

EXPERT SYSTEM FOR RESOLUTION OF DELAY CLAIMS IN CONSTRUCTION CONTRACTS

by

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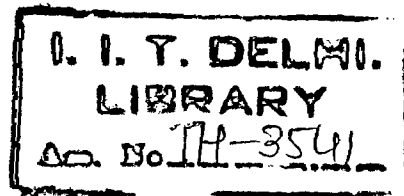
1. Construction Contracts
2. Construction - Claims



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Dedicated
to
My parents, wife & son

CERTIFICATE

This is to certify that the thesis titled “**Expert System for Resolution of Delay Claims in Construction Contracts**” being submitted by **Mr. Nitin Balkrishna Chaphalkar** (Entry No. 2004CEZ8121) to the Indian Institute of Technology, Delhi for the award of degree of Doctor of Philosophy is a bonafide record of the research work carried out by him under my supervision and guidance. The thesis work, in my opinion, has reached the requisite standard, fulfilling the requirements of the said degree. The results contained in the thesis have not been submitted, in part or full, to any other University or Institute for the award of any degree or diploma.



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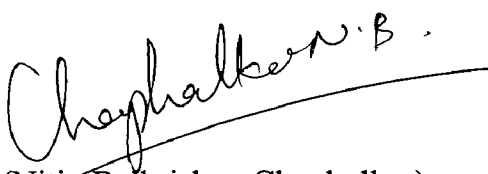
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ABSTRACT

The construction industry is the second largest industry in the India, being next to agriculture. Construction industry is vulnerable to time and cost overruns which lead to disputes. These disputes if not handled properly tend to drag on and consume time and money of all parties to the contract. The construction projects are of different types and magnitude and most of them are multidisciplinary in nature. With the increasing size and complexity in nature of projects the conditions of the contracts also tend to become more complicated. These complexities give rise to number of claims; which in turn, add to number of disputes to the already existing ones and further delay the settlement of disputes.

It was thought appropriate that if a scientific tool was developed for resolution of disputes arising out of one of most dispute-prone clauses, it would serve as a model for further development. Hence this work is an attempt to formulate guidelines to assess the strength of claims arising out of 'Time, delay and extension' clause through an expert system called "Construction Delay Claim Advisor".

Study of 52 arbitration awards helped in the deeper understanding of the subject as well as grouping the delay claims in six broad areas. Also the factors in the form of probing questions which represent the facts being considered by the arbitrator while giving the award were identified. The database for the system was developed using the published cases settled in the Supreme Court of India and various High Courts of the states. The similarity matching scheme was developed to compare the responses given by the user and the data in the system. Relative importance of the factors in each domain was also determined using a questionnaire survey and fed into the system to get the level of overall

matching of the user's case with that of the database cases. The expert system was developed using expert system shell 'iKen Studio' which displays the three matching cases from the database cases with the current case.

The system was also validated for its satisfactory performance and stability. Due to non availability of documented data, the system could not be designed to give the quantum of award. A template is suggested to be included in the award to help the readers including construction professionals and academicians in better understanding of the cases.

Keywords: Construction contracts; Delay claims; Dispute resolution; Expert system; Analytical hierarchy process.

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