

**A FRAMEWORK FOR EVALUATING
THE EFFECTIVENESS
OF eGOVERNMENT INITIATIVES**

By

L. P. H. WADUGE

The dissertation was submitted to the Department of Computer Science & Engineering of the University of Moratuwa in partial fulfilment of the requirement for the Degree of Master of Business Administration.

Department of Computer Science & Engineering

University of Moratuwa

December 2009



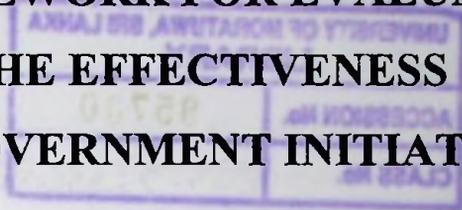
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**MASTER OF BUSINESS ADMINISTRATION
IN
E-GOVERNANCE**



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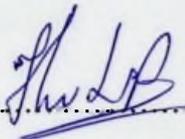


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DECLARATION

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ABSTRACT

The Government of Sri Lanka has embarked on the *e-Sri Lanka Re-Engineering Government* program, which is an Information and Communication Technology (ICT) road map, with the intention of providing efficient and effective services to its stakeholders, mainly, the citizens of the country. The implementation of eGovernment solutions necessitates organizational readiness in terms of structure and human capacity as conventional practices have failed to achieve institutional objectives desirable in today's context. eGovernment can transform the way the traditional public sector organizations work. However, the success of the program is contingent upon several factors such as leadership commitment, competent staff, financial and other resources.

In this backdrop, this research study presents an interesting Analytical Model that public-sector institutions may adopt, in evaluating the effectiveness of eGovernment implementations within government organizations in Sri Lanka.

The objective of this research was to find critical factors that influence the *effectiveness* of eGovernment initiatives in the solution implementation stage as well as in the solution operation stage, and to then formulate an evaluation model to analyze those factors at the organizational level. The key eGovernment projects and initiatives under the Ministry of Public Administration and Home Affairs have been included as the sample space to test the effectiveness factors in the analytical model. The development of this analytical model was done after extensive literature review in related areas with respect to developing countries, and through a pilot study done in the Sri Lankan organizational context.

The proposed analytical model can be used by any government agency to evaluate eGovernment projects prior to deployment and more importantly, during the operational stage. Based on this factor analysis, appropriate recommendations can be proposed to enhance and strengthen the eGovernment initiatives by considering all related factors in the implementation stage such as organizational, surrounding environmental, and other enabling factors pertaining to government organizations in



Sri Lanka. The model features built-in iterations and feedback loops which enables systematic analysis of operational effectiveness, thereby enabling the implementation of timely corrective measures leading to continuous improvement and enhanced positive operational impact of the eGovernment solutions.

Furthermore, since the model was conceptualized and designed with Sri Lankan government organizations as the focus, it is highly relevant in the local context in comparison to the existing evaluation models that are in use elsewhere in the world. Clearly, this model would also be useful in other developing countries with government organization and government process profiles that are similar to Sri Lanka, for the purpose of evaluating their eGovernment projects systematically in order to improve their solution effectiveness.



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I would like to thank the Secretary, Ministry of Public Administration and Home Affairs and staff of the Ministry, Divisional Secretariats of Colombo District, vendor institutions and the ICTA who contributed to my research by providing me with their valuable time amongst busy work schedules, without which my objectives would not have been fulfilled.

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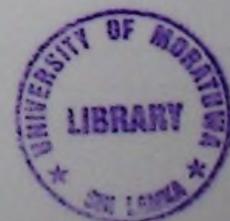


Table of Contents

Declaration	i
Abstract	ii
Acknowledgement	iv
Table of Contents	v
List of Tables	viii
List of Figures	ix
Abbreviations	x
1 Introduction	
1.1 Background	1
1.1.1 eGovernment in Sri Lanka and ICTA	5
1.1.2 MPA&HA and e-Government Initiatives	8
1.2 Objectives of the Research.....	11
1.3 Problem Statement	11
1.4 Importance of the Study	12
1.5 Thesis Structure	12
2 Literature Review	13
2.1 Common Factors Influencing Effectiveness of eGovernment Solutions.....	14
2.2 Common Factors Influencing Effectiveness of eGovernment Solutions in Regional Developing Countries	18
2.3 The Factors Influencing Effectiveness of eGovernment Solutions in Sri Lanka	20
3 Research Methodology	25
3.1 Research Design and Approach	25
3.2 The Conceptual Methodology	26
4 The Analytical Model - eGSEEM	28
4.1 Definition of Implementation Phase Factors.....	30
4.1.1 Organizational Factors	30
4.1.2 Surrounding Environmental Factors	32
4.1.3 Enabling Factors	33
4.2 Definition of Operational Phase Perspectives	33
4.2.1 Social Perspectives	34
4.2.2 Economic Perspectives	34
4.3 The Relation of Factors with Sources of Information	35
4.4 Units of Analysis	35
4.5 The Mapping of Stakeholders to the Analytical Model	36
5 Data Collection	38
5.1 Sample Size and Sample Selection Procedure	38
5.2 Questionnaire Design	39
5.2.1 Questionnaire Design Example	42
6 Data Analysis & Presentation	43
6.1 Analysis of Implementation Phase Factors	44
6.1.1 Organizational Factors	44
6.1.1.1 The Leadership	44
6.1.1.2 Top Management Support	44
6.1.1.3 IT Skills	45
6.1.1.4 Resources	46
6.1.1.5 Change Management	47

6.1.1.5 Change Management	47
6.1.1.6 Procurement Management	48
6.1.1.7 Management Structure	49
6.1.2 Surrounding Environment Factors	50
6.1.2.1 Internal Pressure	50
6.1.2.2 External Pressure	50
6.1.2.3 Legal Infrastructure	51
6.1.2.4 Employee Readiness	52
6.1.2.5 Political Environment	53
6.1.2.6 eGovernment Policy	53
6.1.3 Enabling Factors	54
6.1.3.1 IT Infrastructure	54
6.1.3.2 Local Context	55
6.1.3.3 Process Reengineering	55
6.1.3.4 User Friendliness	56
6.1.3.5 Vendor Effectiveness	57
6.1.3.6 Project Implementation	58
6.2 Analysis of Operational Perspectives	58
6.2.1 Social Perspectives	58
6.2.2.1 Transparency and Openness	59
6.2.1.2 Service Delivery	59
6.2.1.3 Empowerment	61
6.2.2 Economic Perspectives	62
6.2.2.1 Streamlining Processes	62
6.2.2.2 Increasing Revenue	63
6.2.2.3 Cost Reduction	63
7 Recommendations	65
7.1 Recommendations for Implementation Phase Factors	65
7.1.1 Recommendations for Organizational Factors	65
7.1.1.1 The Leadership	65
7.1.1.2 Top Management Support	65
7.1.1.3 IT Skills	66
7.1.1.4 Resources	66
7.1.1.5 Change Management	67
7.1.1.6 Procurement Management	67
7.1.1.7 Management Structure	68
7.1.2 Recommendations for Surrounding Environmental Factors	68
7.1.2.1 Legal Infrastructure	68
7.1.2.2 Employee Readiness	69
7.1.2.3 Political Environment	69
7.1.2.4 eGovernment Policy	69
7.1.3 Recommendations for Enabling Factors	70
7.1.3.1 IT Infrastructure	70
7.1.3.2 Local Context	70
7.1.3.3 User Friendliness	70
7.1.3.4 Vendor Effectiveness	70
7.1.3.5 Project Implementation	71
7.2 Recommendations for Operational Perspectives	71
7.2.1 Recommendations for Social Perspectives	71
7.2.1.1 Service Delivery	71

7.2.2 Recommendations for Economic Perspectives	72
7.2.2.1 Streamlining Processes	72
7.2.2.2 Cost Reductions	72
7.3 Overall Recommendations	73
8 Conclusion	
8.1 Summary of Research Findings	74
8.2 Future Areas of Study	75
8.3 Research Study Summary and Outcome	75
Appendix 1- Questionnaire Templates	77
Set1: Questionnaire for Ministry and its Organizations	77
Set2: Questionnaire for the Apex Body	79
Set3: Questionnaire for Vendors	81
Set4: Questionnaire for Employee	83
Set5: Questionnaire for Citizens	85
References	88

List of Tables

Table 2.1:	Standard Indicators for Government & eGovernment Performance	15
Table 2.2:	ITPOSMO Dimensions by Heeks and Factors by Heeks and Bhatnagar	17
Table 2.3:	Stakeholders Key Dimension of Impact	24
Table 4.1:	Factors-Sources of Information Mapping	35
Table 4.2:	The Stakeholder Selection Criteria	36
Table 4.3:	Factors-Stakeholders Mapping	37
Table 5.1:	Sample Size and Selection Criteria.....	39
Table 5.2:	Questionnaires	39
Table 5.3:	Factor-Questionnaire Mapping	40
Table 5.4:	Questionnaire-Factor Mapping	41
Table 5.5:	Sample Questionnaire	42
Table 6.1:	The Detailed Break-Down of Sample	43
Table 6.2:	Organizational IT Skills Level	45
Table 6.3:	Organizational Resource Availability	46

List of Figures

Figure 1.1:	Citizen Use of eGovernment Data – The Information Chain	2
Figure 1.2:	The Components of eGovernment	3
Figure 1.3:	Levels of eGovernment	4
Figure 1.4:	eGovernment at Different Levels of Government in Developing Countries	5
Figure 2.1:	Changing eGovernment Issues Over Time	13
Figure 2.2:	Stages in the Evolution of eGovernment	18
Figure 2.3:	The Stages of eGovernment	19
Figure 2.4:	The Conceptual Framework	22
Figure 2.5:	Framework for Sri Lankan Public Sector BPR Success	23
Figure 3.1:	The Conceptual Methodology	27
Figure 4.1:	The eGovernment Solution Effectiveness Evaluation Model	29
Figure 6.1:	Organizational IT Skills Level.....	45
Figure 6.2:	Organizational Resource Availability	47
Figure 6.3:	Change Management Alignment with e-Projects	48
Figure 6.4:	Employee Awareness on eGovernment	52
Figure 6.5:	Organizational Political Environment for eGovernment	53
Figure 6.6:	Impact of eGovernment Policy	54
Figure 6.7:	The Comparison of the User Friendliness	56
Figure 6.8:	User Friendliness by Agencies	56
Figure 6.9:	User Friendliness by Employees	57
Figure 6.10:	Transparency through eGovernment	59
Figure 6.11:	Awareness about eGovernment Services of Agencies	60
Figure 6.12:	Citizens' Preference about Service Delivery Mode	60
Figure 6.13:	Citizens' Perception on Better Service Provision through ICT	61
Figure 6.14:	Citizens' Perception on Easiness of Service Provision through ICT	61
Figure 6.15:	Citizens' Perception on Quickness of Service Provision	62
Figure 6.16:	Revenue Management	63
Figure 6.17:	Citizens' Perception on Cost for Service Provision	64
Figure 6.18:	Citizens' Perception on Number of Visits to Obtain Services	64

Abbreviations

BMD	Birth Marriage Death
BPR	Business Process Reengineering
DS	Divisional Secretariat
eBMD	Electronic Birth Marriage Death Project
eDS	Electronic Divisional Secretariat Project
eGov	Electronic Government
eGSEEM	eGovernment Solution Effectiveness Evaluation Model
eGovernment	Electronic Government
eHRM	Electronic Human Resources Management Project
ePensions	Electronic Pensions Project
ePopReg	Electronic Population Registry Project
G2C	Government to Consumer
G2B	Government to Business
G2E	Government to Employee
G2G	Government to Government
G2N	Government to Non-Profits
GIC	Government Information Centre
ICT	Information and Communication Technology
ICTA	ICT Agency of Sri Lanka
IS	Information Systems
LGN	Lanka Government Network
MPA&HA	Ministry of Public Administration and Home Affairs
NCS	National Computer Systems
SDSA	Software Development Services Approach

CHAPTER 1: INTRODUCTION

1.1 Background

Electronic Government, or eGovernment, with its synonyms, is a growing field of practice and research all over the world (Grönlund and Horan 2005). eGovernment in this context encompasses a wide range of branches and sub-areas, for example the dissemination of information, services to individual citizens and businesses, and participatory democracy. According to Wimmer (2006), eGovernment is multidisciplinary and consists of several domains of research and implementations, as for example, e-Democracy, e-Participation, e-Administration, e-Health, and e-Justice. According to Bhatnagar (2003), eGovernment is about a process of reform in the way Governments work, share information, and deliver services to external and internal clients.

In the field of eGovernment it has been emphasized that an important goal of eGovernment is the delivery of faster and cheaper services and information to citizens, business partners, employees, other agencies, and government agencies. Several factors are necessary for building effective eGovernment applications, which could be identified on the basis of an analysis of success and failures of eGovernment applications developed so far (Bhatnagar 2004a).

So far the main use of e-services by citizens is to access information from government Web sites rather than actual services (only 10-25% of eGovernment users undertake transactions (Accenture 2004), and even for eGovernment "frontrunner" services, only 5-10% of transactions are undertaken online: the remainder still occur offline). But this acquisition of data is just the first step in an information chain (see Figure 1.1) that requires the presence of many other resources, if it is to lead to a developmental impact on citizens' lives. To turn that eGovernment based data into an impact requires that the data be assessed, applied and then acted upon.

This requires money, skills, knowledge, motivation, confidence, empowerment and trust among other resources. Yet eGovernment itself does nothing to impact these

other resources. It is therefore only one small part of a much bigger picture required to make an impact on citizens' livelihoods.

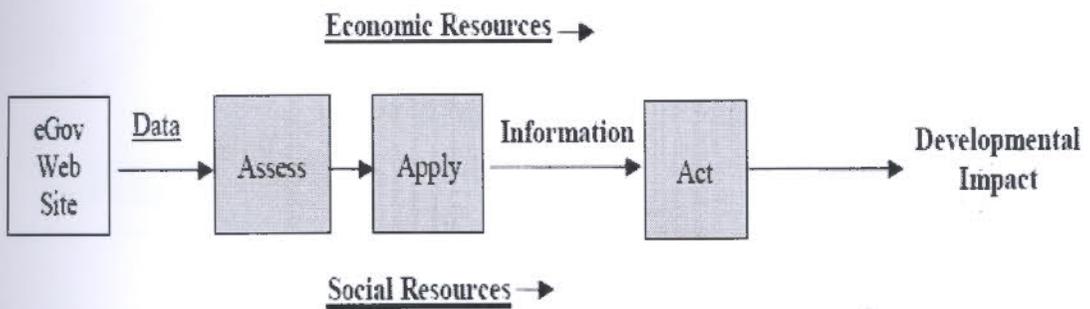


Figure 1.1: Citizen Use of eGovernment Data – The Information Chain
(Source: Heeks 2006)

According to Heeks (2006), the nature of eGovernment can be readily categorized, as per Figure 1.2.

The main components of eGovernment can be described in brief as follows;

First, **G2B** – with the goal of improving public service to business.

Second, **G2G** – with goals such as cutting costs, decentralizing power, managing performance, and improving strategic decision making. E-Administration has a key role to play as well. In terms of most eGovernment stage models, the final stage (be it called integration, transformation, sharing, etc) requires back office changes; in other words, significant G2G developments.

Third, **e-citizens** applications – with goals of talking to citizens and listening to citizens.

Fourth, **e-society** applications – with goals such as working better with business, developing communities, and building partnerships.

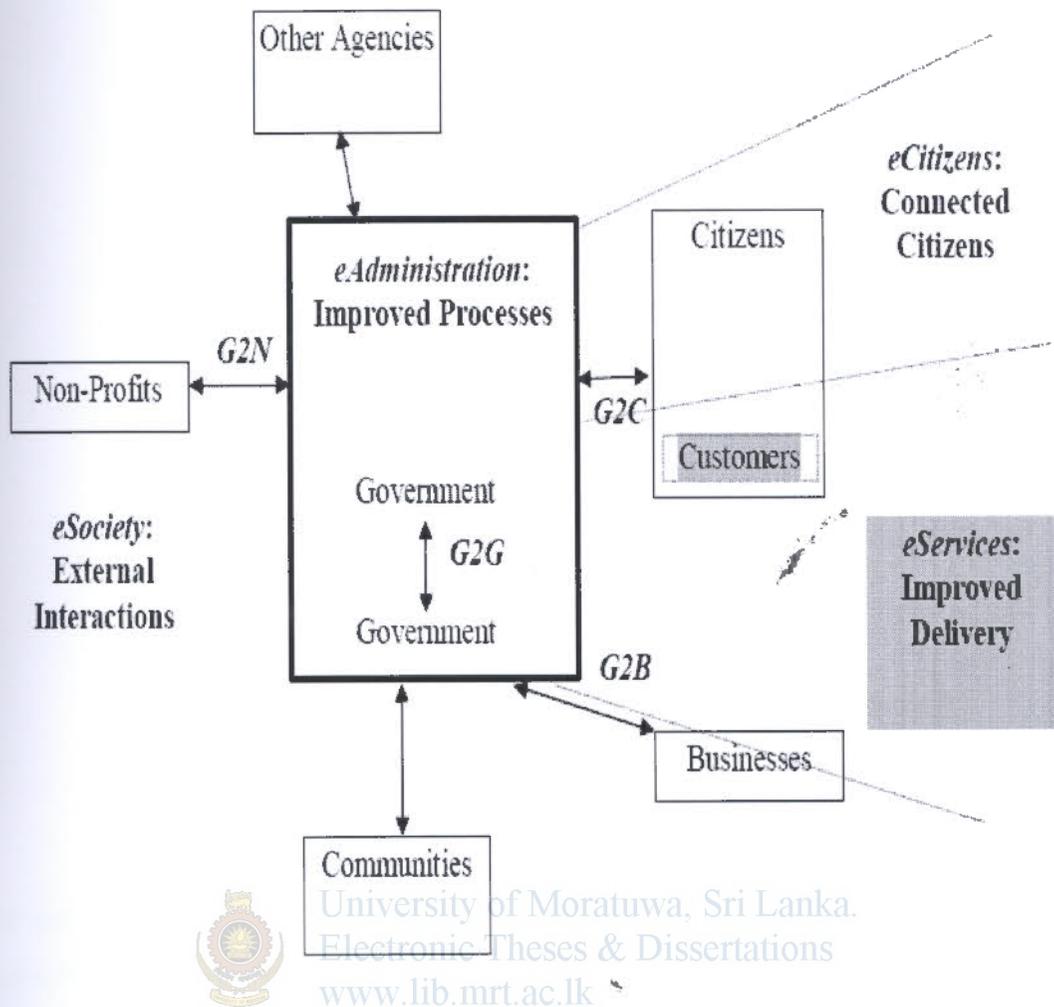


Figure 1.2: The Components of eGovernment
(Source: Heeks 2003)

Accordingly from the perspective of Levels of eGovernment, a categorization into at least five potential levels of eGovernment can be illustrated, as per Figure 1.3.

In developing countries, local governments are the main point of contact for delivery of services and for delivery of national programmes (World Bank 2006). Hence they are a critical location for applying ICTs in pursuit of national development goals.

Lower tiers of government may be more innovative in eGovernment than at the national level due to lower barriers to change.

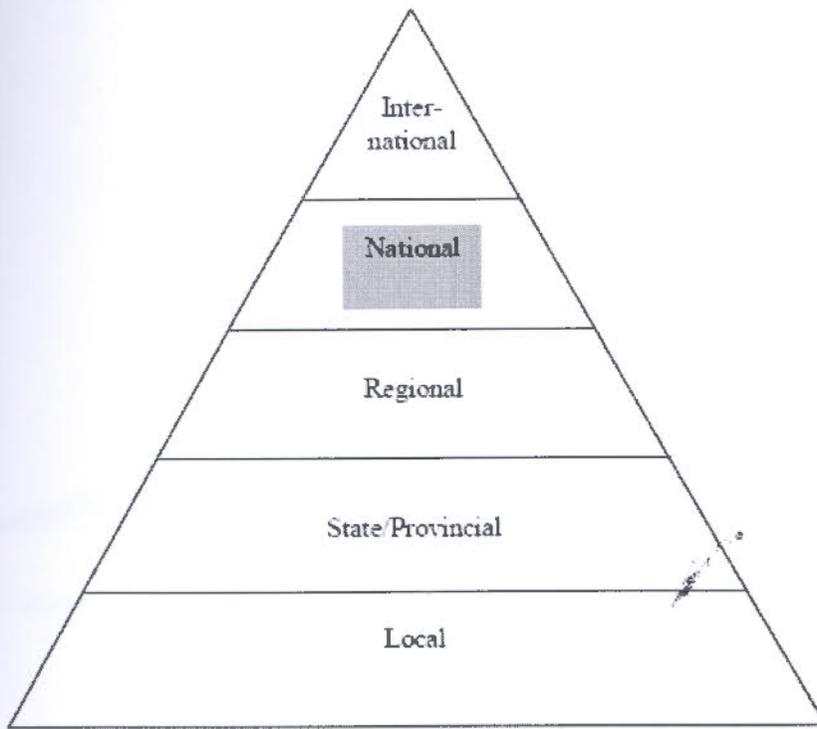


Figure 1.3: Levels of eGovernment

(Source: Heeks 2006)

In many countries, this may be more than counterbalanced by the severe resource constraints, leading to a diffusion graph similar to that portrayed in Figure 1.4. Even in this situation though, government at lower tiers is of increasing importance over time. In fact amongst the eGovernment case studies listed at the World Bank eGovernment web site (World Bank 2006) more than half are at state and local level.

