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AN EXPERT SYSTEM FOR A COMPETITIVE BID ESTIMATION OF AN ELECTRICAL INSTALLATION PROJECT

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Department of Electrical Engineering

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Declaration

"I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The above candidate has carried out research for the Masters Dissertation under my supervision.

Signature of the supervisor: Date
(Dr KTMU Hemapala)

Signature of the supervisor: Date
(Dr AGBP Jayasekara)

Dedication

This is my first research work which is successfully concluded and this will dedicated to my wife Mrs. Nilanjana Senevirathne, who has been always supporting me to make my dreams come true.

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Finally, I gratefully thank my parents who wish my success all the time. My family and friends who have shared ups and downs in my life evenly and the doctrine of load Buddha which I believe the only truth that people can survive and enlighten one day.

Abstract

Construction Industry in Sri Lanka has started to boom from few years back and is going to reach its peak now, therefore, companies require to have more attention on bid estimation in terms of the accuracy and the competitiveness since there are lots of competitors who are always searching for wining their bids.

When it comes to electrical installation field, it is more complex and must be handled by experience quantity surveyor (QS) with a sound supervision from an electrical engineer so that requirements stipulated in the bidding documents are to be well-understood and quoted accordingly.

However the current issues are (i) all the electrical contractors cannot afford to have expertise knowledge on this context and even if had, cannot employ for continuous operation because it tends to reduce the accuracy level of the output. (ii) Conventional estimation techniques are still not reviewed so that continuous improvements on techniques of bidding should be promoted so that introduction of more reliable system would be useful to reduce the complexity of bid estimation process and release the pressure on the estimator in turn. (iii) Application of software base expert systems is still not developed and not applied in the electrical installation perspective in Sri Lanka and implementing such a system should be considered to solve the matter efficiently.

Therefore this research will use expertise knowledge to build a knowledge base expert system and the same will be implemented in software base so that the end result is to overcome prevailing issues in electrical bid estimation in Sri Lanka.

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Abbreviations

Abbreviation	Description
ES	Expert System
FIDIC	Federation International des Ingenieurs counseils (International federation of consulting engineers)
JICA	Japan International Corporation Agency
ICE	Institute of Civil Engineers
NEC	National Electrical Code
ICTAD	Institute for Construction Training and Development
IEEE	Institute of Electrical and Electronic Engineers
BOQ	Bills of Quantities
QS	Quantity Surveyor
OHP	Overhead and Profit
USAF	United states Air Force

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