

**A TRAVEL GUIDE MODEL FOR
SRI LANKA: A CASE STUDY ON A
SECTION OF A9 ROAD**

R K NISSANKA

M.Sc. in GIS & RS

2014

**A TRAVEL GUIDE MODEL FOR SRI LANKA:
A CASE STUDY ON A SECTION OF A9 ROAD**

By

Ramani Keerthikumari Nissanka

M.Sc./GR/2012001

Thesis submitted to the Faculty of Graduate Studies, **UNIVERSITY OF SRI
JAYEWARDENEPURA** for the award of the **MASTER OF SCIENCE IN GIS AND
REMOTE SENSING** on **15 June 2014**

DECLARATION

I do hereby declare that the work reported in this project report was exclusively carried out by me under the supervision of Prof. Krishan Deheragoda and Dr. Ranjith Premasiri and a report on this has not been submitted in whole or in part to any University or any other institution for another degree.

Date: 15/06/2014


.....

Ramani K Nissanka

DECLARATION

We certify that the above statement made by the candidate is true and that this thesis is suitable for submission to the University for the purpose of evaluation.

Certified by:

Supervisors :

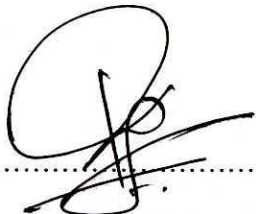
Date: 15/06/2014



.....

Prof. Krishan Deheragoda

Date: 15/06/2014



.....

Dr. Ranjith Premasiri

TABLE OF CONTENTS

CHAPTER	PAGE
Table of Contents	i
List of Tables	iv
List of Figures	v
List of Annexes	vi
Abbreviations	vii
Acknowledgement	viii
Abstract	ix
CHAPTER 1 – INTRODUCTION	1 – 17
1.1 Tourism as a Global Industry	1
1.1.1 Global Travel Scenario	1
1.1.2 Regional and Sri Lankan Tourism Scenario	2
1.2 Use of Travel Guide in Tourism	5
1.2.1 Identification of Target Audience	5
1.2.2 Contents of a Travel Guide	7
1.2.3 Modes of Information Sharing	10
1.3 Modern Day Travel and Usage of Technology	10
1.3.1 Travel Trends	10
1.3.2 Use of GIS in Tourism Applications	11
1.4 Research Problem	13
1.5 Rationale of Study	14
1.6 Objective	15
1.6.1 Study Area	15
1.7 Structure of the Report	16

CHAPTER 2 - LITERATURE REVIEW	18 – 33
2.1 Introduction	18
2.2 Evolution of Travel Guide	18
2.2.1 Travel Guides on Sri Lanka	19
2.2.2 Popular Travel Guides	20
2.3 Profile of the Target Market	23
2.4 Use of GIS in Travel Guides	29
CHAPTER 3 – METHODOLOGY	34 – 58
3.1 Defining Criteria for the Travel Guide Model	34
3.1.1 Identification of Information Requirement	34
3.1.2 Travel Guide; Ease of Use	35
3.1.3 Trip Planning	36
3.1.4 Schematic Model of the Travel Guide Proposed	37
3.2 Selection of the Study Area	39
3.3 Data Collection Process	41
3.3.1 Data Collection through Secondary Sources	44
3.3.2 Primary Data Collection	46
3.4 Data Collation	48
3.5 Map preparation	50
3.5.1 Base Maps	50
3.5.2 Development of Required Map Layers	51
3.6 Incorporation of Interactive Features using GIS Techniques	54
3.6.1 Applicability of the Network Analysis Tools	54
3.6.2 Network Analysis Process	55
3.6.3 Network Analysis Tools Used	56
3.6.4 Other Network Analysis Tools which could be Incorporated	57
3.7 Demonstration of Use of the Techniques Mentioned Above	57

CHAPTER 4 – DATA ANALYSIS	59 – 74
4.1 Establishment of Relationships among Different Components	59
4.2 Scenario Analysis	63
4.2.1 Scenario 1; Pre-travel Stage	63
4.2.2 Scenario 2; While on the Trip	68
4.2.3 Scenario 3; Post Trip	74
CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS	75– 110
5.1 Conclusion	75
5.2 Recommendations	76
5.3 Further Study	77
References	78

