

**DEVELOPMENT OF AN ACTIVITY ALLOCATION
MODEL FOR SRI LANKA USING PECAS
FRAMEWORK**

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(158035V)

Degree of Master of Science

Department of Civil Engineering

University of Moratuwa

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Thesis submitted in partial fulfilment of the requirements for the degree
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DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any other university or institute of higher learning and to the best of my knowledge and believe it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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The above candidate has carried out research for the master's thesis under my supervision.

Signature of the supervisor:

G.L.D.I. De Silva

Date:

ABSTRACT

Traditional Transport Models can under or overestimate the benefits when they try to model a rapidly changing economic surrounding. While looking in to transport aspects, they cannot account the changes, the transportation causes on other systems, which ultimately act upon transportation itself. With expanding economic activities, the rapid urbanization, urban sprawl, planned developments, government policies, the traditional transportation modelling efforts in Sri Lanka is now challenged. Even though some efforts were taken for a better approach, a complete model is yet to be developed, which can grasp the integrated nature of land use and transportation.

Even though the land use transport integration is a complex process to model, PECAS (Production, Exchange, Consumption Allocation System), a generalized theoretical framework for representing spatial economic systems, is capable of modelling it efficiently due to its intrinsic capabilities of modelling all economic subsystems with acceptable accuracy levels. It generates the demand for land, products and services. While the use of PECAS is widely tested in developed countries, only limited studies have been carried out to identify the importance of having a model for developing countries.

Thus, the study focused on developing one of the major components of the framework, an Activity Allocation Module. First, study checked the possibility of adopting the PECAS framework for Sri Lanka, identified data to be derived and did necessary processing.

Data gathered from national accounts of Sri Lanka, input output tables, supply and use tables, other surveys conducted by Department of Census and Statistics and data from other sources were assessed, to check the suitability of available data to prepare economic and land use inputs to the model. Development of key elements of an Activity Allocation Model were completed with available and synthesized data. As the basic output of the study, an Aggregate Economic Flow Table was developed with 42 commodity categories (17 good categories, 11 service commodities, 11 labour categories, 3 space categories and 8 financial and adjusting categories), 12 manufacturing activities and 11 service activities. It includes government and 3 categories of households. Import and export markets are also accounted.

Keywords: Activity Allocation, Spatial Economic Model, PECAS, Aggregate Economic Flow Tables, Sri Lanka Setup Model

DEDICATION

To most loving persons I know,
Amma, Thaththa, Nangi and Shara...

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TABLE OF CONTENT

DECLARATION	i
ABSTRACT	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENT	v
LIST OF FIGURES	viii
LIST OF TABLES	ix
LIST OF ABBREVIATIONS	xi
LIST OF APPENDICES	xiii
1 INTRODUCTION	1
1.1 Problem Statement	1
1.2 Objectives of the Study	2
1.3 Scope of Work	3
1.4 Methodology	3
2 LITERATURE SURVEY	4
2.1 Land Use Transport Integrated Modelling and Place of PECAS	4
2.2 Activity Allocation Module in PECAS Framework	6
2.3 Importance of a PECAS Model in Sri Lankan Contest	8
2.3.1 A solution for emerging traffic problems of the urban centres	8
2.3.2 Western region megapolis planning project	8
2.3.3 Economic and demographic forecasting and policy evaluation	9
2.4 Challenges of Developing an AA Module Using PECAS Framework for SL 10	
2.4.1 Data requirement	10
2.4.2 Not having other types of integrated models	14
2.4.3 Cost of developing a PECAS model	14
3 MODEL DEVELOPMENT	15
3.1 Overview	15
3.2 Consumption and Production of Goods and Services by Manufacturing and Service Activities	16

