UNIVERSITY OF MORATUWA

INFORMATION TECHNOLOGY FOR THE CONSTRUCTION INDUSTRY

BY

D.R.C. DASSANAYAKE



University of Moratuwa, Sri Lanka. Electronic Theses & Dissertations www.lib.mrt.ac.lk

SUPERVISED BY

DR. G.W. KODIKARA

DEPARTMENT OF CIVIL ENGINEERING LINUVEDSITY OF MORATUWA, UNIVERSITY OF MORATUWA A, SRI LANKA.

<u>69"93"</u> 69:007

016

LB (DON 11/1994

INFORMATION TECHNOLOGY FOR THE CONSTRUCTION INDUSTRY

BY පුස්තකාලය මොරටුව විශ්ව විදහාලය. හි ලංකාව මොරටුව,

D.R.C. DASSANAYAKE

THE THESIS SUBMITED IN PARTIAL FULFILMENT

OF

THE REQUIREMENT FOR THE DEGREE OF

MASTER OF ENGINEERING



DEPARTMENT OF CIVIL ENGINEERING

SUPERVISED BY DR. G.W. KODIKARA

We accept this thesis as confirming to the required standard

60914

4M Thesis 67 " 02 poll. C^A

University of Moratuwa

September 93 60914

CONSTRUCTION & STRUCTURAL ENGINEERING DEPARTMENT OF CIVIL ENGINEERING UNIVERSITY OF MORATUWA.

ABSTRACT

Information Technology (IT) has become a vital component in the context of policy for science and technology development in many countries. Construction industry as a whole is now geared to explore the full benefits of IT. It is evident that the construction industry differs from other industries due to its fragmented nature and involvement of expert knowledge, judgment experience. Because of this complexity in the construction and there is a greater potential for IT and many industry countries considering to extend beyond productivity gains now to are strategic applications. This research establishes the current use of IT in the construction industry giving special regard to Lankan context. The research also draws out the Sri recommendations for strategic use of IT and suggests an IT framework for Sri Lankan Construction Industry.

Key words

Information Technology, Construction industry, Computers, Telecommunications.



:

University of Moratuwa, Sri Lanka. Electronic Theses & Dissertations www.lib.mrt.ac.lk



CONTENTS

			Page	
1.	INTRODUCTION			
	1.1	Background	01	
	1.2	Research Objectives	02	
	1.3	Research Methodology	02	
	1.4	Main findings	03	
	1.5	Recommendation	03	
2.	INFO	RMATION TECHNOLOGY	04	
	2.1	What is Information Technology	04	
	2.2	Available IT	08	
	2.3	Future Development of IT	13	
	2.4	IT in the construction industry	16	
3.	CURR	ENT USE OF ENFORMATION TECHNOLOGY NKA.	20	
	3.1	Computerectionaries & Dissertations	20	
	3.2	Computer software	23	
	3.3	Telecommunications	23	
4.	BENE	FITS THAT CAN BE ACHIEVED	28	
	4.1	Engineering Consultants	28	
	4.2	Architects	29	
	4.3	Quantity Surveyor	30	
	4.4	Contractors	32	
5.	BEST	APPROACH TO GET THE MAXIMUM BENEFITS	34	
	5.1	Basic Prerequisites	34	
	5.2	The problems of IT implementations in the construction industry	35	
	5.3	Strategy for the construction industry	39	
	5.4	An IT framework for Sri Lankan construction industry	41	
6.	CONC	CONCLUSIONS 43		
7.	RECO	RECOMMENDATIONS 4		

LIST OF ABBREVIATIONS

3D	-	Three Dimensional
4GL	-	Fourth Generation Languages
BIOS	-	Basic inputs outputs system
CAD	-	Computer Aided Design
CAE		Computer Aided Estimating
CAM	-	Computer Aided Manufacturing
CASE	-	Computer Aided Software Engineering
CICA	-	Construction Industry Computing Association
CNC	_	Computer Numerically controlled
CPU		Central Processing Unit
DP	-	Data Processing
EDI	-	Electronic Data Interchange
EIS	-	Enterprise Information System
FCEC	_	Federation of Civil Engineering Contractors
HTPM	_	Harward Total Project Manager
ICTAD	_	Institute for Construction Training & Development
IIS	-	Industry Information System
ISDN	-	Integrated Services Digital Network
IT		Information Technology
KBS	_	Knowledge Based Systems
LAN		Local Area Networks Sri Lanta
LDC	300	Less Developed Countries
Mbps (Megatranies Theses econosertations
NI	All and a	Natural Interaction
NN	STREETS & REALIST	Neural Network
OCR	_	Optical Character Recognition
PC	-	Personnel Computer
PERT	-	Programme Evaluation Review Technique
PIS	-	Project Information System
PSDN		Public Switched Data Networks
PSTN	•	Public switched Telephone Networks
RAM	-	Random Access Memory
RIBA	-	Royal Institute of British Architects
RICS	-	Royal Institute of Chartered Surveyors
ROM	-	Read Only Memory
SL	-	Sri Lanka
UK	-	United Kingdom
VAN	-	Value Added Network
WAN	-	Wide Area Network