

FINANCIAL MODELLING OF MULTI-PROJECT SCHEDULES

(THROUGH COST BUILD UP CURVES)

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CERTIFICATE

This is to certify that the thesis entitled, "FINANCIAL MODELLING OF MULTI-PROJECT SCHEDULES (THROUGH COST BUILD UP CURVES)", being submitted by Mr. Mujtaba Husseinalipour to the Indian Institute of Technology, Delhi, for the award of the degree of Doctor of Philosophy is a record of the bonafide research work carried out by him under our guidance and supervision.

To the best of our knowledge the thesis has reached the requisite standard. The material presented in this thesis, in part or full, has not been submitted to any other university or Institute for the award of any degree or diploma.

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DEDICATED TO
MY WIFE
AND
MY SON

ACKNOWLEDGMENTS

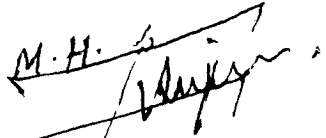
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(Mujtaba Husseinalipour)

ABSTRACT

This study pursues certain aspects of multi-project scheduling in view of its objectives. The problem of project management in developing countries and the deficiencies in optimal productive employment of funds in project implementation is the background against which the objectives and needs of the study are set out.

A wide-spectrum of literature and publications on single and multi-project scheduling problems have been reviewed.

The use of cost build up curves and their algebraic formulations proposed in the literature have been reviewed before adopting the fourth degree polynomial for a dynamic scheduling of projects on the basis of time-stepped updating.

Detailed tabular and pictorial representations have been developed for the cost build up curves and the coefficients in the polynomial are evaluated.

Based on the concept of cost build up curves, dynamically updated decision choices in funds allocation for a single project have been dealt with. Augmenting compensations (at cost index levels kept same as at project initiation) for deficit in achieved performance relative to the Early Start Budget ESB at the beginning of each period are visualised and explained; a decision prompter defined as the "Estimated Increase in Final Cost (EIFC)", is introduced. Whenever time overrun becomes unavoidable, corresponding augmenting compensations in such instances too are visualised and explained. Special considerations that might have to be taken note of during the last phases of a project are also discussed.

These concepts have been extended to situations of multi-project scheduling. The approaches employed have been detailed in a "Generalised Flow Chart for Multi-project Scheduling (GFCMS)", which purports to dynamically update decisions in a multi-project context.

The over-all model build up through chapters 3, 4 and 5 is enunciated into several subroutines and, inter-alia, features of special pertinence are highlighted. Test runs of the proposed model are reported with generated data.

Applications of the developed concepts and its auxiliaries are dealt with thereof.

The study concludes with reflections on the applicability of the multi-project system model. The limitations of the study and its possible extensions are also suggested.

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