3.2.1	Data availability	16
3.2.2	Process of data derivation	16
3.3	Production of Labour by Households.....	19
3.3.1	Data availability	19
3.3.2	Process of calculation.....	21
3.4	Consumption of Labour by Manufacturing Activities	32
3.4.1	Data availability	32
3.4.2	Process of data derivation	32
3.5	Consumption of Labour by Agri And Service Activities.....	38
3.5.1	Data availability	38
3.5.2	Process of data derivation – concise flow chart	38
3.5.3	Process of data derivation	39
3.6	Production of Space Commodity	48
3.6.1	Data availability	48
3.6.2	Assumptions.....	50
3.6.3	Process of data derivation – concise flow chart	51
3.6.4	Process of data derivation	51
3.7	Consumption of Space by Manufacturing Activities	62
3.7.1	Data availability	62
3.7.2	Assumptions.....	62
3.7.3	Process of data derivation	63
3.8	Consumption of Space Commodity by Service Sector Industries, Agriculture and Households	65
3.8.1	Data availability	65
3.8.2	Assumptions.....	66
3.8.3	Process of data derivation	66
3.9	Household Consumption	74
3.9.1	Data availability	74
3.9.2	Process of data derivation – concise flow chart	75
3.9.3	Process of data derivation	75
3.10	Development of the Final Matrix	79
4	CONCLUSIONS AND WAY FORWARD.....	81

REFERENCES.....	84
APPENDICES	86
Appendix I - Reshaped Data to be Used in AEF Development	86
Appendix II - Employed Persons by Occupation Groups	87
Appendix III - Doubly Restrained Employment Distribution.....	88
Appendix IV - Matching ASI Labour Categories with AEF Labour Categories..	92
Appendix V - Formal and Informal Sector Share of Occupational Categories.....	94
Appendix VI - Converting 2018 Land Prices to 2006.....	95
Appendix VII - Value of Land (Jan 2006) classified by industry – Simplified ...	98
Appendix VIII - Percentage Distribution of Weighted Employment – Service Sector.....	100
Appendix IX - Ratio of Expenses for Goods and Services by Households	101

LIST OF FIGURES

Figure 2.1 - Modules and information flows (HBA Specto Incorporated, 2009)	5
Figure 2.2 - Three-level nesting allocation process (HBA Specto Incorporated, 2009)	6
Figure 2.3 - Categories of activities and commodities in make and use tables (HBA Specto Incorporated, 2009)	7
Figure 3.1 - Selection of household categories	20
Figure 3.2 - Sector wise monthly household income	29
Figure 3.3 - Concise flow chart - Consumption of labour by service / agriculture activities	38
Figure 3.4 - Process of data derivation for production of space.....	51
Figure 3.5 - Change of land prices in Sri Lanka from 2012 to 2018.....	56
Figure 3.6 - Change of land prices from 2012 to 2018	59
Figure 3.7 - Change of land prices from 2012 to 2018	59
Figure 3.8 - Flow chart for data derivation of use of space commodity by service activities	70
Figure 3.9 – Derivation process of household commodity consumption.....	75

LIST OF TABLES

Table 2.1 - Availability of data for an AA demonstration model	13
Table 3.1 - Structure of AEF table	15
Table 3.2 - Activities used in AEF	17
Table 3.3 - Commodities used in AEF	18
Table 3.4 - Sector wise employed population by province	22
Table 3.5 - Distribution of employment for rural sector	23
Table 3.6 - Distribution of employment for urban sector	23
Table 3.7 - Distribution of employment for estate sector	24
Table 3.8 - Singly restrained employment matrix for western province.....	25
Table 3.9 - Doubly restrained employment matrix for western province	26
Table 3.10 - Total annual production of labour	30
Table 3.11 - Total labour production for western province	31
Table 3.12 - Total salaries and wages paid for manufacturing activities - ASI labour categories.....	33
Table 3.13 – ASI/AA module matching criteria for agriculture, hunting, forestry and related service activity.....	34
Table 3.14 – ASI/AA module matching criteria for mining and quarrying activity..	35
Table 3.15 - Salaries and wages paid by AA module labour categories at activity level for formal sector only	36
Table 3.16 - Salaries and wages paid by AA module labour categories at activity level for both formal/informal sectors.....	37
Table 3.17 - Share of Government employment	40
Table 3.18 - Percentage distribution of occupation categories	42
Table 3.19 – Percentage occupation distributions for construction and trade sectors	45
Table 3.20 - Average monthly income for occupation categories	46
Table 3.21 - Total annual consumption of labour by service and agriculture sectors (Rs millions).....	47
Table 3.22 - Composition of land consumption in Anuradhapura district.....	52
Table 3.23 - District level composition of land consumption.....	53
Table 3.24 - Average land prices in Sri Lanka for 2018.....	55

