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Abstract

E-government has become popular in Sri Lanka with the implementation of various e-government initiatives. The public value of these e-government initiatives, however, is not clear due to a lack of rigorous assessment so far on the performance of such e-government initiatives. This paper presents an empirical study in evaluating the public value of e-government in Sri Lanka within a conceptual framework developed based on a comprehensive review of existing literature. The study shows that the public value of e-government in Sri Lanka is far from satisfactory exemplified by the lack of e-transaction services and the low uptake of available e-government initiatives.

Keywords: e-Sri Lanka, e-Government, Public Value, Empirical Study

1 Introduction

E-government is becoming increasingly popular worldwide. One study reveals that at least 500 e-government projects were launched worldwide in 2001 (Chen et al. 2006). Another study shows that 94% of the United Nations' member countries had online presence in 2005 (UNDESA 2005). The popularity of e-government is due to its significant benefit to governments, citizen and society including delivery of quality public services, convenience and accessibility to public services, reduction of communication and information costs, bridging of the digital divide, facilitating the active participation of citizens in government, broadening reach, and eradicating distance with citizens living in remote or less densely populated areas (Jaeger and Thompson 2003, Akman et al. 2005).

There is no exception in the development of e-government in Sri Lanka. In 2002, the government of Sri Lanka officially launched the e-Sri Lanka program as the first national e-development program (ICTA 2009). This program aims to improve the public services, uplift the quality of life of citizens, eradicate poverty, and achieve economic and social development (ICTA 2009). Under this e-development initiative, Sri Lanka has designed and implemented six unique e-development strategies encapsulating both e-government and e-development practices that are bound to have a significant impact on Sri Lankan citizens and society.

With the development of e-government in Sri Lanka that involves in tremendous amount of investment from the government and the aid organization, the need for timely evaluating the performance of these e-government initiatives becomes obvious. There are some existing studies on the performance of e-government showing that Sri Lanka has effectively improved its global e-government readiness (UNDESA 2008, Mia and Dutta 2009). These studies, however, fail to evaluate the performance of e-government from the perspective of citizen. There is a lack of rigorous assessment of the public value of e-government even a study of this nature is significant to the government, aid organizations, and other developing countries (Hanna 2008) for better understanding the impact of e-government on citizens and the society, leading to better policies and strategies for the continuous development of e-government.

This paper presents an empirical study in examining the public value of e-government in Sri Lanka. To facilitate the empirical study, a conceptual framework is developed based on a comprehensive review of relevant literature. The study shows that the public value of e-government in Sri Lanka is far from satisfactory exemplified by the lack of e-transaction services and the low uptake of available e-government initiatives.

In what follows, we first review existing approaches for evaluating the public value of e-government, leading to the development of a conceptual framework for facilitating the evaluation of the public value of e-government in Sri Lanka. We then conduct an empirical study for evaluating the public values of e-government in Sri Lanka, followed by a discussion of the implications of the research findings to the continuous development of e-government in Sri Lanka.

2 Approach for Evaluating the Public Value of e-Government

The concept of public value is a popular means for evaluating the performance of public services (Moore 1995, Kelly et al. 2002, Talbot 2008). Countries like United States, European nations, Australia and even some developing countries have been paying much attention to this concept over the past decade (Benington 2009). The popularity of this concept is because it provides an inclusive framework for examining the performance of public services from the perspective of citizens (Kelly et al. 2002, Try and Radnor 2007, Alford and O'Flynn 2009).

The theory of public value is a normative theory in public sector for measuring the success of public services (Moore 1995, Alford and O'Flynn 2009). Moore (1995), the main proponent of this theory, argues that the value of citizens should guide the operations of public organizations in relation to the delivery of public services. This is

because the ultimate goal of public programs including e-government initiatives is to create public values for the citizen and the society in a country (Meynhardt 2009).

There are three important means for creating public values. Operating an effective public organization creates public values (Moore 1995). Improving the quality of public services delivers better public values (Kelly et al. 2002, O'Flynn 2007). Achieving desired outcomes realize public values (Kelly et al. 2002, Cole and Parston 2006, O'Flynn 2007). Jorgensen and Bozeman (2007) develop an inventory with seventy-two kinds of public values. For example, equity, democracy, openness, transparency, confidentiality, responsiveness, environmental sustainability, citizen's self-development, user orientation, quality services are important public values.

