



## Factors Influencing Undergraduates' Intention to Use e-Government Services: Reference to South Eastern University of Sri Lanka

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**Abstract – Implementation and adoption of Electronic Government are in early stage in most of the developing economies. Users of such electronic government services include individual citizens, businesses, government agencies and other governments. The rewarding benefits of such implementation effort depends both on governments' end as well as users' end. This study used variables from Unified Theory of Acceptance and Use of Technology (UTAUT) model to identify the factors influencing undergraduates' adoption of electronic government services in Sri Lanka. Undergraduates from South Eastern University of Sri Lanka (SEUSL) were the participants of the study. The real data disclosed that Effort Expectancy factor has significant effect whereas Performance Expectancy and Social Influence factors did not have effect on undergraduates' intention to adopt Electronic Government services in Sri Lanka.**

**Keywords: Electronic Government, Undergraduates', Intention to Use, UTAUT, Undergraduate, Sri Lanka**

### I. INTRODUCTION

Information Technology (IT) has plugged in itself with almost all activities of business operations today, having benefits, opportunities and challenges for managers and policy makers in private sectors. After the invention of the Internet by the Department of Defence in the United States as a communication network, the Internet has now become part and parcel of human lifestyle today. As a result, the number of internet users in Sri Lanka is more than 3,222,200 [1].

Electronic government (e-Government) has established as an effective mechanism for increasing government's productivity and efficiency and a key enabler of services including citizens, businesses and other government agencies. However, from an adoption perspective, these services are yet to be accepted by citizens in general and undergraduate students in particular. In terms of prior research into understanding factors influencing undergraduates' adoption of such services in Sri Lanka, existing literatures focus on implementation and public value of e-Government in the country and no research studies were found that take a holistic viewpoint of adoption.

Governments around the world have been increasing investments in electronic services during the recent decades and have included the potential of online resources to improve the services to citizens and increased their competitive advantages. The success of such initiatives by the governments largely depends on the higher adoption of such services by citizens. The delivery of government information and services by using the information and communication technology (ICT) is commonly referred to as e-Government [2],[3].

E-Government enables citizens to access information efficiently and also has improved the transparency and communication of government information. The diffusion of this innovation is normally attained with much cost for the implementing side; the government but researchers have found that most countries suffer with low satisfaction in the citizens' adoption of e-government services. Research works studying the citizens' adoption of e-Government are less for developing countries [4] and this research is aimed to fill this gap in Sri Lankan context with specially referring to undergraduate students of SEUSL. The variables from UTAUT model were adopted in this study to explore the factors that determine the adoption of e-Government services in Sri Lanka. The results of this study will be helpful for policy makers to understand undergraduates' adoption of e-Government services.

### II. E-GOVERNMENT IN SRI LANKA

The launching of Lanka Gate, the official portal ([www.lk](http://www.lk) or [srilanka.lk](http://srilanka.lk)) of Sri Lanka, on the Internet was the major implementation step of the e-Srilanka project by the Government of Sri Lanka. Using the site, citizens are enabled to obtain more than 20 e-Services such as e-Revenue License Issuance, Issuance of Examination Certificates, etc. [5] and updated information from the government agencies.

Sri Lankan government started the e-Srilanka project in 2002 [2] and has been continuing to bring in all services of government agencies under one portal. The e-Srilanka project carries many significant benefits such as quality public services, reduction of communication and information costs, bridging the digital divide, and getting the citizens actively participating in government ([2], [3], [6] to the citizen of Sri Lanka. The Government Organizations Visitors Survey of ICTA (2011) identifies the following as the benefits for citizens of Sri Lanka:

- Reducing Burden: administrative simplification; providing higher valued and faster services; saving time and money and improving equity

- Increasing User Satisfaction: 24/7 service; improving personalization and service quality; improving access and equity; addressing security and privacy concerns; transparency and choice
- Supporting Growth: improving the business environment; creating an information society; establishing an infrastructure for secure and reliable transactions.

