

AN ASSESSMENT ON SUITABILITY OF
E-PROCUREMENT
FOR
SRI LANKA RAILWAYS



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

**MASTER OF BUSINESS ADMINISTRATION
IN
e-GOVERNANCE**

A.T.L.P. Samarasinghe
Department of Computer Science & Engineering
University of Moratuwa
December 2009

AN ASSESSMENT ON SUITABILITY OF E-PROCUREMENT FOR SRI LANKA RAILWAYS

By



A.T.L.P. Samarasinghe
University of Moratuwa, Sri Lanka.
Electronic Theses & Dissertations
www.lib.mrt.ac.lk

The Dissertation was submitted to the Department of Computer Science & Engineering of the University of Moratuwa in partial fulfilment of the requirement for the Degree of Master of Business Administration.

Department of Computer Science & Engineering
University of Moratuwa
December 2009

DECLARATION

“I certify that this thesis does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma, in any university, to the best of my knowledge and belief. It does not contain any material previously published, written or orally communicated, by another person or me except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organizations”

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

To the best of my knowledge, the above particulars are correct.

.....
Supervisor
(Dr. Chathura De Silva)

ABSTRACT

The level of maintenance of locomotives and other engineering systems of the Sri Lanka Railways (SLR) does not meet, the system availability levels, demanded by the train operation and the problem persists even after receiving new rolling stock in recent years. This has been revealed by Railway Performance Reports. One of the main reasons is the non-availability of spare parts and other maintenance items, at the time when they are really required. The railway procurement process is not geared to cater to the requirements of the maintenance departments of SLR.

The research was designed, to identify the current problems of railway procurements, including problems experienced by maintenance departments, suppliers and by the procurement (stores) department. It examines how other similar organizations have overcome such problems through application of technology. The existing railway procurement process was deeply studied while studying the procurement processes of other Sri Lankan Organizations in the same manner. Related literature review revealed that carrying out organizational procurements electronically brings many advantages and the current procurement problems of Sri Lanka Railways (SLR) can be overcome through implementation of electronic procurement within railways.

The survey identified fourteen problem faced by the three groups of stakeholders of the railway procurements. Furthermore, it was found that the other Sri Lankan Organisations who have implemented electronic procurement, also have had similar problems and have overcome those problems through e-P implementations.

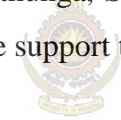
Based on the survey findings and as per literature review, it is recommended to implement electronic procurement within Sri Lanka Railways and a phased implementation starting from 'Restricted e-Tendering' is recommended. Furthermore, a few improvements and reforms such as, classification of procuring items, with the intension of diversifying procurement strategies and formation of Procurement Circles to expedite the current processes, are recommended.

ACKNOWLEDGEMENT

I am deeply indebted to the Head of the Department of Computer Science and Engineering, Mrs. Vishaka Nanayakkara, and all the other staff members, who paved the way for me to achieve the expected level of success.

Also, I wish to extend my gratitude to my research supervisor, Dr. Chathura De Silva, for the continuous support, guidance and encouragement given me to make this research, a success.

My special thanks are due to Dr. T.L.Gunaruwan, former General Manager of Railways, Mr. P.P.Wijsekara, General Manager of Railways and Mr. Nimal Amarathunga, Superintendent of Railway Stores for permitting me and for extending me, the support to carry out the research



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

Finally, I would be remiss, if I did not mention my wife, son and daughter for the assistance given to me, during the last few months.

A.T.L.P.Samarasinghe

MBA/eGov/08/10207

TABLE OF CONTENTS

TITLE		
Declaration		i
Abstract		ii
Acknowledgement		iii
Table of Contents		iv
List of Figures		vii
List of tables		viii
Abbreviations		ix
 CHAPTER - 1 INTRODUCTION		 1
1.1	Background	1
1.1.1	Railway Stores Department	2
1.1.2	Reasons for not achieving the required performance levels	6
1.1.3	Past studies on Railway Procurement System	7
1.1.4	Recent developments in Business trends and Technologies	9
1.2	Research Problem	10
1.3	Objectives	11
1.4	Importance and the benefits of the research	12
1.5	Scope of work and Limitations of the study	13
1.5.1	Scope of work	13
1.5.2	Limitations	14
 CHAPTER - 2 LITERATURE REVIEW		 15
2.1	Procurement	15
2.1.1	Government Procurements	16
2.1.2	The Procurement Processes	18

