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Article information:
To cite this document:
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http://dx.doi.org/10.1108/17506161111114671
Downloaded on: 21-06-2012
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Measuring the public value of e-government: a case study from Sri Lanka

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Abstract
Purpose – This paper aims to present a case study on the public value of the e-Sri Lanka program. Four major dimensions of public value creation through e-government including the delivery of public services, the achievement of outcomes, the development of trust, and the effectiveness of public organizations are considered in evaluating the performance of the e-Sri Lanka program. The progress of e-Sri Lanka program is evaluated, and the potential areas for improvement in the development of e-government in Sri Lanka are identified.

Design/methodology/approach – Existing methodologies for evaluating the public value of e-government have been critically analyzed. The need for extending existing methodologies for better assessing the performance of e-government is discussed. Consequently, an extended conceptual framework is developed for evaluating the public value of e-government. Various national survey data in Sri Lanka on e-government development are used for conducting the empirical analysis on the performance of the e-Sri Lanka program.

Findings – The study reveals that the public value of e-government in Sri Lanka is unsatisfactory in all the dimensions of public value generation. It shows that the proposed framework is effective in facilitating the identification of public value of e-government in Sri Lanka. Furthermore, the study shows that the lack of e-services, the security threat to public information in public organizations, the low adoption of information and communication technologies in government, and the low uptake of available e-government initiatives are the key reasons for such a poor performance in e-government.

Practical implications – The proposed framework can be used for evaluating the public value of e-government. It provides individual governments with an effective means for better understanding the impact of their e-government efforts on their citizens and societies, leading to better policies and strategies being made for the continuous development of e-government.

Originality/value – The proposed framework would be the first approach in examining the public value of e-government by considering all the dimensions of public value creation. It is the first in-depth study of public value creation through e-government in Sri Lanka. Such a study is significant to Sri Lanka giving that its e-government development is at a crucial stage supported by various international aid organizations.

Keywords
Public relations, Communication Technologies, Government, Sri Lanka

Paper type Case study

1. Introduction
Electronic government (e-government) is commonly referred to as the delivery of government information and services through the use of information and communication technologies (ICT) (Akman et al., 2005; Horan and Abhichandani, 2006). With the significant benefits that e-government promises including delivery of quality public services, convenience and accessibility to public services, reduction of communication and information costs, bridging digital divide, and active participation of citizens
in government (Aldrich et al., 2002; Jaeger and Thompson, 2003; Akman et al., 2005), tremendous investment has been made worldwide in implementing diverse e-government initiatives for making full use of the potential of effective and efficient e-government.

With the increasing pressure on accountability for government investments nowadays, evaluating the performance of e-government becomes urgent (Bend, 2004). Such a study not only helps individual governments understand the value for their investment in their e-government initiatives. It can also facilitate identifying the relative performance of the governments in e-government development so that effective strategies and policies can be formulated for improving the performance of e-government (Deng, 2008). For example, Moon (2002) presents an empirical study on the performance of e-government at the municipal level. Irani et al. (2005) conduct an analysis on the development of e-government in local authorities in the UK. Deng (2008) carries out a benchmarking study on e-government performance using an objective multicriteria analysis approach. These studies, however, have not really addressed the issue of efficiency and effectiveness of e-government with respect to the accountability of e-government investment in individual countries.

The concept of public value is a popular means for evaluating the effectiveness and efficiency of public services (Moore, 1995). It provides an inclusive framework for examining the performance of public administration on the creation of public value for the citizens (Kelly et al., 2002; Alford and O’Flynn, 2009). With the use of this concept, the effectiveness and efficiency of public services can be assessed with respect to the creation of public value through different sources (Moore, 1995; Kelly et al., 2002; Try and Radnor, 2007). E-government offers numerous opportunities for governments to improve their administration through automating numerous public services via an effective use of ICT (Kearns, 2004; Yu, 2008). With the increasing pressure for accountability on e-government investment, adopting the concept of public value for evaluating the performance of e-government is not only appropriate but also necessary.

Much research has been done on developing various frameworks for evaluating the public value of e-government. Kearns (2004), for example, proposes a framework for examining the public value through e-government service delivery, outcome achievements and development of trust. This framework, however, lacks appropriate indicators for measuring “trust”, which is an important source of public value creation (Kelly et al., 2002; Grimsley and Meehan, 2007). Furthermore, it does not consider the public value created through operating effective organizations. The European Commission proposes a conceptual framework for examining the public value of e-government on specific e-government projects (eGEP, 2006). This framework is often criticised due to its bias towards e-administration (Heeks, 2008). To date there is a lack of studies on assessing the public value of e-government (Heeks, 2008).