E-government has gone through several phases since its introduction for improving the efficiency of public services in order to provide better public values to the citizen and the society. Various drivers underpin the development of e-government including (a) technology, (b) user, and (c) cost (IANIS 2007). A technology-driven e-government endeavour focuses on the identification and use of ICT for the effective and efficient delivery of public services. A user-centred e-government strategy pays more attention to the requirement and expectation of users. A cost-driven e-government initiative strives for the operations efficiency of public services.

The concept of public value is increasingly becoming the innovative driver in modern e-government endeavours (Bonina and Cordella 2008). As pointed out by Castelnovo and Simonetta (2007), "public administration aims at producing value for citizens and the use of ICT to improve government is a means to improve the public value". Yu (2008) further argues that the prime objective of e-government is to produce public value. This shows that creating public value through e-government is vital. "People express preferences, the government uses ICT to enhance its own capacity to deliver what people want, and eventually a public value is created" (UNDESA 2003).

There are several important attempts at developing various methodologies for evaluating the public value of e-government from different perspectives. Kearns (2004), for example, proposes a 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 (Heeks 2008). The applicability of this framework is exemplified through its use in assessing the public value of e-health initiatives in UK (Bend 2004).

Golubeva (2007) proposes a methodology for examining the public value of e-government portals with respect to (a) usability, (b) transparency, (c) interactivity, (d) citizens centricity of e-services, and (e) level of e-services development. The methodology is applied in Russian Federation for evaluating the public value of regional portals with interesting findings.

The European Commission proposes a conceptual framework for examining the different types of public value of e-government (eGEP 2006, Heeks 2008). Within this framework, the public value of e-government initiatives is assessed with respect to (a) organization, (b) politics, and (c) end user. The organizational value concerns the operations efficiency and the effectiveness of public organizations. The political value relates to the openness and transparency of the public sector and the participation of

citizens in government. The user value focuses on improving the satisfaction of citizens on the delivery of public services.

Liu et al. (2008) propose a multidimensional framework for assessing the public value of e-government projects. This framework emphasizes the importance of evaluating the e-government value and the stakeholder satisfaction. The e-government value focuses on financial, social, strategic, and operational values of e-government projects. This framework, however, primarily focuses on evaluating the public value from the government to business, rather than from the government to citizens perspective.

The developments above have various shortcomings in adequately evaluating the public value of e-government. The framework of Kearns (2004), for example, identifies trust as an important source of public value without showing how to measure trust. It fails to consider the dimension of operating effective public organizations as a source of public value (Moore 1995). The framework of Golubeva (2007) has a narrow focus on the supply side of e-government. E-government, however, is more than just the delivery of public services (Hanna 2008). The framework of the European Commission (eGEP 2006) is often criticised due to its bias towards e-administration without including government's e-enabling role in the civil society and communities (Heeks 2008). The framework of Liu et al. (2008) is questioned for its biasness towards the perspective of government to business. Public values, however, are related to the relationship between government, citizens and society. A true public value evaluation should focus on the government to citizens' perspective of e-government. To adequately address these issues, a conceptual framework for assessing the public value of e-government in Sri Lanka is proposed in the following section.

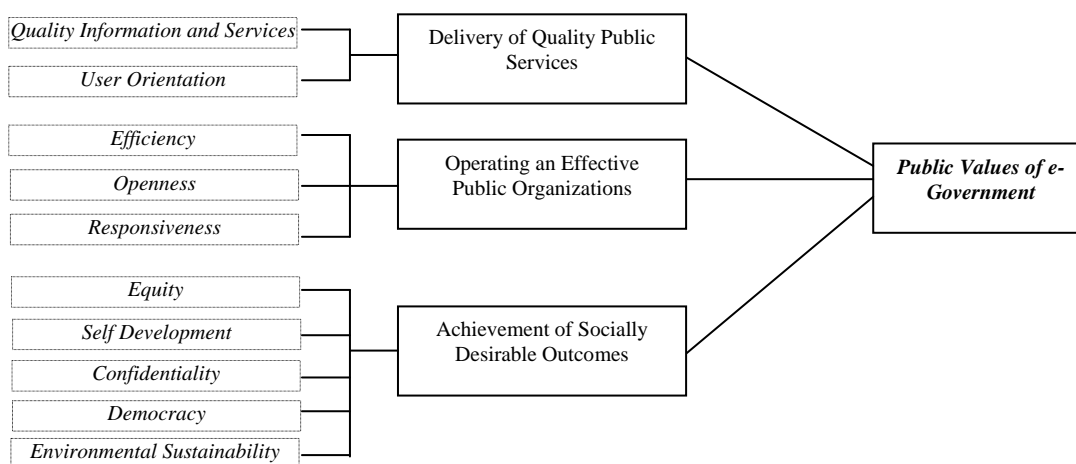# 3 A Framework for Evaluating the Public Values of e-Government in Sri Lanka