The Computer Literacy Survey (CLS) – 2009, which is the latest statistics available as of January 2013, of the Department of Census and Population of Sri Lanka (DCPSL) states that there has been improvement in the household ownership of computers in Sri Lanka from the year 2004 - 2009. The CLS mentioned that *at least one computer is available in one out of every ten households on average in Sri Lanka*. This shows that the usage of computers by the citizen is increasing continuously which is a good sign that the usage of e-Government services by citizen may increase. In addition to the increase in the household ownership of computers in Sri Lanka, it can be seen from the survey done by the DCPSL that the Computer Literacy (“*if a person could use computer on his or her own, he or she is considered as a computer literate person*”) of Sri Lankan citizen as of year 2009 as 20.3% which had been 16.1% in the year 2006/2007 period; this gives us a hint that a good amount of the citizens of this country could adopt e-Government services in Sri Lanka.

According to UN E-Government Survey 2012, Asian countries continue expanding e-Government services by making investments to expand infrastructure, including support for broadband and mobile access. In 2012, out of the top 20 world e-government leaders, three were from Asia; Republic of Korea, Singapore and Japan. Regionally compared, Asia as a whole has a higher level of e-Government than the rest of the world.

In 2012, Sri Lanka secured 115<sup>th</sup> place in World e-Government Development Ranking, however it was in 111<sup>th</sup> place in the year 2010; though Sri Lanka performs better than some other big countries in the region.

Sri Lanka is trying to regain the lost time and opportunities, due to the civil war, by embarking on comprehensive development roadmaps; the most recent one is the ‘Mahinda Chinthana’; the strategic plan of His Excellency the President Mahinda Rajapaksha, which places greater emphasis on rural development.

Among Southern Asian countries, Sri Lanka is in 3<sup>rd</sup> place for the last six years but as for the global rank, the country’s position is decreasing continuously meanwhile this is in contrary to the number of Internet users in the country. Internet World Stats [1] cited based on International Telecommunication Union’s *Internet Usage and Population Statistics*, Internet users in Sri Lanka was 428,000 in the year 2007 and it grew to 1,776,200 in 2010 and Internet World Stats’ [1] the *Asia Internet Use, Population Data and Facebook Statistics* mentioned that Internet users in Sri Lanka on 30<sup>th</sup> June 2012 was 3,222,200 and Facebook users were 1,515,720 on 31<sup>st</sup> December 2012 which is a gradual increase during the years and LinkedIn claims that there are more than 500,000 users using it in Sri Lanka; but on contrary to the number of Internet users, it is a shocking fact that the number of users who registered on www.srilanka.lk, the e-Government portal of Sri Lanka, was 19,502 as of 02<sup>nd</sup> of April 2013. The government of Sri Lanka has a political will for successfully implementing e-Government in Sri Lanka; this is implied from the efforts taken by the Sri Lankan government. Therefore, all the efforts taken by the government are yet to yield significant results for the development of e-Government in Sri Lanka.

There have been a number of studies which try to identify the citizens’ adoption of e-government in developed countries but studies that try to identify the adoption factors in developing countries are a few [7].

After a good review of published researches on citizens’ adoption of e-Government, it was found that there aren’t any researches that study the citizens’ adoption e-Government in Sri Lankan context available, particularly undergraduate students’ intention to use e-government services. Therefore, there exists an unfulfilled gap in the research work which tries to identify the factors influencing the citizens’ adoption of e-Government services in Sri Lankan context.

Based on the above facts, a research on evaluating the adoption of e-Government in Sri Lanka is very much needed at this juncture since the success of e-Government implementation is not only dependent on government support but on citizens’ willingness to accept and adopt such services as well [8]; for any e-Government effort to be successful, citizens’ willingness to adopt the system is considered vital.

Therefore, this research aims to address this vital issue by identifying the factors influencing citizens’ intention to adopt e-Government services in Sri Lankan context.

### **III. OBJECTIVES OF THE STUDY**

The holistic aim of this study is to explore and investigate the key factors that influence the undergraduate students’ intention to use e-Government in Sri Lanka. A conceptual model, based on the well-established UTAUT model was formulated which can be used as the reference model by researchers and policy makers in Sri Lanka to understand the factors influencing undergraduates’ adoption of e-Government and to take accurate measures to stimulate or drive Sri Lankan citizens to adopt e-Government services. To make this research aim true, the following objectives will be followed:

- To empirically examine and explain the factors influencing undergraduates’ intention to use e-Government in Sri Lankan context.
- To develop and examine a conceptual model that depicts the main factors influencing the undergraduates’ intention to use e-Government services in Sri Lanka.
- To examine the relationships between Performance Expectancy, Effort Expectancy, Social Influence and Behavioural Intention to use e-Government services in Sri Lanka.