Improvement in delivery of government services is an important issue for many developing countries. Electronic delivery can improve efficiency, cut delays, and increase transparency. eGovernment reforms the way the government works, shares information and delivers services to external and internal clients. Specially, eGovernment deploys Information Technology (such as Wide Area Networks, Internet, e-Mail, etc.) to transform the existing government processes and delivery channels (Bhatnagar 2004b).

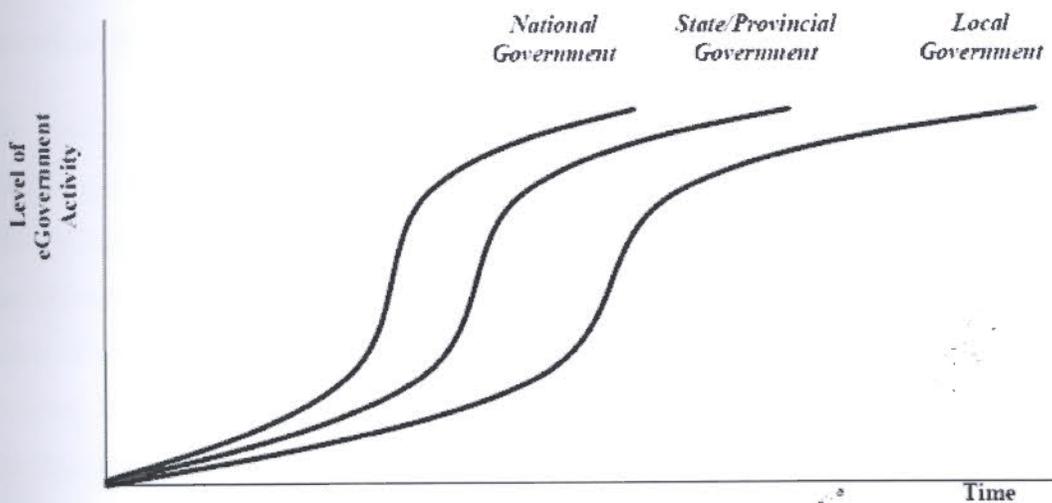


Figure 1.4: eGovernment at Different Levels of Government in Developing Countries
(Source: Heeks 2006)

The resulting benefits can be less corruption, greater convenience and lower costs for business transactions with the government, increased transparency, revenue growth and cost reduction for Government (World Bank 2006). This chapter discusses the brief history of ICT developments in the Government of Sri Lanka and the Ministry of Public Administration, which are motivation factors for this research.

1.1.1 eGovernment in Sri Lanka and ICTA

Computing was introduced to Sri Lanka in 1962, when IBM supplied the Insurance Corporation with accounting machines (Samaranayake 1998). Immediately after, the State Engineering Corporation and later the Department of Census and Statistics, using their IBMs, provided computing facilities to many government agencies and private organizations. In 1977, under a new government that promoted a liberal economy, a lump-sum depreciation scheme was introduced to encourage computerization (Hanna 2007a). That prompted many states as well as private sector organizations to use computers. The 1980s saw the advent of microcomputers and the personal computer. The Ministry of Education introduced computers to a large number of schools, along with curriculum development and teacher training, conducted with a few universities competent in IT. A comprehensive plan was developed to introduce computers to all universities and train university teachers. The

University Grants Commission, a state body for university administration, also provided strong support for the program.

Sri Lanka started efforts to take advantage of computerization of government activities relatively early, in the 1970s. However these efforts then lost momentum, in part because of inadequate political willingness and the civil war. A number of government computerization initiatives and ICT related policies were proposed, but none of them were fully implemented. Several shortcomings hampered these efforts. Among these were the shortage of internal champions and the lack of a process leading to 'buy-in'. According to the Hanna (2007b), other constraints included the lack of a national strategy and road map to guide investment priorities and the absence of a strong authority to enforce policies and standards for information sharing, to support e-leaders and champions, and to build a shared information infrastructure across government.

The key national ICT institutions in place at the beginning of 21st century were the Council for Information Technology (CINTEC, under the Ministry of Economic Reform, Science, and Technology) and the Telecommunication Regulatory Commission (under the Ministry of Posts and Telecommunications). Established early on in the ICT revolution, in 1984, CINTEC was intended to lead national ICT development through policy co-ordination. Originally functioning directly under the President, CINTEC embarked on several initiatives such as public sector computerization and legal & policy reform. Despite gaining broad recognition for some of its initiatives, the institution was later placed under a Ministry and relegated to a layer under another apex policy-making body in 1994. As a result of these and other steps, CINTEC failed to realize its mandate, lost its capacity to attract the right skills, and by 2002, was weighted down by bureaucratic and low-priority activities.

A vision statement for eGovernment of Sri Lanka was prepared in 2003 for consideration by the Cabinet. The aim was to raise awareness of the opportunities and challenges in implementing eGovernment and to motivate the Cabinet to take key steps toward developing a national eGovernment program and building a cadre of e-leaders to meet the challenges. The proposed vision also provided a framework for reconciling the many competing visions and priorities for ICT in government. It is the

vision of the Sri Lankan government to use eGovernment to make a full range of public information and services available electronically to citizens, businesses, and all parts of government; enabling an efficient, responsive, accessible, client-focused, transparent, and accountable public service. EGovernment should ultimately lead to better government, a more competitive economy, and a higher quality of life. The vision of eGovernment in Sri Lanka; as expressed in “e-Sri Lanka: An ICT Development Road Map” (ICTA 2004) and in related documents is, “Innovative eGovernment for Empowered Citizens.”

In the year 2002, the Government of Sri Lanka took measures to establish an apex body for ICT – the ICT Agency of Sri Lanka (ICTA), which encompasses key strategies to be implemented. The ICTA, which became operational in July 2003 under the ICTA act, functions as the single apex body involved in ICT policy implementation and direction for the nation. In other words, wholly owned by the Government of Sri Lanka, ICTA is the implementing organization of the e-Sri Lanka initiative.

The government intends to achieve this vision by (ICTA 2004):

- Fundamentally transforming and rationalizing the work of the public sector through judicious use of digital networking technology
- Making the delivery of services more convenient to citizens
- Achieving order-of-magnitude increases in efficiency, transparency, accountability, customer satisfaction for all public services
- Reducing transaction costs to businesses through effective use of ICT in providing cost-effective, citizen-centered public services.

Sri Lanka also faces many weaknesses in introducing eGovernment, including a politicized civil service and an inadequate implementation of reforms. Sri Lanka has a poor record of implementing civil service reform, with failed attempts in 1987, 1991, and 1996. The key problems include extraordinary overstaffing, lack of competitive recruitment to the public service, a patronage-oriented bureaucracy, and a highly unionized lower-government staff (Hanna 2006).

Taken together, these conditions hardly create the best environment for implementing eGovernment, which brings both power dislocation and change management issues. Some of the best organized vested interests would want to block the process. Yet countering this requires strong political pressures to improve the public sector's performance. Public frustration with the poor quality and limited access to services is high, and trust in government is very low. Yet, the government of Sri Lanka has demonstrated clear commitment by creating the ICT Agency of Sri Lanka, directly under the highest political command in the country.

1.1.2 MPA&HA and eGovernment Initiatives

According to the Progress Report – 2006/2007 of the MPA&HA (MPA&HA 2006), the role of the Ministry is to deal with the challenges relating to the Public Administration and District Administration as the central institution in the public service. The Ministry engages in transforming the public service into an efficient service, joining hands with the economic and social development requirements up to the grass root level. As a special concern of this Ministry, it has drawn up an Administrative Reforms Process in the year 2004 (MPA&HA 2004). Accordingly, the functions of this Ministry as well as other institutions under the Ministry such as the Department of Pensions, the Department of Registrar General, and the District and Divisional Secretariats have been reviewed. Under this program, all the functions of these institutions were reformed and the vision, mission and role of the Ministry were also modified as a timely requirement. In addition to these tasks, improvements were done for selected government procedures, streamlining those and simultaneously, the applicability of ICT/eGovernment solutions was also reviewed.

Lack of customer care and poor quality of services are major concerns of the general public. The majority of government organizations deliver one universal service to the entire population without differentiating to the growing needs of customer specific value added services. The other major concern is that the citizens are not using other available delivery channels but are still restricting themselves to the primary delivery channel of physical presence for obtaining a particular public service.

The Ministry started its own stand alone ICT initiatives since the year 1993, to enhance the quality of the services, in selected departments. In 2000 the Department of Government Printer made a digital version of the Government Gazette available through its intranet. On the request of the Government Printer, the Ministry also published Public Administration circulars on the intranet of the Government Printer, but the publications are still not available on the Internet. In 2000, a new Ministry of Information Technology was formed. The Ministry directed CINTEC to establish the www.gov.lk portal. It also directed government ministries & departments to set up Web sites. Initially the Ministry designed its web site in-house and published it on the CINTEC portal, with no infrastructure for regular updates. After consideration of the difficulties experienced in the updating process, the ministry decided to establish its own web server and e-mail server. This was implemented during the year 2000/2001, and that was a landmark in eGovernment initiatives of the Ministry.

The impact of the effectiveness and efficiency of public service is vital for the economic growth of the country and clearly, the Ministry of Public Administration and Home Affairs (Ministry of PA&HA) has to play a critical role in this regard. ICT is considered as an enabler, facilitator & accelerator of the service delivery process of government services. The government of Sri Lanka demonstrated its commitment to information technologies by declaring 1998 as the year of IT. In alignment with that the Ministry of PA&HA also accelerated its ICT initiatives.

According to Hanna (2006), the Re-engineering Government Programme of the ICTA pursues major improvements in the government's efficiency, effectiveness, and quality of services. It also supports fundamental reforms underway in governance and management by applying new technology and re-engineering work processes. Under the above programme, a number of eGovernment projects within the Ministry and key Departments under the Ministry were identified. Those initiatives included re-engineering business processes from the front end to the back end and the sharing of information within civil service employees (G2E) and with government agencies (G2G). Also a number of G2C initiatives were started and those are now in the stage of implementation. In parallel to ICTA initiatives, the Ministry has started its own eGovernment initiatives with government funding, and those are in the nature of quick

wins. The overall eGovernment initiatives of the ministry can be listed down as follows;

National eGovernment Initiatives of ICTA with the Ministry:

G2E & G2G Initiatives:

- LiFe initiative and the LiFe Location Code Navigator
- e-Human Resources Management Project (eHRM)
- Lanka Government Network (LGN)

G2C Initiatives:

- e-Divisional Secretariat Project (eDS)
- e-Population Registry Project (ePopReg)
- e-Pensions Project

eGovernment Initiatives of the Ministry of PA&HA:

G2E & G2G Initiatives:

- Policy of web publishing and emailing administrative, procedural and other important information
- Employee Performance Monitoring System (ePMS)
- Integrated Grama Niladhari Information System (IGNIS)

G2C Initiatives:

- Policy of web publishing and emailing administrative, procedural and other important information
- House Holder List initiative (HHL)
- Electronic Birth, Marriage & Death conversion and issuance project (eBMD)

The key information, of all the above eGovernment initiatives, can be retrieved from the following web sites; www.pubad.gov.lk and www.icta.lk.

1.2 Objectives of the Research

To evaluate the impact of eGovernment initiatives of the Ministry by analyzing the G2G, G2E and G2C initiatives such as the Integrated Grama Niladhari (GN) Information System, Performance Monitoring System, LGN, eBMD, eDS and other e-services provided through Ministry web site and by email to government organizations and employees.

The following objectives have been identified for this research initiative;

1. To develop a model to assess the effectiveness of eGovernment initiatives.
2. To use the model to analyze different factors in the implementation and operational phases which influence the effectiveness eGovernment initiatives of MPA&HA.
3. Based on the above analysis, to make appropriate suggestions to enhance and strengthen the current eGovernment implementations of the Ministry.

In addition to above objectives the following sub objectives have also been identified. To identify current status of the following eGovernment initiatives, compared with its previous state.

- Policy of web publishing and emailing administrative, procedural and other important information
- Publishing important Human Resources Management information on the web site
- Other eGovernment projects of the line Ministries

1.3 Problem Statement

To achieve expected results from eGovernment initiatives any government organization should have a well planned eGovernment model. The Ministry has been following the eGovernment model of ICTA for the past five years. Hence, it is

important to assess the effectiveness by evaluating its implementation and operational process performances so far.

Based on the background discussion and literature review the problem statement for this research study can be stated as follows;

1. Are the current eGovernment initiatives being implemented by the Ministry, effective?
2. If not, what's going to be the best way to adapt eGovernment initiatives to achieve the Ministry's expectations?

1.4 Importance of the Study

Quality studies on eGovernment implementations of the Ministry have not yet been carried out as this is a comparatively new field in Sri Lanka and due to the lack of reliable sources of information. Hence there is strong motivation and benefit in conducting a scientific study of the eGovernment initiatives of the Ministry.

Thus this research study fulfils a timely requirement by analyzing the effectiveness of eGovernment initiatives of the MPA&HA. Furthermore, it provides a valuable contribution by introducing an eGovernment Solution Effectiveness Evaluation Model (eGSEEM) tailored to the Sri Lankan context.

1.5 Thesis Structure

The thesis presents the material in six chapters including this chapter. Chapter 2 is the Literature Review; it analyzes the existing literature related to the research topic and identifies the theoretical models used by earlier researchers to analyze the effectiveness factors. Chapter 3 is on Research Methodology which will explain the conceptual Effectiveness Evaluation Model and the research design methodology in detail. Chapter 4 is about Data Collection and discusses the data collection methods, sample selection procedure and the questionnaire design methodology. Chapter 5 is about Data Analysis & Presentation and explains the data analysis procedure related to research methodology. Chapter 6 covers Recommendations and Conclusions, based on the outcome of the research data analysis.

CHAPTER 2: LITERATURE REVIEW

The development potential of ICT and eGovernment has been widely discussed in the literature (for example, Heeks and Arun 2006; Madon 2005; Bhatnagar and Schware 2000). However, there is still a lack of conceptual clarity on the role of ICT in national development (Sein and Harindranath 2007). It also explores the relevance and recent evolution of e-governance to different organizations.

This chapter tries to discuss developments in the area of eGovernment within the context of developing countries and the factors influencing effectiveness of the eGovernment. It discusses the kind of applications that have been developed to promote investment and economic growth and the reasons why many developing countries in the region have been quick in adopting eGovernment. However, detailed review of e-governance for development is beyond the scope of this report. Instead I refer to Heeks (2001) for further reading and to Madon (2005) for an examination of both the global and the developing countries context.



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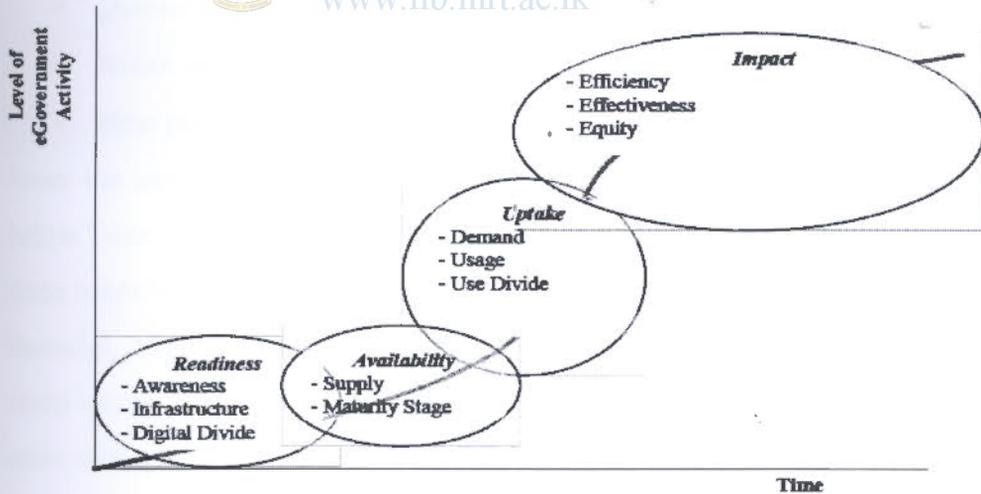


Figure 2.1: Changing eGovernment Issues Over Time

(Source: OECD 1999; ESCWA 2005)

As eGovernment activity has grown over the years, the key issues – and hence, the demand for analysis data – are changing over time, as illustrated in Figure 2.1 (OECD

1999; ESCWA 2005). It could be assumed in such cases that the impact has been demand driven. However, in general, there could be a knowledge gap around the demand for data of analysis; Particularly around demand among eGovernment and other officials in developing countries: According to Heeks (2006) we know very little about what data these senior civil servants want (Heeks 2006).

2.1 Common Factors Influencing Effectiveness of eGovernment Solutions

Several factors that are necessary for building effective eGovernment applications, which could be identified on the basis of an analysis of success and failures of e-governance applications developed so far (Bhatnagar 2004a). Improvement in delivery of Government services is an important issue for many developing countries.

The benefits of eGovernment fall into one or more of five categories stated below (Heeks 2001):

- *Cheaper*: producing outputs at lower total cost.
- *More*: producing more outputs.
- *Quicker*: producing outputs in less time.
- *Better*: producing outputs to a higher quality.
- *New*: producing new outputs.

From the above five categories the last two relate to effectiveness measures (see below Table 2.1 for indicators) and must generally be measured qualitatively. The first three relate to efficiency measures and may offer opportunities for quantitative, even financial, measurement. Where eGovernment is cheaper, resource savings (staff etc.) could occur. Where eGovernment is quicker (and that is certainly the main benefit users seek from eGovernment: Accenture 2004), financial benefits are not so obvious immediately.

The Table 2.1 (Flynn 2002) shows a standard indicator set for public sector performance: The examples chosen here are G2C e-services, but they could equally be applied to other components of eGovernment such as G2B, G2G etc).

<i>Indicator</i>	<i>Explanation</i>	<i>eGovernment Example</i>
<i>Economy</i>	The amount of inputs used	Expenditure per capita on IT in government
<i>Internal efficiency</i>	The ratio of inputs:intermediates	Cost per Web site produced per year
<i>External efficiency</i>	The ratio of inputs:outputs (use)	Cost per citizen user of government Web sites per year
<i>Internal effectiveness</i>	The fit between actual outputs (use) and organisational objectives or other set targets	The extent to which underserved communities are users of e-government services
<i>External effectiveness</i>	The fit between actual impacts and organisational objectives or other set targets	The extent to which citizens are gaining employment due to use of an e-government job search service
<i>Quality</i>	The quality of intermediates or, more typically, outputs (use)	The quality of e-government services as perceived by citizen users
<i>Equity</i>	The equitability of distribution of outputs or impacts	The equality of time/money saved by e-government service use between rich and poor citizens

Table 2.1: Standard Indicators for Government & eGovernment Performance

(Source: Adapted from Flynn 2002)



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Effectiveness measures can and are used for assessment of eGovernment performance, though hampered by the relatively limited attention they have received to date.

eGovernment can make a valuable contribution to development. However, at present, the majority of eGovernment for development projects fails either totally or partially.

To explore the impact of eGovernment, Hecks (2003) divided eGovernment initiatives into three camps:

- *Total failure*: the initiative was never implemented or was implemented but immediately abandoned.
- *Partial failure*: major goals for the initiative were not attained and/or there were significant undesirable outcomes.
- *Success*: most stakeholder groups attained their major goals and did not experience significant undesirable outcomes.