Sri Lanka is a developing country whose developments in e-government are at a crucial stage. With the huge investment from government and aid organizations, there is an urgent need for timely evaluating the performance of various e-government initiatives. Such an investigation helps the government to justify its investment in e-government and provides aid organizations with convincing arguments on the value for their money.

Considering the nature of e-government in Sri Lanka, this study proposes a conceptual framework for assessing the public value of e-government initiatives. Such a framework is based on three theoretical perspectives including (a) the public value theory, (b) the inventory of public values, and (c) the source of public values creation. The proposed framework consists of three major public value creation drivers as shown in Figure 1. These drivers include (a) delivery of quality public services, (b) operating effective public organizations, and (c) achievement of socially desirable outcomes. Each driver consists of several sub-drivers for better measuring the public value of e-government.

The delivery of quality public services is an important public value driver in e-government (Kearns 2004). Effective delivery of public services through e-government very much depends on the quality information and services provided, and the user orientation of public services. The quality of information and services is reflected through the availability of information, choice, and the uptake of e-government services (Kearns 2004). The user orientation refers to the user-centricity

of e-government information and services that is directly related to the satisfaction of users.

Operating public organizations in an effective manner is another way of creating public value through e-government. Efficiency, openness, and responsiveness are the three key drivers in evaluating the effectiveness of public organizations. E-government is used for improving the effectiveness of public organizations by cutting processing cost, making strategic connections between and among government agencies, and creating empowerment (Heeks 2008). In this context, the efficiency of e-government is determined by (a) the financial return of investment in public organizations, (b) empowering public sector employees, and (c) developing sophisticated ICT infrastructure within an organization (eGEP 2006).

Figure 1: A framework for evaluating the public value of e-government

The openness refers to the transparency of public services (Jorgensen and Bozeman 2007). It indicates the extent to which an organization reveals its decision processes and procedures and performance information in a timely manner (Wong and Welch 2004). A public organization can be open by publishing what it is required to reveal, for example, public policies and budget information (Jorgensen and Bozeman 2007). In this regard, the number of processes traceable online, the publication of annual plans and their progress online, and display of budget and expenses are the key indicators.

The responsiveness of public organizations measures the extent that a public organization complies with the public's demands (Jorgensen and Bozeman 2007). In e-government, the responsiveness is examined through the number of public organizations that publish full organizational charts containing the responsibilities and contact information of each public servant online.

Achieving socially desirable outcomes is a major source of public value creation through e-government (Kearns 2004, Heeks 2008). The achievement of outcomes is reflected by the impacts, deliverables, and consequences that public services are designed to attain or have (Cole and Parston 2006). Equity, self-development of citizens, confidentiality, democracy, and environmental sustainability can be enhanced through e-government. To ensure equity, e-government applications must prevent the exclusion of some groups in the society due to factors such as the lack of skills and resources, disability, income disparities, geographic location and so forth. To assess

whether equity is created through e-government, the availability of e-government initiatives in native languages, the number of government websites with disability features, and availability of e-government resources in rural areas are considered.

The self-development of citizens measures whether citizens can learn and develop their skills through various e-government initiatives such as e-learning, improvement of ICT literacy skills, development of network skills and so forth (UNDESA 2003). As a result, the availability of such facilities to improve citizens' skills and the citizens' uptake of such initiatives are the sub-drivers in this regard.

Ensuring the confidentiality of citizens' information is critical. Generally, citizens' expect their information to be protected (Jorgensen and Bozeman 2007). Citizens will not embrace e-government if their information cannot securely kept (UNDESA 2003). Confidentiality can be achieved through ensuring citizens' privacy, protecting data, and ensuring information security (Sakowicz 2002, UNDESA 2003). Since e-government creates unique legal requirements to ensure the confidentiality of citizens' information, implementing e-legislation relating to privacy, cyber security, ICT crimes, data protection, legitimacy of electronic transactions and so forth are useful. The confidentiality of citizens' information through e-government can be gauged through the readiness of individual government organizations to secure citizens' personal information, and the availability of e-laws for data protection.