- To add to the body of knowledge on e-Government adoption in Sri Lanka so that government policy makers would be able to take these findings into their accounts when they make decision on improving citizens' adoption of electronic service delivery channels rather than more traditional service delivery methods.

#### **IV. G2C DIMENSION OF E-GOVERNMENT**

Different categories of e-Government can be noted in the literature: e-Government is categorized as Government to Citizen (G2C), Government to Business (G2B), Government to Government (G2G) and Government to Employee (G2E) [8]. Each category has specific characteristics within the e-Government settings.

G2C is primarily perceived by observers as e-Government [8], which is designed to facilitate citizens' interaction with the government (Bonham et al., 2001). G2C format provides access to public information available online via websites and allows citizens to carry out various tasks, especially ones that include many agencies, by visiting one portal without contacting many agencies individually. By eliminating time and geographical barriers to connect with government, the G2C format increases citizens' participation in government thereby lets citizens get attached with government who may not ordinarily do so and citizens get "more information about government laws, regulations, policies, and services" (Muir and Oppenheim, 2002). In this format of e-Government, transactions such as renewal of licenses and certifications, application for benefits, etc. are made to be less time consuming and easier to do and in G2C format of e-Government citizens enjoy more benefits than participants in other formats e-Government.

Based on the aforementioned literature, it can be asserted that G2C dimension of e-Government has the following objectives:

- To provide access online to public information to citizens at one place.
- Enable citizens to find what they need from governmental agencies quickly and easily.
- Establish citizen-centric services rather than government-agency-centric.
- Deliver public services to citizens directly by eliminating intermediaries.
- Building and retaining citizens' trust on the government.

#### **V. LITERATURE REVIEW**

User acceptance is necessary for any Information Technology initiative and implementation. According to The initial decision taken by an individual to interact with the technology is acceptance and adoption comes when the user has accepted the technology after he or she directly experiences with the technology [13]. There have been many researches trying to study the adoption of e-Government in developed countries [16] but researches on the same for developing countries are minimal [7].

A lot of studies on the adoption of e-Government are mainly based on technology acceptance theories and models such as Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Theory of Planned Behaviour (TPB), Diffusion of Innovation (DOI) and UTAUT, etc. The UTAUT provides valuable comprehensions and suggestions for understanding an individual's intension of using e-Government services [4], [14], [15].

A study using university students to delineate the factors that influences adoption of the e-Government services by citizens was conducted in the United States (US) using DOI model and the construct that they thought to be most relevant were relative advantage, ease of use, compatibility, and image. The researchers of the study found that higher the relative advantage, compatibility, and image; the more the citizens' intension to adopt e-Government services [4]. Another study in US was carried out by [8] on adoption of e-Government services. In the pilot study of their research they surveyed undergraduates in the US using an integrated model incorporating constructs from DOI model, TAM model and Web Trust model. It was discovered that Compatibility and Perceived Usefulness were significant in increasing citizens' intension to adopt e-Government. For the main study of this research they surveyed a group of citizens aged from 14 to 83, and found that Compatibility, Ease of Use and Trustworthiness were significantly influencing the citizens' intension to adopt e-Government. In this research, when the findings of the pilot study are compared with those of the main study, the factors influencing the citizens' adoption of e-Government have differences; citizens' demographic attributes also impacted the factors influencing citizens' adoption [4]. Taiwan's Online Tax Filing and Payment System is one of the e-Government services in that country. Chang *et al.* [9] did a study on citizens' acceptance of this system based on TPB by proposing a comprehensive model to elicit citizens' salient attitude towards e-Government services. They found that Ease of Use, Perceived Usefulness, Perceived Risk, Trust, Compatibility, External Influence, Interpersonal Influence, Self Efficacy and Facilitating Conditions [4] were the factors influencing the adoption of the system.

