

SELECTION OF A PROCUREMENT METHOD FOR DISASTER RECONSTRUCTION

Wickramasinghe W.A.N.K.



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

DEPARTMENT OF BUILDING ECONOMICS
Faculty of Architecture
UNIVERSITY OF MORATUWA.

M.Sc. Dissertation

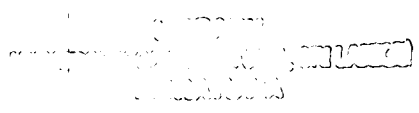
2010

16

AB/DON/162/10

SELECTION OF A PROCUREMENT METHOD FOR DISASTER RECONSTRUCTION

Wickramasinghe W.A.N.K.



University of Moratuwa, Sri Lanka.
Department of Building Economics
www.lib.mrt.ac.lk
University of Moratuwa

Sri Lanka

69"10"

69 003(043)

Submitted in as Partial Fulfillment of the Requirements of the Degree of Master
of Science
January 2010

University of Moratuwa



94523

Selection of a Procurement Method for Disaster Reconstruction



Table of Content

ABSTRACT	xii
Selection of a Procurement Method for Disaster Reconstruction	xii
CHAPTER 1	1
Introduction	1
1.1. Background	1
1.2. Introduction to construction procurement.....	4
1.3. Research Problem.....	6
1.4. Aims and Objectives	6
1.5. Methodology	7
1.6. Scope and limitations	7
1.7. Structure of the Study.....	8
CHAPTER 2	9
Literature Review	9
2.1. Construction Procurement Systems	9
2.1.1. Separated Procurement Systems.....	9
2.1.2. Integrated Procurement Systems (IPS).....	9
2.1.3. Management Oriented Systems.....	10
2.1.4. Collaborative Systems	11
2.2. Construction Procurement Selection - Conventional View	11
2.3. Factors Affecting the Procurement Selection – Broader View.....	13
2.3.1. Client Requirements	15
2.3.1.1. Cost certainty / Completion with in the Budget.....	18
2.3.1.2. Price Competition	18
2.3.1.3. Financial Risk	18
2.3.1.4. Tendering Cost.....	19
2.4. The Early Start of Project.....	19
2.4.1. Planning and Designing Time	20
2.4.2. Tendering and Evaluation Time	20
2.5. Construction Time.....	20

Selection of a Procurement Method for Disaster Reconstruction

2.6. Quality Level.....	21
2.7. Aesthetic Appearance of the Building	21
2.8. Complexity.....	21
2.9. Allocation of Responsibilities.....	22
2.10. Disputes and Arbitration.....	22
2.11. Accountability and Transparency	23
2.12. Familiarity (Client awareness of construction procurement system)	23
2.13. Flexibility.....	24
2.14. Client Characteristics.....	24
2.15. Project Characteristics	25
2.15.1. Type of the Project.....	26
2.15.2. Size of the Project	26
2.15.3. Project Cost.....	26
2.15.4. Degree of Flexibility.....	27
2.15.5. Degree of Complexity.....	27
2.15.6. Time Constraints.....	27
2.16. Payment method of the Project.....	28
2.17. Integration of Design and Construction of the Project	28
2.18. Project Funding Method	29
2.19. Construction Method	29
2.20. External Environment Factors	29
2.20.1. Market Competitiveness	30
2.20.2. Technology Feasibility.....	31
2.20.3. Regulatory Feasibility.....	31
2.20.4. Material Availability.....	32
2.20.5. Availability of Experienced Contractor	32
2.20.6. Weather Conditions/ Natural Disasters.....	32
2.20.7. Objection from neighbor / Public	33
2.20.8. Political Constraints.....	33
2.20.9. Government as a policy maker	33
2.20.10. Cultural Differences.....	34

Selection of a Procurement Method for Disaster Reconstruction

2.20.11. Education of Builders	34
2.20.12. Finance for the project	34
2.20.13. Information Technology	35
2.20.14. Institutional Bodies	35
2.20.15. Industrial Actions.....	35
2.21. Disasters.....	36
2.21.1. Types of disasters.....	36
2.21.2. Natural disasters.....	37
2.21.3. Man made disasters.....	38
2.21.4. Special characteristics in disaster reconstruction.....	38
CHAPTER THREE	41
Research Process & Methodology (Design)	41
CHAPTER FOUR	51
Introduction	51
4.1. Data Analysis and Discussion.....	51
4.2. Data Collection.....	51
4.3. Data Analysis and Results.....	53
4.3.1. Pilot Survey	53
CHAPTER FIVE	62
Conclusion, Recommendation & Futher studies.....	62
References.....	69
Annexes	
Appendices	



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

List of Abbreviation

- PSP - Procurement Selection Parameters
NGO - Non-Government Organization
INGO - International Non-Government Organization
IPS - Integrated Procurement Systems
ICTAD - Institute of Construction Training and Development
PDRP - Post Disaster Reconstruction Project
IFRC - International Red Cross and Red Crescent Societies List of Abbreviation



