

**ADOPTABILITY OF MANAGEMENT INFORMATION
SYSTEMS (MIS) IN CONSULTANCY ORGANIZATIONS
IN SRI LANKAN CONSTRUCTION INDUSTRY**

Miyuru Prabhashi Galgamuwa

(189603X)

MSc / PG Diploma in Project Management

Department of Building Economics

University of Moratuwa

Sri Lanka

May 2022

**ADOPTABILITY OF MANAGEMENT INFORMATION
SYSTEMS (MIS) IN CONSULTANCY ORGANIZATIONS
IN SRI LANKAN CONSTRUCTION INDUSTRY**

Miyuru Prabhashi Galgamuwa

(189603X)

Dissertation submitted in partial fulfillment of the requirements for the
degree Master of Science in Project Management

Department of Building Economics

University of Moratuwa

Sri Lanka

May 2022

DECLARATION

“I declare that this is my own work and this dissertation 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.

Also, I hereby grant to University of Moratuwa the non-exclusive right to reproduce and distribute my dissertation, in whole or in part in print, electronic or other medium. I retain the right to use this content in whole or part in future works (such as articles or books)”.

.....

.....

M P Galgamuwa

Date

I hereby acknowledge that Miyuru Prabhashi Galgamuwa has followed the dissertation process set by the Department of Building Economics.

.....

.....

Dr (Mrs) K.G.A.S. Waidyasekara

Date

Dissertation Supervisor

ABSTRACT

Management Information systems (MIS) have been a dominant application in the era of computing due to the widespread commercial availability of computing technologies. This is the best information and communication technology (ICT) concept which performs easily and increases efficiency. MIS projects are identified for the high cost and time involved. The implementation and adoption of MIS are costly and lengthy. Many organizations in Sri Lanka are about to adopt MIS. However, it is questionable whether most firms realize the true importance of MIS. Hence, this research investigates the adoptability of Management Information Systems (MIS) in Consultancy Organizations in Sri Lanka. First, a comprehensive literature review was conducted to understand the MIS concept, types of MIS used by organizations, pros & cons of using MIS, and requirement for MIS in an organization.

Next, the convergent mixed method research design approach was adopted for data analysis. Initially, nine interviews were held over the phone, using an interview guideline with industry experts from the three specific types of consultancy companies, i.e., Quantity Surveying, Engineering, and Architecture. Simultaneously, a detailed questionnaire survey was distributed among 72 industry professionals, including Quantity Surveyors, Engineers, Architects, Project Managers, and Draughtsman, with a response rate of 69%. The study is limited to the consultants' perceptions, such as Engineering, Quantity Surveying, and Architecture consultancy firms. It was not extended to clients and contractors.

It discovered that the findings from literature were primarily appropriate to the Sri Lankan framework through the feedback provided by the experts. Additionally, it revealed that the Sri Lankan construction industry is at a preliminary phase of developing and using MIS in consultancy organizations. Further, this study found that most companies consist of a small group of employees handling small and medium-scale projects. They do not feel the requirement of working and analyzing the project progress through MIS and are used to following the traditional manual methods. In addition, it is confirmed that adopting MIS supports organizations to stay competitive or enter innovative markets and convert the business procedure system.

The research findings disclosed some significant benefits such as data sharing, providing a valuable time-saving profit to the humans, flexibility and responsiveness, integrity, entree to appropriate knowledge and reports, balancing conflicting requirements, and development in structure and division techniques. Challenges such as the high-cost factor of developing new computer systems and losing information due to website and server crashes obtained the highest frequency percentage as identified. Finally, the study provides some recommendations for better and more accurate performance for the consultancy companies adopting appropriate MIS model/s.

Key Words: MIS, Benefits, Consultancy, Quantity Surveyors, Engineers, Architects

ACKNOELDGEMENT

First and foremost, I would like to take this opportunity to express my heartfelt gratitude to Dr (Mrs) K.G.A.S. Waidyasekara, my research supervisor, for all the priceless advice, guidance, assistance and constant encouragement given throughout this period on achieving the success of this endeavor.

My sincere gratitude shall also extend to Ch.QS. Suranga Jayasena, Head of the Department of Building Economics, Ch.QS Vijitha Disaratna, Former Programme Director and Ch.QS Indunil Senevirathne, Programme Director of PG Dip/MSc. in Project Management programme and all the academic as well as non-academic staff members of Department of Building Economics, for their immense support and guidance.

This study would not have been a success had it not been for the immense support rendered by the respondents of expert interviews and the questionnaire survey amidst their busy schedules. In addition, I would also like to thank the industry professionals who provided me valuable advice and helped me approach other respondents for data collection.

Last, but not least, I wish to express my heartiest appreciation and gratitude to my beloved parents, staff of Infotechs IDEAS (Pvt) Ltd and my batch mates for all the blessings, valuable guidance and encouragement provided throughout this study.

