Linking e-Government with Citizen Satisfaction through Transparency, Accountability and Transformation of Government: An Empirical Study in Thailand

Sakapas Saengchai[a], Thanaporn Sriyakul[b], Kittisak Jermsittiparsert[c*], [a]Faculty of Humanities and Social Science, Suan Sunandha Rajabhat University, Thailand, [b]Faculty of Business Administration, Mahanakorn University of Technology, Thailand, [c]Social Research Institute, Chulalongkorn University, Thailand, Email: [c*]kittisak.j@chula.ac.th, [a]sakapas.sa@ssru.ac.th, [b]ajbamut@gmail.com

The aim of this study is to identify the impact of e-Government (EG) on Citizen Satisfaction (CS), and explore the mediating role of transparency, accountability and transformation of Government (TG) between e-Government and citizen satisfaction. Out of a total of 303 respondents to this research, 125 respondents were male, and 178 were females, showing a majority of female respondents. Out of the total of 303 respondents, twenty-three had completed their higher education graduation, 148 respondents had completed their higher education post-graduation, 122 respondents had completed their masters and ten respondents had other degrees. This study has conducted an analysis on how important it is for EG to satisfy the general public, because the system is introduced for the general public. It is the first priority of the state to satisfy the general public, if they want this system to operate officially. Therefore every action needs a reaction and this system ensures that the public is satisfied and following the systems. It would be of great assistance for not only this generation, but also future generations.

Key words: *E-Government, Citizen, Satisfaction, Transparency, Accountability, Government.*

Introduction

Rapidly advancing ICT has facilitated the worldwide development of electronic government services (Lee, 2010). According to Sigwejo and Pather (2016), governments are transforming the traditional government-oriented service delivery models, to citizen-centered service delivery. This adds value by encouraging two-way communication between the government and their citizens. However, several studies have shown that e-government initiatives usually face failures in developing countries, such as Thailand, due to a variety of factors (Aladwani, 2016; Anthopoulos, Reddick, Giannakidou, & Mavridis, 2016; Chatfield & Alhujran, 2009; Okunola, Rowley, & Johnson, 2017; Sigwejo & Pather, 2016). The major reasons for such failures include the digital divide (Malisuwan, Kaewphanuekrungsi, & Milindavanij, 2016b) and low penetration of broadband-internet (Sigwejo & Pather, 2016).

To achieve citizen satisfaction, every public institution must understand the needs of citizens, measure their expectations and verify that provided services actually meet these expectations (Daunorienė & Žekevičienė, 2015). Many recent studies are being conducted on citizen satisfaction because it is linked with e-government adoption (Bernhard, Norström, Lundh Snis, Gråsjö, & Gellerstedt, 2018; Carter, Weerakkody, Phillips, & Dwivedi, 2016; Rana, Dwivedi, Lal, Williams, & Clement, 2017).

Transparency, in terms of this research, can be defined as open communication between citizens and government (Abu-Shanab, 2013). Bagdai, Van der Molen and Tuladhar (2012) argue that transparency is the pathway to adopt, if governments want to reduce the reservations that citizens have against them. Transparency is the precondition for accountability to exist (Gabriel et al., 2019). Accountability, in terms of this research, means to hold the government answerable based on transparent information available. Figure 1 maps this relationship between transparency and accountability.