LIST OF TABLES

Table No	Caption	Page
Table 2.1	Main features of Generation Y travellers	26
Table 3.1	Hotels located within the Kandy and Matale Districts	45
Table 3.2	Secondary sources of service points	46
Table 3.3	Data collection format	47
Table 3.4	List of service points	48
Table 3.5	List of tourist attractions	49
Table 3.6	Map layers selected	51
Table 4.1	Matching the features in GIS software with travel requirements	73

LIST OF FIGURES

Figure No	Caption	Page
Figure 2.1	: Technology Acceptance Model (TAM)	28
Figure 2.2	: TAM of using mobile technologies by travellers	28
Figure 2.3	: Model of use of thematic layers in GIS	31
Figure 3.1	: Interaction among deciding factors	35
Figure 3.2	: Schematic model of the Travel Guide	38
Figure 3.3	: Locations of towns, Kandy and Dambulla with respect to the road network of Sri Lanka	40
Figure 3.4	: Categorisation of Points of Interests	42
Figure 3.5	: Map Index, 1:50,000 topographic maps	50
Figure 3.6	: Study area selected	51
Figure 3.7	: Merging of map sheets	52
Figure 3.8	: Base map prepared for the study	53
Figure 3.9	: Creating the network dataset	55
Figure 3.10	: Adding attributes to the network dataset	56
Figure 4.1	: Interlinkages among different data sources	60
Figure 4.2	: Attribute tabl of the Points of Interests layer	62
Figure 4.3	: Tools in the Network Analyst toolbox	62
Figure 4.4	: Tourist attractions along the road section selected	64
Figure 4.5	: Hotels along and around the road section selected	65
Figure 4.6	: Service points along the road section selected	66
Figure 4.7	: Area within the 10 km driving distance from filling stations	67
Figure 4.8	: Route planning with attractions selected	68
Figure 4.9	: Output of the analysis as a series of road sections (one section)	69
Figure 4.10	: Output of the analysis as a road section between two selected points	69
Figure 4.11	: Excursion; Kandy, Dambulla, Kandy	71
Figure 4.12	: Task window for entering variations in traffic conditions	72

LIST OF ANNEXURES

Annex No Caption

Annex 1 : Field data collection sheet

LIST OF ABBREVIATIONS

Abbreviation

AI	- Artificial Intelligence
DMS	- Destination Management System
ESRI	- Environmental Systems Research Institute
FIT	- Free Independent Traveller
GDP	- Gross Domestic Product
GIS	- Geographic Information System
GPS	- Global Positioning System
GOSL	- Government of Sri Lanka
ICT	- Information and Communication Technology
IT	- Information Technology
ITS	- Intelligent Transport System
LBS	- Location Based System
PDA	- Personal Digital Assistant
RS	- Remote Sensing
TAM	- Technology Acceptance Model
TRA	- Theory of Reasoned Action
UNESCO	- United Nations Educational Scientific and Cultural Organization
UNWTO	- World Tourism Organization
UTAUT	- Unified Theory of Acceptance and Use of Technology
WYSETC	- World Youth Student and Educational Travel Confederation

ACKNOWLEDGMENT

First and foremost I acknowledge the guidance provided by my supervisors Prof. Krishan Deheragoda and Dr. Ranjith Premasiri in conducting this research study. Also I wish to express my gratitude towards all the lecturers and instructors of the M.Sc. Course in GIS and RS led by the Head of the Department, Dr. (Rev) Pinanawala Sangasumana for all their efforts and patience in guiding this first batch of students towards successful completion of the study program.

I appreciate very much the encouragement, guidance and assistance provided by all the faculty members, colleagues and friends to ensure completion of the study, and especially the visiting faculty member Mr. Prabath Malavige, who kept a tab at all stages to make sure the research work completed in time.

Lastly, I thank my loving family who were very understanding on my time commitments towards the course of study and cheered me up at the times of stress.