This paper presents a case study on the public value of the e-Sri Lanka program based on an extended framework. The extended framework consists of four major dimensions of public value creation through e-government including the delivery of public service, the achievement of outcomes, the development of trust, and the effectiveness of public organizations. The result reveals that the public value of e-government in Sri Lanka is relatively low in all the dimensions of public value generation. The study shows that the lack of e-services, the security threat to public information, the low adoption of ICT in public organizations, and the low uptake of available e-government initiatives are the key reasons for such a poor performance in e-government development.
In what follows, we first present a review of the existing literature on evaluating the performance of e-government. We then discuss the developments of e-government in Sri Lanka. An extended conceptual framework for evaluating the public value of e-government is then presented, followed by a case study in Sri Lanka. We conclude with a discussion on the potential areas for improvement in e-government in Sri Lanka.

2. Evaluating the performance of e-government

Existing research on assessing the performance of e-government is mainly carried out from five perspectives including:

1. e-readiness;
2. e-efficiency;
3. e-supply;
4. e-demand; and
5. impact of e-government (Kunstelj and Vintar, 2004).

Assessing the e-readiness of individual governments focuses on the maturity of these governments on the use of ICT for improving the performance of their public services. Evaluating the efficiency of e-government tries to understand how effectively e-government is used for improving the provision of public services. The investigation of the supply side of e-government focuses on the availability of e-government services from individual governments while the study on the demand side of e-government concentrates more on the actual use of e-government. The research on the impact of e-government is designed to understand how the development of e-government affects the economic, social, and democratic process in a country.

Evaluating the performance of e-government has gone through several phases (Heeks, 2008). It starts from assessing the e-readiness of individual countries at the early stage of e-government development to the investigation of the impact of e-government initiatives on individual countries and their citizens (Heeks, 2008). Now, most e-government studies focus more on the evaluation of the public value of e-government initiatives (IANIS, 2007; Bonina and Cordella, 2008). Such a study allows individual governments to better understand the performance of e-government initiatives; therefore, better accounting for their investment.

The popularity of the concept of public value for evaluating the performance of e-government is due to its recognition of the right of citizens for determining the true value in developing and implementing e-government initiatives (Kearns, 2004; Codagnone and Undheim, 2008). Such a public value is often reflected through the improvement of the quality of citizens’ lives, a better use of public services, and the development of trust and fairness in public services (Grimsley et al., 2006). With the effective adoption of ICT in automating various government services, the potential of e-government for creating public value is endless.

There are many ways for creating public value in public organizations. For example, operating effective public organizations creates public value (Moore, 1995). Improving the quality of public services delivers public value (Kelly et al., 2002; O’Flynn, 2007; Try, 2008). Alleviating poverty and improving public health produce public value (Kelly et al., 2002). Developing trust between public and government creates public value (Kelly et al., 2002; O’Flynn, 2007; Try, 2008). Figure 1 shows an overview of the four
sources of public value creation through e-government based on a comprehensive review of relevant literature.

E-government has gone through a number of phases since its introduction for improving the effectiveness and efficiency of public services. Various drivers are behind the development of e-government including:

- technology;
- user; and
- cost.

A technology-driven e-government endeavour focuses on the use of ICT for the effective and efficiency delivery of public services. A cost-driven e-government initiative strives for the efficiency of public services delivery through ICT. A user-centred e-government strategy pays more attention to the requirements and expectations of users in developing e-government initiatives.

The concept of public value is increasingly becoming an innovative driver in modern e-government endeavours (IANIS, 2007; Bonina and Cordella, 2008). As pointed out by Castelnovo and Simonetta (2007), “since public administration aims at producing value for citizens, the use of ICT to improve government is a means to improve the public value”. This shows that creating public value through e-government is vital for designing and developing e-government initiatives. “People express preferences, the government uses ICT to enhance its own capacity to deliver what people want, and eventually public value is created” (UNDESA, 2003). In the light of the discussion as above, e-government is often seen as a process of creating public value with the use of modern ICT (UNDESA, 2003).

There are several important developments in the literature for evaluating the public value of e-government. Kearns (2004), for example, proposes a conceptual framework for evaluating the public value of e-government through examining the contribution of e-government to the delivery of public services, achievement of desirable outcomes, and development of public trust. Such a study shows that the proposed framework can be used for assessing the public value of e-health initiatives in the UK (Bend, 2004). Although this framework considers trust as a major dimension of public value
evaluation, it does not state explicitly how trust can be measured. Furthermore, this framework also ignores the public value created through operating effective public organizations in an e-government environment.