Figure 1. Relationship between information transparency and accountability
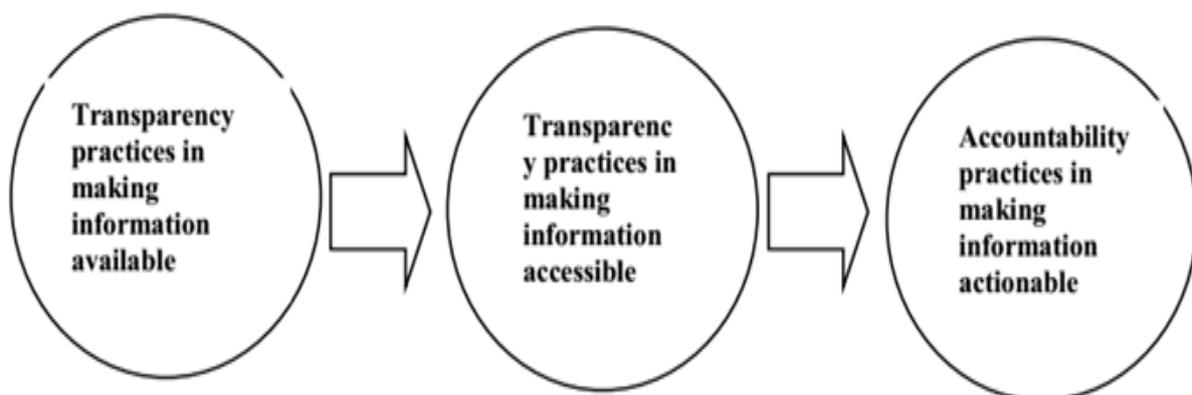
Source: Gabriel (2017)

The term transformation of government is used to represent any reform strategy of a government. Mahmood, Weerakkody, and Chen (2018) define the transformation of government in terms of ICT enabled transformation. This can be explained as the improvements in the way government processes occur and deliver their services to citizens, as an outcome of changes in the structure as well as the functioning of core processes of a government.

In today's world of rapid evolution, developing countries like Thailand, are striving hard to meet up with the ongoing ICT revolutions. Governments of developing countries wish to create nation-wide e-governance systems, but a lack of citizen satisfaction lowers the levels of adoption of strategies. Many studies have been conducted to study the factors influencing citizen satisfaction with e-government services (Daunorienė & Žekevičienė, 2015; Malik, Shuqin, Mastoi, Gul, & Gul, 2016; Yap, Ahmad, Mason, & Newaz, 2017). This research aims to study how the citizen satisfaction can be achieved by using e-government and the effect of transparency, accountability, and transformation of government on citizen satisfaction from e-government. The objectives of this study are:

1) Analysing the impact of e-government systems on the levels of citizen satisfaction in Thailand.
2) Analysing the mediating role of transparency between e-government and the levels of citizen satisfaction in Thailand.
3) Analysing the mediating role of accountability between e-government and the levels of citizen satisfaction in Thailand.
4) Analysing the mediating role of transformation of government between e-government and the levels of citizen satisfaction in Thailand.

The scope of this research is to study how e-government can bring about citizen satisfaction in developing countries like Thailand. Existing studies conducted in this research area have made positive contribution to the e-government literature. This has been achieved by presenting theoretical models of measuring citizen satisfaction levels (Dwivedi et al., 2017; Gupta, Singh, & Bhaskar, 2016; Magoutas & Mentzas, 2010) and by discussing factors that influence citizen satisfaction (Kurfalı, Arifoğlu, Tokdemir, & Paçin, 2017; Rana et al., 2017; Sigwejo & Pather, 2016; Walther, Weber, & Kabst, 2018), so that governments can deploy practical strategies to help achieve e-governance adaptation. The author of this paper will discuss theoretical modelsfor linking e-government and citizen satisfaction, and formulate a research model and hypothesis accordingly.

Literature Review

Citizen Satisfaction Model (EGOVSAT)

Many theoretical models exist that can help measure and predict citizen satisfaction; TAM, UTAUT and DOI are three of these models. TAM is the model that explains the factors that influence user's behaviour of adopting a new technology, while all other technology acceptance models have been built by taking TAM as the baseline. Abhichandani and Horan (2006) present a relatively new model to evaluate success of e-government linked to citizen satisfaction called EGOVSAT. This model promotes trust, openness of data and a citizen-centered service delivery. According to this model, satisfaction of users generates some extended emotional responses, such as confidence in government or frustration. This model was created for the measurement of satisfaction of users from G2C initiatives. It is a quantitative model that uses structural equation modelling, to propose a general fit by capturing different constructs like efficiency, utility and user-based customization. Sheibani and Fariborzi (2011) expand this theoretical model to include performance features like reliability, efficiency, accessibility, completeness, openness and usability. These features show a significant effect on citizens' satisfaction with their government. This model promotes trust, confidence, openness of data and a citizen-based service delivery.