Democracy referred to as e-democracy is another important outcome through e-government. E-democracy assesses the extent to which citizens' views expressed through e-government are considered in decision making (Machintosh 2004). E-participation as an area of e-democracy refers to citizens' participation in decision making through providing feed back on government policies using e-participation applications such as virtual meetings, cyber campaigns, feedback pools, and public survey tools (Anttirioko 2003).

Finally, environment sustainability refers to the citizens' expectation that e-government initiatives will contribute to environmental sustainability. E-government applications can bring many environmental benefits through energy saving, helping to limit duplication of effort and resources, sharing data and resources by automating repetitive tasks, and reducing the use of paper (ITU 2008). To measure the environmental sustainability the amount of paper saved as a result of using e-government applications compared to traditional public management processes and the availability of policy to implement 'green IT' can be used. Table 1 summarises the discussion above.

Dimension	Attributes	Description
Delivery of Public Services	Quality Information and Services	▪ Availability of online information ▪ Availability of e-services ▪ Availability of e-government channels to access information and services ▪ Use (uptake) of information and services
	User Orientation	▪ Citizen centricity of e-government service
Operating Effective Public Organizations	Efficiency	▪ Improved return on investment ▪ Development of ICT infrastructure ▪ Empowerment of employees with ICT skills
	Openness	▪ To what extent public organizations disclose their decision processes and procedures
	Responsiveness	▪ To what extent public administrations respond to the citizens' demands
Achievement of Socially Desirable Outcomes	Equity	▪ To what extent e-government information and services are provided on an equitable basis
	Self Development	▪ To what extent e-government initiatives develop the skills of citizens
	Confidentiality	▪ To what extent e-government guarantees the confidentiality of citizens' information
	Democracy	▪ To what extent citizens use e-government services to contribute to public governance
	Environmental Sustainability	▪ To what extent e-government supports environmental sustainability

Table 1: A Description of the Proposed Conceptual Framework

4 Exploring the Public Value of e-Government in Sri Lanka

This section presents an empirical study in evaluating the public value of e-government in Sri Lanka within the proposed conceptual framework above. Two research questions are formulated including (a) what the public value of e-government initiatives is and (b) how well the e-government initiatives deliver public value in Sri Lanka.

To adequately answer the research questions formulated above, secondary data on e-government development in Sri Lanka are used. The study uses the data from several national surveys including 'government ICT usage survey' (ICTA 2008a), 'government organizations visitors survey' (ICTA 2008b), and other statistics by respective government agencies such as Statistical Survey Department (DCS-SL 2009) and Telecommunication Regulatory Commission of Sri Lanka (TRCSL 2009). Approximately 344 public offices are selected for the government ICT usage survey

with public officers given structured questionnaires for gathering data on how ICT is used at what degree (ICTA 2008a). 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 considered in this research. Informal interviews with government officials and Nenasala operators are conducted to further verify the findings of these surveys.

Delivery of Public Services

The quality of e-government information and service delivery is examined through three sub-drivers, namely, availability of information and services, choice, and uptake as shown in Figure 1. In Sri Lanka 65% central government ministries and 78% departments provide static information through their websites (ICTA 2008a). A majority of these websites provide some general information about their organizations. A few organizations provide interactive information such as train timetables, daily crop prices, etc which cannot be accessed without visiting the respective public organizations.

The information provided through e-services in Sri Lanka is insignificant. Although many e-services are promised through the e-Sri Lanka program, these initiatives, however, are still at the initial stage of development. As a consequence, citizens have not yet had the opportunity of enjoying the full benefits of e-services. The fact that a majority of government agencies do not have a web presence (56%) and the delay in implementing major e-services implies that the full potential of e-government has not fully materialised in Sri Lanka.

Examining the implemented e-government initiatives show that the choices to citizens in Sri Lanka are confined to websites (35% of agencies have websites), call-centre, counter services and a few mobile applications. Empirical dataset (ICTA 2008b) reveals, the most used channel is the website (47.6% users) and it is followed by the call centre services (46.6% users). The government has already established approximately 600 Nenasala centres in rural areas to provide resources to access e-government information and services.

The take-up of e-government services in Sri Lanka is very low. Only 22.3% citizens are aware of available e-government services. Among them 47.3% of citizens obtain information from websites, 46.6% of citizens use call centre services, 7.5% of citizens make inquiry via emails (ICTA 2008b).

