Ain Shams University
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Integrating Value Engineering in the Design of Intelligent Buildings

A Thesis submitted to the Faculty of Engineering in the partial fulfillment of the requirements for the degree of Master of Science in Architecture.

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Dedication…

I dedicate this thesis to my Family, especially…

My dear Father, Mother and Brothers,
And
My supporting Wife and lovely Sons…

Every one of you had set an example in a way that brought along this success, without your continuous support, patience, love and sacrifice; it would have been a lot harder for me to be who I am.

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Statement

This Thesis is submitted to Ain Shams University, Faculty of Engineering in partial fulfillment of the requirements of Master of Science Degree in Architecture.

The work included in this thesis was accomplished by the researcher at the Department of Architecture – Faculty of Engineering – Ain Shams University, in the period between "2006 – 2012". No part of this thesis has been submitted for a degree or a qualification at any other University or Institute.

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God gives success
The Researcher

Abstract

There is undefined relation between the value engineering concepts and the intelligent building in optimizing the value and cost of the building during its life cycle time. The research aims at defining the architectural parameters that achieve the integration of value engineering in the design of intelligent buildings.

The research study the value engineering methodology application and techniques and focuses on the life cycle costing technique defining and explaining the methodology of calculations of this technique as it is used in the analytical application.

The research discuss the intelligent buildings from an economic perspective illustrating the design criteria of these buildings and the market demand for the intelligent building demonstrating the reasons for extra initial cost and the reduced life cycle cost.

The research presents a value engineering study for two traditional buildings, illustrating the step of application of the value engineering methodology and the techniques used. The analytical study aims at highlighting the architectural value engineering proposed ideas that affect the life cycle cost of the building.

The research also analyzes local case studies buildings applying value engineering study for the façade elements of the building and studies the consequences of using the proposed intelligent alternatives suggested by the value engineering on the life cycle cost of the building.

Finally, the research introduced a set of conclusions and recommendation to motive the design of intelligent buildings under the scope of value engineering and the research suggests a "value engineering check list for intelligent buildings"

Keywords

Value engineering (VE) – Life cycle Cost (LCC) - Intelligent Building (IB) – Intelligent buildings in Egypt .

List of Abbreviations

Abbreviation	Word
VA	Value Analysis
VE	Value Engineering
LCC	Life Cycle cost
LCCA	Life Cycle Cost Analysis
IB	Intelligent Building
PW	Present worth
PWA	Present worth of annuity
CTP	Capital Tower Project
NEH	National Eye Hospital
ECG	Engineering Consultant Group

List of Contents

Introduction

Chapter 1
Value Engineering and Life Cycle Cost Analysis

Chapter 2
Intelligent Building in Economic Perspective

Chapter 3
Value Engineering Analytical Examples

Chapter 4
VE Case Studies for IB

Chapter 5
Conclusions and Recommendations

List of Figures

Chapter 1

Chapter 2

Chapter 3

Chapter 4

List of Tables

Chapter 1

Chapter 2

Chapter 3

Chapter 4