According to Heeks (2003), there is very little data about rates of success and failure of eGovernment in developing/transitional countries, but his paper (Heeks 2003) provides some baseline estimates from two sources and putting these sources together, the following working estimates are produced for eGovernment projects in developing/transitional countries:

- 35% are total failures,
- 50% are partial failures, and
- 15% are successes.

According to Heeks (2003), eGovernment success and failure is the amount of change between 'where we are now' and 'where the eGovernment project wants to get us'.

'Where we are now' means the current realities of the situation. 'Where the eGovernment project wants to get us' means the model or conceptions and assumptions built into the project's design. eGovernment success and failure therefore depends on the size of gap that exists between 'current realities' and 'design of the eGovernment project'. The larger this design-reality gap, the greater the risk of eGovernment failure. Equally, the smaller the gap, the greater the chance of eGovernment success.

Analysis of eGovernment projects indicates that seven dimensions – summarized by the ITPOSMO acronym – are necessary and sufficient to provide an understanding of design-reality gaps (Heeks 2001):

- Information
- Technology
- Processes
- Objectives and values
- Staffing and skills
- Management systems and structures
- Other resources: time and money

By reducing the gaps between design and reality, it may reduce the risk of eGovernment failure.

When there is a significant overall design-reality gap, action should be taken since the project may be heading for failure. When there is a significant design-reality gap on a particular dimension, action should be taken since this may cause problems (Heeks 2003).

According to Heeks (2003) "Taking action" means either:

1. Changing the design of the eGovernment project to make it more close to reality, and/or
2. Changing current reality to make it more close to the assumptions/requirements within project design.

Heek's ITPOSMO caters to IS implementation in the government sector especially in developing countries. Therefore, ITPOSMO provides a model which could be used for a wide range of government sector cases in developing countries. The following Table 2.2 shows ITPOSMO Dimensions by Heeks and factors by Heeks and Bhatnagar.

ITPOSMO Dimensions	Factors based on the Onion Ring eGovernment Model
Information	Data
	Knowledge
Technology	IT Infrastructure
	Software/Application
Processes	Information Related Processes
	Business Related Processes
Objectives and values	Self Interest
	Organizational Politics
	Organizational Strategies
	Organizational Culture
Staff and skills	The number of Staff
	Staff Skills
Management systems and procedure	Management Systems
	Management Structure
Other resources	Time and Value
Outside world	Political Environment
	Economical Environment

Table 2.2: ITPOSMO Dimensions by Heeks and Factors by Heeks and Bhatnagar

(Source: Heeks 2003; Bhatnagar 2003; Gamage 2007)

2.2 Common Factors Influencing Effectiveness of eGovernment Solutions in Regional Developing Countries

The challenges for e-governance within the Asian developing countries will be similar to those faced wherever electronic networks prevail. Perhaps the most important characteristic of such future developments is that they will diverge significantly from the e-commerce patterns of the past (Sein and Harindranath 2007).

One view of eGovernment is that it enables governments to transform the relationship with their key clients. As indicated in Figure 2.2, eGovernment applications are said to evolve through a four-stage process (Rogers 2000). The first stage includes the publication of information on a website for citizens to seek knowledge about procedures governing the delivery of different services. The second stage allows for interactivity online. Clients can download applications for receiving services. The third stage involves electronic delivery of documents. The fourth stage results in electronic delivery of services where more than one department may be involved in processing a service request or service. One way to measure progress is to view the scope of an application against this framework.

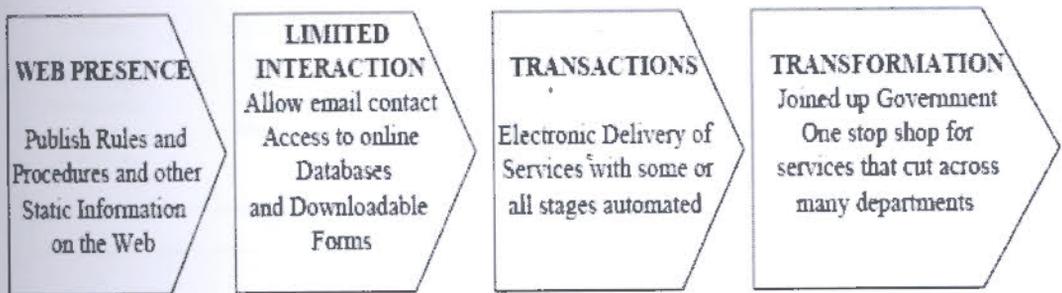


Figure 2.2: Stages in the Evolution of eGovernment (Source: Rogers 2000)

Given the variation in the extent of deployment of ICTs within government, another important dimension that determines the overall impact of eGovernment is the scale of eGovernment in a country. Is it deployed at all levels of government? Are all the agencies and departments covered? How extensive is the coverage in terms of inclusion. Are rural citizens covered? The scale of eGovernment can be measured using the framework in Figure 2.3 (Bhatnagar 2006).

The current status of eGovernment can be gauged through indicators that measure the scale of implementation. An overall assessment can place the progress of eGovernment in any of the five stages of evolution.

1. Planning phase: Setting up task forces, strategy formulation, creating co-ordination structures.
2. Working pilots that demonstrate value of eGovernment applications.
3. Working projects/pilots that demonstrate successful scalable models.
4. Replication on a wider scale (nation-wide/state-wide).
5. Stage of maturity reflecting integrated functioning of eGovernment applications.

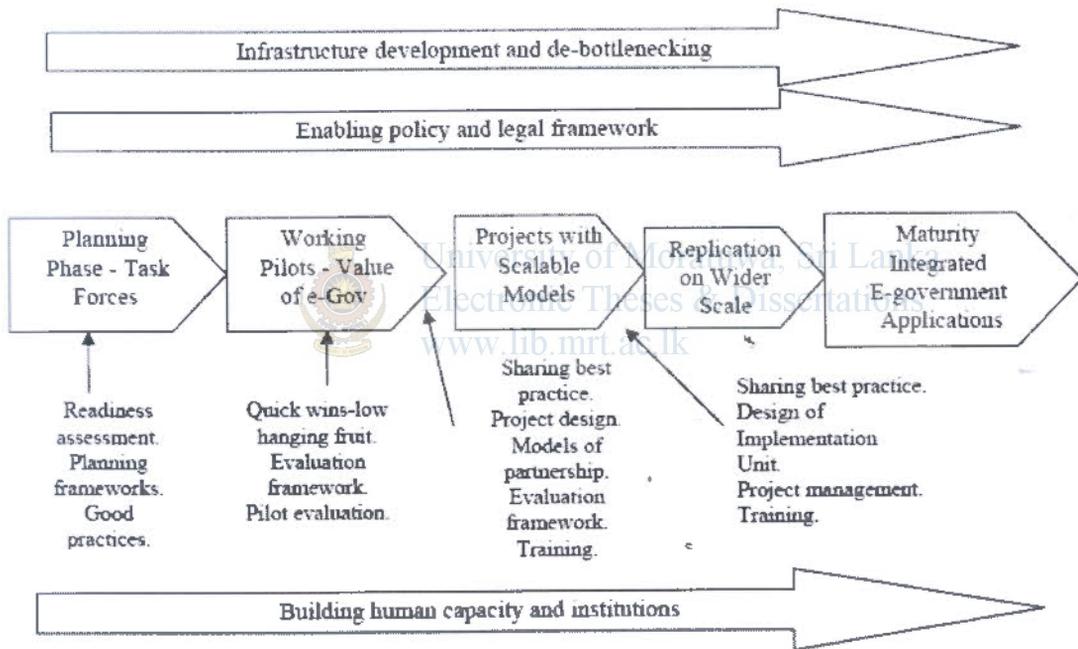


Figure 2.3: The Stages of eGovernment

(Source: Bhatnagar 2006)

According to Bhatnagar (2006) the figure identifies the kinds of inputs that can help move a country from one stage to the next. The objective of a country should be to move itself to the next stage of evolution as identified above. For countries that are just starting out, first potential areas of deployment opportunities would need to be identified, where benefits are concrete and measurable and the payoff is commensurate with investments.



2.3 The Factors Influencing Effectiveness of eGovernment Solutions in Sri Lanka

Sri Lanka was ranked 66th, on the 2003-04 Network readiness index, which measure economic preparedness to participate in and benefit from ICT development. Sri Lanka lagged in ICT use. According Hanna (2007a), a big factor in that ranking, was its lack of a coherent national strategy. Sri Lanka also ranked low on e-readiness and eGovernment capacity. In the International Telecommunication Union's Global Digital Access Index for 2002, Sri Lanka ranked 106th among 178 economies.

According to Hanna (2007b), the government had to confront several challenges, when it began to work on designing the e-Sri Lanka program. Those were;

- Politicized, highly fragmented, and poorly managed civil service
- Weak leadership and co-ordination
- Low level of ICT use in public sector
- Low digital literacy
- Uneven access to information infrastructure
- Software industry with little institutional support
- Poor donor co-ordination.

Yet Sri Lanka also had key strengths that could be leveraged to capture opportunities to harness ICT for development.

- High literacy rate
- Proximity to major ICT centers in India and East Asia
- An emerging base of ICT professionals, a promising ICT industry, and a better destination for business process outsourcing
- Growing dissatisfaction with the performance of the public sector, particularly with the quality and reach of public services
- Growing awareness of the promise of ICT among the highest levels of government.

According to the blueprint study of e-Sri Lanka (prepared by NCS – Singapore), the following critical success factors for eGovernment implementation were identified (ICTA 2004);

- Leadership
- Policies and procedures
- Governance
- Legal infrastructure
- Social and cultural infrastructure
- Technology infrastructure
- Citizen readiness and accessibility.

Among the recent studies done in Sri Lanka, Gamage (2007) has made a significant contribution for the rectification of ongoing eGovernment implementations in Sri Lanka. In their paper, Wackwella and Weerawarana (2008), a categorization of influencing factors into main categories similar to the key factors identified by Kamal and Themistocelious (2006) is presented as follows:

1. Organizational Factors
2. Environmental Factors
3. Technical Factors
4. Support Factors
5. Financial Factors



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However, considering aspects specific to developing countries, Heeks (2001) followed by Gamage (2007), have identified a unique set of sub-factors as particularly relevant as influencing factors in eGovernment implementations in Sri Lanka.

Figure 2.4 shows the conceptual framework developed by Gamage (2007) for his research.

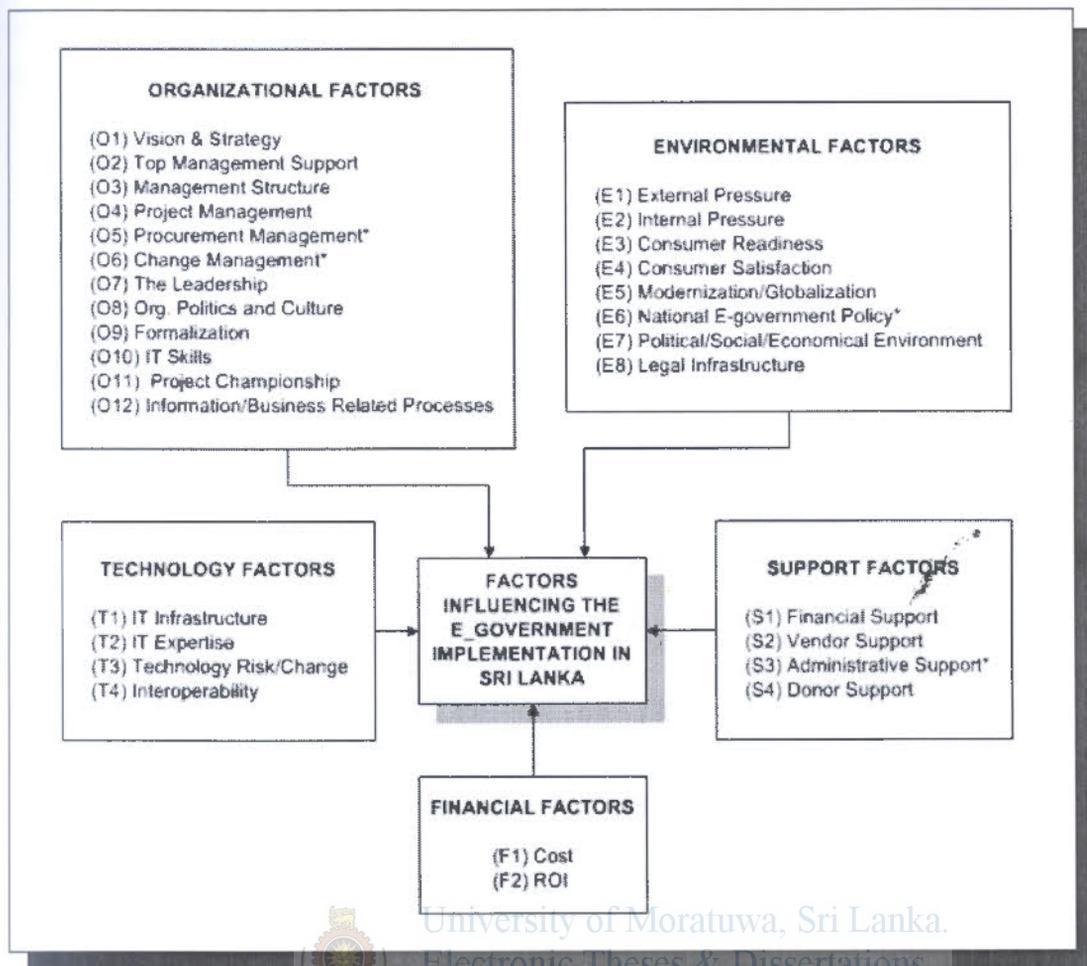


Figure 2.4: The Conceptual Framework

(Source: Gamage 2007)

As proposed by Gamage (2007), the conceptual framework above can be used as a model to evaluate factors influencing eGovernment implementation in any developing country. The factors identified in the literature review and the above Conceptual Framework (Figure 2.4), are, in the author's view, applicable (with certain modifications) to assess the success of eGovernment implementations within government organization as well. This (Figure 2.4) would be particularly relevant for government organizations in Sri Lanka.

Furthermore, from an organizational perspective, a significant research study was done by Hidayat (2007), which critically evaluates the success factors related to Business Process Re-engineering (BPR) in the Motor Traffic Department of the Western Province in Sri Lanka. According to Hidayat (2007), the key issues were identified in conjunction with the domain analysis – which listed the high density

concepts and then the central analysis which analyzed the impact of each concept. Figure 2.5 displays her model of Critical Success Factors (CSF) for BPR in Sri Lanka.

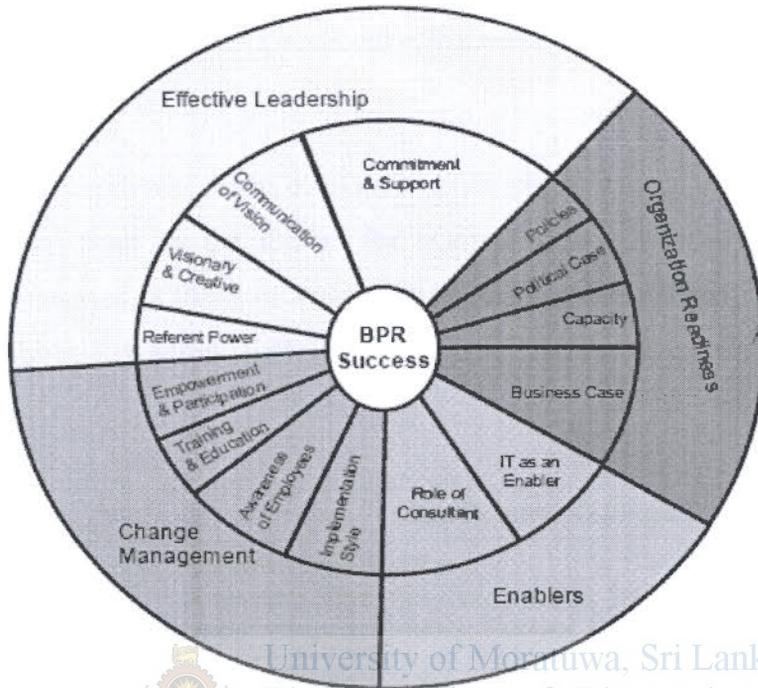


Figure 2.5: Framework for Sri Lankan Public Sector BPR Success

(Source: Hidayat 2007)

The factors that need to be considered from an organizational change management perspective are discussed in Gupta et al. (2004). They present a case study similar to the above (Hidayat 2007), done in India, which indicates that the process of change management is related to a host of issues, from technology-related to organizational, HR functions, legal etc. But most importantly, they note that change management issues are very closely related to the effectiveness of the eGovernance programme, right from the stage of conceptualization to the final completion of the project and subsequently, in the execution and maintenance of the entire infrastructure.

The economic and social impact of eGovernment was discussed in detail by Bhatnagar (2003), in his technical paper for *eGovernment, the Citizen and the State*. He further elaborates social impact goals as; increasing transparency, reducing administrative

corruption, improving service delivery and empowerment of unserved communities. According to Bhatnagar (2003) economic impact goals are streamlining administrative processes, reducing administrative burdens for businesses, increasing revenue and cost reduction & budget savings. The paper demonstrates in detail by analysis of above social and economic goals through ten selected eGovernment cases in the context of developing countries. Therefore operational effectiveness of solutions can be analyzed as economic and social perspectives.

Considering the operational phase of eGovernment projects, according to the impact assessment study done by the Center for eGovernance, Ahmedabad (IIM 2007), impact can be assessed in terms of a variety of outcomes experienced by each type of stakeholder. Table 2.3 below lists key dimensions of outcomes for each type of stakeholder.

Stakeholders	Key Dimension of Impact
Client	<ul style="list-style-type: none"> • Economic (Direct & Indirect) • Governance (Corruption, Accountability, Transparency, Participation) • Quality of Service (Decency, Fairness, Convenience, etc.)
Agency (Including Partners in Implementation)	<ul style="list-style-type: none"> • Economic (Direct & Indirect) • Governance (Corruption, Accountability, Transparency, Participation) • Performance on Key Non-economic Objectives • Process Improvements
Society (Government as a whole and Civil Society)	<ul style="list-style-type: none"> • Economic (Direct & Indirect) • Governance (Corruption, Accountability, Transparency, Participation, Responsiveness) • Development Goals • Attitude to computerization of Government agencies for service delivery

Table 2.3: Stakeholders Key Dimension of Impact

(Source: IIM 2007)

Using the above list of key dimensions, major eGovernment projects have been analyzed and therefore, in the context of a developing country, this is a suitable model for consideration with respect to the evaluation of the operational stage.

CHAPTER 3: RESEARCH METHODOLOGY

The objective of this research was to find critical factors that influence the effectiveness of eGovernment initiatives in the solution implementation stage as well as the solution operational stage, and to then formulate an evaluation model to analyze those factors at the organizational level. The key eGovernment projects and initiatives under the Ministry of Public Administration and Home Affairs in Sri Lanka have been included as the sample space to test the effectiveness factors in the evaluation model. The development of this evaluation model was done after an extensive literature review in related areas in relation to developing countries, and through a pilot study done in an organizational context in Sri Lanka.

To fulfill this objective, the author attempted to formulate factors based on the methodology given under section 3.1. These formulated factors were then abstracted to develop the conceptual methodology (see Figure 3.1), which provided an analytical basis for this research.

3.1 Research Design and Approach

According to Yin (2003), a research design is the logic that links the data to be collected (and the conclusions to be drawn) to initial questions of study. As this research has the ability to interact with many social and human aspects, it has much more justifications to use a qualitative research approach. Also, the author decided to use a case based research strategy, as the qualitative research approach works well with a case based research strategy. For case based research studies, five components of a research design are especially important:

1. A study's questions;
2. Its propositions, if any;
3. Its units of analysis;
4. The logic linking the data to the propositions; and
5. The criteria for interpreting the findings.

Covering these preceding five components of research design will effectively force to begin constructing a preliminary theory related to the topic of study.

The research methodology is the way to systematically solve the research problem by logically adopting various steps. There are several ways of doing scientific research, such as case studies, experiments, surveys, histories, and the analysis of archival information (Yin 2003). Yin also points out that, each strategy has peculiar advantages and disadvantages, depending on three conditions: (a) the type of research question, (b) the control an investigator has over actual behavioural events, and (c) the focus on contemporary as opposed to historical phenomena. In general, case studies are the preferred strategy when “how” or “why” questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context. It also explores the ability of the investigator to address a broader range of historical and behavioural issues.