To examine the user orientation of e-government, citizens' satisfaction about the e-government services is examined. In Sri Lanka, the level of citizens' satisfaction on the available e-government services is very high. Although the availability of e-services and level of information provided to the citizens are inadequate, nearly 70% citizens are satisfied with services offered (ICTA 2008b).

Operating Effective Public Organizations

The government has implemented the 'Re-engineering the Government' program for improving the effectiveness of its public organizations. Since major e-government projects have still not been implemented entirely, the ICT usage in a majority of government organizations is limited to website development and the use of some small

scale client server applications. As a result, public organizations have still not gained significant savings nor gained considerable efficiency through e-government. However, a significant progress can be noticed in ICT infrastructure development in public organizations. Lanka Government Network is such an initiative which connects more than 350 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. An investigation of the number of staff trained with the required ICT skills reveals that nearly 10,000 public staff members have been properly trained (ICTA 2009).

The implementation of e-government initiatives in Sri Lanka seems to have insignificant impacts on the openness of public services. For example, only the Department of Pension's website provides citizens with online process and transactional traceability facilities. The other websites have not offered such facilities. A further investigation reveals that only a few organizations disclose their budget and expenditure online, and display the progress of annual work plan online.

Examining responsiveness 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, contact information of case handling officers who directly interact with citizens is provided in the websites. Thus, responsiveness of case handling officers is not reflected through the e-government.

Achievement of Socially Desirable Outcomes

Sri Lanka is home to multiple ethnic groups using many languages. To meet the challenge, government organizations disseminate information in local languages. 13% government websites and the call centre responds in all local languages (ICTA 2008b). However, an examination of the accessibility of government websites reveals that none of websites fully comply with accessibility standards. To ensure an equal access to e-government resources for rural communities the government has established Nenasala centres in rural and semi-urban Sri Lanka. Such a centre equipped with computers, broadband Internet, scanners, photocopiers, and webcams (Nenasala 2007).

The government of Sri Lanka has made significant efforts to develop the skills of citizens through various e-government initiatives. In Sri Lanka, some Nenasala centres also operate as e-libraries. Such centres are equipped with computer-based training media and e-libraries of books and periodicals for the use of all citizens (Nenasala 2007). More centres are being established in rural areas with 800 e-libraries within the next 2-3 years in the plan (Nenasala 2007). Furthermore, the government has already established distance-learning centres in rural areas for providing citizens with better access to education. About 3000 citizens are given IT literacy training through the support of the human resources capacity building program.

Ensuring the confidentiality of citizens' information is critical for the success of e-government. In this regard, Sri Lanka has developed a regulatory framework for supporting the e-government initiative. This framework includes 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. An examination of the readiness of public organizations to protect public information, however, reveals that only 13% of

government agencies have file servers with installed security software. 71% of government organizations have desktops with security software. 13% have a proxy server with a security system installed. Although the government has created a regulatory environment for protecting public information, the reality at the institutional level is totally different. For example, nearly 32% of ministries, 10% of departments, and 10% of statutory boards reported to have had unauthorized access to information. 32% ministries, 29% departments and, 25% statutory boards have problems of data loss (ICTA 2008a). These security loopholes can certainly affect the confidentiality of public information held in an e-government environment.

The participation of citizens in government through e-government is limited in Sri Lanka. An examination of e-government services in Sri Lanka reveals that most of the government websites in Sri Lanka are at the 'e-information' stage, which means that their services are limited to the dissemination of information only. The web tools required for 'e-consultation' services and 'e-decision making' do not appear on government websites. As a result, citizens are prevented from actively engaging in public discussions online and their inputs are not taken into account in democratic decision making through e-government. This is also reflected from the UN's e-participation index where Sri Lanka is ranked at the 116th position (UNDESA 2008).

An examination of e-government's contribution to environmental sustainability reveals that in Sri Lanka, the government has not taken any significant efforts to adopt green IT concepts in public organizations. Since major e-administration initiatives have not been implemented, no major paper savings have resulted so far.

Barriers to the Effective Creation of Public Value

There are some significant barriers that hinder the creation of public value of e-government in Sri Lanka. These barriers include the presence of poor ICT infrastructure and the low e-readiness among the citizens.