Table 3.25 - Space production final matrix (Rs Millions)	60
Table 3.26 - District wise average land prices for different land uses	61
Table 3.27 - Total production of space at district level.....	61
Table 3.28 - Formal and informal sector relationships in manufacturing industry....	63
Table 3.29 - Consumption of land by formal sector manufacturing activities	63
Table 3.30 - Land use by manu. activities - (formal, informal sectors combined)....	64
Table 3.31 - Space use per employee weight classes.....	67
Table 3.32 - Space units for per capita sector employment	68
Table 3.33 - Percentage dist. of weighted employment in Anuradhapura district.....	69
Table 3.34 - Sector wise employment distribution at provincial level	71
Table 3.35 - Consumption of space commodity by service activities, households and agriculture - In hectares	72
Table 3.36 - Consumption of space commodity by service activities, households and agriculture - in Rs millions.....	73
Table 3.37 - Space consumption by non-manufacturing activities - final matrix	74
Table 3.38 - Sector wise household ratio	76
Table 3.39 - Consumption of 'Elementary' labour by households 2006	76
Table 3.40 - Final weighted ratio (weighted with purchasing power and number of households).....	77
Table 3.41 – Sector wise household consumption (Rs. millions).....	78
Table 3.42 - Difference between produced and consumed labour.....	79
Table 3.43 - Final AEF table.....	80

LIST OF ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AA Model	Activity Allocation Model
ADB	Asian Development Bank
AEF Table	Aggregate Economic Flow Table
ASC	Annual Survey of Construction
ASI	Annual Survey of Industries
ASMI	Annual Survey of Manufacturing Industries
CIF/FOB	Cost, Insurance, and Freight (CIF) / Free on Board (FOB)
CPC	Central Product Classification
DCS	Department of Census and Statistics
EC	Economic Census
ED Model	Economic and Demographic Model
ES	Economic Survey
GDP	Gross Domestic Product
HIES	Household Income and Expenditure Survey
I/O	Input output
IPS	Institute of Policy Studies
ISCO88	International Standard Classification of Occupations 1998
ISIC	International Standard of Industry Classification
JICA	Japan International Cooperation Agency
LFS	Labour Force Survey
LLRC	Lessons Learnt and Reconciliation Committee
LPW	Lanka Property Web
LUPPD	Land Use Policy Planning Department
LUZ	Land Use Zone
PECAS	Production, Exchange, and Consumption Allocation System

PUMS	Public Use Microdata Samples
RDA	Road Development Authority
SAM	Social Accounting Matrix
SD Model	Space Development Model
SL	Sri Lanka
STRADA	System for Traffic Demand Analysis
SUT	Supply and Use Tables
TR Model	Transport Model
UDA	Urban Development Authority
USA	United States of America
WRMPP	Western Region Megapolis Planning Project

LIST OF APPENDICES

Appendix	Description	Page
Appendix I -	Reshaped Data to be Used in AEF Development	86
Appendix II -	Employed Persons by Occupation Groups	87
Appendix III -	Doubly Restrained Employment Distribution	88
Appendix IV -	Matching ASI Labour Categories with AEF Labour Categories	92
Appendix V -	Formal and Informal Sector Share of Occupational Categories	94
Appendix VI -	Converting 2018 Land Prices to 2006	95
Appendix VII -	Value of Land (Jan 2006) classified by industry – Simplified	98
Appendix VIII -	Percentage Distribution of Weighted Employment – Service Sector	100
Appendix IX -	Ratio of Expenses for Goods and Services by Households	101