

# **AN ANALYSIS OF CRITICAL SUCCESS FACTORS FOR WI-FI HOTSPOT DEPLOYMENT IN TRAVEL & TOURISM SECTOR, SRI LANKA**



A Dissertation submitted to the Department of Computer Science & Engineering of the University of Moratuwa in partial fulfillment of the requirement for the Degree of Master of Business Administration in Information Technology 2007

**J.G.C.D.Darshana**

Department of Computer Science & Engineering

**University of Moratuwa**

**IT/04/9055**

## ACKNOWLEDGEMENT

This research dissertation was completed with the help, ideas and encouragement from a lot of people known and unknown to me. I take this opportunity to thank all of them who generously gave me invaluable assistance and spent their valuable time to help me in numerous ways.

First of all, it is with a sense of profound gratitude that I extend my thanks to my supervisor, **Mr. Kithsiri Samarasinghe**, for his excellent guidance, encouragement and support extended throughout this research project in spite of his busy schedule.

I would like to thank Mrs.Vishaka Nanayakkara, the Head of CSE and Dr. Chathura de Silva, the course co-ordinator MBA in IT and all faculty members of the Department of Computer Science and Management of Technology at the University of Moratuwa.

My sincere gratitude goes to few of my colleagues in Dialog Telekom Ltd; Ms.Enoka Peiris, Mr. Jayanthan Ranasinghem, Mr. Chamindra Basnayaka, Mr. Roshanth Gardiarachchi, Mr. Ajith Gamage, Mr. Hazari Razak and Ms. Wathsala Perera for their advices and support extended.

I am grateful to all those who encouraged sharing information and ideas through the Internet and those who have published valuable information in the Internet.

I also gratefully acknowledge the support of my parents during the period of research study. Last but of course not least I add special tribute to my wife for her excellent understanding, tolerance and support through out the MBA program.

## 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 myself 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

Date



University of Moratuwa, Sri Lanka.  
Electronic Theses & Dissertations  
[www.lib.mrt.ac.lk](http://www.lib.mrt.ac.lk)

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

.....  
Supervisor

## ABSTRACT

Wi-Fi HotSpot or WLAN has been so popular in the globe particularly among the travelers and the business community over the last couple of years. In fact Wi-Fi is becoming a necessity due to the convenience and the mobility it provides. In Sri Lankan context it has already become a feature of hotels and the airport. Almost all the five star hotels and most of the large hotels already provide Wi-Fi facility to their guests.

This study is focused on CSFs for Wi-Fi HotSpot deployments in T & T sector Sri Lanka. This identifies the CSFs in the global market to compare and match with the Sri Lankan market. In addition, this research identifies the business models in the globe and investigates the viability of those models for Sri Lankan T&T sector. Furthermore, CSFs of the T&T sector and the service provider sector were investigated on perspectives of technological, strategic, legal/environmental and economical. Similarly the questionnaire responses from the sample Wi-Fi users were investigated on different perspectives of technological, social/environmental, and economical levels. The conceptual model was developed based on the findings of the literature survey, to identify the CSFs of Wi-Fi HotSpot deployments in T&T sector Sri Lanka. Finally the identified CSFs were analyzed and compiled for Wi-Fi HotSpot deployments in T&T sector Sri Lanka.

With the limited time frame when compared with the scope of this research, case studies were limited to the largest Wi-Fi operator in the country. The valid data samples of the user questionnaires were limited to fifty four existing and potential Wi-Fi users. The questionnaire responses were analyzed along with the case study results and recommendations are proposed for Wi-Fi HotSpot deployments for T&T sector.

It was identified that the security and the speed are the most concerned factors having strong correlation with the usage of Wi-Fi. Four main business models were identified in Wi-Fi deployments in Sri Lanka and two models were recommended one for public and one for private Wi-Fi HotSpots.

