A FRAMEWORK FOR PROVIDING A LIFELONG SOCIAL SECURITY SYSTEM FOR THE OPERATIONAL WORKFORCE IN THE CONSTRUCTION INDUSTRY IN SRI LANKA

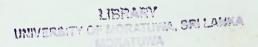


SUJEEVA PADMAKUMARA WIJEWICKREME

PhD THESIS 2016

A Framework for

Providing a Lifelong Social Security System for the Operational Workforce in the Construction Industry in Sri Lanka



Submitted in partial fulfillment of the requirements of the degree of Doctor of Philosophy in management, economic research and information technology



Sujeeva Padmakumara Wijewickreme
School of the Built Environment
College of Science and Technology
University of Salford

69 (043)

PhD Thesis

October 2016

TH 3278

A Framework for

Providing a Lifelong Social Security System for the Operational Workforce in the Construction Industry in Sri Lanka



Personal tutor:

Prof. Charles Egbu School of the Built Environment College of Science and Technology University of Salford



Supervisor:

Dr. Chaminda P Pathirage School of the Built Environment College of Science and Technology University of Salford



Local university supervisor:

Dr. Lesley L Ekanayake Department of Civil Engineering Faculty of Engineering University of Moratuwa

Sujeeva Padmakumara Wijewickreme
School of the Built Environment
College of Science and Technology
University of Salford

PhD Thesis October 2016

Table of Contents

Contents	i
Dedication	viii
Acknowledgement	ix
List of figures	x
List of tables	
List of equations	
List of abbreviations	xiii
Declaration	XV
Abstract	xvi
Chapter: 1 Introduction	1
1.1 Research background	1
1.2 Operational workforce	
1.3 Justification of the research	
1.4 Research problem	
1.5 Aim and objectives	11
1.5.1 Research aim	
1.5.2 Research objectives	11
1.6 Scope and limitations	12
1.7 Brief overview of the research methodology	13
1.8 Structure of the thesis	14
1.8.1 Chapter 1 - Introduction	15
1.8.2 Chapter 2 - Literature syntheses	15
1.8.3 Chapter 3 - Research methodology and data collection	15
1.8.4 Chapter 4 - Data analysis and findings	15
1.8.5 Chapter 5 - Proposed framework for PR/SS in Sri Lanka	15
1.8.6 Chapter 6 - Conclusions	16

3	hapteı	r:2	Literature syntheses	.17
	2.1	Introd	uction	. 17
	2.2	The co	onstruction sector in Sri Lanka	. 19
	2.3			
			oyers in the construction industry	
	2.4	Procu	ring construction work	.26
	2.5	Econo	omics of construction	.28
	2.6	Micro	economic considerations	.32
	2.7	Opera	tional workforce of the construction industry	.35
	2.7.		rational workforce in the construction industry in Sri Lanka	
	2.8	Behav	viourism (What does it mean?)	.37
	2.8.		avioural effects on production and resource sharing	
	2.	.8.1.1	Behaviour analysis and cultural materialism	
	2.	.8.1.2	Essential concepts of cultural materialism	
	2.	.8.1.3	Production efficiency: the negative correlation	
	2.	.8.1.4	Impact of behavioural constraints	
	2.8.2	2 Beh	avioural problems of the operational workforce	
	2.8.3	3 Beh	avioural problems in the Sri Lankan construction industry	44
	2.9	Detail	ed expression of behavioural problems	.45
	2.9.	1 Emp	oloyer perspective	46
	2.	.9.1.1	High labour turnover	47
	2.	.9.1.2	Poor quality of workmanship	48
	2.	.9.1.3	Temporary or irregular attendance	49
	2.	.9.1.4	Lack of trade knowledge and skill	49
	2.	.9.1.5	Irresponsibility and lack of reliability	51
	2.	.9.1.6	Unfair demand for wages or rates	51
	2.	.9.1.7	Adamant behaviour and lack of loyalty	52
	2.	.9.1.8	Reluctance to learn and train	52
	2.	.9.1.9	Carelessness and safety concerns	
	2.	.9.1.10	Unethical sudden demands	
	2.9.2	2 Emp	ployee perspective	
	2.	.9.2.1	Poor retirement benefits	
	2.	.9.2.2	Dissimilarities in salary scales	
	2.	.9.2.3	Gray areas in career development	
	2.	.9.2.4	Temporary nature of occupation	57