3.2 The Conceptual Methodology

The Conceptual Model, which will be discussed in Chapter 4, was formulated based on two sources.

1. Literature Review
2. Pilot Study

The development of the Effectiveness Evaluation Model was done after extensive literature review (discussed in detail in Chapter 2), in related areas in relation to developing countries, and through a pilot study done in the Sri Lankan organizational context. The pilot study was carried out to get some clarification on the proposed evaluation model. This pilot survey gave valuable insights into important factors being studied along with the information derived parallelly via the ongoing literature review. This confirmed the research approach both by existing theories and by a fresh set of real observations in the Sri Lankan government organizational context. In this pilot study, in order to represent all stakeholders, a few preliminary interviews were carried out with apex body officials, ministry officials, ministry employees and vendors related to ongoing eGovernment initiatives.

In this research, those who have more eGovernment implementation experiences were selected upfront for the pilot study such as eHRM, ePMS, eBMD and HHL etc. The

factors that might not have been identified from the literature survey have been identified through the exploratory study during the case analysis. There are a significant number of models developed to identify factors during implementation and separate models for during operations. It is very hard to find a single model for both implementation and operational stages.

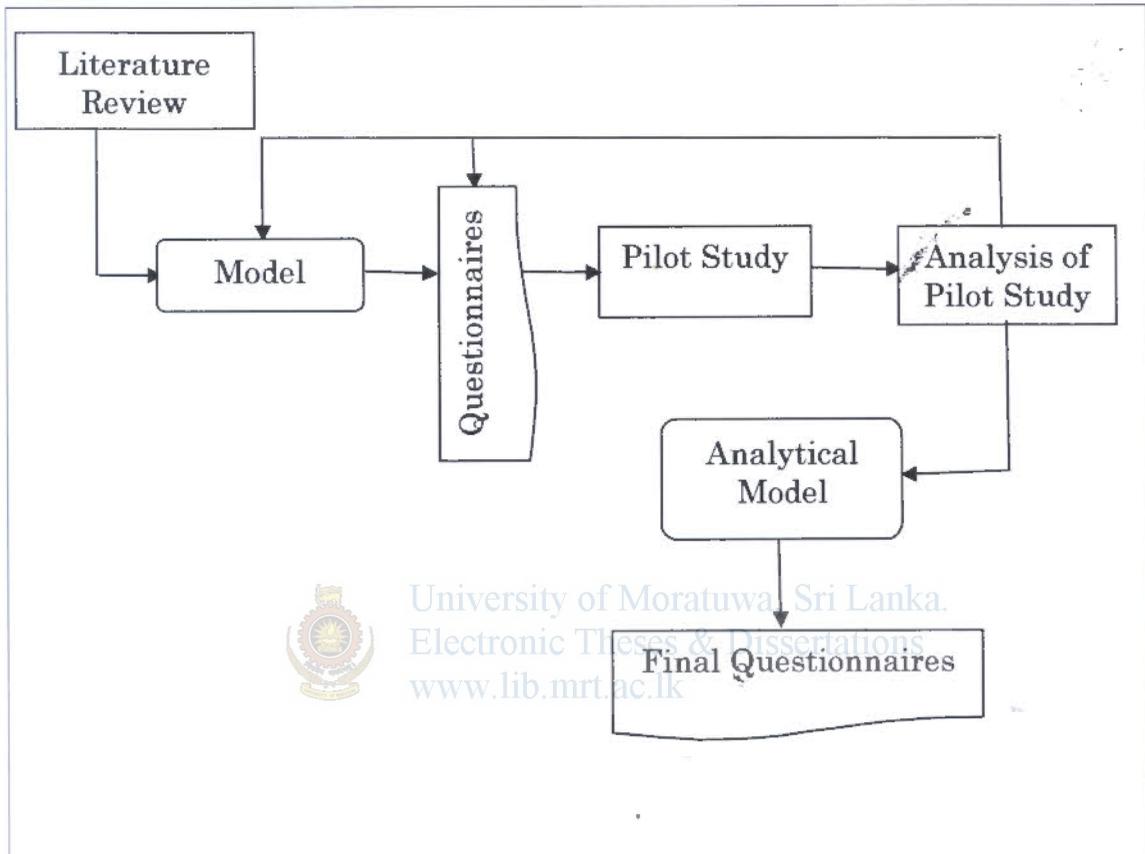


Figure 3.1: The Conceptual Methodology

The author attempted to formulate factors based on the conceptual methodology given in Figure 3.1. (In the next chapter the author mainly focuses on the concept of the analytical model, the eGovernment Solution Effectiveness Evaluation Model [eGSEEM] and definitions of the factors and different perspectives of that model.)

CHAPTER 4: THE ANALYTICAL MODEL- eGSEEM

Based on all these prior developments related to eGovernment success/failure factors, an Effectiveness Evaluation Model was formulated along with the incorporation of further impact factors identified through an initial exploratory research study, done by the author. In particular, the author noted that there are significant numbers of models, developed to identify success/failure factors and impact factors, during the implementation stages of eGovernment projects. Similarly, there are separate models to evaluate the impact of such projects, during the operational stages. Through the use of such a single model, the author intends to encourage the concept of iterative and continuous improvement of eGovernment solutions with respect to their effectiveness. Furthermore, the use of such a single model to measure effectiveness across the implementation and operational stages may motivate the planning and procurement of finer-grained eGovernment initiatives.

In this research, the author has devised a single model for the evaluation of effectiveness of eGovernment projects in both the implementation and operational stages.



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The research work resulted in a grouping of factors into three key categories in the implementation stage and into two key categories in the operational stage as follows:

Implementation Phase Factors

1. Organizational Factors
2. Surrounding Environmental Factors
3. Enabling Factors

Operational Phase Perspectives

1. Social Perspectives
2. Economic Perspectives

The model incorporating this categorization of eGovernment solution effectiveness factors and a set of relevant sub-factors is illustrated in Figure 4.1. Thus this analytical



model clearly shows factors related to implementation stage and perspectives related to operational stage separately.

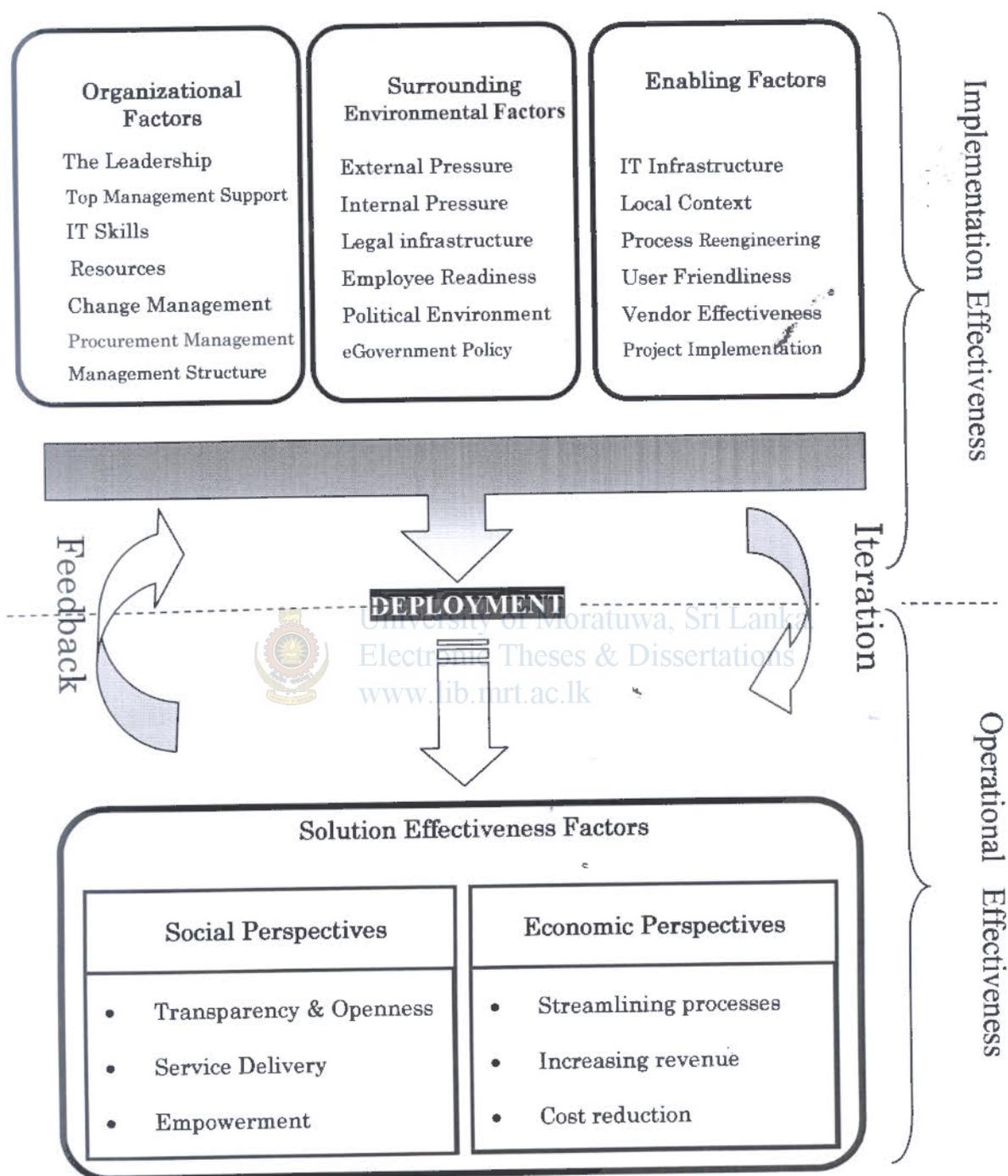


Figure 4.1: The eGovernment Solution Effectiveness Evaluation Model (eGSEEM)

The proposed effectiveness evaluation model can be used by any government agency to evaluate eGovernment projects prior to deployment and more importantly, during

the solution operation. Based on this factor analysis, appropriate recommendations can be proposed to enhance and strengthen the eGovernment initiatives by considering all related factors in the implementation stage such as organizational, surrounding environmental, and other enabling aspects pertaining to government organizations in Sri Lanka. A major strength of this analytical model is its ability to evaluate the impact of eGovernment solutions in the operational stages.

The model features built-in iterations and feedback loops to systematically analyze operational effectiveness, thereby enabling the implementation of timely corrective measures leading to continuous improvement and enhanced positive operational impact of the eGovernment solutions.

The factors and perspectives of the eGovernment Solution Effectiveness Evaluation Model are discussed in detail below.

4.1 Definition of Implementation Phase Factors

This section discusses implementation phase factors of the eGovernment Solution Effectiveness Evaluation Model (see Figure 3.2).

4.1.1 Organizational Factors

(O1) The Leadership

The leadership of most of the government agencies lack awareness of national eGovernment initiatives, directions and its benefits and hence the leadership may lacks commitment towards the eGovernment projects success.

(O2) Top Management Support

The top management awareness is a key factor for any innovation to drive successfully. The top management should drive and contribute actively in order to create a conducive atmosphere of the organization in a manner that supports eGovernment initiatives.

(O3) IT Skills

The IT skills refer to the level of IT facilities & resources, level of training personnel on IT and the capability of shifting existing systems into IT Systems within an organization.

(O4) Resources

The availability of financial and other resources to implement and enhance or build organizational IT infrastructure including the office environment is referred to as resources.

(O5) Change Management

Many eGovernment initiatives of the government organizations face resistance from its internal staff and key stakeholders. The majority of government officers consider eGovernment projects as a threat to their current jobs that may result in a loss of employment, power or responsibility. Therefore, many eGovernment projects tend to adopt different change management strategies to obtain existing staff's support without which project could be in great risk.

(O6) Procurement Management

The procurement management can be considered as a key component of the project management, since it is highly important in the eGovernment implementation process, particularly in developing countries. It involves long term sustainability of eGovernment implementations as well as operations.

(O7) Management Structure

This is also a key element which facilitates smooth implementations of IT projects and indicates the way the management system is structured both informally and formally. Most government organizations have bureaucratic hierarchical management structures, which are not conducive for building a team culture. With the introduction of IT systems several unnecessary processes could be eliminated and new efficient management structures, could be introduced. With the change of management structure, it is interesting to see how the "IT function" too gets involved in this process.

4.1.2 Surrounding Environmental Factors

(SE1) External Pressure

The external pressure is created by the government, other government organizations and citizens to search new ways to increase efficiency.

(SE2) Internal Pressure

Internal pressure is one of the key factors which can drive reforms of the public service. Government organizations have various kinds of internal pressures that strongly direct them towards introducing ICT systems to provide quality citizen services, increased efficiency and integrity.

(SE3) Legal Infrastructure

Ability to introduce new procedure and laws and the readiness of the legal infrastructure for eGovernment implementations and operations is another major factor.

(SE4) Employee Readiness

Employee readiness is a key success factor of eGovernment project implementation and operation.

(SE5) Political Environment

The political leadership and political environment is very important in public sector eGovernment initiations, implementations and operations. Organizational politics and culture is an inescapable reality in any government organization. It is further intricately interwoven with organizational norms, outcomes, performance and its processes.

(SE6) eGovernment Policy

An existence of well defined organizational eGovernment policy is a significant factor for any type of eGovernment implementation and operation.

4.1.3 Enabling Factors

(E1) IT Infrastructure

The collection of hardware, software and connectivity available in the organization that will provide smooth and secure ICT services to employees, citizens, and businesses. This also includes the reliability of communication and existing systems and the degree of formalization of systems development and management.

(E2) Local Context

The local context should be given adequate weight in eGovernment projects since it will be greatly affected in project operations.

(E3) Process Re-engineering

Process re-engineering can increase efficiency of the public service delivery process, if it is used in a proper manner. But if it is not controlled in a proper way, it can also lead to failure.

(E4) User friendliness

The user friendliness of implementation is also important for smooth user acceptance of the ICT systems.

(E5) Vendor effectiveness

The support rendered by various vendors to enhance or build ICT solutions.

(E6) Project Implementation

Approach of the project implementation will play a key role in the absorption of the solution into a public organization. A small module based iterative approach is suitable for the public sector organizational context.

4.2 Definition of Operational Phase Perspectives

This section discusses operational phase perspectives of the eGovernment Solution Effectiveness Evaluation Model.



4.2.1 Social Perspectives

(SP1) Transparency & Openness

This means transparency and openness of service provision to citizens through the eGovernment activities. It involves transparent decisions as well. Enhanced citizen's awareness could reduce corruption and malpractices.

(SP2) Service Delivery

Time reduction for service delivery, reduction of cost for services and ease of services are major expectations.

(SP3) Empowerment

Empowerment can be done by introducing new channels, automating and avoiding intermediaries.

4.2.2 Economic Perspectives

(EP1) Streamlining Processes

By eliminating unnecessary steps in a process it could be streamlined. This can be done through automation of tedious work, integration with required information and by monitoring task completion rates.

(EP2) Increasing Revenue

This will be one of the key objectives of any government. It makes revenue collection convenient, improves the audit process and could reduce the corruption.

(EP3) Cost Reduction

This is also a major benefit of eGovernment projects; that is to reduce the cost of transactions and to provide better control of government expenditure, so that the country as a whole will benefit.

4.3 The Relation of Factors to Sources of Information

Each factor identified in the eGSEEM model was derived from either literature or from the pilot survey. Table 3.1 shows the source references from which each factor or perspective was derived. Factors, which were exclusively derived from the pilot study, are marked by (*) in the Table 3.1.

Factors & Sources	
Organizational factors	(O1) The Leadership (Heeks, 2007) (O2) Top Management Support (Kamal & Themistocleous, 2007) (O3) IT Skills (Kamal & Themistocleous, 2007) (O4) Resources (Kamal & Themistocleous, 2007) (O5) Change Management (Wackwella, 2007) (O6) Procurement Management (Wackwella, 2007) (O7) Management Structure (Heeks, 2001)
Surrounding Environmental factors	(SE1) Internal Pressure (Kamal & Themistocleous, 2007) (SE2) External Pressure (Kamal & Themistocleous, 2007) (SE3) Legal Infrastructure (Heeks, 2001) (SE4) Employee Readiness (*) (SE5) Political Environment (Heeks, 2001) (SE6) eGovernment Policy (Wackwella, 2007)
Enabling factors	(E1) IT Infrastructure (Wackwella, 2007) (E2) Local Context (*) (E3) Process Re-engineering (Heeks, 2006) (E4) User Friendliness (*) (E5) Vendor Effectiveness (Wackwella, 2007) (E6) Project Implementation (*)
Social Perspectives	(SP1) Transparency & Openness (Gupta et al., 2004) (SP2) Service Delivery (Report, 2007) (SP3) Empowerment (Bhatnagar, 2003)
Economic Perspectives	(EP1) Streamlining Processes (Report, 2003) (EP2) Increasing Revenue (Bhatnagar, 2003) (EP3) Cost Reduction (Gupta et al., 2004)

Table 4.1: Factors-Sources of Information Mapping

4.4 Units of Analysis

Stakeholders are considered as the main units of analysis in this case study research.

There are five main stakeholder categories identified by the author.

1. Government agencies
2. The apex body
3. Vendors
4. Employees
5. Citizens

The criterion for selecting the above stakeholder categories is given in Table 3.2.

Stakeholder	The Reason for selection
Government Agencies	To represent G2G, G2E and G2C initiatives
The apex body	To represent the overall government authority which control & implement eGovernment in Sri Lanka
Vendors	To represent solution implementation and operations
Employees	To represent G2E initiative and its impact
Citizens	To represent G2C initiatives and overall impact of eGovernment

Table 4.2: The Stakeholder Selection Criteria

4.5 The Mapping of Stakeholders to the Analytical Model

After identifying all stakeholders, the researcher mapped the applicable factors in the eGSEEM model to each stakeholder. The mapping criterion was mainly based on the relevance of each factor to the particular stakeholder. The questionnaires/interview questions for each stakeholder were thereby purely based on this factors-stakeholders mapping table given below (See Table 3.3). Section 4.3 of the next chapter discusses the questionnaire design based on these factors to stakeholders mapping.

Stakeholder	Factors		
Government Agencies	Interviews	Organizational factors	(O1) The Leadership (O2) Top Management Support (O3) IT Skills (O4) Resources (O5) Change Management (O6) Procurement Management (O7) Management Structure
		Surrounding Environmental factors	(SE1) Internal Pressure (SE2) External Pressure (SE3) Legal Infrastructure (SE4) Employee Readiness (SE5) Political Environment (SE6) eGovernment Policy
		Enabling factors	(E3) Process Re-engineering (E4) User friendliness (E5) Vendor effectiveness (E6) Project Implementation
		Economic Perspectives	(EP1) Streamlining Processes (EP2) Increasing Revenue
The Apex body	Interviews	Organizational factors	(O1) The Leadership (O3) IT Skills (O5) Change Management (O6) Procurement Management

		Surrounding Environmental factors	(SE3) Legal Infrastructure (SE4) Employee Readiness (SE6) eGovernment Policy
		Enabling factors	(E1) IT Infrastructure (E2) Local Context (E5) Vendor Effectiveness
		Social Perspectives	(SP2) Service Delivery
Vendors	Interviews	Organizational factors	(O1) The Leadership (O3) IT Skills (O5) Change Management (O7) Management Structure
		Surrounding Environmental factors	(SE3) Legal Infrastructure (SE4) Employee Readiness (SE6) eGovernment Policy
		Enabling factors	(E1) IT Infrastructure (E2) BPR (E6) Project Implementation
		Social Perspectives	(SP1) Transparency & Openness (SP2) Service Delivery (SP3) Empowerment
		Economic Perspectives	(EP1) Streamlining Processes (EP2) Increasing Revenue (EP3) Cost reduction
Employees	Interviews	Organizational factors	(O1) The Leadership (O2) Top Management Support (O3) IT Skills (O7) Management Structure
		Surrounding Environmental factors	(SE1) Internal Pressure (SE2) External Pressure (SE4) Employee Readiness
		Enabling factors	(E2) Local Context (E3) Process Re-engineering (E4) User Friendliness (E5) Vendor Effectiveness
		Economic Perspectives	(EP1) Streamlining Processes
Citizens	Interviews	Social Perspectives	(SP1) Transparency & Openness (SP2) Service Delivery (SP3) Empowerment
		Economic Perspectives	(EP1) Streamlining Processes (EP3) Cost reduction

Table 4.3: Factors-Stakeholders Mapping

CHAPTER 5: DATA COLLECTION

This chapter will discuss the data collection methodology and the specific approach of the research. The data collection methodology defines the way in which the data are collected in a research project. It is important to use a proven methodology for data collection which will help to analyze and present data in a scientific manner.

