Internet Use and E-Government Diffusion: An Empirical Estimation by Using Panel Data from Fiji, Jamaica and Mauritius

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Abstract:

Intuitively, it is logical to think that citizens using the internet are likely to use e-government services. Consequently, the role of the government would be to provide more e-government services. This paper test the relationship between internet use and e-government diffusion. The study used secondary data from the World Bank and United Nations database to examine the effect of internet use on e-government diffusion. Three small island developing countries were studied - Fiji, Jamaica and Mauritius. The findings show that internet use had a positive and significant effect on e-government diffusion only in Fiji but not in Jamaica and Mauritius.

Introduction

It is advocated that e-government has many benefits to nations that have effectively embraced this technology. E-government has helped many economies to tackle socioeconomic problems that have constrained growth of such economies. There are five main advantages of using e-government services. E-Government reduces corruption (Shareef et al. 2010; Musingafi and Zebron 2014); fosters transparency (Boateng et al. 2008) and accountability (Sharifi and Manian 2010); enhances accuracy (Sang et al. 2009); eases access, and encourages social inclusion (Bonsón et al. 2012). Over the years, there have been huge measures taken by national governments all over to encourage citizens to use e-government services. Some of these measures include reducing internet cost, developing infrastructure that supports the use of e-government services, and provide a more enabling school curriculum and continuing/adult education services. Such measures have also been taken by Small Island developing states, particularly those of the Pacific Islands, Caribbean region, and also Trinidad and Tabago (Hackshaw 2015; Lee 2014).

Many studies have used the Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI) theory to propose factors that affect e-government and diffusion. Sang, et al. (2009) found that in Cambodia the perceived usefulness, trust and relative advantage affected e-government participation. Rehman et al. (2012) found that perceived ease of use and service quality affects e-government participation in Pakistan. In total, six factors affect e-government adoption and diffusion; these are:

- perceived ease of use,
- perceived usefulness,
- social context,
- trust,
- compatibility, and
- relative advantage (Sang et al. 2009; Rehman et al. 2012).

A number of studies have emphasized that internet use is one of the factors influencing the use of e-government services (Chadwick and May 2003; Kumar et al. 2007; Bélanger and Carter 2008; Bélanger and Carter 2009). Unfortunately, few studies have tested the relationship between internet use and e-government participation (Gilbert et al. 2004; Horst et al. 2007). Studies that have investigated the relationship between internet use and e-government diffusion have used time and money related factors as proxies for internet use (Gilbert et al. 2004).

This study explores the empirical relationship between internet use and e-government diffusion. It seeks to discover whether internet use will influence e-government diffusion. Following the study conducted by Zhao et al. (2014), this study measures e-government diffusion by using two indicators: e-government development and e-government participation index.

Such a study will add to the knowledge in the field. So far, no study has examined the effect of the number of people using the internet on e-government diffusion. In other words, does many citizens using the internet, lead to pressure on the national government to increase the supply of e-government services? Second, whatever research that is found now, is largely on internet use and e-government diffusion in large developed and developing countries. There are critical differences in internet use and e-government diffusion between small island developing countries and large developed and developing countries. This study focuses on small island developing countries. Specifically, the paper explores the relation-

ship between internet use and e-government diffusion in three small island developing countries - Fiji, Jamaica and Mauritius.

Internet Use, E-Government Participation and Development in Fiji, Jamaica and Mauritius

Internet Use in Fiji, Jamaica and Mauritius

Fiji has a population of around 837,271, out of which, 475,739 are Fijians, 313,798 are Indians and 47,734 includes other races (Fiji Bureau of Statistics 2015). Jamaica is larger than Fiji; according to Country-Meters (2015), Jamaica's population is estimated at 2,767,704. The population of Mauritius is estimated to be 1,319,906 as at January 2015.

