 papers in national and international conferences, seminars and workshops.

Written about 15 registered and unregistered management cases for classroom discussions