Sri Lanka has a moderate access to telecommunication infrastructure (ITU 2008). The current telecommunication network comprises of 16.1% fixed line and 62% mobile phones (TRCSL 2009). Since the fixed lines are the dominating Internet carriers in Sri Lanka, the presence of poor telecommunication infrastructure in rural areas means that access to the Internet is uneven and unaffordable. Existing statistics reveal that only 11.1% of the rural household population have Internet access (DCS-SL 2009). This is a significant barrier to the deployment of e-government in Sri Lanka where 80% of the population live in rural areas. The inability to access the available e-government resources due to the unavailability of connectivity can result in the failure of e-government. To address this issue, the government should take immediate actions to speed up the implementation of the Rural Telecommunication Network project, which promises rural citizens affordable access to the Internet at any time from anywhere.

The low e-readiness among citizens further increases the challenge for the e-government deployment. In Sri Lanka, only 11.4% of households have computers. The urban households have a 31.1% of computer literacy while the rural households are at 19.3% (DCS-SL 2009). Due to the low e-readiness among citizens, providing equal

opportunities to every citizen, therefore achieving fairness in the delivery of e-government services is always challenging in Sri Lanka.

5   Conclusion

This paper presents an empirical study in evaluating the public value of e-government in Sri Lanka within a new conceptual framework. It shows that the public value of e-government in Sri Lanka is far from satisfactory exemplified by lack of e-services, low ICT usage in e-government, and low uptake of available e-services. This poor performance of e-government is due to the unimplemented major e-government projects, security threat to the public information, poor e-readiness, and lack of awareness.

To improve the public value of e-government, Sri Lanka should accelerate the delayed e-service projects and revamp existing government websites in a citizen-centric manner. Immediate actions should be taken to eliminate the security threat to the public information in public organizations. Adequate policies and strategies should be made for ensuring a fair distribution of e-government services for preventing the creation of digitally excluded communities. The presence of the poor ICT infrastructure and the low e-readiness of the citizens should be addressed through various e-government initiatives such as information infrastructure development and human resources capacity building. Implementing such strategies has had a positive influence on the development of e-government. Existing statistics reveal that Sri Lanka is moving up along the Network Readiness Index steadily over the past couple of years. The overall ranking of Sri Lanka has risen from the 86th in 2006/2007 to the 72nd in 2009/2010 (Mia and Dutta 2009). This shows that achieving designated objectives of e-Sri Lanka program would have a positive impact on the creation of public value. Table 2 summarizes the findings of the empirical study discussed as above.

It is worthwhile to note that secondary data from national surveys are used in this study. This prevents this research from conducting a comprehensive investigation of the public value of e-Sri Lanka program. To address this limitation, significant efforts are being made in collecting primary data, and the corresponding findings on the creation of public value in Sri Lanka will be reported in the due course.

Dimension	Attributes	Summary of the Findings
Delivery of Public Services	Quality Information and Services	▪ The quality of the information and services provided through e-government is low. ▪ Major e-services have not been implemented. ▪ Multiple choices of channels are available. ▪ Among the citizens who aware of the available e-government information and services, 47.3% obtain information from websites and 46.6% use call centre services.
	User Orientation	▪ 77% users are satisfied with e-services.
Operating Effective Public Organizations	Efficiency	▪ Major e-services and e-administrative initiatives have not been fully implemented. Thus, there is no major cost saving. ▪ More than 350 government organizations are connected to a single network. ▪ About 10000 staff members of public organizations have been trained.
	Openness	▪ Government's openness is not reflected.
	Responsiveness	▪ Government's attempt to increase the responsiveness is partially reflected.
Achievement of Socially Desirable Outcomes	Equity	▪ Trilingual websites and a trilingual call centre have been established. ▪ Government websites do not fully comply with accessibility standards. ▪ About 600 tele-centers established in rural and semi-urban areas provide access to e-government services for an affordable fee.
	Self Development	▪ Some Nenasala centres operate as e-libraries and distance learning centres. ▪ About 3000 citizens are trained in IT.
	Confidentiality	▪ A regulatory framework is established. ▪ The public information held in an e-government environment is at a risk. ▪ 32% ministries, 10% departments, and 10% statutory boards reported unauthorized access to their databases.
	Democracy	▪ Citizens did not engage in public discussion online, and their inputs are not considered. ▪ Sri Lanka is ranked at the 116th on the UN's e-participation index.
	Environmental Sustainability	▪ E-government has not contributed to significant environmental sustainability efforts.

Table 2: A Summary of the Study Findings

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