Dimitrova and Chen [10] did a survey in the US by combining TAM and DOI models to study the effects of socio-psychological factors that influence people's adoption of e-Government in the US. They found that Perceived Usefulness, Prior Interest in the government, and Perceived Uncertainty were the factors influencing the adoption of e-Government there in the US [11]. In a study done by Phang *et al.* [12] in China on the senior citizens' adoption of e-Government, basing TAM, they found that perceived ease of use and Internet safety as the influencing factors for senior citizens' perception of the usefulness of the e-Government, image and compatibility being less influencing. Akman *et al.* [3] did a survey in Turkey to study the impact of gender, education, and citizens' attribute, on the use of e-Government. For the study they surveyed different groups from public and private sectors and found that gender and education had a significant influence on the citizens' adoption of e-Government in Turkey. They found that e-Government services are used more by males than females and the higher the education level, the more interaction the participants had with e-Government services.

From the above review of literature, many factors such as perceived usefulness ease of use, compatibility, trustworthiness, Internet safety, image, educational level, etc. have been found to be influencing the adoption of e-Government in developed as well as a few developing countries; but little is known that these factors are applicable in the case of Sri Lanka.

This study aims to address this gap by finding out the factors that influence the citizens' adoption of e-Government in Sri Lanka by doing a first-hand data collection and analysis using undergraduate students of SEUSL as subjects.

## VI. RESEARCH MODEL AND HYPOTHESES

Variables from UTAUT model were used in this study since the UTAUT was formulated by synthesizing eight technology acceptance models, which had their origins in psychology, sociology, and communications. Many researchers have adopted, modified, and validated many theoretical models to understand and predict acceptance of technology and its usage [13]. Each model tries to predict and explain user behaviour using a number of independent variables. The models include the TRA, TPB, the TAM, and the DOI. It was argued by Venkatesh *et al.* [13] that researchers chose a certain model which they favoured and used it by ignoring the contributing factors from other alternative models.

Hence Venkatesh *et al.* [13] reviewed the existing eight user acceptance models (TRA, TAM, the TPB, the combined TAM-TPB, the Motivational Model (MM), DOI, the Model of PC Utilization and the Social Cognitive Theory (SCT)) and integrated elements found in those models and the result of this review is the UTAUT [13]. The UTAUT provides better understanding of acceptance of technology by users. Some of the above theoretical models are considered to be the most robust and significant to describe IT and Information Systems adoption.

The study of citizens' adoption of e-Government was motivated to use this UTAUT model because of the comprehensiveness, validity, and reliability of it and the model encouraged the researcher to adopt and validate it in Sri Lankan context.

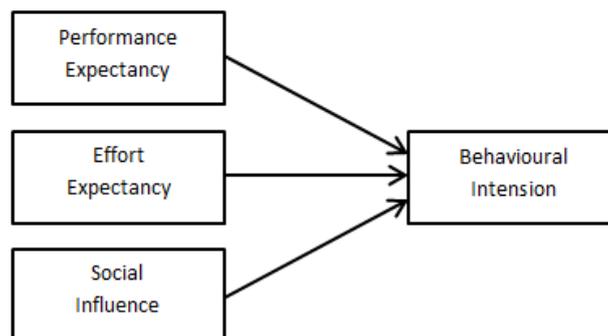


Fig.1 The Conceptual Model

This research used variables from the UTAUT model originally proposed by Venkatesh *et al.* [13] in order to fit it to the adoption of e-Government in Sri Lankan context. According to the amended model, it is hypothesized that Performance Expectancy, Effort Expectancy and Social Influence are significantly influencing the Behavioral Intension of the business owners. They are elaborated below.

- **Performance Expectancy (PE):** “the degree to which an individual believes that using the system will help him or her to attain gains in job performance” [13].
- **Effort Expectancy (EE):** “the degree of ease associated with the use of the system” [13].
- **Social Influence (SI):** “the degree to which an individual perceives important that others believe he or she should use the new system” [13].
- **Behavioral Intension (BI):** “the person’s subjective probability that he or she will perform the behavior in question” [13].

