

ATTITUDES OF SITE PERSONNEL TOWARDS WASTE MANAGEMENT OF BUILDING CONSTRUCTION PROJECTS IN SRI LANKA

By
J.P.K.N. Jayaweerarathna
Supervised by
Dr. J.M.A. Manatunge

The Dissertation was submitted to the Department of Civil Engineering of the University of Moratuwa in partial fulfilment of the requirement for the Degree of Master of Science in Construction of Project Management.

Department of Civil Engineering
University of Moratuwa

2010

94538

Abstract

Waste management is a very widely known subject and it has served with many aspects of research areas already carried out to avoid waste in construction industry. But the problem still remains as this is very severe problem to the construction industry in terms of cost and time involvement to the waste reduction efforts and the cost of wasted materials. Although the designers, planners and managers trying to develop various means of waste reduction efforts, finally the people who are actually engaged with the work have more influence towards the outcomes of waste management. Therefore the examination of their attitudes regarding this concept is worthwhile to the successfulness of this effort.

In Sri Lanka it is hard to find any widely published research that, has addressed attitudes and behavioural factors of site personnel towards waste management of construction industry. Since the construction is a highly labour intensive trade of work, the attitudes and behaviours of individuals involved in the construction work influence its growth and performance.

This research intends to provide insights of what attitudes and behaviours have the more significance towards waste management of building construction industry in Sri Lanka. Further the individuals who are actually work at construction sites or the operatives of the construction work were selected for this research, since they are the more influential cluster of the construction works towards waste management.

The ultimate intention of this research is to find out the important attitudes of site personnel towards waste management in Sri Lankan Building construction industry to overcome the negative attitudes for a successful project waste management.

Declaration

I hereby declare that this submission is my own work and that to the best of my knowledge and belief, it contains neither materials previously published or written by another person, nor material, which to a substantial extent has been accepted for the award of any other degree or diploma of an university or other institute of higher studies, except where an acknowledgement is made in the text.

Jayaweerarathna J.P.K.N.

Date: 22^{nd} February 2010

This is to certify that this thesis submitted by J.P.K.N. Jayaweerarathna is a record of the candidate's own work carried out by her under my supervision. The matter embodied in this thesis is original and has not been submitted for the award of any other degree.

UOM Verified Signature

Research Supervisor

Dr. J.M.A. Manatunge

Department of Civil Engineering,

University of Moratuwa

Date: 22nd February 2010

i

Acknowledgment

The research was concluded with much dedication and assistance in numerous ways, which I am indebted. It is my pleasant task to place my deep gratitude to all the individuals and organizations those who contributed and extended their kind cooperation in order to achieve the study successful.

First of all, I would like to offer my grateful thank to the head of the Department of Construction Project Management, Dr Asoka Perera, respected research coordinator, Dr Lesley L. Ekanayake and all the other academic and non academic staff for their continues support extended to me during the preparation of the research report.

I express my enormous indebtedness to Dr J.M.A. Manatunge who very responsibly guided me to success, in the arduous role of dedicated supervisor, for his valuable and timely guidance throughout this study.

I wish to deliver my sincere thank to all the people who willingly gave their assistance on many occasions in direct ways and for guidance and cooperation to complete my research successfully.

Finally, I owe my exceptional appreciation and gratitude to my family for the spiritual and emotional reinforcement throughout the study and for the unstained support.

Table of Contents

Abstract		vi
List of Fig	gures	vii
List of Tal	bles	viii
Abbreviati	ions and Acronyms	ix
СНАРТЕ	CR 01	1
Introduct	tion	1
1.1	Background	1
1.2	Problem Definition	3
1.3	Objectives	3
1.4	Scope and Limitations	4
1.5	University of Moratuwa, Sri Lanka. Methodology	4
1.5.1	Primary Survey V. lib. mrt. ac. lk	
1.5.2	Secondary Survey	5
1.6	Main Findings	6
1.7	Guide to Report	6
СНАРТЕ	ER 02	7
Literatur	e Review	7
2.1	Waste Management	7
2.1.1	Types of Waste	8
2.1.2	Waste Management Practices	10
2.1.3	Reusing of Construction Waste	11
2.1.4	Recycling of Construction Waste	11
2.1.5	Disposal of Construction Waste	12

2.2	Environmental Impacts from Construction Waste	12
2.2.1	Sustainability of Construction Work	14
2.3	Attitudes and Behaviors	15
2.3.1	Formation of Attitudes	16
2.3.2	Factors Affecting to Attitudes	17
2.4	Attitudes and Construction Waste Management	17
СНАРТЕ	R 03	20
Methodol	ogy	20
3.1	Introduction	20
3.2	Research Design	20
3.2.1	Research Approach	20
3.2.2	Research Techniques	20
A.	Literature Survey	
В.	Interviews www.lib.mrt.ac.lk	21
C.	Questionnaire Survey	22
3.2.3	Method of Sample Selection	23
3.3	Method of Analysis	24
СНАРТЕ	CR 04	27
Analysis.		27
4.1	Method of Data Collection	27
4.2	Distribution of the Sample	27
4.2.1	Categorization of Respondents of the Questionnaire Survey	28
4.2.2	Analysis of Demographic Characteristics of Respondents	29
43	Analysis of Managers and Site Staff Attitudes	33

	4.3.1	Calculation of Relative Important Index for Attitudes of	
		Management and the Site Staff	33
	4.3.2	Hypothesis Analysis of Management and Other Staff Attitudes	35
	4.4	Analysis of Workers Attitudes	40
	4.4.1	Calculation of Relative Important Index for Attitudes of Workers	40
	4.4.2	Hypothesis Analysis of Workers Attitudes	41
	4.5	Discussion of Results	46
	4.5.1	Comparison of Management, Site Staff and Site Workers	46
	4.5.2	Recommendations to Improve Waste Management	50
CH	IAPTER	. 05	53
Co	nclusion	and Recommendations	53
	5.1	Conclusion	53
	5.2	Recommendations and Further Researches. www.lib.mrt.ac.lk	54
Re	ferences		56
Ar	ppendices	S	58

List of Figures

Figure 2.1:	Hierarchy of waste materials disposal	13
Figure 2.2:	Waste Management and Sustainable Construction	14
Figure 2.3:	Dimensions of Attitudes	16
Figure 2.4:	The theory of planned behavior	16
Figure 3.1:	Likert Scale for the Questionnaire	23
Figure 4.1:	Distribution of the Sample	29
Figure 4.2:	Age range distribution of the sample	31
Figure 4.3:	Educational qualifications of management staff	31
Figure 4.4:	Educational qualifications of workers	32
Figure 4.5:	Sample distribution in terms of type of organization	32
Figure 4.6:	Relative Important Index for attitudes of management and site staff	34
Figure 4.7:	Relative Important Index for attitudes of workers	41



List of Tables

Table 3.1 :	Basis of Research Findings	. 25
Table 4.1:	Distribution of the Sample	. 28
Table 4.2:	Demographic characteristics of respondents	. 30
Table 4.3:	RII for Attitudes of management and site staff	. 33
Table 4.4:	Hypotheses for attitudes of management including site staff	. 36
Table 4.5:	Relative Important Index for attitudes of workers	. 40
Table 4.6:	Hypotheses for workers attitudes	. 42
Table 4.7:	Comparison of attitudes of two groups	. 47



Abbreviations and Acronyms

C&D Construction and Demolition

ICTAD Institute of Construction Training and Development

RII Relative Important Index

