

**FINAL YEAR PROJECT REPORT**

**ADVANCED DIPLOMA IN CIVIL ENGINEERING**

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**SHAH ALAM**

title

**AN APPLICATION OF EXPERT SYSTEM**

**IN**

**PREQUALIFYING CONTRACTORS**

**USING -C-**

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## SYNOPSIS

The purpose of this project is to generate a computer program which apply 'Expert System' to automate the prequalifying process of contractors in civil works. Expert system can be defined as a storage of expertise or knowledge base into a database form in order to come to a specific decision. An expert system is actually an artificial intelligence system to solve problems in a particular domain which contain a manageable amount of information. In the case of this study, the domain used is a set of information and rules acquired from people who are expert in contractor's prequalifying process.

This program consist of 4 examples of database to prequalify a contractor for specific civil work contracts or in other word to determine the contractor's capability to undertake specific works for which bids are to invited. The concept of evaluation used here is based on the scoring system, that is the establishment of groups of evaluation factors and assignment of a minimum score to be reached for each group.

On the application side, this computer program could enormously reduce the decision time taken for evaluating each contractor while maintaining high accuracy of each decision made. It also eliminates the human factor such as bias during the decision making.

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Lastly, I hope that this thesis could give some benefit in any form what so ever, to other engineering students of ITM as well as others in our community especially in engineering field. Thank you.

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# 1. INTRODUCTION

Prior to allowing candidate contractor to participate in a project bids, a review of their qualifications should be performed. A formal evaluation of parameters such as reputation, past performance, financial stability, experience record, firm capacity, current workload and technical expertise is usually included.

Contractors prequalification decision making involves a wide range of criteria that often consist of both qualitative and subjective information. Frequently the criteria used in this process must be modified in light of the particular construction owner and project. The process remain largely an art, where subjective judgement based on the individual's experience becomes an essential part of the process.

Thus, contractor prequalification typically requires use of 'heuristic knowledge' as rules of thumb in the form of 'if- then' decision rules. This process is often performed in an ill-structured and intuitive manner without the use of computer aids.

## 1.1. General Overview

The prototype computer program which apply knowledge-based expert system that have been developed is proposed to aid owners in making the contractors prequalifying decision. In regard to expert system, a large amount of effort in the knowledge and expertise are represented. As the result, a more structured approach to the process have been achieved. Thus,