LB/MON/58/06

# EVALUATION OF THE READINESS OF SRI LANKA TO BE A MEMBER OF GLOBAL KNOWLEDGE SOCIETY

CRITICAL KNOWLEDGE FACTOR ANALYSIS OF SRI LANKA



The dissertation was 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.

004 "05 004:65(043)

Department of Computer Science & Engineering

University of Moratuwa

December 2005

1.8



86343

86343

#### **Declaration Form**

I hereby declare that;

I have sincerely endeavored to produce a research report of outstanding academic quality with age long importance to the economic development of Sri Lanka. I have produced this document by myself without having outside assistance except from the people and documents I quote and also I have not copied this report from other papers or documents available, except where I have explicitly stated. I also certified that the work in this dissertation in part or whole has not been submitted for any other academic qualification at any institution.

C.N.Wickramasinghe, MBA/IT/03/9092 December 2005.

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

Certified by,

#### **UOM Verified Signature**

Ms. Vishaka Nanayakkara Department of Computer Science & Engineering, University of Moratuwa December 2005.



#### Abstract

Utilization ICT and Knowledge in economic applications are becoming the most important assets by outperforming traditional capital intensive, technology intensive or labor intensive comparative advantages of any country. The power of this transformation can be recognized in terms of its impact on knowledge sharing, dissemination and utilization in socio economic behaviors of any country. When the knowledge and knowledge outcomes are having major impact on all the human activities, then that economy can be identified as a Knowledge Society. This study was conducted to evaluate the nature, status and competence of Sri Lanka as a developing country to face this rising wave of Knowledge Society and potential to regain the economic development that has been there as better economy in South-East Asia. Study used a benchmarked indicator framework by developing both quantitative and qualitative indicators to evaluate the prerequisites to be a knowledge society and outcomes of a knowledge society. According to literature review and comprehensive analysis more than thirty (30) indicators study found that In South-East Asian region Rep. of Korea is the best knowledge society while Singapore, Malaysia, and also India are showing great potential of be competitive global knowledge societies. Rather than having emerging enthusiasm on mobile technology and modern CDMA technology, Sri Lanka still does not show any specific urgency. adaptation or greater enthusiasm to be a knowledge society in terms of knowledge creation, dissemination and utilization of knowledge in economic activities. There are no identifiable solid interrelations between each pre-requisite and also between the outcomes in Sri Lanka. They were trying to develop as isolated sections. That was the reason why that, social factors such as health and general education are at satisfactory level in Sri Lanka but economic performances far away from emerging Asia. By implementing recommended strategies of the study Sri Lanka is expected to make economic interlinks between every section of the country that would be compulsory to be a competitive global knowledge society.

#### Acknowledgement

The report covers an area that is very novel to Sri Lanka and had very little attention from researchers in Sri Lanka. Due to the novelty and lack of previous work those related to the topic in Sri Lanka and available studies are vastly incompatible with Sri Lankan context I came a cross ample of blind tunnels during this study. During this complicated journey I have had invaluable support from various people. Without their sincere support I would unable to complete the task sufficiently. I would like to express my sincere thanks to some of the individuals who gave me remarkable support on this effort.

- My supervisor Ms. Vishaka Nanayakkara, Senior Lecturer, Department of Computer Science and Engineering, University of Moratuwa.
- Dr. Ananda Patabendige, Senior Lecturer, Department of Commerce and Financial Management, University of Kelaniya.
- Mr. E.G. Ubayachandra, Senior Lecturer, Department of Marketing Management, University of Kelaniya.
- Mr D.M. Semasinghe, Head, Department of Commerce and Financial Management.
- My wife Devika Koddithuwakku, Graduate teacher in commerce, C.W.W. Kannangara Vidyalaya, Borella.
- Ms. D.N. Thanthiriwatta, Lecturer, Department of Commerce and Financial Management.
- All the staff members of
  - o Ministry of Education's statistical division, Issurupaya, Baththaramulla.
  - o University Grants Commission, Statistical division, Independence square.
  - o Intellectual property office, Colombo.
  - o Central Bank of Sri Lanka
  - o Census and Statistics Department of Sri Lanka

Xu

C.N.Wickramasinghe, MBA/IT/03/9092 October 2005.