E-Government and Citizen Satisfaction in Thailand

A commonly occurring issue in developing countries, is that they often have a weak government infrastructure and citizens have an in-built lack of trust in such systems. Moreover, developing countries usually have an uneven distribution of technical knowledge. Thailand, being a rapidly developing country, has been fighting with failed e-government initiatives due to various issues like digital divide, lack of trust in government agencies, lack of technical knowledge and uneven distribution of e-government initiatives (Jareonsubphayanont & Narot, 2016; Malisuwan, Kaewphanuekrungsi, & Milindavanij, 2016a; Sagarik, Chansukree, Cho, & Berman, 2018).

The concept of citizen satisfaction can be thought of in terms of customer satisfaction theories, due to the similarity in customer-to-businesses interactions and citizen-to-government interactions. Government agencies need to perform statistical and analytical studies to find out the problematic areas and their possible solutions, so that national level e-government implementations can occur in Thailand. The key to achieve this ideal scenario is to develop high levels of customer satisfaction by introducing polices of open flow of information, improving the quality and availability of e-services and improving the overall quality of e-service systems. Service quality creates user satisfaction, system availability and economic as well as social benefits for the users. If the e-government systems provide users with e-services

that can save their transportation cost and time, ensure the security of their data and openness of the system functioning, then they can invoke intent of use in the citizens. This behavioural intent of use will allow for a willingness to learn the technologies and eradicate any fears and mistrust issues that the citizens have with their government. Quality of information also plays the key role in the achievement of a good user experience. The data in the e-government portals must be secure, reliable and must always be updated simultaneously. This ensures a seamless service delivery. Thus, we can hypothesize that if e-government systems have high quality, they will positively affect citizen satisfaction; whereas low service quality, will have the opposite effect.

H1: Implementation of e-government systems have a significant impact on the levels of citizen satisfaction.

Mediating Role of Transparency and Accountability between E-Government and Citizen Satisfaction

As already discussed, transparency and accountability are functions of each other. Accountability cannot exist in its best form, in a system that lacks openness and transparency. A transparent system is one that does not withhold how it functions, what data it needs from its users, and how it aims to use the data and any other such process details. Accountability in a system, allows users to gain trust in the system and associate it with reliability (Fadah, Kurniawati, & Titisari, 2017).

While tailoring e-government services, the agencies keep the socio-political as well as the geographic, and specific needs of both the government in question and their people are met. E-government portals are designed in a way that allows the user to be knowledgeable of the internal functions of the system. Thus, transformation of physical government services to e-government services, can make way for transparency and accountability in the overall government sectors. Citizens will be knowledgeable about the way their information is being used, who is using it and what services can they get in exchange of this data. This transparency can be linked with accountability in government sectors, as well as it will allow the citizens to monitor the services and will invoke responsibility in public employees (Park & Blenkinsopp, 2011).

Transparency and accountability value created in the government network will thus have an impact on the overall citizen satisfaction levels, by invoking trust in the government. Rawlins (2008) argues that trust in the government, can enhance the satisfaction of citizens and plays a vital role, along with transparency and accountability, to create a satisfactory relationship between citizens and government. Thus, we can hypothesize that transparency and

accountability have a mediating effect on citizen satisfaction in relationship to e-government systems.

H2: Transparency plays a mediating role between e-government systems and the levels of Citizen Satisfaction.

H3: Accountability plays a mediating role between e-government systems and the levels of Citizen Satisfaction.