# TABLE OF CONTENTS

ACKNOWLEDGEMENT.....	II
DECLARATION.....	III
ABSTRACT.....	IV
TABLE OF CONTENTS .....	V
LIST OF FIGURES .....	IX
LIST OF TABLES .....	X
ABBREVIATIONS .....	XI

## CHAPTER 1: INTRODUCTION ..... 1

1.1	BACKGROUND.....	1
1.2	PROBLEM STATEMENT .....	7
1.3	RESEARCH TOPIC.....	7
1.4	RESEARCH OBJECTIVES.....	8
1.5	IMPORTANCE/BENEFITS OF THE STUDY .....	9
1.6	NATURE AND FORM OF RESULTS .....	9

## CHAPTER 2: LITERATURE SURVEY ..... 11

2.1	BENEFITS OF HOSTING A WI-FI HOTSPOT .....	11
-----	---	----

2.2	IDENTIFICATION OF CSFS FOR WI-FI DEPLOYMENT .....	15
2.2.1	CSF FOR WI-FI IN PUBLIC LIBRARIES .....	16
2.2.2	CSFs FOR WI-FI DEPLOYMENT IN AIRPORTS .....	17
2.3	PWLAN DEPLOYMENT STRATEGIES .....	18
2.4	A GENERIC WI-FI HOTSPOT MODEL .....	23
2.4.1	ROLE MODEL .....	27
2.4.2	RESOURCE MODEL .....	31

## **CHAPTER 3: FRAMEWORK OF THE STUDY ..... 36**

3.1	INTRODUCTION .....	36
3.2	METHODOLOGY .....	36
3.3	RESEARCH DESIGN .....	39
3.4	DEVELOPMENT OF CONCEPTUAL MODEL .....	39
3.5	OPERATIONALIZATION OF PARAMETERS .....	42
3.6	CSF IDENTIFIED FOR PWLAN (WI-FI HOTSPOTS) .....	42
3.7	SOURCES OF DATA .....	46

## **CAPTER 4: ANALYSIS OF CRITICAL SUCCESS FACTORS (CSF) ON WI-FI USER PERSPECTIVE ..... 48**

4.1	INTRODUCTION .....	48
4.2	SURVEY AND RESULTS .....	48

4.3	ANALYSIS OF PRIMARY RESULTS.....	48
4.4	SUMMARY OF THE PRIMARY RESULTS .....	52
4.5	ANALYSIS OF USERS REPONSES FOR CSFS.....	52
4.5.1	PRIORITIES IN CRITICAL SUCCESS FACTORS.....	55
4.5.2	FURTHER ANALYSIS OF RESULTS .....	55
4.6	CONCLUSIONS OF CSFS IN USER PERSPECTIVE .....	56

## **CHAPTER 5: CASE STUDIES FOR CSFS ON WI-FI HOTSPOT OPERATORS ..... 58**

5.1	INTRODUCTION.....	58
5.2	BACKGROUND OF DTL.....	58
5.3	DTL WI-FI.....	60
5.4	EVALUATION OF CSFS AGAINST DIALOG.....	63
5.5	OBSERVATIONS AND CONCLUSIONS.....	67

## **CHAPTER 6: DEVELOPMENT OF BUSINESS MODEL FOR WI-FI HOTSPOT ..... 68**

6.1	INTRODUCTION.....	68
6.2	IMPORTANT ASPECTS OF THE BUSINESS MODEL.....	69
6.3	CRITICAL SUCCESS FACTORS IDENTIFIED THROUGH THE ANALYSIS .....	72
6.4	WI-FI HOTSPOT OPERATORS AND BUSINESS MODELS IN SRI LANKA.....	75