2.1.3	The Government Procurement Process	26
2.2	Electronic Procurement	32
2.2.1	Electronic Government Procurement	35
2.2.2	Electronic Procurement Process	36
2.2.3	Electronic Government Procurement Processes	40
2.3	Advantages / Benefits of Electronic Procurement	45
2.4	Disadvantages and Risks in Electronic Procurement	49
2.4.1	Issues and Problems in Electronic Procurement implementation	50
2.4.2	Need of Procurement Re-engineering	52
2.5	Staged or Phased Implementation of Electronic Procurement	53
 CHAPTER - 3 METHODOLOGY		 55
3.1	Conceptual Framework	59
 CHAPTER - 4		 60
4.1	Electronic Procurement Systems of other organisations	60
4.1.1	Airport and Aviation Services Limited (AASL)	60
4.1.2	Sri Lanka Telecom Limited (SLT)	65
4.1.3	Indian Railways (IR)	72
4.2	Procurement Process of Sri Lanka Railways (SLR)	77
4.3	Observations on survey findings	80
4.3.1	Lead Times visualized from user department's perspective	80
4.3.2	The problems / issues in the SLR's procurement system observed by the user departments in SLR	81
4.3.3	The problems/issues in the SLR's procurement system observed by the Railway Procurement Department	82
4.3.4	The Situation in other organizations in Sri Lanka before and after e- Procurement implementation	83
4.4	Observations of the Literature Review	85

CHAPTER - 5	DATA ANALYSIS	86
5.1	Problems / difficulties of SLR against the e-procurement implementations in other organizations	86
5.2	Problems / difficulties in SLR by matching them with the findings of the literature review	91
5.3	Procurement processes of the other organizations against the Sri Lanka Railway procurement process	92
CHAPTER - 6	RECOMMENDATIONS and CONCLUSION	95
6.1	Recommendations	95
6.1.1	Implementation of electronic procurement within Sri Lanka Railways	95
6.1.2	Implementing Procurement Management reforms / improvements	97
6.1.3	Revenue Generation through Railway Electronic Procurement Portal	99
6.2	Conclusions	100
	Appendix - I – The Organisation Chart of SLR	101
	Appendix – II - Questionnaire for User Departments	102
	Appendix - III – Questionnaire for Stores Department	106
	Appendix – IV – Questionnaire for Suppliers	112
	Appendix – V – Questionnaire for other organizations	115
	References	119

LIST OF FIGURES

1.1	Distribution of functions within the Railway Stores Department	03
1.2	Classification of procured items	04
2.1	Procurement Process as a chain of activities	19
2.2	The Procurement Process as a cycle with sub stages	19
2.3	The 'Inquiry' Procurement Process including document flow	22
2.4	Government Procurement Process	26
2.5	Government Procurement Process in Philippines	27
2.6	Product-Agent-.Process Representation	32
2.7	The Electronic Procurement Process	36
2.8	e-Tendering Process as a chain of activities	37
2.9	Steps in e-Tendering Process	37
2.10	E-Purchasing Process	38
2.11	Philippine Government Electronic Procurement Process	42
3.1	Conceptual Framework	59
4.1	The Electronic Procurement Process of the Airport and Aviation Services Limited	64
4.2	Electronic Procurement Process of Sri Lanka Telecom (SLT) for Standard Items	70
4.3	Electronic Procurement Process of Sri Lanka Telecom (SLT) for Specific Items	71
4.4	E-Procurement Process of Indian Railways	76
4.5	SLR Procurement Process for Standard Items	78
4.6	SLR Procurement Process for Specific Items	79

LIST OF TABLES

1.1	Functions of Maintenance Departments (user departments)	04
1.2	Classification of procured items with annual averages	05
1.3	Level of maintenance of the Locomotive Fleet	05
1.4	Annual Train Delays due to problems in locomotives etc.	06
2.1	Differences in Public / Private Procurement Processes	17
2.2	Summary of Principles of Good Government Procurement System and Principles in the Government Procurement Guideline	18
2.4	Comparison of Procurement Methods	29
2.5	Survey results on Sri Lanka Government Procurements	31
3.1	Purposes of questionnaires	56
3.2	Factors evaluated by each questionnaire	57
3.3	Way of sampling the respondents	58
4.1	Lead times of items visualized by user departments	80
4.2	Procurement related problems faced by the user departments	81
4.3	Procurement related problems seen by the Stores Department	82
4.4	Situation in Sri Lankan Organisations - before and after implementation of Electronic Procurement	84
4.5	Advantages of e-Procurement and literature references	85
5.1	Present Situation in Sri Lanka Railways compared to situation in other Sri Lankan Organisations	89
5.2	Present Situation in Sri Lanka Railways compared to situation in other Sri Lankan Organisations	90
5.3	Comparison showing how e-procurement solves Railway Procurement problems	91
5.4	Comparing the procurement processes of AASL, SLT, Indian Railways and SLR	93
5.5	Benefits received by organizations after implementing of e-Procurement	94
6.1	Proposed Procurement Item Classification Method	97

ABBREVIATIONS

AASL – Airport and Aviation Services Limited

ADB – Asian Development Bank

B2B – Business to Business

CA – Certifying Authority

e-P – Electronic Procurement

GIN – Goods Inward Note

GMR – General Manager Railways

GoSL – Government of Sri Lanka

ICT – Information and Communication Technology

IR- Indian Railways

MRO – Maintenance – Repair – Operate

NRI – Network Readiness Index

RFQ – Request for Quotations

SLR – Sri Lanka Railways

SLT – Sri Lanka Telecom. Limited

SRS – Superintendent of Railway Stores