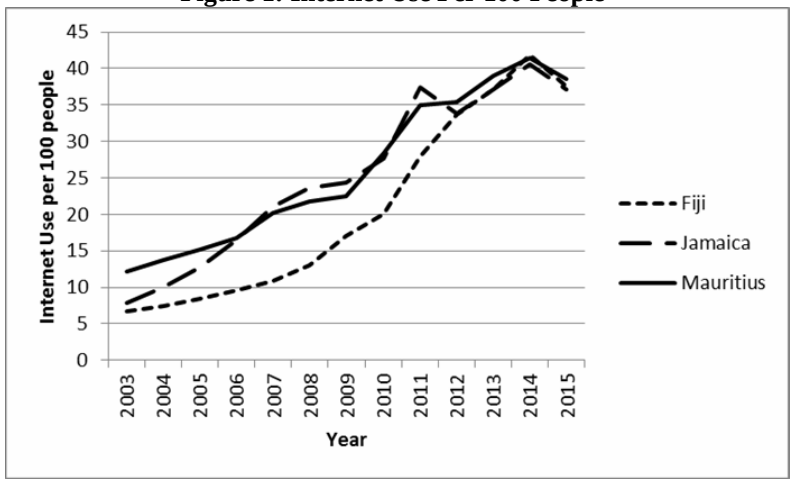
Fiji is regarded as the hub of the Pacific Island Countries. As far as internet services are concerned, it provides the highest speed of internet access both to businesses and general citizens (Stanley, 2004). With the introduction of 4G unwired services, the quality of internet services and coverage, have greatly improved. One could access unwired services from most parts of Fiji. This was not possible before the introduction of 4G unwired services (Digicel Fiji 2015).

The government of Jamaica has ensured that effective information computer technology diffusion is its key objective in this new millennium (Muturi, 2006). Information computer technology diffusion in Jamaica has been enhanced via training workshops and seminars conducted by government bodies and non-government organizations. Muturi (2006) found that more than 80% of the women interviewed have access to internet facilities in Jamaica.

In Mauritius, in 2007 the government took a bold step to increase the use of information computer technology by Mauritians (Pee et al., 2012). This plan was focused on raising ownership of laptops by private households, improving internet penetration rate and establishing internet kiosk centres across the island. After the implementation of this plan, the Internet Kiosk Centres have enabled better social inclusion of internet use (Pee et al., 2012).

Internet use in Fiji for 2014 is estimated to be 42 per 100 people. In Jamaica and Mauritius the rate is 41 per 100. Figure 1 shows the trends in internet use in these three countries.

Figure 1: Internet Use Per 100 People



(Source: World Bank Database)

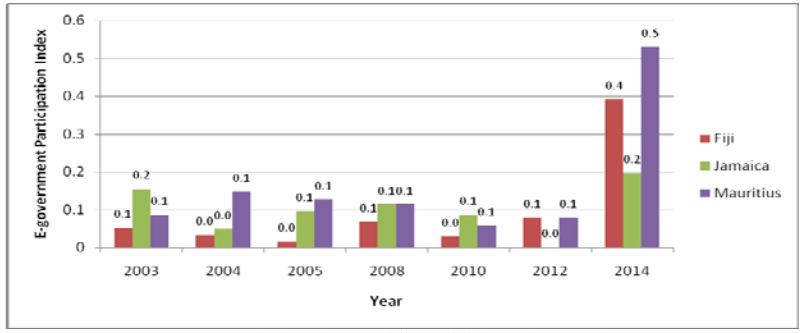
E-government Participation and E-government Development

E-government participation can be measured by e-government participation index. E-government participation index can be defined as the citizen's uptake of and participation in e-government services. E-participation can be divided into three categories (United Nations Public Administration, 2016). The first category includes providing citizens with information on the types of e-government services that are available to them. The second category is e-consultation; this includes consulting citizens on public policies and services via internet. The third category includes e-decision making; this includes empowering citizens to make decisions by using e-government services (United Nations Public Administration, 2016).

The e-participation index for Mauritius is estimated to be 0.5294, followed by 0.3922 for Fiji and 0.1961 for Jamaica. Figure 2 provides the trends in these. Thus citizens of Mauritius are more likely to participate in e-government service delivery as compared to citizens of Fiji and Jamaica. Citizens of Jamaica are least likely to participate in e-government service delivery. According to Obi and Iwasaki (2015), the governments of Fiji and Jamaica need to invest in capacity building of locals and improve information computer technology infrastructure so that locals be-

come more information computer technology friendly and are not hesitant in taking up e-government services. Mauritius has become the leader in providing e-government services via the implementation of its integrated web portal. As stated above, the e-government development initiatives taken by the Mauritius government are unique and encourage greater social inclusion (Manoharan and Holzer 2015).