	2	000		
		9.2.5	Lack of social recognition	
		9.2.6	Non availability of recreation facilities	
		9.2.7	Being away from families and relatives	
		9.2.8	Political and social influences	
		9.2.9	Safety and sanitary facilities	
		9.2.10	Interpersonal relationships	
		9.2.11	Lack of trouble free communication	
		9.2.12	Influence from dependents	
		9.2.13		
	2.	9.2.14	Behaviour of immediate supervisors	61
2.1	10	Socia	al security frameworks in developed countries	. 62
	2.10.	.1	Canadian Pension Plan (CPP)	64
	2.10.	.2	United States' Social Security System (US-SSS)	.65
	2.10.	.3	Japan Pension Service (JPS)	.67
	2.10.	.4	French Social Security System (FSSS)	.73
	2.10.	.5	German Statutory Pension (GRV)	.77
	2.10.	.6	Italian National Social Security Institute (INPS)	.79
	2.10.		United Kingdom Social Security System (UK-SSS)	
	2.10.		Summary of the PR/SS structure in developed countries	
	2.10.	.9	Comparison of the Europe, America and Latin American frameworks	.89
	2.10.	.10	Comparison of the West, East and South Asian frameworks	.90
2.1	11	Socia	al security in Sri Lanka	.91
	2.11.		Social security in Sri Lankan history	
	2.11.		Liquidation of prevailing social security systems in Sri Lanka	
	2.11.		Current ESBs and the constraints of the EPF system in Sri Lanka	
	2.11.		The legal system of Sri Lanka	
			s and challenges involved with global social security	
2.'				
	2.12.		Exposure challenges	
	2.12.		Worthiness challenges	
	2.12.	.3	Monetary challenges	99
2.′	13	Socia	al security theories, models and frameworks in practice	103
2.′	14	Dilen	nmas in the PR/SS frameworks and suggested myths	104
2.′	15	Curr	ent recruiting model for the operational workforce	105
2 •	16	Modi	fied hierarchy of human needs	107

	2.17	Conceptual framework	109
	2.18	Chapter summary	114
<u> </u>	hapter	: 3 Research methodology and data collection	116
	_		
	3.1	Introduction	116
	3.2	Research philosophy	118
	3.2.1	Ontology	119
	3.2.2	Epistemology	121
	3.2.3	Axiology	122
	3.3	Paradigms and approaches	123
	3.3.1	Positivism and interpretivism (antipositivism)	124
	3.3.2	Strategies of inquiry	125
	3.3.3	Development of research approaches and paradigms	126
	3.4	Research methods	127
	3.4.1	Quantitative methods	
	3.4.2		
	3.4.3	Mixed methods	128
	3.5	Positioning the research stance	130
	3.6	Research strategy	131
	3.7	Research design	133
	3.7.1	Phase 1 of the research study	136
	3.7.2		
	3.7.3	ICTAD and NCCASL	139
	3.7	7.3.1 Supporting structure for the data collection and the Framework	141
	3.7.4	The instruments of data collection	143
	3.8	Research techniques and procedures	145
	3.9	Data collection, techniques used, and research findings	
	3.9.1	Finalisation of the questionnaire and survey	
	3.9.2	Data collectionQuestionnaire survey	
	3.9.3		
	3.9.4		
	3.9.5		
	3.10	Management of confidentiality requirements and ethical approval	157

3.11	l CI	hapt	er summary	158
Chap	ter : 4	4	Data analysis and findings	160
4.1	In	trod	uction	160
4.2	Δ,	nalv	sis of the questionnaire survey data	161
	.2,1		tive importance index (RII)	
	4.2.1		Impact analysis of the behavioural problems of the workforce	
	4.2.1		Causes for the scarcity of an operational workforce	
4.			entages and RII analysis by using spreadsheets	
	4.2.2		Modes of procuring manpower for an operational workforce	
	4.2.2	.2	Monitoring statuses for current PR/SS systems (EPF /ETF)	
	4.2.2	.3	Contractors' revenues for the past 5 years and the next 3 years	
	4.2.2	.4	Cost effects of material wastage due to imperfections	
	4.2.2	.5	Participants' opinions on a PR/SS for the workforce	
4.3	E;	nan	cial data review	172
	.3.1		profit and loss account	
			balance sheetbalance sheet	
			directors' report	
			auditors' report	
			nat, users, timing, and content	
			ication of financial information	
4.4	Ar	naly	sis of financial performance	182
4.5	Ra	atio a	analysis of the contractor's averaged financial data	184
4.	5.1	Profi	tability ratios	185
	4.5.1	.1	Return on capital employed (ROCE)	185
	4.5.1	.2	Asset turnover	187
	4.5.1	.3	Profit margin	188
	4.5.1	.4	Profitability comparisons	188
4.	.5.2	Liqui	dity ratios	190
	4.5.2	.1	Current ratio	190
	4.5.2	.2	Quick ratio	
	4.5.2	.3	Stock turnover	
	4.5.2	.4	Debtors' time to pay	
	4.5.2	.5	Creditors' time to pay	
	4.5.2		Liquidity comparisons	
4.	5.3	Gea	ring	196