As stated in Chapter 3, qualitative research design is adopted for this research; hence following qualitative data collection procedures have been used.

- Interviews
- Direct observation
- Analyzing documents and materials

5.1 The Sample Size and Sample Selection Procedure

As stated in Section 4.4 the following five types of stakeholders are involved in this research.

- Government Agencies
- The Apex body (ICTA)
- Vendors
- Employees
- Citizens

The sample of each stakeholder was taken based on the *purposive sampling* method. This is a kind of sampling method, which allows the researcher to “hand pick” the sample by keeping a specific purpose in the researcher’s mind, which is basically related to the research question (see Table 5.1).



Stake holder	Sample	Sampling Technique	Number of Interviews
Government Agencies	46 from 16 Government institutions	<i>Purposive Sampling</i> The sample was selected based on the implementation and operation level of each organization of the Ministry which has on-going eGov projects.	46
The Apex body	ICTA relevant project managers	<i>Purposive Sampling</i> This sample was purposefully taken to represent the project managers of ICTA to represent relevant eGov projects.	08
Vendors	15 vendors of eGov projects	<i>Purposive Sampling</i> This sample was taken to represent the selected service providers of work-in-progress eGov project of the ministry.	15
Employees	46 employees from 16 agencies	<i>Purposive Sampling</i> This employee sample was selected based on the implementation and operation level of each organization of the Ministry which has on-going eGov projects.	46
Citizens	26 citizens	<i>Purposive Sampling</i> This sample was taken to represent the Western Province.	26

Table 5.1: Sample Size and Selection Criteria

5.2 Questionnaire Design

The questionnaire was prepared in the following manner (Table 5.2) and it was based on the solution effectiveness evaluation model stated in Figure 4.1. Complete questionnaire templates are given in Appendix-I.

Template	Description of questionnaire
[GA] Government Agency	Questionnaire for Ministry and the Agencies of the Ministry
[AP] Apex Body	Questionnaire for the Apex Body
[VN] Vendor	Questionnaire for Vendors
[EM] Employee	Questionnaire for Employees
[CT] Citizen	Questionnaire for Citizens

Table 5.2: Questionnaires

The Factor-questionnaire Mapping is shown in the Table 5.3. (GA- Government Agencies; AP- Apex Body; VN-Vendor; EM- Employee; CT-Citizen)

Factors		Questions
Organizational factors	(O1) The Leadership	GA1,AP1,VN1, EM1
	(O2) Top Management Support	GA2, EM2
	(O3) IT Skills	GA3, GA4, AP2, VN2, EM3
	(O4) Resources	GA5
	(O5) Change Management	GA6, AP3, VN3
	(O6) Procurement Management	GA7, AP4
	(O7) Management Structure	GA8, GA9, VN4, EM4
Surrounding Environmental factors	(SE1) Internal Pressure	GA10, EM5
	(SE2) External Pressure	GA10, EM5
	(SE3) Legal Infrastructure	GA11, AP5, VN5
	(SE4) Employee Readiness	GA12, AP6, VN6, EM6
	(SE5) Political Environment	GA13
	(SE6) eGovernment Policy	GA14, AP7, VN7
Enabling factors	(E1) IT Infrastructure	AP8, VN8
	(E2) Local Context	AP9, EM7
	(E3) Process Re-engineering	GA15, VN9
	(E4) User friendliness	GA16, EM8
	(E5) Vendor effectiveness	GA17, AP14, AP15, EM18
	(E6) Project Implementation	GA18, VN10
Social Perspectives	(SP1) Transparency & Openness	CT11
	(SP2) Service Delivery	CT5, CT6, CT7, CT8, CT9, CT10, AP11
	(SP3) Empowerment	CT12
Economic Perspectives	(EP1) Streamlining Processes	GA19, EM10, CT13
	(EP2) Increasing Revenue	GA20,
	(EP3) Cost Reduction	CT14, CT15

Table 5.3: Factor-Questionnaire Mapping

Table 5.3 shows how each question of questionnaire template was mapped to factors of analytical model by ensuring well balanced questionnaire for each stakeholder.

The Questionnaire-Factor Mapping is shown in the Table 5.4.

Questionnaire Template (Set #)	Question #	Factors covered
S1 [GA]	GA1 – G20	O1, O2, O3, O4, O5, O6, O7 SE1, SE2, SE3, SE4, SE5, SE6 E3, E4, E5, E6 EP1, EP2
S2 [AP]	AP1 – AP11	O1, O3, O5, O6 SE3, SE4, SE6 E1, E2, E5
S3 [VN]	VN1 – VN10	O1, O3, O5, O7 SE3, SE4, SE6 E1, E3, E6
S4 [EM]	EM1 – EM10	O1, O2, O3, O7 SE1, SE2, SE4 E2, E4, E5 EP1
S5 [CT]	CT1 – CT15	SP1, SP2, SP3 EP1, EP3

Table 5.4: Questionnaire-Factor Mapping

The questionnaire was designed based on the analytical model – eGSEEM, presented in Chapter 4. The factors were prioritized depending on the stakeholder (see Figure 4.3 for factors-stakeholders mapping). As a result of this exercise, 5 semi-structured questionnaires were prepared (See Appendix I for all questionnaire templates).

5.2.1 Questionnaire Design Example

As shown in the Table 5.3, each question in the questionnaire is mapped to a factor or perspective in the analytical model. Since there are multiple stakeholders in this research, the same factor can have multiple questions and there can be multiple questions to a single factor from the same stakeholder too.

Factor	Questionnaire Code	Question#	Sample question
The Leadership	GA	11	Do you think the strong leadership at the organization can affect the eGovernment success?
	AP	11	As an apex body, how do you think the proper leadership at the top of government organizational level could affect the eGovernment success? Lanka.
	WN	11	How do you see the leadership support for eGovernment projects of the Ministry? www.lib.mrt.ac.lk
	EM	11	Do you think the strong leadership at the organization can affect the eGovernment success? .

Table 5.5: Sample Questionnaire

As shown in Table 5.5, the factor “The Leadership” is represented in all questionnaires. The GA questionnaire for a government agency contains one question related to the factor depending on its relevancy. However, depending on the relevancy some factors can have more than one question to same stakeholder. The author has tried to maintain the same questionnaire design methodology for all the other factors as well. Please refer Appendix I for the remainder of questions.

CHAPTER 6: DATA ANALYSIS AND PRESENTATION

The purpose of this chapter is to present the collected data and analyze them using the eGovernment Solution Effectiveness Evaluation Model. Since this research adopted a qualitative research approach, the researcher used responses from interviews, secondary data from archival and other sources of information, to analyze the data gathered. Due to resources, time and scope limitations of this study, the sample size stated in Table 5.1, was further confined to the Ministry and the Colombo District, where pilot implementation and operations are in progress. The detailed sample size is reduced to 55 and the break down is shown in Table 6.1.

Stake-holder/Organization		Sub-Unit/s	Number of Questionnaires
1	MPA&HA	IT Unit	01
		Divisional Admin	01
		Grama Niladhari	01
		PMS Units	11
		Colombo District	03
	Total	17	
2	Apex-body	eBMD	01
		ePMS	01
		Re-eng Gov	01
	Total	03	
3	Vendors	PWCH	01
		ICTA(T)	01
		Syntex	01
		Bluechip	01
		BSS	01
	Total	05	
4	Employees	Divisional Admin	01
		Grama Niladhari	01
		PMS Units	11
		Colombo District	03
	Total	17	
5	Citizens	Colombo district	13
Total Number of Questionnaires			55

Table 6.1: The Detailed Break-Down of Sample



6.1 Analysis of Implementation Phase Factors

Three factors that are categorized under implementation phase factor category in the eGSEEM are analyzed in this section.

6.1.1 Organizational Factors

The factors which are grouped as organizational category related to the implementation phase in the eGovernment Solution Effectiveness Evaluation Model, are analyzed in this sub-section.

6.1.1.1 The Leadership

All respondents in government organizations including the employees, vendors and the apex body (ICTA) agreed that proper leadership is necessary to make eGovernment initiatives a success. Also some organizational representatives and employees stress that the need of political leadership is also very important for the projects' success, since otherwise, the lack of their awareness or for other reasons, political leadership may give more priority to other routine activities, which could affect eGovernment implementations in a negative manner.

6.1.1.2 Top Management Support

All respondents in government organizations and in the apex body strongly feel, even if government organizations acquire the full support of leadership, success in eGovernment projects within government organizations will remain elusive without the support of the top management immediately under the Ministry/Organization leadership. Most eGovernment project implementations are actively managed by the top management, because the organizational leadership gives more priority to other critical activities which have a higher political importance. Therefore empowerment of the top management is also important by giving them better exposure in the field of eGovernment. It is also a better investment for the future as they are the people who will take this leadership responsibility immediately after retirement of current leadership.

6.1.1.3 IT Skills

IT skills were analyzed based on the IT skill level of pilot project implementing government organizations (See Table 6.2). These skill levels were taken from the judgment of the project champions of the selected government organizations, employees and the service providers.

IT skill level	Number of Organizations
Good	2
Moderate	7
Poor	6

Table 6.2: Organizational IT Skills Level

This is graphically shown in Figure 6.1; it shows that 40% of government organizations are still at a poor level of IT skills. Organizations that are categorized as 'poor' can shift into a better level of IT skills by utilizing available IT training opportunities in a well organized manner.

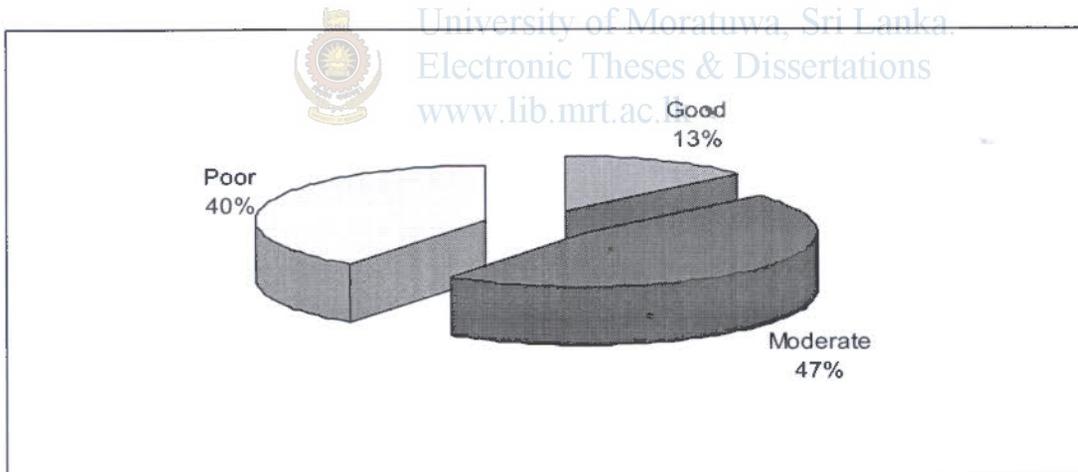


Figure 6.1: Organizational IT Skills Level

However, in general, the IT skill levels are poor or moderate (See Figure 6.1) and need a lot of improvement. The interviewers mentioned the following as reasons for the above situation.

1. Most of the government employees are from an older generation and they are not in a position to grasp the latest technologies.
2. Lack of adequate training opportunities for operational staff.

3. IT foreign training opportunities are not given to related staff.
4. Unavailability of designated IT cadre in the government service.
5. Due to organizational internal politics.
6. Most employees feel that IT enablement is a threat to their careers and that will lead to the loss of their existing control in service delivery.
7. Lack of motivation to learn a new technology, as it does not give any financial or other benefit.

6.1.1.4 Resources

Availability of financial and other resources to implement and enhance or build organizational IT infrastructure including the office environment is considered as 'resources'. One major problem in government organizations is the lack of adequate resources and financial capabilities. Also, most eGovernment projects focus only on the software and the hardware solutions but e-initiatives need other important ingredients, such as organizational layout, proper furniture and conducive environment for the operation. A significant number of interviewers are of the view that these important factors were identified only at later stages of project implementation and therefore, most of the project implementations were dramatically affected. The other key problem was, when the project fails to plan initially, finding financial resources later becomes a key problem.

The Table 6.3 shows resource availability of organizations selected for this research study.

Resource availability	Number of Organizations
Good	2
Moderate	3
Poor	10

Table 6.3: Organizational Resource Availability

Most (67%) respondents feel that the resource availability of organizations is very poor (See Figure 6.2).

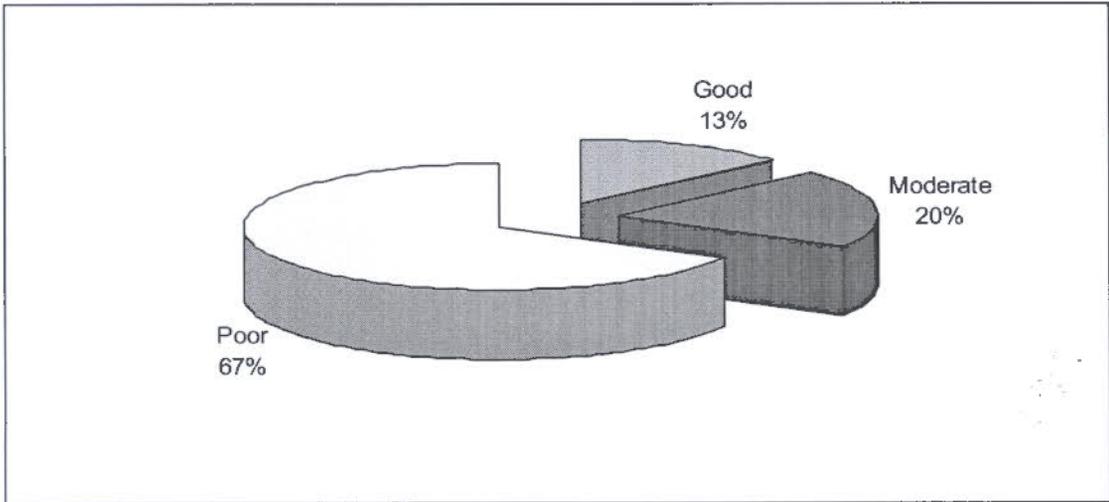


Figure 6.2: Organizational Resource Availability

Therefore this can be a key factor for eGovernment project success, because the ability to undertake un-planned activities as alternatives purely dependent on organizational resources and most of the government organizations are not in a position to fulfil this resource requirement. Therefore, most of the time they have to depend on other superior organizations such as ministries, etc., to acquire such resources.



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6.1.1.5 Change Management

As “*change is inevitable*”, changing the attitudes and perception of all government employees towards IT enablement is a most important factor. There is a need develop of a culture within government organizations where employees desire IT systems instead of the existing trusted manual systems. Hence, it is necessary to introduce specific change management programmes including IT awareness training programs, during the implementation period as well as in the operational phase.

Most of the vendors are of the view that change management programmes are not aligned to the project implementation; hence it significantly impacts the live, operational environment (See Figure 6.3).

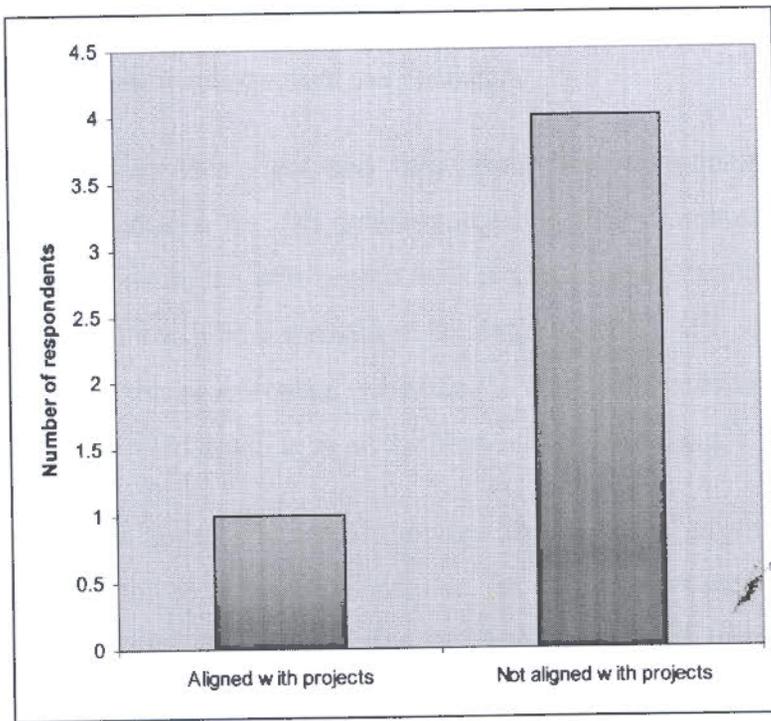


Figure 6.3: Change Management Alignment with e-Projects

One ICTA respondent expressed the following view:

“Change management process should look at preparing individuals as well as organizations for the changes that arise as a result of Government Process Re-engineering (GPR) and introduction of eGovernment systems. There should be dedicated teams of Change Agents within the organizations who should be entrusted with carrying forward the Change Management processes.”

6.1.1.6 Procurement Management

The researcher analyzed this aspect with three stakeholder categories namely, government agency, apex body and vendors. All three categories recognized the fact that this is one of the bottlenecks responsible for most of the delays of eGovernment projects. The Government agencies use the traditional procurement approach for IS procurement, but ICTA has adopted World Bank’s IS procurement procedures. However both seem to be problematic and eGovernment projects are delayed on for a long period, mainly due to these procurement approaches.

Most of the respondents are of the view that procurement should be given adequate attention by considering long term sustainability of the IT projects. Government



agencies are of the view that procurement should be planned to manage vendors properly and to get right solutions from the vendors.

The vendors are of another view and they think that government procurement procedures are not suitable for IS procurement and many improvements to this process need to be done which will benefit both the government and the vendors and that the ultimate results will be beneficial to the entire society. Also, the other reason vendors stress about the procurement schedule, is that there is either delay or non adherence to the scheduled timeline in all the phases of procurement.

Respondents from the apex body are of the view that both the government agencies and the vendors are more or less, responsible for various procurement issues and subsequent delays. They also agreed that IS procurement management should be improved and ICTA is taking continuous measures to improve procurement management. Also some ICTA respondents stated that the Software Development Services Approach (Weerawarana 2009) is a better alternative for many procurement issues, including the delays. The SDSA is a procurement approach which reduces complexity of the projects and applies agile methods to eGovernment procurement. The eGSEEM model has built-in iteration and feedback loops which work well with the SDSA approach.

One ICTA respondent had this to say:

“Procurement Management is a key component in eGovernment success as following proper procurement guidelines and procedures ensure the transparency and integrity of the procurement process. Having a transparent procurement process helps to build confidence and credibility amongst stakeholders of eGovernment systems.

However, generally large procurement take a substantially long time and could have an adverse effect for eGovernment success as stakeholders could lose in projects with long gestation periods.”

6.1.1.7 Management Structure

With the implementation of eGovernment, management structure which is in practice should accommodate changes proposed by the BPR and Change Management plan in order to smoothen the function of ICT solutions. All the stakeholders stated that resistance is natural while adopting changes to the existing management structures,

where moving from existing functional silos to new management structures is a very complex task. All the vendors perceive that this is a critical activity and without establishing a proper management structure, which will align with the BPR, it is hard to get the advantage of eGovernment solutions and that the solutions will not be able to provide the expected outcomes.

Under this factor, the author's intention was to analyze one of the major sub-factors, the evolution of the "IT function" within the Ministry and the agencies under the Ministry. However, time-limitations of the study did not permit the author to perform further analysis and it may be recommended for future researchers. Also further details on the evolution of IT functions can be found in Heeks (2006) followed by Wackwella (2007), in relation to national eGovernment implementations in Sri Lanka.

6.1.2 Surrounding Environmental Factors

The factors, which are categorized under surrounding environmental factors category in the eGSEEM Model, are analyzed here.

6.1.2.1 Internal Pressure



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The government organizational inefficiencies, especially in terms of operational, managerial and technical aspects have been triggered by this factor. Most respondents in government agencies think that the main reasons for internal pressure are caused by the following aspects.

1. Tedious manual processes
2. Inefficient management of operational staff
3. Poor application of technology
4. The poor quality of current citizen services
5. Lack of proper integration with other government agencies
6. Lack of IT cadres in government agencies.