Golubeva (2007) proposes a set of indicators for measuring the quality of e-government portals with respect to:

- usability;
- transparency;
- inter-activity;
- centricity of citizens of e-services; and
- level of e-service development.

These indicators have been applied in the Russian Federation for evaluating the public value of regional portals. The findings are found to be useful in providing informed recommendations for improving the public value of e-government (Golubeva, 2007). Such indicators, however, are developed for examining the public value of e-portals with the focus on the supply side of e-government. E-government, however, is more than just the delivery of public services (Hanna, 2008).

Heeks (2008) proposes a set of indicators for measuring the delivery of public value through e-government. These indicators are developed for, respectively, examining:

- the level of information provision;
- the extent of e-government use;
- the availability of choices;
- the level of user satisfaction;
- the extent to which e-government is focused on user priorities;
- the extent to which e-government is focused on those most in need communities;
- the cost effectiveness of e-government service;
- the contribution of e-government to the delivery of outcomes; and
- the contribution of e-government to develop and secure trust.

As Heeks’s (2008) indicators are derived from the framework of Kearns (2004), those indicators suffer from the same problems as the original framework.

The European Commission (eGEP, 2006) proposes a framework for examining the public value of e-government initiatives from the perspectives of:

- organizational value;
- political value; and
- user value.

The organizational value concerns the efficiency and effectiveness of public organizations. The political value relates to the openness and transparency of public services and the participation of citizens in government. The user value focuses on improving the satisfaction of citizens with regard to the delivery of public services. This framework, however, lacks flexibility in evaluating the performance of e-government. It fails to consider the governments’ e-enabling of the civil society (Heeks, 2008).
To adequately address the problems above for evaluating the public value of e-government, this paper proposes a conceptual framework as an extension to the framework of Kearns (2004) and Golubeva (2007).

3. Developments of e-government in Sri Lanka

Sri Lanka is a developing country whose economic development has been slowed considerably due to the civil war in the last three decades. With the rapid advance in ICT, the Government of Sri Lanka recognises the need for effectively adopting latest technologies for improving the delivery of public services. Supported by several major international funding organizations, the Sri Lanka Government launched the e-Sri Lanka program in 2002. Through the implementation of such a program, the government aims to foster social and economic developments in order to improve the quality of life of its citizens (Hanna, 2007).

Millions of dollars have been invested in implementing numerous e-government initiatives in the e-Sri Lanka program. The Information and Communication Technology Agency (ICTA) has been established for coordinating and facilitating the implementation of e-Sri Lanka initiatives (ICTA, 2005). Six distinct strategies have been adopted for facilitating the implementation of specific e-government initiatives listed as follows:

- an information infrastructure development program to ensure affordable access to information, communication, electronic services, and other content;
- a coherent investment strategy to provide transparent, effective, and efficient public services through re-engineering government processes and technology empowering;
- an e-society development program to empower the most vulnerable communities in Sri Lanka through promoting innovative use of ICT;
- an ICT literate development program to build up an ICT-skilled workforce;
- an ICT industry development strategy to develop the domestic ICT sector to ensure a sustainable economic growth in the country; and
- a program designed to create policy and regulatory environment, and develop leadership and institutional capacity building to support ICT-based developments and reforms.

With the implementation of the e-Sri Lanka program, adequately evaluating the performance of the e-Sri Lanka initiatives becomes urgent. Such an evaluation is important for several reasons (Karunasena and Deng, 2009). First, the e-Sri Lanka program is at the final year of implementation. Understanding how the overall e-Sri Lanka program performs helps Sri Lanka improve its e-government practice in the next stage of e-government development. Second, the experience accumulated and the lessons learned from implementing the e-Sri Lanka program would greatly benefit the donor organizations in their tireless efforts to help other developing countries such as Pakistan, Rwanda, Ghana, and Cuba to effectively pursue their e-government developments (Hanna, 2008). Third, the fact that the e-Sri Lanka program heavily depends on the funding support of international donors (Hanna, 2007, 2008) obligates the government to timely account for their investment in e-government. Such a study helps attract future support for e-government programs. Fourth, no rigorous assessment has been done so far in examining the public value of e-Sri Lanka program.
4. A conceptual framework

In this section, a conceptual framework consisting of four major dimensions of public value creation through e-government is proposed. As shown in Figure 1, these dimensions outline the four different ways of creating public value through e-government including the delivery of public services, the achievement of desirable outcomes, the development of trust, and the effectiveness of public organizations. A set of attributes associated with each dimension are identified for better measuring the public value of e-government with respect to each dimension based on a comprehensive literature review. Figure 2 shows an overview of the proposed conceptual framework.