4.5.3.1 Gearing comparisons	197
4.5.4 Stakeholders' interest	197
4.5.4.1 Earnings per share	197
4.5.4.2 Price earnings' ratio	198
4.5.4.3 Competitor evaluation	198
4.5.4.4 Chronological evaluation	199
4.6 Other information	199
4.7 Knowledge acquisition and framework abstraction of PR/SS	200
4.8 Sri Lanka consumer price index (CPI)	205
4.9 Sri Lanka inflation rate	205
4.10 Sri Lanka producer prices	205
4.11 Life expectancy	206
4.12 Chapter summary	207
Chapter : 5 Proposed framework for Sri Lanka	208
5.1 Introduction	208
5.1.1 Projectised approach and temporary nature of occupation	210
5.1.2 Government's interventions	210
5.2 Current management practice of construction operatives	211
5.3 Modes of risk, taxes and overhead multiplication	212
5.4 Funding mechanisms	214
5.4.1 Salvaged finances, construction share of GDP and workforce	214
5.4.2 Construction share between government and private sector	216
5.4.3 Calculation of possible savings from the current mechanism	217
5.5 Concept of Building Forces for Sri Lanka (BFSL)	219
5.5.1 Merging the BFSL with SLQF	219
5.6 Chapter summary	221
Chapter : 6 Conclusions	223
6.1 Introduction	223
6.2 Overview of the research aim and objectives	225
6.2.1 Aim of the research	225

6.2.2	Ob	jecti	ves of the research	***************************************	226
6.2	2.2.1	F	irst Objective	***************	226
6.2	2.2.2	S	econd Objective	****************	227
6.2	2.2.3	T	hird Objective	•••••	227
6.2	2.2.4	F	ourth Objective	•••••	228
6.2	2.2.5	F	ifth Objective		230
6.3	Meth	odc	ology Adopted	***************************************	230
6.4	Cont	ribu	ıtion to knowledge		231
6.4.1	Cor	ntrib	oution to academia		233
6.4.2	Cor	ntrib	oution to the industry	•••••	233
6.5	Reco	mm	nendations		234
6.5.1			ion system of Sri Lanka		
6.5.2			unions in Sri Lanka		
6.5.3	Gei	ndei	r balanced education	•••••	235
6.5.4	Red	duci	ng university entrance age to 18 years	•••••	235
6.6	Limit	atio	ons		236
6.7	Finai	no	te		236
Reference	ces	•••••		******************	238
Appendi	ces .			******************	254
Appendix	(A		Trades in construction	3	Pages
Appendix	с В		Questionnaire distribution summary	15	Pages
Appendix	C	:	ICTAD Guide lines for contractor categorisation	4	Pages
Appendix	C D	:	Sample data collection document	10	Pages
Appendix	κE		Survey of construction industry	31	Pages
Appendix	C F	:	Sri Lanka qualifications framework	36	Pages
Appendix	G	:	Publications	16	Pages

Dedication

This PhD thesis is dedicated to Capt. M G Kularatne and Mrs. L L Piyawathee Kularatne

for their invaluable and lifelong sacrifices for the setting up of benchmarks in the Sri Lankan construction industry

Acknowledgement

It is a great pleasure for me to be able to offer my acknowledgements and gratitude to all the individuals who were involved in my PhD journey and who helped me in various ways to make this PhD a success. Many names will always remain in my mind and richly deserve my gratitude.

I would like to thank Dr Chaminda Pathirage (Supervisor) and Dr Lesley Ekanayake (Local Supervisor) for their kind cooperation and for their guidance in helping to make this thesis a success. The assistance granted by former University of Salford academics Professor Charles Egbu and Professor (Mrs) Dilanthi Amaratunga must be warmly acknowledged as well.