6.1.2.2 External Pressure

The government organizations are under enormous pressure to deliver citizen service in a more efficient manner. Introducing ICT systems is one of the potential approaches to overcome inefficiencies in government services; hence the pressure is much higher

in these eGovernment projects. Funding agencies are also exerting pressure on government agencies to complete eGovernment projects within the schedule. The pressure can be seen emanating both from the administrative level as well as from the political level. Also, citizens are exerting continuous pressure to the political leadership and the organizational leadership for simplification of the procedures and enhancement of the efficiency of public services. Also at the moment, ICTA as an independent body does not have enough authority to pressurize any government agency to follow their directions.

6.1.2.3 Legal Infrastructure

The other common issue across government agencies is not having a proper understanding of legal aspects, in terms of ICT usage. ICTA has completed a number of initiatives to lay a proper legal framework to support eGovernment projects. But measures taken to increase the awareness within government agencies have not been adequate. This can be a result of not having a proper *ICT Policy for Government* during the past few years. ICTA is now trying to introduce these policies to all new eGovernment projects under the ICTA authority.

One respondent from a government organization in Colombo District had this to say:

"Our organization with the Western Province Motor Traffic Department and ICTA developed an online payment system with the help of the SMS technology. We wanted to launch it at eAsia on 2nd December 2009. Because we could not get approval from the Ministry of Finance, this project is currently on hold. This can be one of the good examples for legal infrastructure as a major constraint for eGovernment projects, as it could affect adversely, the project implementation phase as well as the solution operation phase."

The other major issue in Government agencies is to get assistance for change or set-up of new procedures or legal framework by re-engineering existing procedures, policies and laws. The Government agencies are of the view that due to shortage of expert legal professionals in the eGovernment related fields and time taken to approve and accommodate new legal changes affect eGovernment implementations critically.



The respondent from ICTA had this to say:

“The legal infrastructure has been one of those areas that the ICTA steadily progressed during the past few years. ICTA facilitates the formulation and adoption of National ICT policy with the collaboration of the Ministry of Science and Technology. With this policy during the last few years ICTA was able to enact a few ICT laws such as Electronic Transaction Act, Intellectual Property Right Act, Computer Crime Act, Payment device fraud Act to lay the foundation for a safer eGovernment. But the fact that less awareness of these developments in government agencies is a key issue and ICTA is currently taking number of steps to enhance awareness of public officers on existing eGovernment legal framework.”

6.1.2.4 Employee Readiness

The employee readiness and awareness about eGovernment is analyzed by this factor. The employee readiness is a key factor for the eGovernment implementation phase as well as the operational phase. The employees’ IT skills, awareness about eGovernment, and easy adoption of new technology could be key indicators to employee readiness. Based on the analysis, employee awareness about eGovernment is very high (see Figure 6.4).

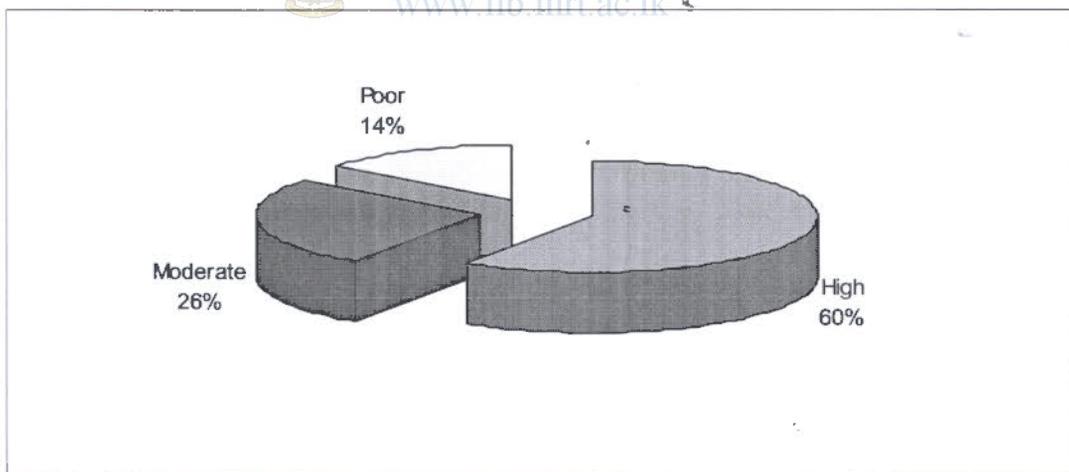


Figure 6.4: Employee Awareness on eGovernment

According to the Figure 6.4, the 60% out of 42 respondents think that employee awareness is high, 26% has moderate awareness and only 14% has less awareness. This is a very good sign for the Ministry and the institutions affiliated to the Ministry.

6.1.2.5 Political Environment

A conducive political environment is very important to implement eGovernment initiatives in a successful manner. As the Ministry and its departments, unlike private organizations, are service-oriented rather than being profit-oriented to perform any reforms of existing systems, it should be clearly backed by the political authority. This is the general perception among any government organization in developing countries including Sri Lanka.

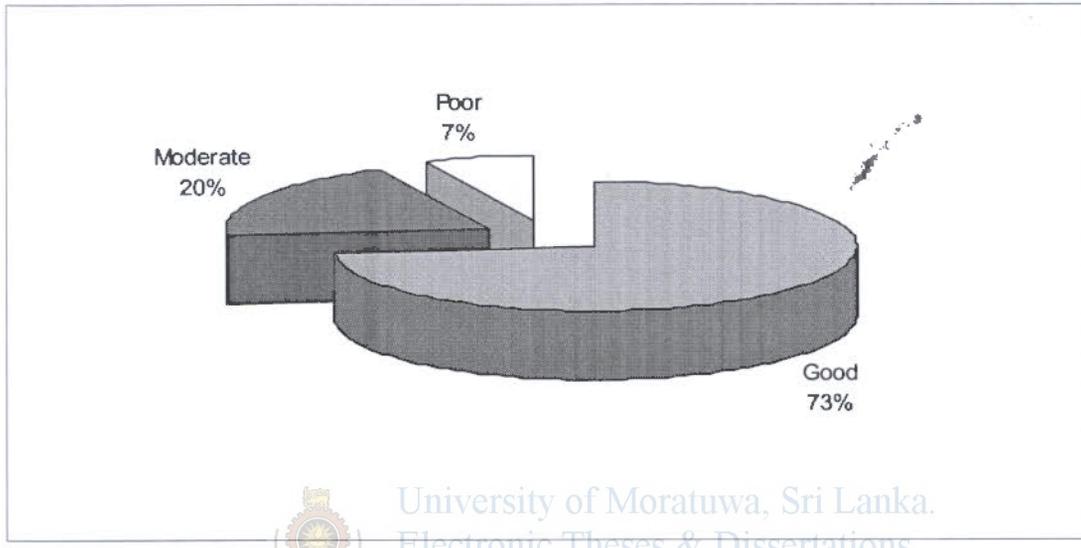


Figure 6.5: Organizational Political Environment for eGovernment

Most (73%) of government agency respondents think that good political support is available for the eGovernment initiatives of the Ministry (see Figure 6.5).

6.1.2.6 eGovernment Policy

As expected, out of 25 interviewees (Government organizations, apex body, and vendors), a relatively high number of interviewees (72%) were under the impression that having an organizational eGovernment policy could make a difference to the whole eGovernment solution success (See Figure 6.6). They all think that even without a proper policy the eGovernment initiatives are on the right track, and availability of such a policy would definitely make a positive difference.

4

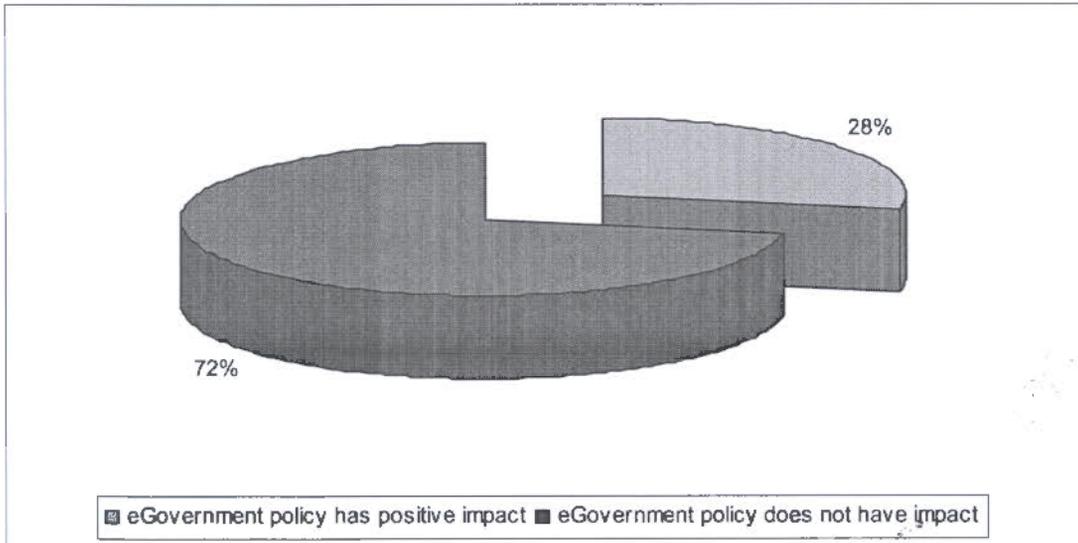


Figure 6.6: Impact of eGovernment Policy

The author also believes that availability of eGovernment policy could have a positive impact towards implementation and the operation of eGovernment projects.

6.1.3 Enabling Factors

The factors which are grouped as enabling factors category related to the implementation phase in the eGovernment Solution Effectiveness Evaluation Model are analyzed in this sub-section.

6.1.3.1 IT Infrastructure

The IT Infrastructure is a necessary component for successful eGovernment adoption in any country and it is relevant to the Ministry as well. All the interviewees have the impression that their organizations have good IT Infrastructure. The reason may be that all organizations covered under this research study have computers, local area networks and Internet and email connectivity through the Lanka Government Network (LGN). ICT Agency's LGN project made a big difference by overcoming infrastructure issues in 325 government organizations. All Divisional Secretariats of the Colombo District and the Ministry are covered by the LGN project and therefore, all the respondents (apex body and vendors) indicated the existence of a satisfactory IT infrastructure.

However, a respondent had this to say:

“The LGN is under utilized because of the lack of proper content in relation to government organizational needs. Also some organizations use two LANs and some officers also have one computer from each LAN. This is just a waste of resources. Senior officers of most organizations are provided with LGN connectivity, and they very rarely use it, but operational staff who need these facilities, still, does not have them. ICTA and organizations have to take immediate action to increase this utilization rate to a higher level.”

6.1.3.2 Local Context

eGovernment should cater to local requirements of the eGovernment implementations. There is a saying, *“think globally and act locally”*. Most vendors try to deploy global solutions in local organizations. When there are local solution implementations one must always think about local language support, focusing on local cultural and political aspects, locally available technology aspects, such as usage of mobile phones, etc. Almost all respondents from the apex body and employees consider this as an important requirement.



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6.1.3.3 Process Re-engineering

In most of the government organizations, process re-engineering is essential, since for many years the processes have not been reviewed and re-engineered. According to Heeks (2006), the design-reality gap analysis should be given proper attention, and if this gap is there, there is always a tendency towards a failure. Considering this, most of the Ministry projects are incorporated with a process re-engineering component and by applying it carefully, better results can be obtained from the eGovernment projects. The process re-engineering could; eliminate inefficiencies of processes & procedures, simplify processes and promote a customer centricity concept.

All the respondents (Government agencies and vendors) believe that process re-engineering is compulsory for any eGovernment project in developing countries. Some vendors are of the view that process re-engineering and solution development can be done effectively by working with one party rather than working with a number of parties.

6.1.3.4 User Friendliness

The user friendliness of implementation is especially important when it comes to ICT implementations in government organizations including the Ministry and its institutions. This factor was analyzed based on the data received from government agencies and the employees. The majority respondents are of the view that user friendliness aspects are not being addressed adequately. The Figure 6.7 shows comparison of user friendliness aspects by agency and employee level.

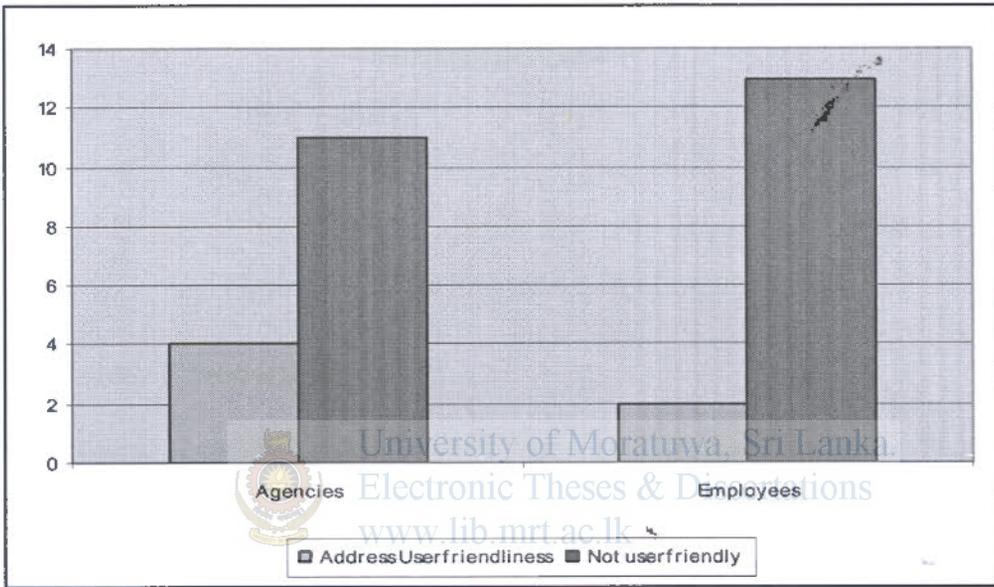


Figure 6.7: The Comparison of User Friendliness

According to the Figure 6.8, most (73%) analyzed agencies think that user friendliness aspects are not being addressed properly.

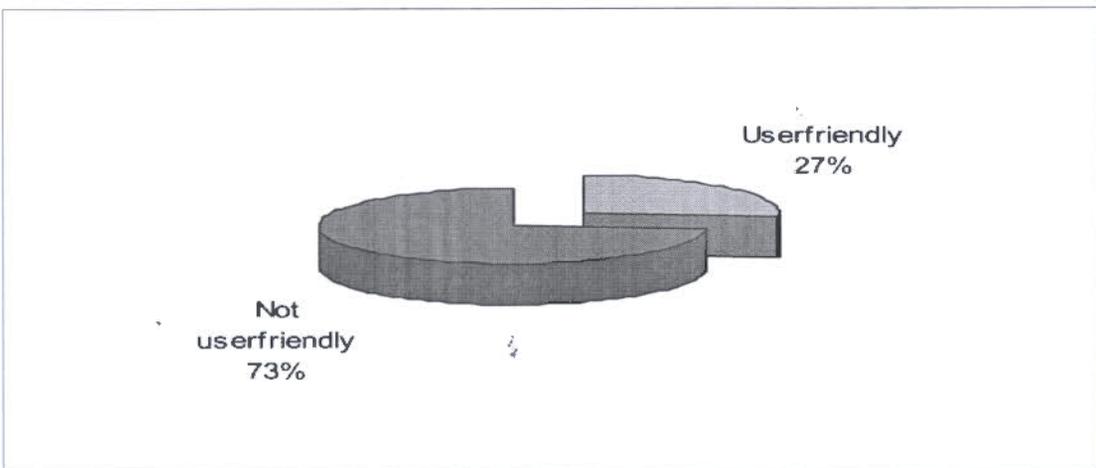


Figure 6.8: User Friendliness by Agencies

More interestingly, 87% of employees (see Figure 6.9) think in the same way as their agencies. Here more employees, compared with agency respondents, are not happy with the user friendliness aspects.

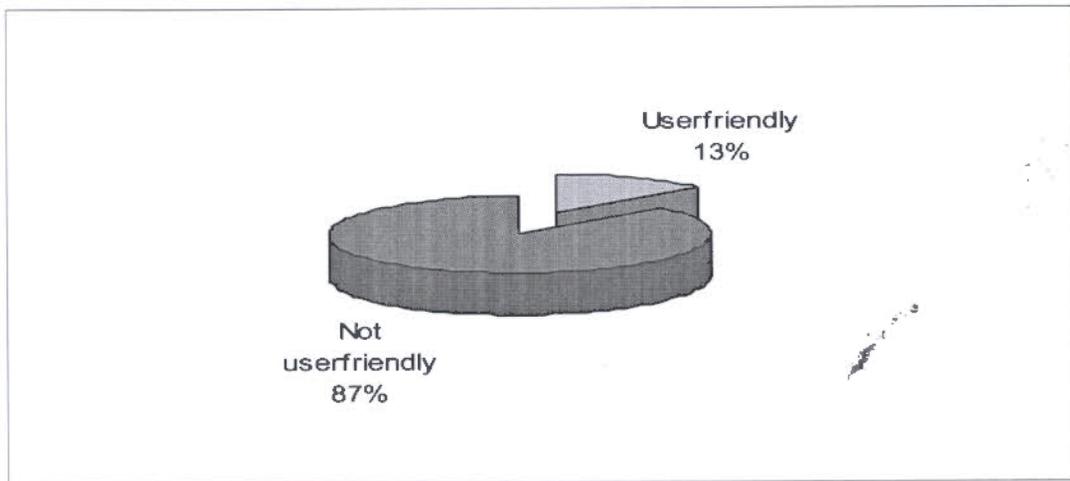


Figure 6.9: User Friendliness by Employees

6.1.3.5 Vendor Effectiveness

All government agencies interviewed who some kind of interaction with vendors had related to eGovernment projects were not quite happy with their performances. They admit that whatever delays there have been are not only due to their faults but also to vendor's faults as well. The major concern regarding vendors is that, they always try to go by the scope rather than trying to deploy a good solution. The other concern is that vendor project team's knowledge on the agency domain is weak and the time taken, to grasp that knowledge is long. Some of them are very happy about their commitment and dedication to complete their work on time in a successful manner.

However, ICTA had a few complaints about the vendor's capability to prepare proper tender proposals.

One respondent from ICTA had this to say,

"With complex World Bank tender regulations, all vendors were required to adhere to a set of strict guidelines, in order to get them approved by the World Bank. However, we did not see much competency, in our local vendors, especially related to this area. That caused many delays in eGovernment implementations so far."

One more respondent from ICTA had this to say,

“Competency of the vendors who develop eGovernment applications is critical towards eGovernment success. However, our experience has been that apart from only a few companies, majority of both local and international companies lack the necessary competence to develop mission critical national level eGovernment projects as additional time is required to ensure quality of the systems.”

6.1.3.6 Project Implementation

The project implementation approach is also a key factor for the success of eGovernment solutions as government organizations contribute to eGovernment implementations while performing their day to day activities. By considering these basic facts, eGovernment implementation should plan to get maximum effective involvement of agencies while doing their normal functions. Also these projects should plan to do small iterative deployments and in that manner get the attention of the agencies throughout the entire implementation of the project. If projects drag on for a long time without fruitful results, the agency staff loses interest and it is very difficult to get back their active attention and contribution again. Therefore, small organizational projects with a proper project implementation approach would have better chances for successful completion. Proper project implementation approach with better planning would get all the stake holders on board, throughout the entire implementation.

6.2 Analysis of Operational Phase Perspectives

Two perspectives that are categorized under operational phase perspective category in the eGSEEM are analyzed in this section.

6.2.1 Social Perspectives

Factors which are grouped as social perspective category related to the operational phase in the eGovernment Solution Effectiveness Evaluation Model, are analyzed in this sub-section.