A TRAVEL GUIDE MODEL FOR SRI LANKA: A CASE STUDY ON A SECTION OF A9 ROAD

R. K. NISSANKA

ABSTRACT

Tourism is identified as an important thrust area of the Sri Lankan economy. The country is blessed with abundant resources to make this objective a reality. However, lack of a user friendly, comprehensive tour guide is a barrier to promote Sri Lanka as a top-end destination, more importantly among the high spending Free Independent Travellers. Tourism is inherently linked to travel and points of attractions. The service facilities too play an important role in making the trips, safe, pleasant and enjoyable. The conventional navigational systems only show the route, but neither offers sufficient description of the attractions nor indicates the time to be spent on location. The studies on characteristics of the modern day travellers reveal that bits of desired information are needed at their fingertips on the go. The capability of Geographic Information Systems (GIS) to link spatial data with relevant attributes and its powerful analyzing techniques can ideally fulfill that need. This study is an effort to identify GIS techniques that facilitate development of an interactive travel guide, which could be used in all stages; pre-trip, on trip and post trip and demonstrate how. The study reveals that several techniques, especially the network analysis tools, could be adopted to meet travel needs. Major challenge encountered was the lack of information, i.e. detailed digital maps of the road network, historical and current road traffic data, verified information sources on points of attractions. That overcome and software customized, with further study, the concept developed in this study can be nurtured to be a commercial mobile travel guide application.

Key Words: GIS, Tourism, Travel Guide, Trip

INTRODUCTION

1.1 Tourism as a Global Industry

1.1.1 Global Travel Scenario

The Travel and Tourism industry has a very high impact on the global economy. According to the World Tourism Organization (UNWTO), the United Nation's specialized agency responsible for the promotion of responsible, sustainable and universally accessible tourism, the industry contributes to 9% of the World's Gross Domestic Product (GDP) and one in eleven jobs worldwide (direct, indirect and induced). In 2012, it resulted in US\$1.3 trillion in exports equivalent to 6% of the world's exports.

Tourism is defined in many ways and it is noted that the following definition encompasses all the aspects of this industry.

‘Tourism is defined as a composite of activities, services, and industries that delivers a travel experience to individuals and groups traveling fifty miles or more from their homes for purposes of pleasure. The business sectors comprising the tourism industry include: transportation, accommodation, eating and drinking establishments, shops, entertainment venues, activity facilities, and a variety of hospitality service providers who cater to individuals or groups traveling away from home.

Tourism product is not produced by a single business, nonprofit organization, or governmental agency; rather, it is defined as “a satisfying visitor experience.” This definition encompasses every activity and experience that a tourist encounters during his or her entire trip away from home.’

(www.pileus.msu.edu/tourism/tourism_whatistourism.htm, 2014)

The UNWTO publication, *Tourism Highlights – 2013* states that ever increasing number of destinations have opened up and invested in tourism, turning tourism into a key driver of socio-economic progress through export revenues, the creation of jobs and enterprises, and infrastructure development. Also over the past six decades, tourism experienced continued expansion and diversification, becoming one of the largest and fastest-growing economic sectors in the world.

According to the statistics released by the UNWTO, international tourist arrivals reached a record 1.087 billion in 2013, which is 5% up from that of 2012. The UNWTO's predictions show that the industry will experience a continued growth. The report also highlights the fact that the growth in receipts also matches the growth of tourist arrivals indicating the strong economic co-relation. It says the 'international tourism receipts grew by 4% in real terms in 2012, hitting a new record of US\$ 1,075 billion worldwide (Euro 837 billion).

1.1.2 Regional and Sri Lankan Tourism Scenario

According to the UNWTO *Tourism Highlights*, 2013 edition, 'Asia and the Pacific was again the fastest growing region in 2012 with a 7% increase, equivalent to 15 million more international tourist arrivals than in 2011. This raised the region's share in the world to 23%, with a total 234 million arrivals. The region earned US\$ 324 billion in international tourism receipts (+6% in real terms), representing 30% of the world total. In South Asia (+4%), Sri Lanka and Bhutan boasted the fastest growth in arrivals last year, both climbing up by 17%. India, the largest destination in the sub-region, recorded 5% growth'.

After resolving the internal conflict, which spread over three decades, now all parts of Sri Lanka is accessible to both foreign and domestic tourists, and tourism has become a thriving industry once again. Sri Lanka's scenic beauty, rich biodiversity, sunny beaches, cultural heritage, spices, gems, and the friendly people have made it a tourists' paradise. Its compactness has made tourists enjoy many facets, attractions/destinations in a relatively short period of time. Development of tourism industry has been identified