The delivery of public services concerns about the quality of the service delivered through e-government (Kearns, 2004; Heeks, 2008). Effectively delivering public services through e-government very much depends on the availability of information, the importance of information, choice, cost savings, fairness of the services, the satisfaction of citizens, and the take-up of e-government services (Kearns, 2004). The availability of information refers to the amount and type of information available to citizens through e-government services. The importance of the information is a reflection of the perception and requirements of citizens with respect to their needs. The choice of services refers to the availability of multiple e-government service delivery channels to citizens for accessing public services. The cost saving of e-government relates to the amount of money that citizens can actually save through e-government service compared to traditional government services. The fairness of e-government services delivery refers to the extent to which e-government services are available to the whole population including socially disadvantaged groups. The satisfaction of citizens is reflected through the personal experience of citizens in using e-government services. The take-up of e-government is measured by the number of users who have used at least one e-government service.

Achieving socially desirable outcomes through e-government creates public value (Kearns, 2004; Heeks, 2008). The achievement of the outcome is reflected by the impacts, deliverables, and consequences that the public services are designed to attain.
The outcomes include initial, intermediate, and long-term outcomes. These outcomes can also be classified as direct, intermediate, and end outcomes (Codagnone and Undheim, 2008). In general, achieving intended results for specific constituencies are direct outcomes, producing results for entire sectors are intermediate outcomes, and achieving specific targets for the entire society are end outcomes. This framework does not consider the distinction between different categories of outcomes. It focuses on any socially desirable outcome that can be achieved through e-government.

The development of trust between citizens and government is a major dimension for examining the public value of e-government (Kearns, 2004; Heeks, 2008). It can usually be assessed from the perspectives of:

- security and privacy of citizens' information (Kearns, 2004; Carter and Belanger, 2005);
- transparency of e-government services (Golubeva, 2007; Undheim and Blakemore, 2007);
- trust of citizens in e-government services (Kearns, 2004; Heeks, 2008); and
- participation of citizens in government.

The security and privacy of citizens’ information in e-government services refer to the extent to which government securely manages citizens’ personal information. This is often reflected by the readiness of individual organizations to secure citizens’ personal information and the development of effective law and regulations on the use of e-government. The transparency of e-government refers to the extent to which an organization reveals work, decision processes and procedures (Wong and Welch, 2004). A transparent government discloses the performance information of public organizations timely. The public trust in e-government can be measured by the citizens’ perceptions about the e-government services delivered by the public organization. The participation of citizens in government is demonstrated through the active involvement of citizens in the public decision-making process through online consultation services with the use of web tools such as online forums, blogs, community networks, and newsgroups.

The effectiveness of public organizations is a key indication of public value created through e-government. This can be measured by efficiency, accountability of public organizations, and citizens’ perceptions about public organizations (Moore, 1995). E-government is considered as a way for improving the public services by cutting processing cost, managing performance, making strategic connections between and among government agencies, and creating empowerment (Heeks, 2008). In this context, the efficiency of e-government is determined by:

- the financial return of investment in public organizations;
- empowering public sector employees; and
- developing sophisticated ICT infrastructure (eGEP, 2006).

Accountability refers to “answerability of government to public on its performance” (Wong and Welch, 2004). E-government breaks the traditional channel of answering to the citizens and provides citizens with a new electronic interface (Wong and Welch, 2004). From the perspective of e-government, accountability is reflected by the number of public agencies publishing online full organizational charts, and the contact
information of its staff and designated staff members who are accountable for particular e-government transactions (eGEP, 2006). The perceptions of citizens’ on a public organization where e-government initiatives are implemented are found by the number of citizens who have positive or negative opinion about the e-enabled public organizations. Table I summarizes the discussion above.

5. The public value of e-government in Sri Lanka: a case study
This section presents a case study for evaluating the public value of e-government in Sri Lanka using the proposed framework as discussed above. The study focuses on answering two key research questions as follows:

RQ1. What is the public value of e-government initiatives in Sri Lanka?

RQ2. How well do the e-government initiatives create public value in Sri Lanka?
To answer these questions, much secondary data about the development of e-government in Sri Lanka is utilized. These data are obtained from several comprehensive national surveys including, the Government ICT Usage Survey (ICTA, 2008a), the Government Organizations Visitors Survey (ICTA, 2008b), and the Nenasala Interim Survey (ICTA, 2008c). Approximately, 344 public offices are selected for the Government ICT Usage Survey with public officers given structured questionnaires for gathering the first-hand data on how ICT is used at what degree (ICTA, 2008a).

