



PROJECT MANAGER'S LEVEL OF SATISFACTION IN CONSTRUCTION LOGISTICS IN ISO 9001 CERTIFIED SRI LANKAN CONSTRUCTION COMPANIES

By

M. M. D. Munasinghe

Supervised By

Prof. N. D. Gunawardena

The Dissertation was submitted to the Department of Civil Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Master of Business Administration.

DEPARTMENT OF CIVIL ENGINEERING
UNIVERSITY OF MORATUWA
SRI LANKA.

2009

94536



Abstract

Customer satisfaction and continuous improvement are the fundamental goals of construction logistics and ISO 9001 standard. ISO 9001 is a universally understood and accepted quality management system which comprises of a set of tools, when properly implemented; gives customer confidence that the supplier can continuously meet their requirement timely in the required quality. While much attention and much research has been focused on exploring the relationships of external customer satisfaction, researches on internal customer satisfaction is very few in number. Happy satisfied internal customer will improve the bottom line of an organization. So by this case, the paper is to identify the factors that are required to increase Project Manager's satisfaction (most important internal customer) especially on actions that are taken by the management in ISO certified construction companies. The purpose of this study is to extend the framework for construction material logistics in customer satisfaction from owner to project manager level. This paper examines how construction logistics affect a project manager's level of satisfaction. A survey established the general importance that a project manager must place on the construction logistics. Accordingly, the most significantly correlated factors in customer satisfaction were obtained from a project manager's point of view. Key important factors related to satisfaction were found through interviews with project managers and a literature review. These included project's personnel, material flow, schedule, contractor's organization, and information flow. The study results out of the key logistic factors material flow, information flow, schedule and personal found to be highly significant over total satisfaction of PM on construction logistics in ISO certified Sri Lankan companies. Out of significant factors suggest that material flow, information flow and schedule are worthy of the most attention. Satisfying the above factors will greatly improve the construction logistics that will, greatly increase the project manager's level of satisfaction over construction logistics. This paper also investigates the effect of logistics on, time, cost and quality of a project and also suggested the actions that have been practiced by the management of ISO



9001certified construction companies in fulfilling their Project manager's satisfaction.

Declaration

I confirm that, except where indicated through the proper use of citations and references, this is my own original work. I confirm that, subject to final approval by the Board of Examiners of University of Moratuwa, a copy of this Dissertation may be placed upon the shelves of the library of the University of Moratuwa and may be circulated as required.



M.M.D. Munasinghe
MBA/PM/08/9753

21/02/2010

Date

To best of my knowledge the above particulars are correct. Sri Lanka.

UOM Verified Signature

ic Theses & Dissertations
.mrt.ac.lk

Prof. N. D. Gunawardena (Supervisor)
Department of Civil Engineering,
University of Moratuwa.

22/02/2010

Date

Approved by the examination committee:

MBA in PM, Department of Civil Engineering,
University of Moratuwa,
Sri Lanka.
December 2009.

Acknowledgement

I wish to express my sincere gratitude to the Department of Civil Engineering, University of Moratuwa, for giving me the opportunity to carry out a research for the completion of Master of Business Administration Programme in 2009.

My sincere gratitude goes to Prof. N. D. Gunawardena, my supervisor, Department of Civil Engineering, University of Moratuwa, for his continuous support and guidance throughout the course as well as this dissertation.

I would like also to place on record with respect Dr. Ashoka Perera, Dr. Lesly Ekanayake and Dr. Rangika Halwatura of the same Department for their valuable suggestions, comments and encouragement during the progress presentations. I would like also to thank all the members of the Department of Civil Engineering for their support throughout the period.

I offer my sincere gratitude to the people who assisted me in the process of collecting data in the focused organizations and other organizations. I would like also to thank Mr. Chesmi of the University of Sri Jayewardenepura for his guidance in statistical data analysis.

I deeply cherish the management of Access Engineering Ltd for extending me necessary guidance support. Special thanks go to Mr. Christopher Joshua, Mr. Rohana Fernando, Mr. K. W. Upasena.

I express my thanks and appreciation to my family for their understanding, motivation and support given to make the dissertation success. Last but not least, I would like to thank to all my colleagues and friends who helped and motivated me throughout.

M. M. D. Munasinghe

MBA/PM/08/9753

List of Symbols, Notations Abbreviations and Acronyms

COO	: Chief Operating Officer
GM	: General Manager
EC	: Electronic Commerce
HR	: Human Resources
KPI	: Key Performance Indicator
ISO	: International Standard Organization
ICTAD	: Institute of Construction, Training & Development
GPS	: Global Positioning System
JIT	: Just In Time
PM	: Program Manager
QMS	: Quality Management System
RFID	: Radio Frequency Identification



