



**Assessment of Design Quality Management in Jordanian  
Companies Using Complex Proportional Assessment  
(COPRAS) Method**

**By: Esraa Shaban AL-Hafi**

**Supervisor: Dr. Ibrahim A. Mohammed**

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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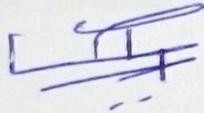
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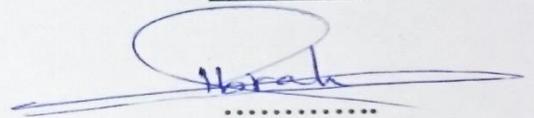
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*Assoc. Dr. Ibrahim A. Mohammed (Supervisor)*

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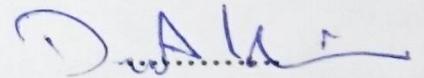


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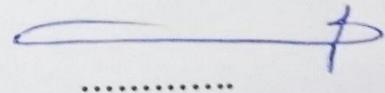


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## DEDICATION

*I would like to dedicate this work to*

*My beloved parents*

*for taught me the value of education and supported me all the way*

*My dear husband*

*for his inspiration and unlimited encouragement*

*My Lovely kids*

*whose innocent energy was and still a source of inspiration and hoped for  
them a bright future*

*My brothers and sisters*

*for their Continuous Support in order to reach my dreams*

*I pray that Allah, the most gracious, the most merciful to grant them  
paradise as a reward for their patience and efforts.*

*hoping that I made all of them proud.*

*ESRAA AL-HAFI*

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## ABSTRACT

The design stage considered as one of the essential stages of engineering project life cycle. Even the quality requirements at this stage would be a basis to the next levels of preparation, construction and maintenance.

The main objective of this research is study the quality and confirming it in the design phase, also how it can be employed technical grounds (The Method of Multiple Criteria Complex Proportional Assessment (COPRAS)). COPRAS method consists of alternatives and criteria, in this research there are five companies alternatives classified as consulting engineering companies which are (A1, A2, A3, A4 and A5) and twelve main criteria collected from previous works and studies.

As a result of conducted research, the controlling of design output is one of the main design quality criteria which had the highest relative importance was in comparison with all other criteria, in addition, the evaluation was various between the companies, where the company A4 obtained the highest assessment while the company A2 had the lowest evaluation, but in general, the design quality in the Jordanian companies is weak. So the proposed framework and the obtained results can help stakeholders of projects in Jordanian companies to get better understanding manage the design phase.

Finally, it recommended to use the application of techniques of decision- making multi-criteria in the evaluation of project in addition to expediting the application of the systems proposed by the researcher for the design quality management to help engineers on the best implementation of this administration.

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## LIST OF ABBREVIATIONS

AHP	Analytic Hierarchy Process
ANP	Analytic Network Process
ARAS	Additive Ratio Assessment
B.Sc.	Bachelor Degree
BIM	Building Information Modeling
CBR	Case-Based Reasoning
CILOS	Criteria Impact LOSs
COPRAS	Complex Proportional Assessment
COPRAS-F	Fuzzy COPRAS
COPRAS-G	Complex Proportional Assessment of alternatives with Grey relations
DEA	Data Envelopment Analysis
EDAS	Evaluation Based on Distance from Average Solution
FAHP	Fuzzy Analytic Hierarchy Process
GIS	Geographic Information System
GP	Goal Programming
IDOCRIW	integrated determination of objective criteria weights
ISO	International Organization for Standardization
M.Sc.	Master degree
MADM	Multi Attribute Decision Making

MAUT	Multi-Attribute Utility Theory
MCDA	Multi-Criteria Decision Analysis
MCDM	Multi-Criteria Decision Making
Ph.D	Doctor of Philosophy
POP	Product, Organization and Process
PROMETHEE	Preference Ranking Organization Method for Enrichment Evaluations
QM	Quality Management
ROC	Rank Order Centroid
RR	Rank Reciprocal weights
RS	Rank Sum Weights
SAW	Simple Additive Weighting
SMART	Simple Multi-Attribute Ranking Technique
SWARA	Step-wise Weight Assessment Ratio Analysis
TOPSIS	Technique for Order of Preference by Similarity to Ideal Solution
WSM	Weighted Sum Model