The conceptual model which is proposed for the evaluation of undergraduates’ intention to use e-Government in Sri Lanka is shown in Fig.1.

From the above model, the following hypotheses have been developed:

- H1:** There will be a positively significant relationship between Performance Expectancy and Behavioral Intension to use e-Government services.
- H2:** There will be a positively significant relationship between Effort Expectancy and Behavioral Intension to use e-Government services.
- H3:** There will be a positively significant relationship between Social Influence and Behavioral Intension to use e-Government services.

## VII. METHODOLOGY

The research employed a quantitative study based on questionnaire survey. Quantitative method enables the researcher to test the relationships between the variables identified in the model and thereby let him provide evidence to support or disprove the [8]. The population of this study included all undergraduates in SEUSL with or without experience in using e-Government services of Sri Lanka.

Questionnaire which had been primarily prepared in Tamil language was translated into Sinhala language and personally administered by the researchers to more than 200 recipients from December 2013 to March 2014 and a total of 153 complete questionnaires were received back, the response rate of 61%. Since the e-Government project of Sri Lankan government is not very well-known a small introduction was given in the questionnaire itself. Respondents were instructed to answer by using Likert scale type questions. Constructs and statements were adopted from previous researches.

### VIII. DATA ANALYSIS AND RESULTS

#### A. Reliability of the Model.

Reliability of the scale constructs was tested using Cronbach’s alpha and their values are given in Table I, with all constructs earning values greater than 0.7.

Based on the, a regression analysis was done with the inclusion of independent variables and dependent variable.

In order to analyse relationships among variables and measure the strength of the linear relationship between the variables regression analysis was carried out using SPSS software.

Table I: Reliability of the Model Constructs

Scales	Cronbach’s Alpha coefficient	No. of Items
Performance Expectancy	.902	8
Effort Expectancy	.707	7
Social Influence	.756	3
Behavioural Intension	.789	2

#### B. Results.

A regression analysis process was undertaken based on the model which included independent variables and dependant variable. In the analysis, the main predictors (PE, EE and SI) were used to predict the BI with regard to their use of e-Government services. The results of the analysis are given in Table II and Table III.

Table II: ANOVA

Model	Sum of Squares	df	Sig.
1 Regression	74.045	3	.000 <sup>b</sup>
Residual	50.785	149	
Total	124.830	152	

a. Dependent Variable: BI

b. Predictors: (Constant), SI, PE, EE

The Table II shows an ANOVA significance of .001 or one chance in 1000 of Type-I error (incorrect rejection of null hypothesis), implying that the data between PE, EE, SI and BI are strongly correlated and there is a good model.

Table III: Coefficients

Model	B	Standardized Coefficients	Sig.
		Beta	
(Constant)	-.146		.090
1 PE	.462	.272	.023
EE	.841	.600	.000
SI	-.111	-.139	.093

a. Dependent Variable: BI

According to Table III, The Constant, PE and SI show significance above 0.05; meaning they are insignificant. The EE construct show a significance of .001; meaning that a unit of increase in EE will result in .841 unit increase in BI to adopt e-Government services.

The practical test of the model identified factors determining the intention and use of e-Government. According to the results, the hypotheses H1 and H3 are not supported and H2 is only supported. The statistically significant influence of EE suggests that respondents are apt to use e-Government services when they are easy to use enabling them to have more time for other activities. The results highlight the need to provide easy e-Government services. The government should pay attention on making the web-applications easy to use and user friendly. For this the Information and Communication Technology Agency (ICTA) can get feedback from registered users about the experience they had with the e-Government system’s applications and collect constructive suggestions to come out with improved features

## IX. CONCLUSION

The holistic aim of this study was to delineate the factors that influence undergraduates' adoption of e-Government services in Sri Lanka. For this, the study used UTAUT model to pick up variables and found that EE was significant in the intention to use e-Government services however PE and SI were insignificant in the use of such services. Although the subjects of the study are undergraduates of SEUSL, having limited generalizability, the study provided many insights into the motivations underlying the intentions to use e-Government services in developing countries. The tested model will be useful for more researches trying to find out e-Government adoption factors in developing countries and those researchers can accommodate more constructs such as infrastructural facilities, trust, etc.

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