## Table of Contents

DECLARATION FORM	
ABSTRACT	
ACKNOWLEDGEMENT	IV
TABLE OF CONTENTS	v
LIST OF TABLES	VIII
LIST OF FIGURES	x
CHAPTER 1 - INTRODUCTION	1
1.1 BACKGROUND TO THE STUDY	2
1.2 PROBLEM STATEMENT	
1.3 OBJECTIVES OF THE STUDY	7
1.4 IMPORTANCE OF THE STUDY	7
1.5 Methodology	
1.6 LIMITATIONS OF THE STUDY	9
CHAPTER 2 -LITERATURE REVIEW	
2.1 EMERGING IMPORTANCE OF KNOWLEDGE IN GLOBAL ECONOMY	
2.2 KNOWLEDGE AND KNOWLEDGE SOCIETY; CONCEPTUAL CONFLICT	
2.3 KNOWLEDGE SOCIETY AND ICT	
2.4 KNOWLEDGE SOCIETY AND EDUCATION	
2.5 KNOWLEDGE SOCIETY, ECONOMIC GROWTH AND HUMAN DEVELOPMENT	
2.6 HOW TO MEASURE KNOWLEDGE SOCIETIES	
CHAPTER 3 - RESEARCH DESIGN & METHODOLOGY	
3.1 RESEARCH DESIGN	
3.2 SAMPLE PERIOD AND SOURCES OF DATA	
3.3 OPERATIONALIZATION	
3.4 DEFINITIONS OF COMPOUND INDICATORS	
3.4.1 Media	
3.4.2 Education	
3.4.3 Employment Related factors	
3.4 DEFINITIONS OF KEY TERMS	
3.5 Method of Analysis	
CHAPTER 4 -DATA ANALYSIS AND FINDINGS	
4.1 MEDIA INFRASTRUCTURE AND RESOURCES	
4.1.1 Information and Communication Technology (ICT) Media Indicators	
4.1.2 South-East Asia, Sri Lanka and Traditional Jipp Curve Analysis	

4.1.3 Mobile Phone Usage and GDP per Capita Income	40
4.1.4 Internet and GDP per capita Income	41
4.1.5 Broadcasting Infrastructures	43
4.1.6 Television and per capita income	44
4.1.7 Radio and Per Capita Income	45
4.1.8 Conventional Communication Media	46
4.2 Overall Educational Indicators	49
4.2.1 Finance on Education	
4.2.2 Expenditure on Education from the GDP and GNP	
4.2.3 Per Capita Cost of Education	
4.2.4 Enrolment in education	53
4.2.5 Student-Teacher Ratio	57
4.2.6 Literacy Rate	
4.2.7 Educational Reforms	
4.3 Tertiary Education Indicators	60
4.3.1 Institutional Development	60
4.3.2 Enrollment by Subject Field	61
4.3.3 Graduate Output	63
4.4 Employment Indicators	
4.4.1 Distribution among occupational Groups	65
4.4.2 Distribution among economic sectors	68
4.4.3 Distribution among age groups	69
4.4.4 Distribution among Ownership Structures	
4.4.5 Distribution among Educational Qualifications	
4.4.6 Distribution among Foreign Employment	73
4.5 SOCIAL WELFARE INDICATORS	75
4.5.1 Human Development Index (HDI)	75
4.5.2 Digital divide with in the country	78
4.6 POLITICS	
4.6.1 Government efforts to improve ICT and Education	79
4.6.2 Expenditure on R&D	
4.7 OUTCOME INDICATORS	
4.7.1 Innovations	
4.7.2 E-Commerce Applications	85
	86
Nature of on-line presence	
Since Contraction of the second se	
Findings on site content classification.	
Customer sales	

Customer Service	88
Customer Communication	88
Informational content	89
4.7.3 E- Government Applications	89
4.7.4 Economic Impacts	90
4.7.5 GDP index and ICT	90
4.7.6 GDP index and Education	91
4.7.7 Social Impact	92
Health and Education	93
Prisoners and Education	94
CHAPTER 5 - CONCLUSIONS AND RECOMMENDATIONS	95
5.1 OVERALL CONCLUSIONS AND RECOMMENDATIONS	95
5.2 SPECIFIC ISSUES AND STRATEGIC RECOMMENDATIONS	. 101
5.3 SUGGESTIONS FOR FUTURE RESEARCHES	. 104
REFERENCES	. 106
MAIN STATISTICAL SOURCES	. 110
APPENDIX	111