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Attributes</th>
<th>Description</th>
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<tbody>
<tr>
<td>Delivery of public services</td>
<td>Information</td>
<td>Availability of information for citizens through e-government</td>
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<td></td>
<td>Importance</td>
<td>Importance of the information to the citizens</td>
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<td></td>
<td>Choice</td>
<td>Availability of multiple e-government channels</td>
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<td></td>
<td>Fairness</td>
<td>Fairness of e-government service delivery</td>
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<td></td>
<td>Cost savings</td>
<td>Cost savings for citizens using e-government services</td>
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<td></td>
<td>Take-up</td>
<td>Use of e-government services</td>
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<td>Citizens' satisfaction</td>
<td>Citizens' satisfaction with e-government services</td>
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<tr>
<td>Achievement of outcomes</td>
<td>Socially desirable outcomes</td>
<td>Achievement of socially desirable outcomes through e-government</td>
</tr>
<tr>
<td>Development of trust</td>
<td>Security and privacy</td>
<td>To what extent government secure public information and privacy of citizens through e-government</td>
</tr>
<tr>
<td></td>
<td>Transparency</td>
<td>To what extent public organizations disclose their decision-making processes and procedures through e-government</td>
</tr>
<tr>
<td></td>
<td>Trust</td>
<td>Public’s trust for e-government services</td>
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<td></td>
<td>Participation</td>
<td>Improve citizens participation in public discussions</td>
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<tr>
<td>Effectiveness of public organization</td>
<td>Efficiency</td>
<td>Increase efficiency of public organization</td>
</tr>
<tr>
<td></td>
<td>Accountability</td>
<td>Improve the answerability of government</td>
</tr>
<tr>
<td></td>
<td>Citizens' perceptions</td>
<td>Citizens’ opinions about an e-enabled public organizations</td>
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Table I. Indicators associated with the attributes of the conceptual framework
In the Government Visitors’ Survey, interview is used with a population of about 593 visitors who visited public organizations with respect to a structured questionnaire (ICTA, 2008b). Approximately, 70 Nenasala centres are taken into the Nenasala Interim Survey (ICTA, 2008c).

In addition to these data sources, the information about the ICT penetration into households (Satharasinghe, 2007), and the statistics provided by respective government agencies such as the Statistical Survey Department (Satharasinghe, 2007), the TRCSL (2007), and the data available in the published literature are also used (Hanna, 2007, 2008; UNDESA, 2003, 2008). Informal interviews with government officials were conducted to further verify the findings of these surveys.

The level of information provided through e-government is examined first along the proposed framework. As shown in Figure 3, in Sri Lanka 65 percent central government ministries, 78 percent departments, 60 percent statutory boards, 19 percent provincial government (PG) ministries, 15 percent PG departments, 87 percent district secretariat offices, and 1 percent divisional secretariat officers (out of the 35 percent of government organizations that have completed web sites) provide static information through their web sites (ICTA, 2008a). A majority of these web sites provide some general information about their organizations such as an overview of the services provided to citizens, organizational history, their functional details, establishment details, contact information, news and events, and so forth. Furthermore, several e-government web sites provide information such as train timetables, daily crop prices, up-to-date agriculture information, and so forth which could not be accessed by the citizens previously unless they went to the respective public organizations holding the information.

The information provided through e-government services in Sri Lanka, however, is insignificant. The e-Sri Lanka development roadmap contains several e-services delivery projects that aim to support citizens. These projects are e-employment, e-pension, e-motoring, e-national identity card, e-population registry, and e-land registry. Although many initiatives have been proposed, these projects are still at the initial stages of development at the time of this study. As a consequence, the citizens in Sri Lanka have not yet had the opportunity of enjoying the full benefits of e-services.

**Figure 3.** The readiness of the government web sites
For the time being, nearly 15 percent central government ministries and 15 percent departments (from the 35 percent government organizations with completed web site) provide simple e-services such as allowing citizens to submit quarries and searching databases (ICTA, 2008a). In addition, about 38 percent of central government ministries and 39 percent of central government departments provide downloadable applications (ICTA, 2008a). The fact that a majority of government agencies do not have a web presence (56 percent), a majority of web sites are not mature enough to provide e-services (85 percent do not provide e-services) and the delay in implementing major e-services imply that the full potential of e-government has not fully materialised in Sri Lanka.