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

List of Tables

Table 2.3.1.: Summary of client's requirements for a construction project.....	17
Table 3.8.1: Arbitrary Respondent's Result.....	49
Table 4.2a: Profile of the Sample – Organization.....	51
Table 4.2b: Profile of the Sample – Professionals	52
Table 4.3.1a: Results of the Factors Selected.....	55
Table 4.3.1b: Results of the Factors Selected - only considered Client Organizations (Donors).....	55
Table 4.3.1c: Results of the Factors Selected - only considered Consultant Organizations...56	
Table 4.3.1d: Results of the Factors Selected - only considered Contractor Organizations...57	
Table 4.3.2a: Ranking of Significant Factors Influencing Post Disaster Reconstruction Procurement Selection.....	58
Table 4.3.2b: Ranking of Significant Factors Influencing Post Disaster Reconstruction Procurement Selection - only Client Organizations.....	59
Table 4.3.2c: Ranking of Significant Factors Influencing Post Disaster Reconstruction Procurement Selection - only Consultant Organizations.....	60
Table 4.3.2d: Ranking of Significant Factors Influencing Post Disaster Reconstruction Procurement Selection - Contractor Organizations.....	61

List of Figures

Figure 2.2: The Eternal Triangle.....	12
Figure 2.3.: Major factors affecting Construction Procurement Selection.....	14
Figure 2.21.1 Type of Disasters.....	36
Figure 2.21.2 Natural Disasters.....	37
Figure 2.21.3 Man Made Disasters.....	38
Figure 3 1a: Research Methodology.....	42
Figure 3.1b: Research Process.....	43
Figure 3.8.1b: Ascending order of the Selected Factors.....	50
Figure 5.1: Conceptual model for selection of procurement systems for disaster reconstruction projects.....	66



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

ACKNOWLEDGEMENT

I express my sincere thanks to my dissertation supervisor Prof. Raufdeen Rameezdeen, Professor, Department of Building Economics, University of Moratuwa for his guidance, instructions, comments and encouragement given to me in order to make this dissertation a reality. Without him, this report would not have materialized.

I extend my gratitude to the Dean of Faculty of Architecture, Head of Department of Building Economics, Course Coordinator/M.Sc. (PM) and all the other lecturers of M.Sc. (PM) course of the Department of Building Economics for their guidance and support to complete the report.

It is my foremost duty to pay my gratitude to the Department of Building Economics, University of Moratuwa, and all the academic and non-academic staff of the Department for the services rendered. I extend my gratitude to Mr. Indunil Senevirathna, Head of the Department of Building Economics and Coordinator of the Master of Science in Project Management for his keen interest and encouragement to the achievement of producing this dissertation.



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

I am also grateful to Dr. Sepani Senarathna, the Research Coordinator, for her interest and dedication throughout the year.

Further, I would like to acknowledge the contribution received from all the respondents for the success of the survey with their busy schedules.

Dedication

To my parents




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

A Study Submitted in Partial Fulfillment of the Requirements of the Degree of Master of Science in Project Management

Declaration

I hereby declare that this submission is my own work and that, it contains no 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 a University of other institution on higher learning, except where an acknowledgement is made in the text.

UOM Verified Signature

 W.A.N.K. Wickramasinghe
2nd February, 2010



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

Certification

I hereby acknowledge that Mr. W.A.N.K. Wickramasinghe has followed the dissertation process set by the Department of Building Economics

UOM Verified Signature

Prof. Raufdeen Rameezdeen
Dissertation Supervisor

09.02.2010

Date

Selection of a Procurement Method for Disaster Reconstruction

ABSTRACT

Selection of a Procurement Method for Disaster Reconstruction

Selecting a proper procurement method is vital in construction projects as it would result in successful completion of a project. Although conventional methods were used in the past, innovative ways have come up lately but not all parties concerned are knowledgeable of those facts. It is important to study the different procurement methods to be aware of them to be applied when the need arises. Even though literature is available on factors that should be considered in selection of a procurement method for normal project, very scant attention has been given on disaster reconstruction projects. When major catastrophes in the likes of Tsunami occur, it is essential to act fast and comply with the requirements of those affected parties through an appropriate procurement method. There is a high possibility that factors governing the selection of a normal project may not be suitable for disaster reconstruction. The aim of this research is to identify the most appropriate procurement method for disaster reconstruction in Sri Lanka.



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

Researchers conducted in the past over the world have identified many factors to be considered in the selection of a procurement method. The identified factors were discussed with a panel of experts comprising officials of the donor agencies, consultants and contractors. Ten factors identified as important were forwarded to parties who were involved in Tsunami reconstruction process and were requested to express their opinion on the level of significance on each factor and the results were statistically summarized. The factors that were identified were Risk management, Time and predictability, Price certainty & completion within the budget, Price competition, Accountability, Flexibility for changes, Quality of work, Familiarity, Project cost and funding method, Price complexity. The questionnaire prepared based on those factors were forwarded to clients (donor), consultants and contractors who were involved in Tsunami reconstruction process and were requested to express their opinion on the level of significance on each factor and the results were

Selection of a Procurement Method for Disaster Reconstruction

statistically summarized. The parties responded to all ten factors with price competition, price certainty, financial risk, accountability and transparency, quality of work and construction time being the priorities in descending order.

Considering the above factors that have been identified it can be assumed that the Design and built method is more appropriate due to the urgency of reconstruction process in disaster situations.

Keywords: procurement, disaster, reconstruction, Sri Lanka



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