Thank You

M P Galgamuwa

ABBREVIATIONS

CI	Construction Industry
CMM	Capability Maturity Model
CV	Curriculum Vitae
DSS	Decision-support systems
EMIS	Educational Management Information System
ERP	Enterprise Resource Planning
ESS	Executive support systems
FBS	Functional business system
HMIS	Health Management Information System
HRMS	Human Resource Management System
ICT	Information communication Technology
IOIS	Inter ORGANIZATIONAl Information System
IOS	Inter Organizational System
IT	Information Technology
KMS	Knowledge management system
MIS	Management Information System
MKIS	Marketing Information System
QB	Quick Book
QS	Quantity Surveying
RII	Relative Importance Index
SIS	Strategic information system
SPICE	Standardized Process Improvement for Construction Enterprises
TPS	Transaction processing systems

TABLE OF CONTENTS

DECLARATION	ii
ABSTRACT.....	iii
ACKNOELDgement.....	iv
ABBREVIATIONS	v
1. INTRODUCTION	1
1.1 Research Background.....	1
1.2 Problem Statement	3
1.3 Aim of the research	4
1.4 Objectives of the research	4
1.5 Scope and Limitations.....	4
1.6 Research Methodology.....	5
1.7 Chapter Breakdown.....	5
1.8 Chapter Summary.....	6
2. LITERATURE REVIEW	7
2.2 Definition and Concept of MIS.....	7
2.3 Objectives of MIS	9
2.4 Components of IS and their relationship.....	11
2.5 Model of Management Information Systems	12
2.6 Development of Management Information Systems.....	13
2.7 Types of Management Information Systems	15
2.8 Advantages of Implementing Management Information Systems.....	17
2.9 Challenges of using MIS	18
2.10 Role of MIS in Decision Making	21
2.11 Applications of Management Information System	23
2.12 MIS in Construction Industry.....	25
2.13 Summary	30
3. RESEARCH METHODOLOGY.....	31
3.1 Introduction	31

3.2	Research Design.....	31
3.3	Research Approach	31
3.4	Research Techniques.....	34
3.4.1	Data Collection	34
3.4.2	Data Analysis	35
3.5	Research Process	36
3.6	Summary	38
4.	DATA ANALYSIS & FINDINGS	39
4.1	Introduction	39
4.2	Expert Interviews	39
4.2.1	Objectives of Expert Interviews.....	39
4.2.2	Design of the Expert Interview Guideline	39
4.2.3	Respondents of the Expert Interviews	40
4.3	Analysis of the outcome of Expert Interviews	40
4.3.1	The current practice of MIS in consultancy companies in the local Construction Industry.....	41
4.3.2	Benefits of using Management Information Systems compared to the Manual Systems	43
4.3.3	Challenges of using Management Information Systems and methods to overcome.....	44
4.4	Questionnaire Surveys.....	45
4.4.1	Aims of the Questionnaire Survey	45
4.4.2	Details of questionnaire respondents	46
4.5	Findings of the Questionnaire Survey	48
4.5.1	Awareness of common MIS types in consultancy companies.....	48
4.5.2	Current MIS types used in the organization while handling information 49	
4.5.3	Main objectives of using MIS for a consultancy company.....	50

4.5.4	Benefits of using MIS for a consultancy company	51
4.5.5	Challenges of using MIS in a consultancy company	52
4.5.6	Suitable strategies can process to implement MIS in a consultancy company	53
4.6	Discussion of Findings	54
4.7	Chapter Summary	55
5.	CONCLUSIONs AND RECOMMONDATIONs	56
5.1	Introduction	56
5.2	Conclusions	56
5.2.1	Achievement of Objective One - Examine the MIS concept and its applications globally and locally	56
5.2.2	Achievement of Objective Two - Identify the benefits of implementing MIS in Consultancy Organizations in the Sri Lankan Construction Industry	57
5.2.3	Achievement of Objective Three - Investigate the barriers to using MIS in Consultancy Organizations in Sri Lanka	58
5.2.4	Achievement of Objective Four - Propose suitable strategies to (efficiently and effectively) enhance the use of MIS in consultancy organizations in Sri Lanka.....	59
5.3	Limitations of the Research.....	59
5.4	Recommendations for the Industry	60
5.5	Areas for further study	60
6.	REFERENCES	62
	Appendix A - Semi Structured Interview Guideline.....	76
	Appendix B – Interview Transcript	78
	Appendix C - Questionnaire Guideline.....	81

LIST OF FIGURES

Figure 2.1: Five Components of an Information System (IS) (Source: Kroenke, 2007)..	11
Figure 2.2 : MIS Model (Source: Mishra, Kendhe and Bhalerao, 2015).....	12
Figure 2.3 : Management Information System (MIS) Development Model (Source: Tripathi, 2011)	14
Figure 2.4: Types of Management Information System (Source: Singh and Kaur, 2012)	15
Figure 2. 5: Process of Decision Making (Source: Simon, 1984)	22
Figure 2. 6: The process through which the health management information system evolved in Malawi. (Source: Chaulagai et al, 2001).....	25
Figure 2.7: Fragmented nature of the Construction Industry (Sarshar et al., 2000)	26
Figure 2: 8: preferred communication model for construction (Sarshar et al., 2000)	27
Figure 2. 9: Project Model for Construction (Sarshar et al., 2000)	27
Figure 2.10: SPICE Model (Sarshar et al., 2000)	28
Figure 2.11: SPICE Assessment Approach (Sarshar et al., 2000).....	28
Figure 3.1: Characteristics of Research approaches	32
Figure 3.2: Triangular concurrent mixed design approach	33
Figure 3.3: Importance Level from RII (Sakhare and Chougule, 2019).....	36
Figure 3. 4: Research Process	37
Figure 4.1: Response rate to questionnaire survey	46
Figure 4.2: Professional Background of the Respondents	47
Figure 4.3: Working Experience of the Respondents	47
Figure 4.4: Current usage of MIS in Consultancy Companies	49
Figure 4.5: Life cycle approach to the development of MIS	53

LIST OF TABLES

Table 4.1: Profile of the Interviewees	40
Table 4.2: Awareness of Common MIS types	48
Table 4.3: Main objectives of using MIS.....	50
Table 4.4: Benefits of using MIS	51
Table 4.5: Challenges of using MIS	52