Figure 2: E-government Participation Index



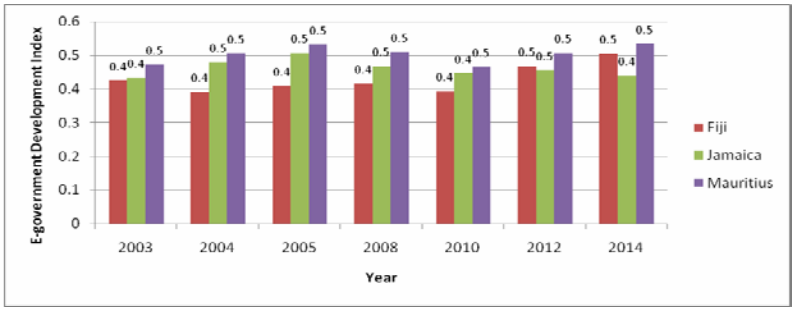
(Source: United Nations Public Administration Database)

Information computer technology service of Fiji is an arm of the Ministry of Finance. The e-government program in Fiji has been divided into three categories: public complaint stream, connection within government departments, and connection between government and the public (Obi and Iwasaki, 2015). In Mauritius, political will has been the driving force behind the development of e-government services (Hemant et al., 2008). Similarly, the governments in Fiji and Jamaica, via their budgetary expenditures, have shown their continuing support for e-government initiatives.

E-government development index is defined as the willingness of the national government to deliver e-government services. The national government has to commit resources to deliver e-government services; these resources come at an economic cost (Knoema, 2016).

In 2014, the index for Mauritius was 0.5338 followed by 0.5044 for Fiji and 0.4388 for Jamaica. Figure 3 provides the e-government development index trends for the three countries.

Figure 3: E-government Development Index



(Source: United Nations Public Administration Database)

A comparative analysis of the e-government development and participation indices show that the governments of the three small island developing countries are developing e-government services.

Theories on Internet Use and E-government Diffusion

The processes involved in adopting new behaviour can be examined by transtheoretical model of behaviour change. This model was developed by University of the Rhode Island's James Prochaska in 1977 (Hales, 2008). This model focuses entirely on the fact that a person's change of behaviour is his/her own decision rather than the decision of the others (Hales 2008).

There are three important components of the transtheoretical model of behaviour change; these are (1) stages of change process, (2) processes of change and (3) self-efficacy (Hales 2008). The first component of the transtheoretical model of behaviour change identifies six important stages of the change process. The first stage of the transtheoretical model of behaviour change is the *pre-contemplation stage*. In this stage, an individual is not aware of any change in behaviour that is needed. The second stage is labelled as *contemplation stage*; this is the stage where the individual realizes that there is a need for changing his behaviour. The third stage is known as the *preparation stage* where an individual intends to change his or her behaviour. The fourth stage is called the *action stage* where people take action to change their behaviour. The fifth stage is the *maintenance stage* where an individual continues to work on the behaviour that he or she has changed in the action stage. The final stage is the *termination stage*, where the behaviour becomes part of an individual's personality.

The second component of the transtheoretical model of behaviour change - the process of change - refers to the activities that actually help in the change process. The third component - self-efficacy - refers to the trust and the confidence that an individual has about himself or herself that he/she will be able to cope with the change process (Hales 2008).

This paper uses the transtheoretical model to examine whether internet use affects e-government diffusion. This model has hardly been used in studies on e-government. There are a handful of studies that have used the model to undertake risk and transformation analysis of different information computer technology projects. Bostrom and Löfstedt (2003), for example, used social network theory, information processing theory and transtheoretical model to examine the risks associated with information computer technology. This study found that community engagement and participatory decision making are important tools needed for managing the risks associated with information computer technology. Westbrook and Gonzalez (2011) used the transtheoretical model to examine how victims of domestic violence can be helped. While these two studies are not directly related to the area of e-government, they can be used in information computer technology management. The model can help examine how an individual who is using internet may also contemplate on using e-government services. As e-government services are a subcomponent of internet services, it is easier for citizens to change their behaviour and quickly adopt e-government services if they were users of internet services.

Undoubtedly, skilled and educated citizens would prefer to use internet and e-government services; however, the behaviour of citizens in a nation is unpredictable. A nation has citizens with different skills and knowledge. As such it is difficult to predict whether people using internet mainly for social networking reasons would be interested in using e-government services (Gibson et al., 2015).