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

Contents

Abstract	iii
Acknowledgement	iv
List of Symbols, Notations Abbreviations and Acronyms	v
Contents	vi
List of Tables	viii
List of Figures	ix
1 Chapter 1: Introduction.....	1
1.1 Research Background.....	1
1.2 Problem Statement	3
1.3 Research Objectives	4
1.4 Methodology	5
1.4.1 Outline of Methodology.....	5
1.4.2 Methodology in Brief.....	5
1.5 Limitation of the Study	5
1.6 Key Findings	6
1.7 Chapter Breakdown.....	7
2 Chapter 2: Literature Review	8
2.1 Introduction	8
2.2 Overview	8
2.3 Construction Logistics.....	9
2.4 Supply Logistics & Site Logistics.....	15
2.5 Customer (Internal) Satisfaction	16
2.6 PM's Satisfaction in Construction Logistics.....	18
2.7 Main Factors related in Construction Logistics	18
2.8 Sri Lankan Construction Industry	19
2.8.1 ICTAD Grading of Major Civil Construction Companies in Sri Lanka.....	19
2.8.2 ISO Certified Construction Companies in Sri Lanka	22
3 Chapter 3: Methodology of study.....	22
3.1 Overview of Methodology	22
3.2 Research model	22
3.3 Identification of logistic factors in construction industry	23
3.4 Identify the key factors of the construction logistics factors identified.....	23

3.5	Importance of the Identified Logistic Factors	24
3.6	Impact on the Project Manager's Satisfaction in each Logistic Factor	24
3.7	Population and the Sample	25
3.8	Design of the Questionnaire	25
3.9	Questionnaire Survey	25
3.10	Method of Data Analysis.....	26
4	Chapter 4: Data Analysis and Discussion.....	27
4.1	Introduction	27
4.2	Sample characteristics	27
4.2.1	Respondent's Position.....	27
4.2.2	Gender Variation.....	27
4.2.3	Respondent's Age	28
4.2.4	Education Qualification	29
4.2.5	Construction Experience.....	30
4.3	Construction logistic Factors.....	31
4.4	The Importance of Key Logistic Factors.....	32
4.5	Relationship between Construction Logistics and Project Manager's Satisfaction..	33
4.6	Variation in each Key Satisfaction Variable	35
4.6.1	Satisfaction on Project's Personnel (Personal)	36
4.6.2	Satisfaction on Material Flow (Mat_Flow).....	37
4.6.3	Satisfaction on Schedule (Schedule).....	39
4.6.4	Satisfaction on Contractor's Organization (Organization)	40
4.6.5	Satisfaction on Information Flow (Info_Flow).....	42
4.7	Impact of Critical Factors vs. Time.....	43
4.8	Impact of Critical Factors vs. Cost.....	45
4.9	Impact of Critical Factors vs. Quality	46
4.10	Summary	48
5	Chapter 5: Conclusions and Recommendations	49
5.1	Conclusions	49
5.2	Recommendations	51
	References and Bibliography	52
	Appendix.....	54
	A.1 Research Questionnaire.....	54

List of Tables

Table 2-1: ICTAD Grading of Major Civil Construction Companies in Sri Lanka	19
Table 3-1: Key important logistic factors	23
Table 4-1: Gender variation among respondents	27
Table 4-2: Representation of Respondents by Age Group	28
Table 4-3: Education Qualifications of Respondents	29
Table 4-4: Construction Experience among Respondents	30
Table 4-5: Construction Logistic Factors	31
Table 4-6: Relative importance of Key Logistic Factors.....	32
Table 4-7: Variables Entered/Removed –Satis_Total.....	33
Table 4-8: Model Summary - Satis_Total	34
Table 4-9: ANOVAb - Satis_Total	34
Table 4-10: Coefficientsa - Satis_Total	34
Table 4-11: Variables Entered/Removedb -Personal.....	36
Table 4-12: Model Summary - Personal	36
Table 4-13: ANOVAb -Personal	36
Table 4-14: Coefficientsa- Personal.....	37
Table 4-15: Variables Entered/Removedb- Mat_Flow.....	37
Table 4-16: Model Summary - Mat_Flow	38
Table 4-17: ANOVAb - Mat_Flow.....	38
Table 4-18: Coefficientsa - Mat_Flow.....	38
Table 4-19: Variables Entered/Removedb - Schedule.....	39
Table 4-20: Model Summary - Schedule	39
Table 4-21: ANOVAb- Schedule.....	39
Table 4-22: Coefficientsa - Schedule.....	40
Table 4-23: Variables Entered/Removedb - Organization.....	40
Table 4-24 : Model Summary - Organization.....	41
Table 4-25: ANOVAb - Organization	41
Table 4-26: Coefficientsa - Organization	41
Table 4-27: Variables Entered/Removedb- Info_Flow.....	42
Table 4-28: Model Summary - Info_Flow.....	42

Table 4-29 : ANOVAb - Info_Flow	42
Table 4-30: Coefficientsa - Info_Flow	43
Table 4-31: Impact of Critical Factors vs. Time.....	44
Table 4-32: Impact of Critical Factors vs. Cost.....	45
Table 4-33: Impact of Critical Factors vs. Quality	46

List of Figures

Figure 1-1: The Quality Chains (Gunawardena, 2005)	2
Figure 2-1: Product Realization Processes (Gunawardena, 2005).....	9
Figure 2-2 : Construction logistics tasks. (Jang, Russell and Yi 2003).	15
Figure 3-1: Conceptual model of the research.....	22
Figure 4-1: Gender variation among respondents.....	27
Figure 4-2: Representation of Respondents by Age Group.....	28
Figure 4-3: Education Qualifications of Respondents.....	29
Figure 4-4: Construction Experience among Respondents.....	30
Figure 4-5: Relative importance of key logistic factors.....	32