Examining the implemented e-government service channels shows that the choices offered to citizens in Sri Lanka are confined to web sites, call centre, counter services, and several mobile applications. Only 35 percent of government agencies have web sites (ICTA, 2008a). In Sri Lanka, the most used channel is the web site. About 47.6 percent users use government web sites (this percentage is calculated from 22.3 percent of total citizens who aware about e-government in Sri Lanka). This is followed by the call centre services which records 46.6 percent users (ICTA, 2008b). The purpose of the call centre is to respond to the general inquires of citizens such as how to get services from the public sector, which government agency should be contacted, which documents should be filled and so forth. It operates from Monday to Saturday from 8.00 a.m. to 8.00 p.m. and nearly 2,500 calls are received per day, 85 percent of which are successfully responded. A further investigation of the counter services reveals that none of those services use customer relationship management software. In addition to these initiatives, the government has already established approximately 600 Nenasala centres (Kiosks/telecentres) in rural and semi-urban areas to provide resources to access e-government services (Nenasala, 2007).

The fairness of e-government services delivery is investigated while evaluating the performance of e-government in Sri Lanka. Sri Lanka is home to multiple ethnic groups. A majority of them communicate in their local languages. To meet such a challenge requires government organizations to disseminate information online in local languages. An empirical analysis shows that 13 percent government web sites (out of the 46 percent government organizations that have web sites) and the call centre responds in all local languages to the inquiries of citizens (ICTA, 2008b). However, an examination of the accessibility of government web sites reveals that none of web sites comply with accessibility standards.

In Sri Lanka, a majority of the citizens are under the poverty line. To address this issue, the e-Sri Lanka program has taken several initiatives including:

- a Nenasala centre development program which has a poverty alleviation strategy in addition to the provision of access to e-government services for an affordable fee;
- e-society services which address the needs of most vulnerable communities;
- a program strategy to improve the IT literacy of citizens; and
- implementation of rural telecommunication network (RTN) which promises affordable information infrastructure throughout the country to ensure any time any where access to e-services are some initiatives.
However, the delay in implementing RTN project has resulted in the rural communities being still unable to access e-government services for an affordable price.

The cost saving for citizens using e-government services is an issue of concern in Sri Lanka. As major e-government projects have not been implemented so far, not much direct cost saving can be found for citizens through e-government service delivery. With the development in e-government so far, the direct cost saving is mainly from the government web sites, the call centre services, and e-society applications.

The take-up of e-government services in Sri Lanka is very low. Only 22.3 percent citizens are aware of available e-government services (ICTA, 2008b). As shown in Figure 4, among them 47.3 percent obtain information from web sites, 46.6 percent use call centre services, 7.5 percent make inquiry via e-mails, and 6.0 percent uses online application (ICTA, 2008b). The number of users of e-government in Sri Lanka is very low. The level of citizens’ satisfaction on the available e-government services, however, is very high. Although the availability of e-services and level of information provided to the citizens are inadequate, nearly 60 percent citizens are satisfied with services offered so far. Moreover, over 90 percent are satisfied with call centre services.

Achieving socially desirable outcomes has always been a major objective of the e-Sri Lanka program. With the implementation of e-government initiatives, three important outcomes have been achieved through Nenasala centres. For example, nearly 41 percent of Nenasala users claim that they found jobs as a result of computer training provided in the centres and 26 percent users found jobs by using the internet facility available at the centres (ICTA, 2008c). Furthermore, 31 percent centre operators believe the Nenasala centres help them improve their existing business or develop new business opportunities.

The development of public trust in e-government is crucial to the creation of public value in e-government. The empirical study shows that Sri Lanka has developed a legal and regulatory framework to support various e-government initiatives (ICTA, 2005). These initiatives include laws and regulations relating to privacy, cyber security, ICT crimes, data protection, electronic transactions, and intellectual property rights protection. ICT legal training programs are provided to judges, lawyers, and enforcement personnel. In addition, an ICT policy for government has specified the necessary steps to be taken by individual government agencies to protect public information.

![Figure 4](image_url)

**Figure 4.**
An overview of e-government usage
A further examination of public organizations’ readiness to protect public information, however, reveals that only 13 percent of government agencies have file servers with installed security software (ICTA, 2008a). According to the empirical data set (ICTA, 2008a), 71 percent of government organizations have desktops with security software. About 13 percent have a proxy server with a security system installed. About 6 percent have a web server installed with a security system or software (note: in the sample, there were 38 ministries, 45 departments, and 58 statutory boards). Although the government has created the legal and regulatory environment for protecting public information, the reality at the institutional level is totally different. For example, nearly 32 percent of ministries, 10 percent of departments, and 10 percent of statutory boards reported to have had unauthorized access to information. About 32 percent ministries, 29 percent departments, and 25 percent statutory boards have problems of loss of data (ICTA, 2008a). These security loopholes can certainly destroy the public trust in e-government.