E-government services have many benefits for developing countries, including small island developing states (Schuppan, 2009). However, there are only a few studies on internet use and e-government adoption in small island developing countries, particularly, Fiji, Jamaica and Mauritius (Golding et al., 2008).

Different countries have different levels of e-government use (Prattipati, 2003). Pattipati highlighted that 57% of the population in Sweden used e-government services in early 2000's, while only 5% of the population used e-government in India and 3% used e-government services in Hungary. Reddick (2005) found that the use of internet services has improved the interaction of citizens with government departments. Carter

and Weerakkody (2008) cited the work of Carter and Bélanger (2005) and Pavlou (2003) and argued that e-government adoption of citizens in the UK and USA is influenced by the trust citizens have on the medium (internet services) via which e-government services are provided. Carter and Bélanger's (2005) study of 106 citizens present in a community concert in the USA found that trust on internet services influenced e-government adoption. Torres (2008) found that e-government in European Union countries is becoming a powerful development tool. Gupta et al. (2008) found that social influence, which measures an individual's trust on the internet, affects e-government adoption and diffusion in India.

Shackleton et al. (2006) found that e-government adoption and diffusion model at the local government level in Australia is not applicable because the goal of the local government is to encourage collaboration and participation of local community members. Lau et al. (2008) found that Argentina, Brazil and Mexico were slowly trying to catch up with the development and provision of e-government services. Schwester (2009) found that the national government (US) has used different e-government applications to deliver e-government services; however, financial, technical and human resource problems are constraining the diffusion and adoption of e-government services. A study on 400 Jordanian's found that trust on internet services does not affect e-government adoption and diffusion (Alomari et al., 2012). Elbahnasawy's (2014) work based on panel data of many countries found that e-government use influences corruption, with two way relationships between internet use and corruption control.

Internet Use and E-government in Fiji, Jamaica and Mauritius

Ifinedo's 2005 qualitative study of African countries found that Mauritius has the best e-government services in the African region and is better equipped to meet the challenges of a globalized world. Joseph and Jeffers (2009) found that e-government relates to economic growth of the Caribbean Islands. Pathak et al. (2009) found that e-government can help to cut corruption in Fiji. Goundar (2009) found that the e-government website of Fiji is less interactive, but government and citizens of Fiji are unwilling to use e-government websites to make online payments. Rorissa and Demissie (2010) argued that in most parts of Africa, the use of e-government services is quite minimal as compared to the other parts of the world. This study identified the factors that contributed to low levels of e-government use in African countries: poor infrastructure development, low literacy rate (that constrains the use of information computer

technology), and a number of cultural and societal factors. Singh et al. (2010) studied 918 citizens in India, Fiji and Ethiopia and found that e-government has benefits for both large developing countries and small island developing countries. Unlike large developing countries, e-government in small island developing countries is underutilised; therefore, the benefits that e-government may have on the small island developing nations is limited. Brown and Thompson (2011) explored the policies and practices of e-government diffusion in the context of Jamaica and found that information computer technology infrastructure and government support for e-government services are two factors that demarcate the differences in the provision of e-government services between developed, developing and small island developing countries. Naidu and Chand (2013) found that information computer technology diffusion is related to the economic growth rate of the Pacific Island Countries.

There have been a number of studies on the trust in internet services and e-government adoption. However, there are very few studies that have examined the relationship between the number of internet users and e-government adoption and diffusion. This study seeks to fill this research gap by exploring the relationship between internet use and e-government diffusion in Fiji, Jamaica and Mauritius.

The Study

The main aim of this paper is to examine the relationship between internet use and e-government adoption in three small island developing countries; namely, Fiji, Jamaica and Mauritius. These three countries have been selected for two reasons. First, small island developing countries are receiving increasing attention on how information computer technology can be used to improve the competitiveness of these countries. Therefore, three small island developing countries were selected. Second, data for these three small island developing countries was easily available from international sources (like the United Nations Public Administration and World Bank database) than for other countries.

In this paper, internet use is an independent variable and e-government diffusion is the dependent variable. Following the study conducted by Zhao et al. (2014), e-government adoption in this study was measured by e-government development and participation index. Data on internet use was available from 2003 to 2014 and data on e-government diffusion was available from year 2003 to 2015. Internet usage data for the year 2015 was estimated by using a 3 period moving average method. Data collected in this study was analysed by using the Eviews8 software,

which is robust in handling time series data; therefore, panel data can be easily analysed by using this software.