Furthermore, I would like to record my gratitude to all the construction industry professionals and contracting organisations that supported me during the data collection stages. Brigadier Madura Wijeyewickrema (CEO) and his team at Major and Specialist Contractors in the National Construction Association of Sri Lanka provided me with immense support during the questionnaire distribution. My MSc course colleagues at the University of Moratuwa too provided enormous cooperation during the preparation of the research questionnaire and during the data collection stage as well.

Finally, I would like to acknowledge former and current colleagues ChQS J P Kumudini Nayomi Jayaweerarathna, Eng. Isa Soleyman, ChQS. Sundaram Devakanthan, ChQS. Charith Fernando, my wife Maureen Lalanie and my daughters Tarushi Vidagdhi and Binuri Vidagdhi for their numerous sacrifices, cooperation and support throughout my six years of study.

Sujeeva Padmakumara Wijewickreme

School of the Built Environment
College of Science and Technology
University of Salford

October 2016

List of figures

Figure 1.1 : The Three Dimensional Iron Triangle	6
Figure 1.2 : The Iceberg Model of physiological contracts	7
Figure 1.3 : Research Layers	13
Figure 1.4 : Research Flowchart	14
Figure 2.1 : Short term profit maximisation curve	33
Figure 2.2 : Geographical positioning of the major developed countries	63
Figure 2.3 : Timeline of social security development in Japan	69
Figure 2.4 : The Japan Pension System	71
Figure 2.5 : Categories and Premiums for Beneficiaries	72
Figure 2.6 : Structure of the financial resources	73
Figure 2.7 : Modified Hierarchy of Human Needs	108
Figure 2.8 : The Construction Six M Wheel	113
Figure 3.1 : The Systematic Research Process 'Onion'	117
Figure 3.2 : Philosophical Positioning of the Research	118
Figure 3.3 : Types of Research	123
Figure 3.4 : Flow of the deductive approach	124
Figure 3.5 : Mixed Method - Data Analysis Example	146
Figure 3.6 : Count of Respondents	153
Figure 4.1: Degree of Time Impact	165
Figure 4.2 : Degree of Cost Impact	165
Figure 4.3 : Degree of Quality Impact	166
Figure 4.4 : Causes for the scarcity of an operational workforce	167
Figure 4.5 : Modes of recruiting operational workforce	168
Figure 4.6 : Monitoring statuses for current PR/SS systems	169
Figure 4.7 : Contractors' revenue predictions	170
Figure 4.8 : Cost effects of material wastage	172
Figure 4.9 : Participants' opinions	173
Figure 4.10 : Outcomes from the financial statement analysis	178
Figure 4.11 : Inflation impact on construction materials	202
Figure 4.12: The inflation of construction indices in Sri Lanka	203
Figure 5.1 : Proposed BFSL Framework for Construction Operatives	209
Figure 5.2 : Imbalanced Construction Six M Wheel	211
Figure 5.3 : Cascade effect of Risk Multiplication	213
Figure 5.4 : Distribution of Value of Contract by Sector	216

List of tables

Table 1.1 : Ranking of the Behavioural Problems	10
Table 3.1 : Strategies of Inquiry	125
Table 3.2 : Main Contractor Grading Classification	141
Table 3.3 : Specialist Contractor Grading Classification	142
Table 3.4 : Questionnaire distribution and responses received	154
Table 4.1 : Summarised data from the financial statements	177
Table 4.2 : Inflation of major resources in Sri Lanka	202
Table 4.3 : Construction Inflation in Sri Lanka	203
Table 5.1 : Count of operatives and government daily cost per head	215
Table 5.2 : Calculation of possible savings from current mechanism	217

List of equations

48
163
186
187
188
189
190
191
192
193
194
196
198
198
198
199

List of abbreviations

AFSL : Armed Forces of Sri Lanka

ASB : Accounting Standards Board

ASC : Accounting Standards Committee

BFSL : Building Forces of Sri Lanka

CCI : Chamber of Construction Industry Sri Lanka

CID : Criminal Investigation Department of Sri Lanka

CPP : Canadian Pension Plan

EPS : Earnings Per Share

EU : European Union

FIDIC : International Federation of Consulting Engineers

(Fédération Internationale des Ingénieurs Conseils)