6.5	RECOMMENDATION FOR THE WI-FI HOTSPOT BUSINESS MODEL .....	74
6.6	CONCLUSION .....	76

## **CHAPTER 7: DISCUSSIONS AND FUTURE RESEARCH ..... 78**

7.1	INTRODUCTION.....	78
7.2	DISCUSSION & CONCLUSIONS .....	78
7.3	DIRECTIONS FOR FURTHER RESEARCH .....	80

## **REFERENCES..... 81**

<b>ANNEXURE A : WI-FI USER QUESTIONNAIRE .....</b>	<b>83</b>
--	-----------

<b>ANNEXURE B : INTERVIEW QUESTIONNAIRE FOR T&amp;T SECTOR IN SRI LANKA.....</b>	<b>89</b>
--	-----------

<b>ANNEXURE C: INTERVIEW QUESTIONNAIRE FOR WI-FI OPERATORS....</b>	<b>98</b>
--	-----------



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



## LIST OF FIGURES

Figure 1: A Simple Wi-Fi Network .....	5
Figure 2 : Wi-Fi HotSpots Operators in Sri Lanka .....	6
Figure 3 : HotSpots in T&T Sector –Sri Lanka .....	7
Figure 4 : Position of Partners in an enterprise .....	24
Figure 5: A WLAN HotSpot Business Model. ....	26
Figure 6: A WLAN HotSpot Role Model .....	28
Figure 7: Security Service Provider.....	30
Figure 8: A WLAN HotSpot Resource Model .....	32
Figure 9: PWLAN bossiness models .....	34
Figure 10 : Primary and Secondary Business Models By Type of Specialized Players...	35
Figure 11: Wi-Fi User Related CSFs.....	39
Figure 12: HotSpot Provider Related CSFs .....	40
Figure 13: HotSpot Owner Related CSFs.....	40
Figure 14: Conceptual model.....	41
Figure 15 : Gender of the respondents.....	49
Figure 16 : Respondent’s education level.....	49
Figure 17: Respondents age groups analysis .....	50
Figure 18: Respondents gender analysis.....	50
Figure 19: Respondents employment category.....	51
Figure 20: Respondents duration of using Wi-Fi.....	51
Figure 21: Structural Partners Interaction for Wi-Fi HotSpots business models in Sri Lanka .....	68

## LIST OF TABLES

Table 1: Concepts, Variables, Indicators and Measures for HotSpot Provider .....	44
Table 2: Concepts, Variables, Indicators and Measures for HO.....	45
Table 3: Concepts, Variables, Indicators and Measures for Wi-Fi user .....	46
Table 4 : Respondents profiling summary .....	52
Table 5: Assigned values for 4-point likert scale responses .....	53
Table 6 : Variables considered in the analysis.....	53
Table 7 : Mean Values and Variance of the CSFs .....	54
Table 8: CSF priority list for users on Wi-Fi HotSpot.....	55
Table 9: Correlation coefficient of Security and Speed Vs Wi-Fi usage.....	56
Table 10 : Dialog Wi-Fi Payment methods.....	61
Table 11 : Dialog Hotspots .....	62
Table 12: Dialog Wi-Fi charging options .....	66
Table 13: CSFs for Wi-Fi hotspots identified by Dialog.....	67
Table 14: Roles, Resources and Revenue of each business model.....	71
Table 15: CSFs prioritized in HotSpot owner perspective. ....	72
Table 16: CSFs priorities in HotSpot provider perspective. ....	73
Table 17: CSFs for all perspectives .....	74
Table 18: Existing Wi-Fi HotSpot providers & Business models in Sri Lanka .....	75

## ABBREVIATIONS

ADSL	-	Asynchronous Digital Subscriber Loop
AP	-	Access Point
CSFs	-	Critical Success Factors
DTL	-	Dialog Telekom PLC
FTP	-	File Transfer Protocol
GPRS	-	General Packet Radio Service
HLR	-	Home Location Register
HO	-	HotSpot Owner
HP	-	HotSpot Provider
IEEE	-	Institute Of Electrical & Electronic Engineers
IMA	-	Information Management Associates
ISP	-	Internet Service Provider
LAN	-	Local Area network
MSC	-	Mobile Switching Center
PWLAN	-	Public Wireless LAN
RF	-	Radio Frequency
ROI	-	Return On Investment
SLA	-	Service Level Agreement
SLIC	-	Scottish Libraries and Information Council
SLT	-	Sri Lanka Telekom
T&T	-	Travel & Tourism
TRCSL	-	Telecommunication Regulatory Commission Sri Lanka
VOIP	-	Voice Over IP
Wi-Fi	-	Wireless Fidelity
WLAN	-	Wireless Local Area Network
WEP	-	Wired Equivalent Privacy



University of Moratuwa, Sri Lanka.  
Electrical & Electronic Engineering Department  
www.ho.mrt.ac.lk