

**ROLE AND INFLUENCE OF EMERGING SOCIAL
DYNAMICS IN DECISIONS ON INVESTMENT
OPPORTUNITIES IN CONSTRUCTION INDUSTRY**

By

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*Thesis submitted in fulfilment
of the requirements for the degree of*

DOCTOR OF PHILOSOPHY



**DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY, DELHI
MARCH, 1997**

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The thesis entitled "ROLE AND INFLUENCE OF EMERGING SOCIAL DYNAMICS IN DECISIONS ON INVESTMENT OPPORTUNITIES IN CONSTRUCTION INDUSTRY" submitted by Mr. Rajeev Arora to the Indian Institute of Technology, Delhi, for the award of the degree of Doctor of Philosophy, 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 this Institute. The results presented in this thesis have not been submitted elsewhere for the award of any degree or diploma.

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DEDICATED TO MY PARENTS AND GOURI

ACKNOWLEDGEMENTS

I wish to express my deep sense of gratitude and indebtedness to my Supervisor, Prof. P. Natarajan, Department of Civil Engineering, Indian Institute of Technology, Delhi, who inspired and guided me in the right direction with valuable advice throughout the period of this research. It is needless to say that without his help this work would not have come to this stage. I am also grateful to Mrs. Vijayalaxmi Natarajan who has always been kind and affectionate to me.

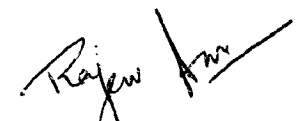
I record my sincere gratitude to all the faculty members of Civil Engineering Department, Indian Institute of Technology, Delhi, for their kind cooperation and necessary help, specially to Dr. V. B. Deshpande and Dr. B. Bhattacharjee, for their encouragement during this study.

My sincere thanks are also due to various officials from different organisations who spared much of their time for contributing useful information for the present study.

I am very much grateful to Dr. Jagat Arora, Department of Bio-Technology, Ministry of Science and Technology, Government of India, for his inspiration, encouragement, support and suggestions throughout this work.

Words fail to enable me to express my gratitude to my parents for their blessings and moral support throughout this study.

I would like to express my gratitude and appreciation to my wife Gouri for appreciating my difficulties and giving me her valuable support inspite of missing my company for long hours.


Rajeev Arora

ABSTRACT

Investment opportunities, particularly in the construction sector, are beset with increasing number of problems and involve the need for looking at multiple objectives besides technology-directed cost-benefit aspects.

Industry interaction has enabled to focus on the current inclination and need to look at the following objectives/goals/criteria: (1) J - Improve Asset Utilisation; (2) K - Maximise Sales Volume; (3) L - Maximise Aggregate Earnings; (4) M - Maximise Returns; (5) N - Achieve Growth Rate; (6) O - Accord With Social Responsibility; (7) P - Recognise Employee Welfare; (8) Q - Attempt Global Quality Standards; and (9) R - Attend To Environmental Impact Management. Literature does not reveal the development of a comprehensive procedure for development of decision-guides for such contexts.

Adopting the data of SPSM by Kalyana Sundaram, a goal programming model with four objectives was studied, employing also the methodologies of Functional Evaluation and Analytic Hierarchy Process. This emphasized the need that the relative weightages between the criteria be developed reflective of the prevalent social dynamics.

Construction industry participants were queried on their perceptions about the relative ranking between the nine objectives. The accumulated data helped in developing relative qualitative position values amongst the nine objectives as industry-aggregated averages.

Correlation values were developed from the same fundamental market research data. Reasoned appreciation of the correlation values revealed the several undercurrents affecting, alleviating and aiding the industry.

The same results of the market survey were recast into equations of comprehensive social dynamics together with a summation criterion, and lower bounds and upper bounds conditions. This lent to a G.P. formulation for the industry-aggregated average situation with a mind towards the nine objectives.

Alternative Trials of G.P. solutions were developed towards the best choice Trials. Certain concepts like "Inversion" came into evidence during this aspect of the study.

The self-same industry participants were given the opportunity for a relook into their respective relative preferences among the objectives. This updated data sponsored the development of the concept of eventual equilibrium. The modified matrix of correlation values based on the updated responses was compared with the first set of correlation values. Significant comments could be developed which bore well upon the aspirations and dilemmas of the social dynamics orientations.

The industry can persuade itself to enable quantifications of achievement and alleviation measures in terms of each of the nine goals and thereby look for improving in the overall, both for the industry in the aggregate and for the society.

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