To obtain robust results, both lagged and non-lagged effects were considered in this study. Lagged effect captures the short-run effect of internet use on e-government diffusion and non-lagged effect captures long-run effect of internet use on e-government diffusion. According to the normal distribution theorem, a sample size of more than 30 provides robust statistical results (Maas and Hox, 2005). In this paper, the data for each country was available for 13 year period; therefore, providing a sample size of 13. As per the normal distribution theorem, a sample size of 13 is insufficient to generate robust regression results. As a result of this, data for all the three countries were combined and analysis was conducted for all three countries. The results for all three countries presented in Tables 2 and 3 are based on the data for all three countries that has a cumulative sample size of 39.

Independent Variable

The independent variable in this study is internet use. Internet use was measured by the number of internet users per 100 people (see Bertot, 2003, 2009; Bertot and Jaeger, 2008; and Singh and Sahu, 2008). This is a good proxy for internet use. Internet users refer to those citizens who use internet, irrespective of the purpose of use and the type of connectivity that they have access to.

Dependent Variable

The dependent variable is e-government diffusion. E-government diffusion was proxied by e-government development and participation indices. E-government development index is calculated by a weighted sum of the online service index, telecommunication infrastructure index and human capital index. Each of these three factors is given a weight of 33.33%. The highest value that the e-government development index can take is 1 and the lowest value is 0.

The online service index measures the quality of online services. This index was calculated by examining the country's e-government websites. The equation for the online service index is given below (United Nations Public Administration, 2010):

$$\text{Online service index} = \text{website assessment score} \div \text{range} \quad (1)$$

In equation 1, range is calculated for the website assessment score. Telecommunications infrastructure index is the mean of the following variables (United Nations Public Administration, 2010):

- Personal computer use per 100 people.
- Internet use per 100 people.
- Telephone lines per 100 people.
- Mobile cellular subscriptions per 100 people.
- Fixed broadband subscriptions per 100 people.

There is no problem of double counting in this measure as people who have access to internet, personal computers and mobile phones simultaneously will contribute to better infrastructure of the country; therefore, a high value of telecommunications infrastructure index. Serious biasness in the measure will arise if these people are not included in each of the measures.

The human capital index measures the aggregate education level of citizens (Zhao et al., 2014). The equation for human capital index is as follows (United Nations Public Administration, 2010):

Human Capital Index= (0.6667 x adult literacy index) + (0.333 x gross enrolment index) (2)

In the above equation, adult literacy rate index is calculated by taking the adult literacy rate and dividing it by the range. Gross enrolment index is a combined measure of primary, secondary and tertiary enrolment. E-government participation index measures citizen's participation and engagement in the use of e-government services (Zhao et al., 2014).

Model Specification for the Short-run and Long-run Effects

This section will specify the short-run and long-run models that capture the effect of internet use on e-government diffusion. Following the studies conducted by Naidu (2016a, 2016b) and Kumar et al. (2015), this study proposes that the short-run effect of internet use on e-government diffusion is as follows:

$$Egove_t = \beta_0 + \beta_1 Inter_t + \varepsilon_t \qquad (3)$$

Here E-government diffusion is represented by e-gove$_t$ and internet use is represented by inter$_t$.

Similarly, equation 4 captures the short-run effect of internet use on e-government diffusion. Equation 4 is given as follows:

$$Egove_t = \beta_0 + \beta_1 Inter_{t-1} + \varepsilon_t \qquad (4)$$

In equation 4, t-1 captures the lagged or short-run effect of internet use on e-government diffusion.

Results

The descriptive statistics for e-government development and participation index and internet use is given in Table 1. The mean for e-government development index for Fiji, Jamaica and Mauritius for the period 2003 to 2014 is 0.46. On average, e-government participation index for Fiji, Jamaica and Mauritius for the period 2003 to 2014 is 0.119. On average, internet use per 100 people, for the period 2003 to 2015 is 21.68.