FOC : Free of Cost

FRS : Financial Reporting Standards

FS : Funded System of Social Security

FTZ : Free Trade Zone

GBP : Great Britain Pounds

GCE A/L : General Certificate of Education (Advanced Level)

GDP : Gross Domestic Product

GOSL : Government of Sri Lanka

HEIs : Higher Education Institutions

HM : Her Majesty's

HMRC : Her Majesty's Revenue and Customs

HR: Human Resources

HSE-UK : Health and Safety Executive

ICE : Institution of Civil Engineers

ICTAD : Institute for Construction Training and Development

IT: Information Technology

JCT : Joint Contract Tribunal

JIT : Just in Time

JPS: Japan Pension Service (Kokumin Nenkin)

LTI : Lost Time Injuries

M&SC : Major and Specialist Constructors

MOENZ: Ministry of Education, New Zealand

NCASL: National Construction Association of Sri Lanka

NDC: Notional Defined Contribution

NGO : Nongovernmental Organisations

NVQF : National Vocational Qualification Framework

PAYG : Pay As You Go System of Social Security

PPE : Personal Protection Equipment

PR/SS : Pensions, retirement benefits or Social Security

SBD : Standard Bidding Document (Sri Lanka)

SLQF : Sri Lanka Qualification Framework

SLRs : Sri Lankan Rupees

SME : Small and Medium Scale Enterprises

SSAP : Statements of Standard Accounting Practice

USA : United States of America

US-SSS : United States System of Social Security

WBI : World Bank Institution

Declaration

This thesis is submitted under the rules and regulations of the School of the Built Environment, in the University of Salford in partial fulfillment of the requirement for the award of a degree of Doctor of Philosophy (PhD) by research in Management, Economic Research and Information Technology.

While the research was in progress, some of the research findings were published in referenced journals and conference papers prior to this submission (please refer to Appendix G).

The researcher declares that no portion of the work referred to in this thesis has been submitted in support of an application for another degree of qualification at this, or any other, university or institution of learning.

Sujeeva Padmakumara Wijewickreme

School of the Built Environment
College of Science and Technology
University of Salford

October 2016

Abstract

Construction is a projectised industry. One of the important resource requirements for construction projects is the availability of an operational workforce for its physical production. Hence, the operational workforce is a critical deciding factor in the success and failure of construction projects.

The construction sector in Sri Lanka is suffering from a shortage of a required operational workforce for its physical operations even though the unemployment rate in Sri Lanka is about 5.2%. Research has further highlighted that "work" and "pay" are only the surface factors, hiding underneath them (similar to an iceberg) are a multitude of different problems and the psychological needs of the workers. In addition to the shortage, there is a lack of an organised structure for human resources, which delivers time, cost and quality related behavioural constraints within the construction industry of Sri Lanka since circa the 1980's.

The aim of the research is to develop a sustainable framework for a lifelong social security system for the operational workforce of the construction industry in Sri Lanka without increasing the prevailing construction costs. The hypothesis is the minimising of resource wastages and behavioural impacts of current practices and the introduction a secured future life through a new system of lifelong social security [PR/SS] for the operational workforce. It is anticipated that the finances required for providing a social security system can be salvaged from the recovery values of material and time wastages and the demand and supply impacts generated as repercussions from the behavioural practices of the current operational workforce.

The research instruments used for gathering primary and secondary data for evaluating the financial impacts of behavioural constraints were a questionnaire survey and audited financial statements. About 400 questionnaires (That were premeditated to calculate the monetary impacts of the social behaviors of the construction operatives via 'degree of importance' and 'relative important index') were distributed to higher management of contracting organisations in Sri Lanka. A further request was made to the contracting organisations to provide audited statements for the past five years.

From the research, it was identified that the unavailability of a human resources structure is a major constraint for the construction industry in Sri Lanka. Salvaged finances that could derive from the removal of the transitional layers of risk multiplication and the removal of the behavioural constraints of the construction operatives are sufficient to

finance a lifelong social security system for themselves. Based on the research findings, a framework for the Building Forces of Sri Lanka [BFSL] was developed to overcome from the interim thinking pattern of the current construction operatives. In the current system, contracting organisations are not capable of providing the required training for the operatives. With the implementation of BFSL alongside the strong intervention from statutory organisations, a trained operational workforce can be developed to face any situation within the construction arena in Sri Lanka.