6.2.1.1 Transparency and Openness

One of the key objectives of the eGovernment deployment is to deliver government services in a more transparent manner. Through the eGovernment initiatives transparency of service provision can be increased, subsequently customer satisfaction could be increased as well. Most (77%) of the citizens believe that with the implementation of eGovernment initiatives, the transparency of services will increase (see Figure 6.10)

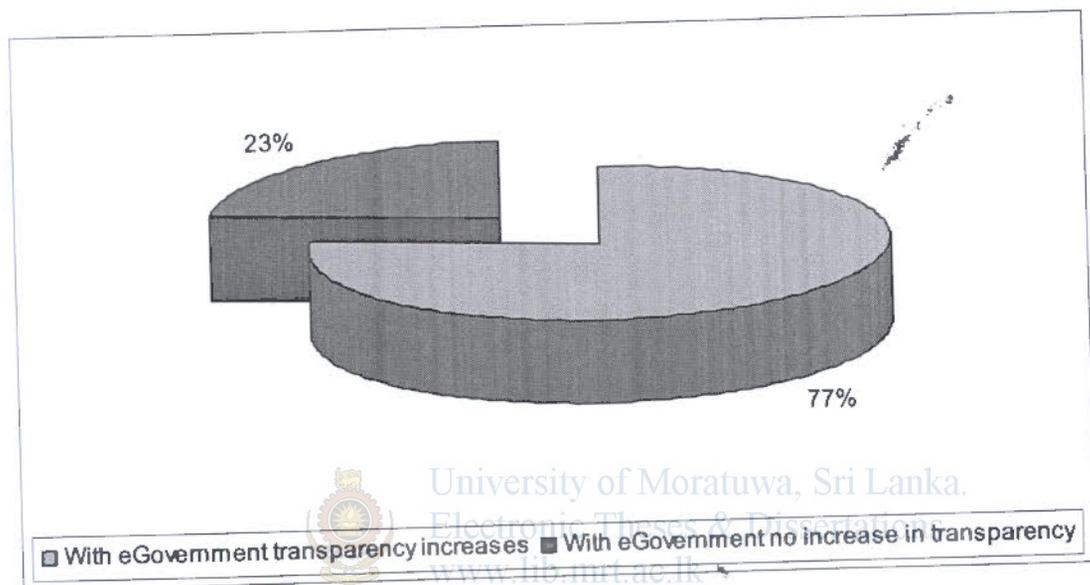


Figure 6.10: Transparency through eGovernment

Out of the 23% respondents who disagreed, a few citizens have commented that instead of increasing transparency, in certain occasions they have found new types of malpractices. To deal with these kinds of situations, it is necessary to incorporate IT security safeguards with proper monitoring systems.

6.2.1.2 Service Delivery

This is also a key social perspective of the eGovernment operation and how satisfied citizens are with the new ICT solutions is going to be indicated here. This can be analyzed in a number of ways. Because of the limited time and scope of the research, it was limited only to pilot project sites, by focusing only on key aspects. Figure 6.11 shows awareness of e-services of the Ministry agencies by the citizens.

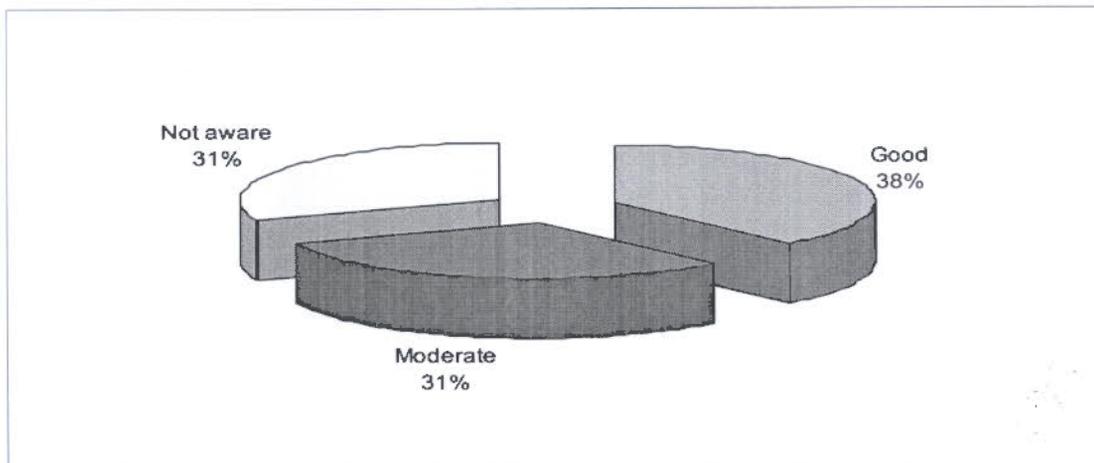


Figure 6.11: Awareness about eGovernment Services of Agencies

It shows that only 31% of citizens are unaware of these e-services and in general 69% of respondents are either well aware of these services or are moderately aware.

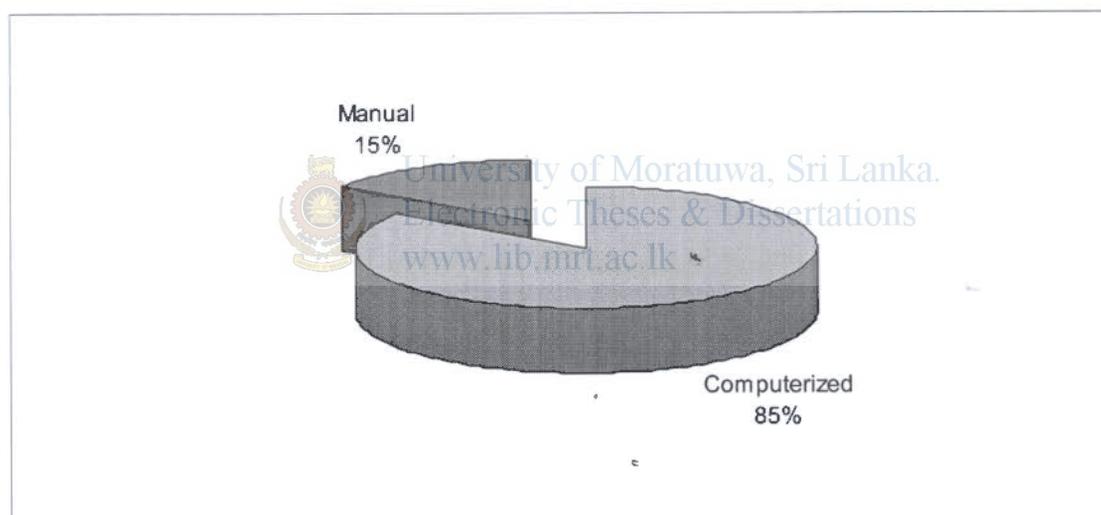


Figure 6.12: Citizens' Preference about Service Delivery Mode

Figure 6.12 shows citizens' preference on the service delivery mode and most (85%) of citizens are in favour of a computer based citizen service. It may be that their practical experience is such, or their perception is such that they believe computer based services as more efficient compared with the manual service delivery.

4

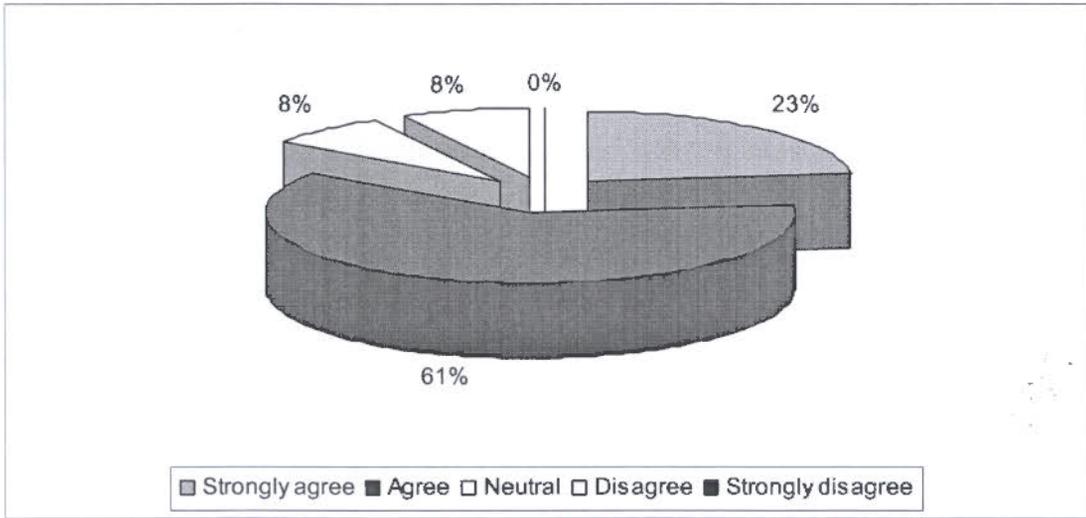


Figure 6.13: Citizens' Perception on Better Service Provision through ICT

Most citizen respondents (84%) felt that the application of ICT could provide better citizen services compared with the manual alternative (see Figure 5.13). According to Figure 5.13 only 8% felt that application of ICT has not been able to provide better citizen services.

6.2.1.3 Empowerment

Empowerment of services is understood as easiness of obtaining services, availability of proper information for customers and new channels for service delivery etc. Most (85%) felt that services provided by eGovernment are easy and services could be obtained without any ambiguity (see Figure 6.14).

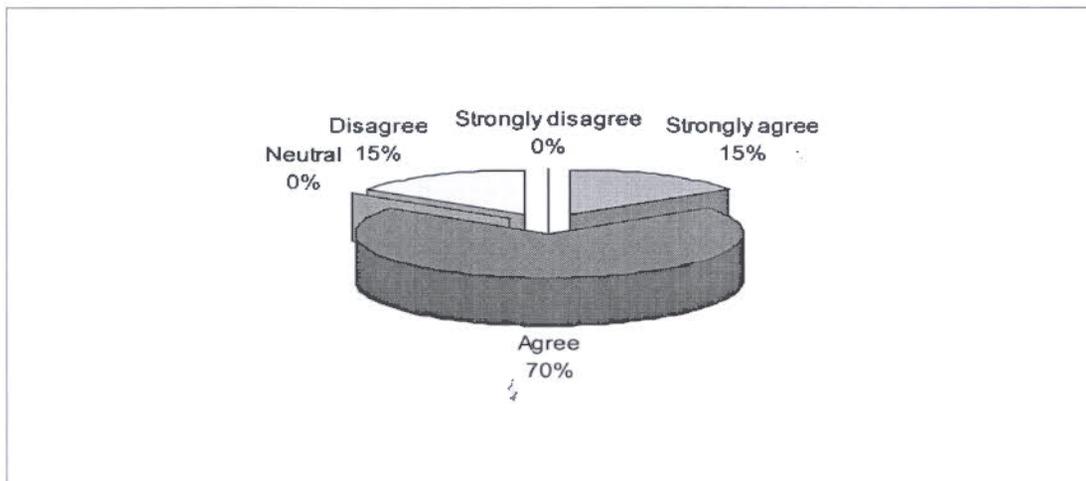


Figure 6.14: Citizens' Perception on Ease of Service Provision

6.2.2 Economic Perspectives

The factors which are grouped under the economic perspective category related to the operational phase in the eGovernment Solution Effectiveness Evaluation Model, are analyzed in this sub-section.

6.2.2.1 Streamlining Processes

Under this perspective, the author intended to analyze the effectiveness of newly designed processes based on which the solution was developed, by indicators of task completion rates, integration of processes, time taken to get the service and reduction of inefficient work steps etc. However, due to time limitations of this study, this is analyzed only based on the responses received by the employees and the citizens. It is recommended to do a deep analysis on this factor which could furnish valuable feedback to related implementation phase factors and by taking corrective actions to improve the overall solution effectiveness.

Most (85%) of the citizen respondents are of the impression that by application of ICT they receive a speedy service (see Figure 6.15), and 15% felt that time taken is similar to the previous mode.



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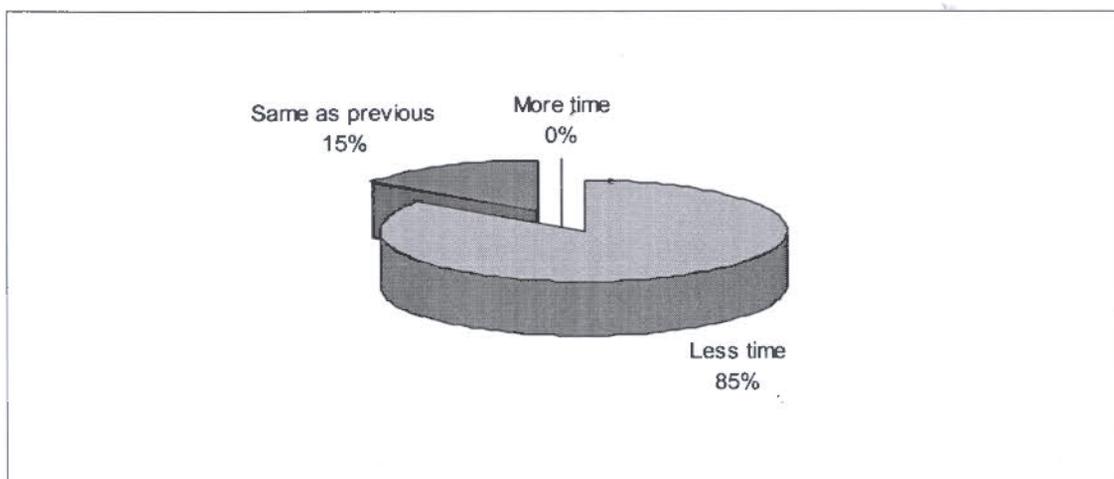


Figure 6.15: Citizens' Perception on Quickness of Service Provision

The analysis shows that, it is still necessary to do some enhancements to improve the processes.

6.2.2.2 Increasing Revenue

The ultimate objectives of eGovernment, from the government point of view, are convenient revenue management and improvement of audit to reduce corruption. The existing manual systems make it very difficult and there is plenty of room for malpractices. Hence the revenue management process is very inefficient and revenue leakages are very common. Figure 6.16 shows graphically, disbursement of government agency responses regarding revenue management.

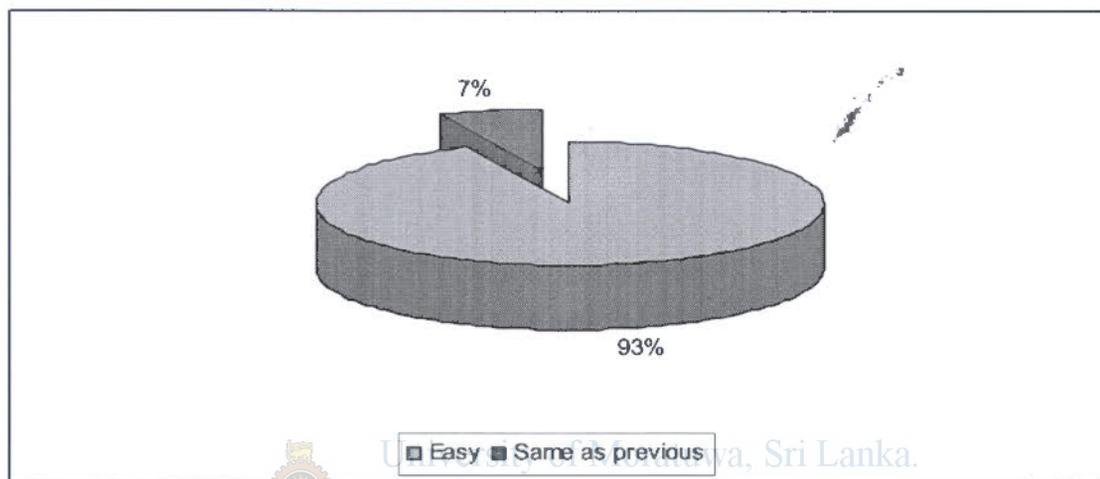


Figure 6.16: Revenue Management

According to the Figure 6.16, most (93%) agencies favour easy revenue management through eGovernment.

6.2.2.3 Cost Reduction

The sub-factors related to reduction of cost for transactions and better control of expenditure are analyzed by this perspective. This is also a key economic perspective in the implementation phase and could be analyzed in detail, and due to limitation in time, resources and scope, it is limited to the pilot implementation level. Therefore it is analyzed only by citizen respondents and Figure 6.17 shows the cost incurred for service provision. Most (92%) stated that cost is the same as in the previous mode. But no respondents stated that the cost is more. It is a positive development if agencies could provide more efficient service for the same or less cost.



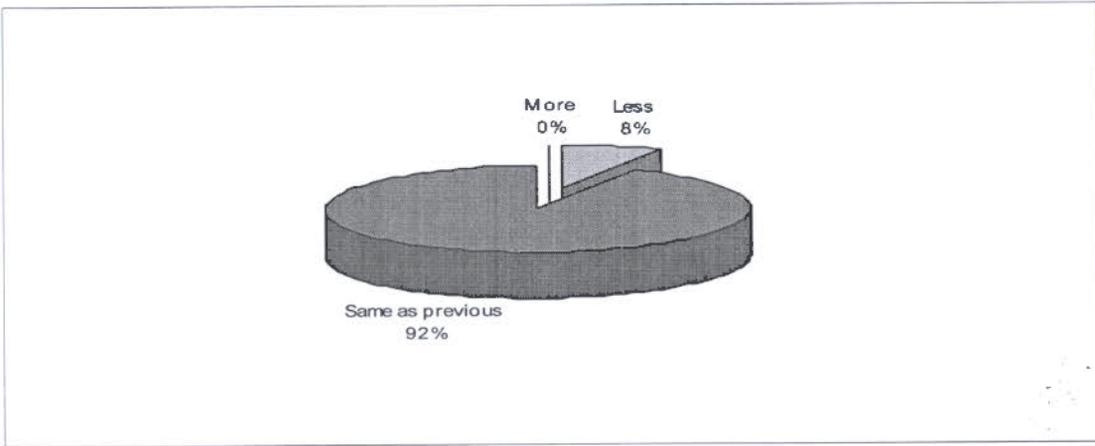


Figure 6.17: Citizens' Perception on Cost for Service Provision

The Figure 6.18 shows details of the number visits made by the citizens to obtain the government's services.

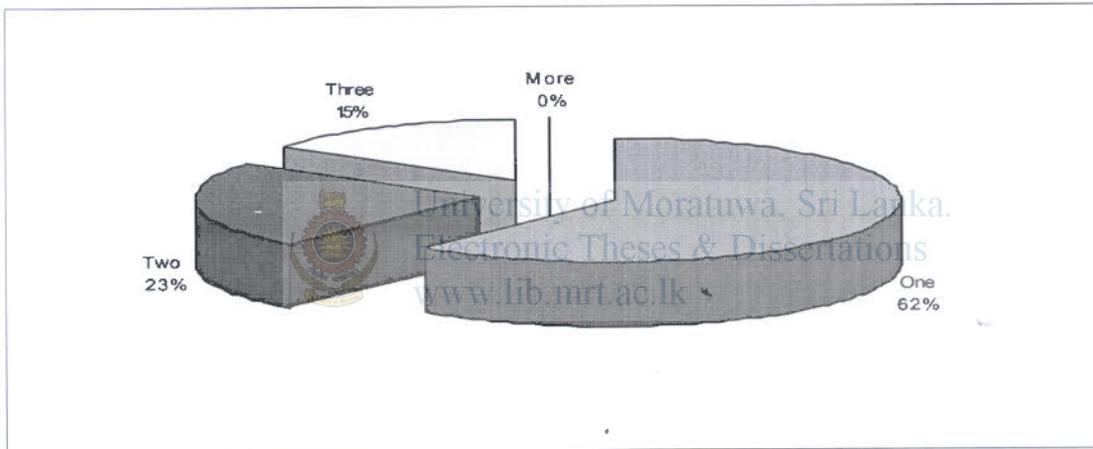


Figure 6.18: Citizens' Perception on the Number of Visits to Obtain Services

Most (62%) think that they did only one visit to get the service, 23% think they visited twice to obtain the service and 8% visited three times to get the job done. It is necessary to take corrective measures to reduce the number of visits to one.

CHAPTER 7: RECOMMENDATIONS

This research presents an interesting study which evaluates the effectiveness of eGovernment initiatives, of the Ministry of Public Administration and Home Affairs. The researcher adopted a qualitative research approach, with a case-based research strategy in order to do an in-depth study. The proposed eGovernment Solution Effectiveness Evaluation Model (eGSEEM) may be further improved based on broader sample size and subsequent data analysis.

7.1 Recommendations for Implementation Phase Factors

Using the eGSEEM model, the status of the each implementation phase factor could be identified and subsequent corrective measures could be undertaken to rectify implementation failures.

7.1.1 Recommendations for Organizational Factors

Recommendations for key organizational factors are discussed in this sub section.

7.1.1.1 The Leadership

As suggested by most respondents, to make this eGovernment dream a success the organization needs a visionary leader at the top, which always drives the organization to the expected target. The leader could ensure stakeholder buy-in towards the intended target. Also the leader could make sure that eGovernment is a priority in the agenda of his/her organization. It is important to get strong backup by the political leadership as well, without which it could be a difficult task. According to Gupta, et al. (2004), leadership is the most critical factor in eGovernment implementation success in the Indian context.