L

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

### List of Tables

Table 1: Key Social- Technological Indicators of South Asia	3
Table 2: Key Social- Technological Indicators of East Asia	4
Table 3: Structure of GDP by major economic activities (% Distribution) 1959-1968	4
Table 4: Structure of GDP by major economic activities (% Distribution) 1993-2003	4
Table 5: Changes in GDP structure in South Asia and Sri Lanka	5
Table 6: Main Indicator variables of the Study	26
Table 7: Analytical framework of Media Indicators	29
Table 8: Internet Users Growth in Asia 2000-2005	36
Table 9 : Television and Radio usage of Sri Lanka by province - 2003	45
Table 10 : No. of Books published by Language in Sri Lanka 1998-2002	47
Table 11 : No. of news papers in circulation in Sri Lanka 1998-2002	47
Table 12 : Magazines published in Sri Lanka 2000-2002	48
Table 13: Government expenditure on education from GDP in South-East Asia -2004	50
Table 14: Per capita cost of education in Sri Lanka 1990-2001	52
Table 15: Participation in education by relevant age group 1990-2001	52
Table 16: Enrolment ratios in South-East Asian countries from relevant age groups	55
Table 17: Student-Teacher ratios in Sri Lanka 1990-2002	57
Table 18: Government school teachers by category of appointment 2003	58
Table 19 : Adult and Youth literacy rates in South-East Asia 1009-2004	59
Table 20: Universities' institutional development in Sri Lanka 1990-2002	60
Table 21: Correlation between human resources and institutional development	60
Table 22: Technical Colleges institutional development in Sri Lanka 1990-2002	61
Table 23:Student enrollment by subject fields 1994-2002	61
Table 24: Enrolment rate from eligible students 1995-2003	62
Table 25: Percentage median annual income increments in United States from 1990 to 2001	63
Table 26: first degree graduate output of Sri Lankan universities by academic streams 1995-2002	64
Table 27: Post graduate output of Sri Lankan universities by academic streams 1995-2002	65
Table 28:Currently Employed Persons by Major Occupational Groups %	67
Table 29 : Employment by Economic Activity as % of Labor Force	68
Table 30 : Age Group Participation and Unemployment Rate as % From Labor Force	70
Table 31 : Unemployment Rate by Level of Education as a percentage of participation 1993-2002	73
Table 32 : Migration for Foreign Employment and Labor force 1992-2003	74
Table 33 : Departures for Foreign Employment by Manpower Levels 1994-2003	74
Table 34 : Vacancies and Departures by Occupational Level 2001-2004	75
Table 35 : South-East Asia's HDI- 2003	76
Table 36 : Correlation between HDI and it's sub indexes of medium HD countries -2003	77
Table 37 : Correlation between each sub indicator of HDI in medium developed countries -2003	77
Table 38 : Top 15 patent categories in the world in 2004	83

Table 39: Sources of patent applications by type of applicants	84
Table 40: Patent applications and grants in Sri Lanka for residents and non-residents 1995-2004	84
Table 41: Distribution of the sample of online presence companies among sectors	87
Table 42: Relationship between GDP index and ICT usage in South-East Asia-2004	91
Table 43: Expenditure on education and GDP index in South-East Asia- 2003	92
Table 44: Health, Women's Education and Mortality rate of South –East Asia	93
Table 45: Percentage of prisoners by level of education in Sri Lanka – 1995-2002	94
Table 46: Concluding remarks on Main Indicator variables of the Study	97



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



### List of Figures

Figure 1: Sri Lankan GDP Growth behavior compared with South Asian Countries 1998-2003	3
Figure 2: Sri Lankan GDP Growth Behavior compared with East Asian Countries 1998-2003	
Figure 3: Conceptual Framework for the study	23
Figure 4: Indicator Framework of Eurofound's Advancement of Knowledge Societies 2004	24
Figure 5: Indicator Framework of the Present study	25
Figure 6: Analysis of Employment in Sri Lanka	31
Figure 7: Analytical Sequence of Indicators, Variables and Concepts	34
Figure 8: Growth of the ICT infrastructure in Sri Lanka 1991-2003	35
Figure 9: Composition of ICT infrastructure in Sri Lanka 1991-2003	36
Figure 10: Linear Jipp Curve for South-East Asia for latest available Data	38
Figure 11 : Linear Jipp Curve for South- Asia for latest available Data	39
Figure 12 : Linear Jipp Curve for Mobile Phone Usage in South- East Asia	40
Figure 13 : Linear Jipp Curve for Mobile Phone Usage in South- Asia	41
Figure 14: Linear Jipp Curve for Internet Usage in South- East Asia	42
Figure 15 : Linear Jipp Curve for Internet Usage in South- East Asia	43
Figure 16 : Television usage and per capita income in South-East Asia	44
Figure 17 : Radio usage and per capita income in South-East Asia	45
Figure 19: Expenditure on general education and university education as a percentage of GNP 90-200	)1 50
Figure 20: Sri Lankan Government's Recurrent Expenses 1991-2003	51
Figure 21: Sri Lankan Government's Capital Expenses 1991-2003	51
Figure 22: Enrolment rates in all levels of education in Korea, India and Sri Lanka	56
Figure 23: Total graduate output in Sri Lanka 1990-2001	64
Figure 24: Employment as per ownership structure	71
Figure 25 : Availability of ICT, % of households by provinces-2003	78
Figure 26: E-Sri Lanka project objectives	80
Figure 27: No. of international applications field since 1990	81
Figure 28: No. of applications from developing countries	82
Figure 29: Patent applications from top 10 developing countries in 2004	82
Figure 30: Key Strategic Issues in Sri Lanka to be KS	100