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

By

RAJEEV ARORA

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CERTIFICATE

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.

P. Natarajan

P. NATARAJAN
PROFESSOR OF CIVIL ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY (DELHI)
NEW DELHI - 110016 (INDIA)

DEDICATED TO MY PARENTS AND GOURI

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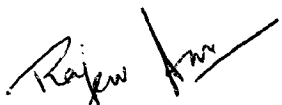

Rajeev Arora

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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