7.1.1.2 Top Management Support

By analyzing interview responses and through observations, it was quite evident that there is a strong correlation between the organizational eGovernment success and the support of its top management. Organizations that have progressed steadily so far, have definitely had the backing of the top management. Whatever failures have been

reported so far did not have the required level of support, at the top level, immediately under the organizational leadership. As leadership is involved in other prioritized areas of the governance in some situations, the top management has to play the role of leadership as well. Therefore empowerment of top management is very important, by giving them better exposure in the field of eGovernment. It is a good investment for the future as they are the people who will take this leadership responsibility subsequent to the retirement of current leadership.

7.1.1.3 IT Skills

The analysis shows that a lot of improvements is still needed to get to the next level of IT skills in government organizations, and this requires immediate attention. This aspect is being addressed well by ICTA, by training most of the government staff under their ICT capacity building programs. However, government organizations' top management should ensure that the right set of individuals are sent for this training without any internal politics being involved. Also there should be a proper policy within the organization related to training and retaining of trained staff at least during the project implementation period. The observations indicate, that transferring of well trained staff has a negative impact on project implementations.

7.1.1.4 Resources

The government organizations need adequate allocations for IT related areas. The ICT Agency also instructed organizations to allocate funds to take over solution maintenance and improvement processes after the initial warranty. But still, agencies are not ready to attain self sustainability of ICT systems. It is recommended to set up an inter-ministerial committee including representatives from ICTA for ICT budget planning for the organizations. It is needed to provide special attention on the areas such as civil construction work, IT infrastructure set-up, office layouts suitable for ICT solution deployment etc. An additional effort is needed to ensure adequate funds to complete those activities in-line with ICT solution implementations. Most of the vendors think these related activities cause delays due to lack of funds and hence is a key issue in government organizations.

7.1.1.5 Change Management

All the stakeholders are of the view that change management aspects are not addressed properly in-line with eGovernment initiatives. Most of the stakeholders think that giving just an awareness of the change management would be sufficient to manage change, but there is a lot of project and organizational specific change management issues which should be addressed specifically. Government organizations and ICTA have already identified change management as one of the main factors that need to be taken care of in their strategy to implement eGovernment. With this approach, government agencies need to conduct an initial study on change management procedures, whenever they embark on a re-engineering initiative and conduct special change management workshops. This change management approach should be undertaken in an organizational and project specific manner by combining various training programmes, workshops, reorganizing of human resources in-line with ICT solutions to achieve the ultimate goals of the eGovernment. It is very important for government organizations to understand the real meaning and value of such action, which could bring success to eGovernment initiatives.

7.1.1.6 Procurement Management

All stakeholders think that this has been one of the major challenges that, not only the organizational eGovernment implementation, but also national eGovernment projects are facing, so far. The observations show that this is one of the key reasons for project implementation delays. Representatives of apex body have said that they are in the initial phase of the learning curve and that they are in the process of improving procurement management. Also, the national projects of ICTA use the BRUF (Big Requirement Up Front) approach which results in large projects with increased complexity. However, currently ICTA is promoting SDSA (Software Development Service Approach), as an approach which reduces complexity of the projects and uses an agile approach to eGovernment procurement. According to Weerawarana (2009), SDSA is an innovative alternate approach to eGovernment solution procurement and development in a cost effective and speedy manner. This could be a better solution as opposed to the World Bank IS procurement method, which makes the procurement process difficult for both the vendors and the organizations. However it is the ICTA,

which has to lead the development of the appropriate procurement process, which could cater for easy management of IS procurement.

7.1.1.7 Management Structure

Management structures of government organizations have to go through a re-engineering process followed by management structure changes. Such organizations invariably face some sort of a resistance while implementing these management/organizational structural changes.

However, to get real benefits of ICT, structural changes of the management structure must be accommodated. Therefore, before finalizing changed structures, organizational leadership should have change management workshops for all the management staff. It is very important to increase the awareness among management, which will make them realize the importance of the whole re-engineering process. At the BPR stage, it is essential to get the involvement of the whole management to get their valuable input, including the operational staff. It is always important to get involvement of the organizational staff that will lead to less resistance during implementation. This is a very tough task as far as government organizations are concerned and without that the real benefit of solutions cannot be obtained. In this case, the Administrative Reforms Committee (ARC) could play a major role; this is a way of reducing inefficiency of processes by proper re-organizing of management structures. It also eliminates unproductive approval processes by the right sizing of the organizational staff.

7.1.2 Recommendations for Surrounding Environmental Factors

Recommendations for four important factors, which are grouped under the surrounding environmental category, are discussed here.

7.1.2.1 Legal Infrastructure

ICTA has taken measures to ensure that the legal framework is in place. While other technical developments are going on, the importance of ensuring parallel developments in the legal infrastructure is essential. The biggest problem in organizations is the lack of awareness of these developments. Therefore it is very



important to have intensive awareness programmes, to enhance the awareness of key officers of organizations where eGovernment implementations are taking place. Also it is recommended that ICTA keep up with their support for the organizations, which needs legal changes to accommodate their solutions in an expeditious manner.

7.1.2.2 Employee Readiness

The analysis shows that employee readiness is evident. However continuous action and better policies to increase the level of readiness is required. The organizations and ICTA should plan together to utilize the existing training opportunities in a more fruitful way in order to further enhance the employee readiness. It is also necessary to take measures to increase awareness of employees who are in the older generation.

7.1.2.3 Political Environment

Analysis of responses shows, that adequate political awareness is available for the Ministry eGovernment initiatives. As political support is very critical for eGovernment projects, it is necessary to have tireless effort to get this support throughout the entire implementation period.

7.1.2.4 eGovernment Policy

The ICT Policy for Government and Organizational ICT should be implemented without further delay. It can recognize ICT as a compulsory component of governance. Currently the ICT Policy for Government is ready for the cabinet approval. This will allow government organizations to follow some strict guidelines from the beginning. Otherwise, complications will arise after a few years. This policy could address issues such as; use of pirated software within government departments and promotion of Free and Open Source Software in the government. The initial policy may not be a perfect one but will certainly improve the standards and the management of ICT within the organization.

7.1.3 Recommendations for Enabling Factors

Recommendations for five important factors which are categorized as enabling factors are discussed in this sub section.

7.1.3.1 IT Infrastructure

IT Infrastructure is quite good, but further plans are needed to maintain the existing infrastructure, at same level and to upgrade the technology into the next level. The organizations and ICTA have to jointly prepare periodic plans for this purpose. The best example is the first phase of the LGN project. The computers provided by that projects are now outdated and there is no plan of replacing those computers.

7.1.3.2 Local Context

When eGovernment implementations take place, local context aspects should be taken into consideration. If properly done, it could make the absorption of implementations into the organizations, easy and seamless.

7.1.3.3 User Friendliness



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Most respondents think that user friendliness aspects are not adequately addressed with solution deployment. This is also an important factor in government ICT projects and government staff could easily be transitioned to the systems when they are user friendly and easy to use.

7.1.3.4 Vendor Effectiveness

It is difficult to claim that all the vendors are supportive, but there are some vendors who are supportive throughout the implementation. It is a fact that implementing any ICT system in the government hureaucratic environment is difficult. Further, the working culture of those two entities is very different. Therefore, it is necessary to have a better procurement environment to deploy the best solution by the vendors.

7.1.3.5 Project Implementation

Project implementation should be planned in such a way as to get all the stakeholders support in an effective manner. This is a challenging task and based on the environment, it should be adjusted in the most effective manner. It is better to always plan it by implementing small iterations rather than big implementations, where the project owner needs to wait for a long time without any meaningful result. If small iterations are planned, the organization would perceive regular impact of the ICT implementations. Through this continuous impact stakeholder interest could be maintained throughout the project life cycle. This should have a very dynamic mechanism and ICTA has to play a leading role.

7.2 Recommendations for Operational Perspectives

Using the eGSEEM model, the status of each operational phase perspective could be identified and subsequent feedback to the implementation phase with corrective measures could improve the entire solution effectiveness.

7.2.1 Recommendations for Social Perspectives

Recommendations for two important factors which are grouped under the social perspective category are stated here.

7.2.1.1 Service Delivery

The level of satisfaction is high even with the current status of the implementation. The concept to treat the citizen as the customer of a particular organization, could make a further difference. However the final impact should be analyzed, once the projects are finally launched. Citizens prefer computer based service delivery processes and their awareness is also good. These factors could be analyzed in a more detailed manner, but in this study, due to time limitations, such a deep analysis was not undertaken. Through such analysis, more related indicators can be found and through feedbacks to the implementation phase, corrective measures can be implemented for deployment and thereby, improvement of the overall solution effectiveness can be achieved.

7.2.1.2 Empowerment

The citizens are satisfied with the present level of implementations. Opening of more delivery channels, may increase this satisfaction level further. It is necessary to do a proper evaluation of the current status of the services and based on citizen's perceptions, implementations can be performed by accommodating those requirements as well.

7.2.2 Recommendations for Economic Perspectives

Recommendations for two important factors which are grouped under the economic perspective category are stated here.

7.2.2.1 Streamlining Processes

If the processes are streamlined well, services could be simplified. This can be analyzed using various indicators, and based on the analysis, feedback can be given to the implementation phase. Then corrective measures to increase the process simplification could be taken. Therefore, using the eGSEEM in an iterative manner, continuous improvement could be incorporated.

7.2.2.2 Cost Reduction

The ultimate target of eGovernment is to deliver cost effective services to its clients. By the existing manual system, the initial charge for the service is very small. However, there are many hidden costs, such as waste of time and inability to obtain the service within the required time frame. Therefore if the services can be provided within a pre-defined timeframe, a small increase of cost, would be acceptable to the clients. Analysis shows that citizens are satisfied with the current cost for services, but more aspects of this factor can be analyzed deeply by broader data collection and subsequent analysis. As the time and scope is limited in this research study, the analysis had to be limited to this level.

7.3 Overall Recommendations

Since the model was conceptualized and designed with emphasis on Sri Lankan government organizations, it is highly relevant to the local Sri Lankan context. However, its uniqueness in comparison to existing evaluation models that currently are in use worldwide and its alignment with the prevalent challenges of eGovernment solutions in developing countries, highlight its feasibility for application across regional countries. Thus, this model would be useful for other countries with government organization and government process profiles that are similar to Sri Lanka, as a mechanism to systematically evaluate the effectiveness of their eGovernment solutions.

In summary this model could be used to evaluate the effectiveness of;

1. eGovernment initiatives of Sri Lankan government organizations
2. Other countries with government organization and government process profiles that are similar to Sri Lanka



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CHAPTER 8: CONCLUSION

8.1 Summary of Research Findings

The research results highlighted that eGovernment initiatives of government agencies in Sri Lanka are struggling to cope with their intended expectations. This has been due to various factors as explained in this research. Based on the research data analysis several recommendations have been proposed by the researcher to overcome these issues.

Government agencies desperately need a dedicated leadership, at the highest level in the organization. This was emphasized Mr. Lalith Weerathunga, Secretary to the President of Sri Lanka, in his keynote address at the e-ASIA Conference 2009, where he stated that with all his experiences, that leadership is the most critical success factor for eGovernment (Weerathunga 2009).

The government agencies should be aware about eGovernment concepts and its effectiveness in the long run. Government agencies should not depend on funding agencies and instead, they have to plan their budget for eGovernment. Also, government agencies should consider alternative funding approaches such as partnering with private organizations as successfully practised in other developing countries in the region.

The ICTA as the apex body should take quick measures to improve the IS Procurement method which is very critical for all the levels of eGovernment projects in the country. The SDSA approach can be a good alternative to the IS procurement method of World Bank. Also immediate incorporation of eGovernment Policy proposed by ICTA for government organizations will make a significant difference, and contribute to the progress of eGovernment effectiveness. Furthermore, ICTA needs to enhance the awareness of government organizations on the prevailing legal framework for eGovernment. Activities of Administrative reforms committee should be linked with ICTA and the eGovernment projects. Appointing a proper committee to monitor these activities is also an important.

All government employees should understand and be aware of eGovernment initiatives, and therefore, it is important to have a continuous awareness campaign for government staff. It is also important that factors such as user friendliness and being sensitive to the local context are addressed in eGovernment solutions by potentially mandating easy adoptions of the solutions. Change management and BBR aspects are also key components in the effectiveness of eGovernment initiatives. In particular, change management should be properly planned with eGovernment implementations.

In summary, this research has identified effectiveness factors of eGovernment implementations and operations' using the analytical model proposed by the author and the analytical model was used as a mechanism in formulating suitable recommendations, to cope with those challenges.

8.2 Future Areas of Study

This generic model was designed to evaluate the three main types of G2E, G2G and G2C initiatives of the ministry. Further studies could be directed to each of the above areas in a specialized manner, leading to the design of specific models targeted to the afore-mentioned three key eGovernment aspects. Also, those models can be tested with appropriate sample sizes which would give optimum results based on subsequent data analysis.

8.3 Research Study Summary and Outcomes

An objective of this research was to analyze the effectiveness factors that influence eGovernment initiatives of the Ministry of Public Administration and Home Affairs. The author confined this research sample to selected eGovernment initiatives managed by the Ministry and three divisional secretariats which were chosen as pilot project sites mainly due to the time-limited scope of the research study. For the purpose of achieving the previous objective the author developed an eGovernment Solution Effectiveness Evaluation Model, based on extensive literature review and a pilot study. Subsequently this model was practically tested with the research sample. Using this analysis, recommendations for the improvement of the effectiveness of the eGovernment projects in the sample space were made.

A significant outcome of this study is the evident suitability and viability of this model to evaluate the effectiveness of eGovernment solutions of the MPA&HA. Thus this model can be used by any other government institution in Sri Lanka or other countries with government organizations that are similar to Sri Lanka.



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APPENDIX 1- INTERVIEW/QUESTIONNAIRE TEMPLATE

SET 1: Questionnaire [GA]

Questionnaire for Ministry and its Organizations

The Leadership

GA1. Do you think the strong leadership at the organization can affect the eGovernment success?

Top Management Support

GA2. How do you see the level of commitment and support from the Top Management?

IT Skills

GA3. How do you see the level of IT skills within the organizational staff?

GA4. Is designated/qualified IT staff available within the organization?

Resources for Projects

GA5. Are you satisfied with the funding capability of the MPA&HA?

Change Management

GA6. How do you explain organizational change management strategies used during the eGovernment implementation?

Procurement Management

GA7. How do you describe procurement management as a key component of eGovernment success?

Management Structure

GA8. How do you describe the management decision making structure, prior to the eGovernment implementation?

GA9. How do you see the change in the existing management decision making structure with the introduction of eGovernment implementation?

Internal/External Pressure

GA10. How do you explain the level of internal/external pressure effect the on eGovernment implementation success?

Legal Infrastructure

GA11. How do you describe the situation with the current ICT legal infrastructures in terms of eGovernment implementation and operation status in MPA&HA?

Employee Readiness

GA12. How do you see the level of employee awareness about the eGovernment projects?

Political Environment

GA13. Is existing political environment conducive for the eGovernment projects of the MPA&HA?



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EGovernment Policy and Strategy

GA14. Is there proper eGovernment policy and strategy within the MPA&HA?

Process Re-engineering

GA15. Do you think that work process improvement is compulsory before eGovernment implementation?



SET 2: Questionnaire [AP]

Questionnaire for the Apex Body

The Leadership

AP1. As an apex body, how do you think the proper leadership at the top of government organizational level could affect the eGovernment implementation and operation?

IT Skills

AP2. How do you describe the level of IT expertise in the Organization?

Change Management

AP3. How do you describe Change Management process in the eGovernment projects of the Ministry?

Procurement Management

AP4. How do you describe procurement management as a key component of eGovernment success?

Legal Infrastructure

AP5. Are you satisfied with the current ICT legal infrastructures in terms of current eGovernment implementation status in MPA&HA?

Employee Readiness

AP6. How do you describe the level of employee readiness?

eGovernment Policy and Strategy

AP7. How do you explain the level of satisfaction about the current eGovernment Policy and strategy in MPA&HA?

IT Infrastructure

AP8. Are you satisfied with the current IT infrastructural capability in MPA&HA and its departments?

Technological Support in Local Context

AP9. How do you see the level of impact by local context to the current implementation/operational process?

Vendor Effectiveness

AP10. How do you see the effect of the level of support rendered by vendors, towards eGovernment success?

Service Delivery

AP11. How do you see the level of satisfaction by the citizen?



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SET 3: Questionnaire [VN]
Questionnaire for Vendors

The Leadership

VN1. How do you see the leadership support for eGovernment projects of the Ministry?

IT Skills

VN2. How do you see the level of IT skills within the government organizational staff and the eGovernment success?

Change Management

VN3. How do you see the effect of government organizational culture towards eGovernment implementation/operation success?

Management Structure

VN4. How do you describe the change of management structure with eGov implementation?

Legal Infrastructure

VN5. How do you describe legal and policy environment eGov implementation and operations?

Employee Readiness

VN6. How do you describe the Employee Readiness of the Ministry?

eGovernment Policy

VN7. How do you explain the level of satisfaction about the current eGovernment policy in MPA&HA?

IT Infrastructure

VN8. How do you describe IT infrastructure of the Ministry?

Process Re-engineering

VN9. How do you see the level of satisfaction of BPR?

Project Implementation

VN10. How do you describe the project implementation approach?



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SET 4: Questionnaire [EM]
Questionnaire for Employees

The Leadership

EM1. Do you think the strong leadership at the organization can affect the eGovernment success?

Top Management Support

EM2. How do you see the level of commitment and support from the Top Management?

IT Skills

EM3. How do you see the level of IT skills of your co-staff?

Management Structure

EM4. How does the organization manage the 'IT function' before and after the eGovernment implementation?

Internal /External Pressure

EM5. How do you explain the level of internal/external pressure effect the eGovernment implementation and operational success?

Employee Readiness

EM6. How do you see the level of employee awareness of the eGovernment projects?

Local Context Support

EM7. Does the implementation fulfil local context requirement?

User Friendliness of Solution

EM8. Do the implementations accommodate user friendliness aspects?



Vendor Effectiveness

EM9. How do you see the effect of the level of support rendered by vendors towards eGovernment success?

Streamlining Processes

EM10. Are the processes re-engineered?



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SET 5: Questionnaire [CT]
Questionnaire for Citizens

Background Information

Please use (✓) to fill the following

CT1. What is your age?

1. Less than 25 years
2. 26 -35 years
3. 36 – 45 years
4. 45 – 55 years
5. >55 years

CT2. What is your level of education?

1. Below O/L
2. O/L
3. A/L
4. Diploma/Degree
5. Others

CT3. What is your workplace?

1. Government
2. Private
3. Semi-government
4. Self-Employed
5. Other (Please specify)

CT4. What is your area/district of residence?

Service Delivery

CT5. Have you ever heard about the eGovernment/ computer based services?

Yes / No

If 'yes', Please describe your opinion about the eGovernment initiatives / computer based services in Sri Lanka?

CT6. Have you ever heard about the eGovernment/ computer based services of the MPA&HA/DS's?

Yes / No

If 'yes', Please specify them?

CT7. How long have you been aware of the computerized service delivery process of the Ministry?

CT8. Are you satisfied with services provided by eGovernment?

Initiatives/computer based citizen services of the MPA&HA so far? (*The Ministry Web Site, eBMD, etc.*)

Yes / No

If 'no', what are the reasons and recommendations for that?

CT9. Do you prefer the computerized or the Manual systems?

1. Computerized 2. Manual

CT10. To what extent do you agree that Information Technology/Computerization can be used to give better citizen services?

1. Strongly disagree 2. Disagree 3. Neither agree nor disagree
4. Agree 5. Strongly agree

Transparency

CT11. The services provided by the Ministry/Department are more convenient compared with the previous mode of service provision?

Yes /No

If 'Yes' what are the reasons for that?

Empowerment

CT12. The Current service delivery process is easy and service obtaining process is also clear?

1. Strongly disagree 2. Disagree 3. Neither agree nor disagree
4. Agree 5. Strongly agree

Streamlining Processes

CT13. Time taken for service provision is less compared with the manual process?

1. Less time 2. Same as previous 3. More time

Cost Reduction

CT14. Is the cost for service the same as manual process?

1. Less cost 2. Same as previous 3. More cost

CT15. Number of visits made to obtain services, where computer based services is available?

1. One 2. Two 3. Three 4. More than 3 times



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