The Sri Lanka Government is currently taking necessary steps to migrate the existing unsecured infrastructures to a secured government-wide network. A certification authority is planned to be established for developing the public trust in e-government. The implementation of e-government initiatives in Sri Lanka seems to have insignificant impacts on the transparency of the delivery of public services. For example, only the web site of the Department of Pension provides citizens with online process and transactional traceability facilities. A further investigation reveals that only a few organizations disclose their budget and expenditure online.

The participation of citizens in public discussion through e-government is limited in Sri Lanka. An examination of e-government services in Sri Lanka reveals that most of the government web sites in Sri Lanka are at the “e-information” stage. This means that the services are limited to the dissemination of information only. The web tools required for “e-consultation” services and “e-decision making” do not appear yet on government web sites. Owing to these reasons, citizens are prevented from actively engaging in public discussion online. Such a finding is also reflected from the UN’s e-participation index where Sri Lanka is ranked at the 116th position (UNDESA, 2008).

The Government of Sri Lanka implemented the e-Sri Lanka program for improving the effectiveness of its public organizations. The main e-government projects, however, have still not been implemented entirely. As a result, a majority of government organizations’ ICT usage is limited to web site development and maintenance, and use of some client server applications such as management information systems, human resources systems, and inventory control systems. Owing to these reasons, it is plausible that government organizations have still not gained any significant cost savings nor gained considerable productivity/efficiency through e-government.

Examining accountability of e-government services reveals that a majority of government organizations publish their organization’s chart online with the contact information of top-level executives. However, the contact information of case-handling officers who directly interact with citizens in day-to-day activities is missing in the web sites. Thus, accountability of case-handling officers is not reflected through the web.

A significant progress can be noticed in information infrastructure development in public organizations although major e-services are still on the way of being developed. Sri Lanka Government Network is such an initiative, which is an inter-government network which already connects more than 200 government agencies. The purpose
of this network is to provide information infrastructure for public agencies to run their future e-government applications and to make inter-agency communication possible. With the implementation of this network, government agencies have saved a significant cost through using voice over internet protocol phones to communicate with other agencies. However, further studies need be done to determine cost saving from e-government.

An investigation of the number of staff trained with the required ICT skills reveals that nearly 5,500 public staff members have been properly trained and another 3,000 are being trained now. In addition to that a specialized Masters of Business Administration degree specializing in e-government has been designed for top-level executives in public sector. Such executive staffs are appointed as the chief innovation officers to lead e-government projects in their organizations.

Examining the citizens' perception of public organizations reveals that a majority of citizens believe that public sector organizations are inefficient (ICTA, 2008b). Although the government has taken various actions to transform the public organizations for proving accountable, transparent, and efficient public services, the unavailability of e-government services still prevent citizens from enjoying the benefits of e-government. This is reflected through citizens' satisfaction about public sector organizations. Table II summaries the empirical study findings.

6. Conclusion
This paper presents a conceptual framework for evaluating the public value of e-government. The proposed framework is then applied for evaluating the public value of e-government initiatives in Sri Lanka. The empirical study shows that the public value of e-government in Sri Lanka is far from satisfactory due to weaknesses in both the supply and demand sides of e-government. Lack of e-services, low ICT usage in government and low uptake of available e-government services are indications of such a poor public value creation. Moreover, security threats to public information held in government organizations threaten the public trust and thereby, public value creation. Unimplemented major e-government projects, poor e-readiness, and lack of awareness can also be some of the reasons for these problems.