Table 1: Descriptive Statistics for E-government Development and Participation Index and Internet Use

DESCRIPTIVE STATISTICS	EGOV_DEV	EGOV_PART	INTER_USE
Mean	0.464410	0.119190	21.68299
Median	0.467200	0.085700	20.00000
Maximum	0.533800	0.529400	41.80000
Minimum	0.391200	0.000000	6.725435
Std. Dev.	0.043658	0.125186	12.24490
Skewness	-0.101266	2.206143	0.371441
Kurtosis	1.942250	7.358117	1.697442
Jarque-Bera	1.014872	33.65378	1.967466
Probability	0.602037	0.000000	0.373913
Sum	9.752600	2.503000	455.3428
Sum Sq. Dev.	0.038121	0.313429	2998.752
EGOV_DEV: E-government development EGOV_PART: E-government participation INTER_USE: Internet Use			

Table 2 shows the regression results for the long-run impact of internet use on e-government diffusion. In the long-run, a one unit increase in internet use is associated with a 0.005 unit increase in e-government participation index for all three countries (Fiji, Jamaica and Mauritius) at the 1% level of significance. In the long-run, a one unit increase in internet use for Fiji is associated with a 0.002 unit increase in e-government development index ($p<0.01$) and a 0.007 unit increase in e-

government participation index ($p<0.05$). Internet use does not have a statistically significant effect on e-government development and participation index for Jamaica and Mauritius.

Table 2: Long-run Impact of Internet use on E-government Diffusion

Variable	ALL 3 COUNTRIES		FIJI		JAMAICA		MAURITIUS	
	EGOV_DEV	EGOV_PART	EGOV_DEV	EGOV_PART	EGOV_DEV	EGOV_PART	EGOV_DEV	EGOV_PART
INTER_USE	0.001365 (1.805673)	0.005572 (2.833210)**	0.002592 (3.833831)**	0.007455 (2.825760)*	-0.000825 (-0.980369)	0.000435 (0.188665)	0.000636 (0.627849)	0.008267 (1.565881)
C	0.434822 (23.24095)***	-0.001618 (-0.033235)	0.380591 (24.72788)***	-0.044177 (-0.735743)	0.479364 (22.64297)***	0.089589 (1.545946)	0.487855 (18.37174)***	-0.035654 (-0.257458)
R-squared	0.146468	0.297001	0.746170	0.614938	0.161232	0.007069	0.073078	0.329038
Adjusted R-squared	0.101546	0.260001	0.695405	0.537926	-0.006522	-0.191518	-0.112307	0.194845
S.E. of regression	0.041382	0.107689	0.023128	0.090229	0.025880	0.070842	0.028308	0.147629
Sum squared resid	0.032538	0.220340	0.002675	0.040706	0.003349	0.025093	0.004007	0.108972
Log likelihood	38.13606	18.05189	17.61199	8.082932	16.82510	9.776174	16.19730	4.636448
F-statistic	3.260453	8.027081	14.69826	7.984922	0.961124	0.035595	0.394195	2.451985
Prob(F-statistic)	0.086839	0.010625	0.012200	0.036858	0.371927	0.857774	0.557659	0.178153
Mean dependent var	0.464410	0.119190	0.429157	0.095471	0.460957	0.099286	0.503114	0.162814
S.D. dependent var	0.043658	0.125186	0.041906	0.132736	0.025796	0.064900	0.026841	0.164525
Akaike info criterion	-3.441529	-1.528752	-4.460569	-1.737981	-4.235744	-2.221764	-4.056372	-0.753271
Schwarz criterion	-3.342051	-1.429274	-4.476023	-1.753435	-4.251198	-2.237218	-4.071826	-0.768725
Hannan-Quinn criter.	-3.419940	-1.507163	-4.651581	-1.928992	-4.426756	-2.412776	-4.247384	-0.944282
Durbin-Watson stat	0.512023	0.266451	1.286745	0.067938	2.256195	1.250221	1.022904	0.074147

Note: *** shows $p<0.001$; ** shows $p<0.01$; * shows $p<0.05$. Coefficients are provided and t-statistics are given in brackets.
EGOV_DEV: E-government development
EGOV_PART: E-government participation
INTER_USE: Internet Use

Table 3 shows the lagged effect of internet use on e-government development and e-government participation. In the short run, a one unit increase in internet use reduces e-government development by 0.002 units. The findings from the lagged effect of internet use captures short run effect of internet use on e-government development and e-government participation.

Table 3: Lagged Effect of Internet Use on E-government Development and E-government participation

Variable	ALL 3 COUNTRIES	
	EGOV_DEV	EGOV_PART
$INTER\_USE_{t-1}$	-0.002 (2.83)*	0.001 (1.80)
C	-0.001618 (-0.033235)	0.43 (23.24)***
R-squared	0.297001	0.146468
Adjusted R-squared	0.260001	0.101546
S.E. of regression	0.107689	0.041382
Sum squared resid	0.220340	0.032538
Log likelihood	18.05189	38.13606
F-statistic	8.027081	3.260453
Prob(F-statistic)	0.010625	0.086839
Mean dependent var	0.119190	0.464410
S.D. dependent var	0.125186	0.043658
Akaike info criterion	-1.528752	-3.441529
Schwarz criterion	-1.429274	-3.342051
Hannan-Quinn criter.	-1.507163	-3.419940
Durbin-Watson stat	0.266451	0.512023

Note: *** shows $p<0.001$; ** shows $p<0.01$; * shows $p<0.05$. Coefficients are provided and t-statistics are given in brackets.
EGOV_DEV: E-government development
EGOV_PART: E-government participation
INTER_USE: Internet Use

Discussion and Conclusion

This study found that in the long-run, internet use is positively related to on e-government development and participation index in Fiji but not in Jamaica and Mauritius. In other words, the number of people who use internet in Fiji, and the adoption of e-government services move in the same direction. As the demand for e-government services increases, the government of Fiji will need to play a significant role in developing e-government infrastructure that is needed by the citizens of Fiji. There are two reasons for this. First, Fijians who use internet know that they can rely on the information that is provided online on government websites. But presently, Fiji government's website is not interactive. However, citi-

zens are able to trust the online system as they do not have to make payments online (Kumar, 2009). It is argued that when citizens have to make payments online, the level of trust on the e-government website decreases as security issues become critical (Goundar 2009).

Second, if the demand for e-government services increases, the government will need to setup proper e-government structures and make e-government websites more interactive. Government information computer technology officers have to develop e-government websites based on unique demands from citizens.

The results for Fiji confirm the results of Singh et al. (2010), which found that internet use is a significant predictor of e-government diffusion. The policy implication is that the government should encourage more citizens to use the internet. Singh et al. (2010) highlighted that there was limited use of e-government services by Fijians. There are a number of reasons for this. First, Fiji has a collective culture, hence, people in Fiji are less responsive to risk taking behaviour (Naidu and Chand, 2015), and thus reluctant to use technology. Second, the education level of people on using information computer technology is relatively low. Third, people still do not have confidence on the sustainability of governments e-services.

Interestingly, however, results show that the link between internet use and e-government diffusion does not hold for Jamaica and Mauritius. In Jamaica and Mauritius, using internet services does not imply that the users will participate in e-government services. Thus points to other factors, apart from internet use, which affects e-government development and participation index.

Rorissa and Demissie (2010) found that poor infrastructure development, low literacy rate and a number of cultural and societal factors affect e-government diffusion in African countries. But both, Mauritius and Jamaica have greater literacy rates and much better infrastructure development than African nations. Brown and Thompson (2011), on the other hand, concluded that information computer technology infrastructure and government support for e-government services are two factors that affect e-government diffusion. In Mauritius, factors apart from internet use, which is captured by the error term of the regression model, have a greater impact on e-government diffusion. The information computer technology infrastructure and government support for e-government services is captured by the error term of the regression model presented in Table 2.

Further research in these factors, therefore, needs to be undertaken. Ultimately, e-government development is a long run rather than a short run phenomenon. Internet is a technology that is mostly used by younger generation for entertainment and communication purposes. It takes younger generation longer for independent decision making, thus lover to resort to e-governance.

This study extends the trans-theoretical model of behaviour change in two ways. First, it found that internet use and e-government diffusion are related in Fiji. According to Hailes (2008), self-efficacy is an important component of the trans-theoretical model of behaviour change. If citizens have trust on the internet system, they will have confidence that they will be able to change their behaviour and adopt e-government services. Internet use is technology-enabled communication; likewise e-governance is also technology enable activity. Confidence in use of technology for carrying out daily activities would need to be established. The trans-theoretical model of behaviour change argues that people's decision to change their behaviour is their own decision rather than the decision of others (Hailes, 2008). Similarly, even though people in Jamaica, Mauritius and Fiji may have similar statistics on internet use, their decisions on whether to adopt e-government services or not, is their personal choice. The factors affecting these personal choices need further examination.

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