To enhance the public value of e-government, the government should accelerate delayed e-service projects, e-administration initiatives, and revamp the existing government web sites in a citizen centric manner. Moreover, immediate actions should be taken to eliminate the vulnerabilities to the public information held in government organization. A fair and equal distribution of e-government services to all the citizens in the society is vital to prevent the creation of digitally excluded community groups. Poor ICT literacy, lack of resources to access e-government initiatives and language barriers further increase the challenges to fair and equal distribution e-government services to every citizen. However, the government has made a considerable effort to eliminate these barriers through numerous e-development strategies such as information infrastructure development, human resources capacity building and e-society initiatives. The successful implementation of these strategies would help address these issues. Furthermore, tremendous growth in mobile phone subscribers in Sri Lanka indicates the possibilities of creating public value by introducing more personalized e-government services accessible via mobile phones.
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Attributes</th>
<th>Achievements</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery of public services</td>
<td>Information</td>
<td>In Sri Lanka, 78 percent departments, 65 percent ministries, and 60 percent of statutory boards provide information through web sites</td>
<td>Majority of government web sites are not citizen centric</td>
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<td></td>
<td></td>
<td>A call centre with 85 percent successful response rate</td>
<td>Major e-services have not been implemented</td>
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<tr>
<td>Importance</td>
<td></td>
<td>Government web sites provide information about their organization</td>
<td>Value of such information from citizens’ point of view is relatively low</td>
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<td>Choice</td>
<td></td>
<td>Multiple e-government access channels are available to access public services</td>
<td>Sustainability issues of the Nenasala centers due to the delays in implementing RTN</td>
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<td></td>
<td></td>
<td>600 Nenasala centers have been established in rural/semi-urban areas to provide resources to access these channels</td>
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<tr>
<td>Fairness</td>
<td></td>
<td>Trilingual web sites and a trilingual call centre have been established to overcome the language barriers of citizens</td>
<td>Government web sites do not comply with the web accessibility standards</td>
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<td></td>
<td></td>
<td>Telecenters established in rural/semi-urban areas provide access to e-government information services</td>
<td>Majority of the citizens are not ICT savvy to access available e-government resources</td>
</tr>
<tr>
<td>Cost savings</td>
<td></td>
<td>Cost saving for citizens by using web sites, call centre services, and resources available at Nenasala centers</td>
<td>Since major e-services have not been fully implemented it is plausible that there is no major cost saving by using e-government services</td>
</tr>
<tr>
<td>Take-up</td>
<td></td>
<td>Among the citizens who are aware of e-government services (22.3 percent), 47.3 percent use web sites, 46.6 percent use call centre services, 7.5 percent make inquiries via e-mails, and 60 percent use online applications</td>
<td>E-government information/services usage is very low</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Low awareness among the citizens about available e-government resources</td>
</tr>
<tr>
<td>Citizens’ satisfaction</td>
<td></td>
<td>Of users, 60 percent satisfied with the offered e-services/information and 90 percent satisfied with call centre services</td>
<td>Low overall e-government usage</td>
</tr>
<tr>
<td>Achievement of outcomes</td>
<td>Socially desirable outcomes</td>
<td>For example, nearly 41 percent of Nenasala users claim that they found jobs as a result of computer training provided in the centers, 26 percent users found jobs by using the internet facility available at the centers</td>
<td>Further research is required</td>
</tr>
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</table>

(continued)

Table II. A summary of the case study findings
<table>
<thead>
<tr>
<th>Dimension</th>
<th>Attributes</th>
<th>Achievements</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of trust</td>
<td>Security and privacy</td>
<td>Sri Lanka has established a regulatory framework to address issues related to privacy, cyber security, ICT crimes, data protection, electronic transactions, etc.</td>
<td>Public information held in public organizations is at risk. About 32 percent ministries, 10 percent departments, and 10 percent statutory boards report unauthorized access to government data including citizens’ information</td>
</tr>
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<td></td>
<td>Transparency</td>
<td>No significant achievement in this area</td>
<td>Government’s transparency is not clearly reflected through e-government</td>
</tr>
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<td></td>
<td>Trust in e-government</td>
<td>Further research needs to be done to examine the citizens’ trust in public organizations</td>
<td>True citizens’ participation is not possible at the moment. Consequently, citizens are prevented from participating in public policy making through e-government</td>
</tr>
<tr>
<td></td>
<td>Participation</td>
<td>Most government web sites are at the “e-information” stage</td>
<td></td>
</tr>
<tr>
<td>Effectiveness of public</td>
<td>Efficiency</td>
<td>Government process re-engineering tasks have been completed to support future e-government projects. Nearly, 5,500 public staff have been empowered with necessary ICT skills</td>
<td>Major e-service and e-administration projects have not been fully implemented. As a result not much efficiency gains through e-administration. Further studies should be done to determine the efficiency gains through e-government</td>
</tr>
<tr>
<td>organizations</td>
<td>Accountability</td>
<td>Majority of government organizations publish their organizational charts online with the contact information of top-level executives</td>
<td>A majority of citizens believe that public organizations are inefficient (ICTA, 2008b) even though these organizations use ICT systems</td>
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<td></td>
<td>Citizens’ perceptions</td>
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References


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