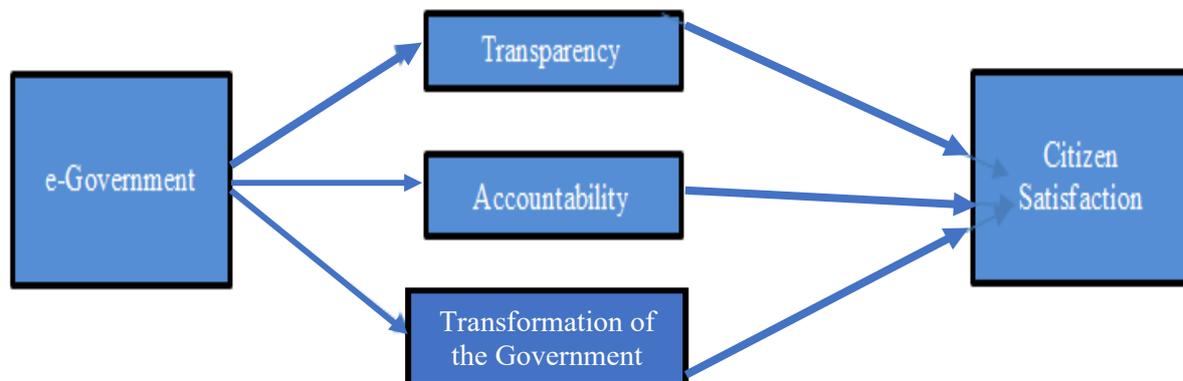### *Mediating Role of Transformation of Government between E-Government and Citizen Satisfaction*

With changing socio-political demands, the policies of government in any country are transformed (Samanta, 2018). A transformed government must have some change in its infrastructure and functioning that is usually used to represent a reform strategy in government. Such strategies are meant to change the way people understand and view the internal and external functioning of government bodies. In terms of this paper, the transformation of government is basically the transformation of physical infrastructure to e-government in the context of Thailand (Sagarik et al., 2018).

The rapidly increasing trends of e-government systems has taken root in Thailand. The government is vigorously trying to overcome issues like digital divide and technical illiteracy, so that e-government initiatives can succeed in the country. Booming e-government technologies have forced the government bodies to drop their old ways and adopt digital changes. The transformed infrastructure of e-government has a high level of in-built transparency and accountability values. In addition, the e-government transformation has provided the citizens with easy to use and reach services, with the benefits of reduced cost and time usage. Citizens are becoming increasingly involved with the usage of e-government due to the infrastructure transformation.

The transformation of governance has invoked higher levels of satisfaction in citizens. The underlying causes of this increase in satisfaction is increased trust in the system and belief that accountable actions can be taken, due to an open flow of processes. The citizens perceive the transformed system as transparent and secure, easier to use and reach, compared to traditional infrastructure. Also, e-government initiatives ensure anti-corruption due to openness of information, data and functioning of government bodies. All these points assist us to hypothesise that transformation in governance plays a mediating role between e-government and citizen satisfaction levels.

H4: Transformation of government plays a mediating role between e-government systems and the levels of citizen satisfaction.

Research Model

Research Methodology

Population and Sample

Researchers observed the impact of e-Government on citizen satisfaction in mediating the role of transparency, accountability and transformation of the government. Researchers selected Thailand as the study population, because Thailand government has been practicing e-Governance policies for a long time. This enables data collection from Thailand people that is very beneficial, because they have a clear idea about the functionality and practice of e-Governance policies. Moreover, government organizations of Thailand use the sampling frame of this proposed study and researchers collect data from employees of organisations about the mediating effect of transparency, accountability and transformation of government on the relationship of e-Gov and citizen satisfaction. Convenient sampling technique has been used for a sample selection, because it enables the selection of respondents more conveniently. The sample size in this study is 345, it has been calculated on the bases of Klein's (2015) idea regarding the number of questions*10. 345 questionnaires have been distributed, but after the whole procedure only 245 valid responses have been collected.

Data Collection Procedure

In the proposed study, researchers processed the data collected through a survey questionnaire as it enables the researchers to collect numeric and primary data. Researchers adapted the survey items from research of authors in previous literature and checked that language is in accordance to the proposed study. Content validity of scale has also been verified by collecting feedback of industrial practitioners. Moreover, a pilot study has been conducted before finalising the questionnaire because researchers checked whether survey items are understandable or not. The finalised questionnaire is administered through two techniques, online and self-administration techniques. Researchers ensured that all queries related to specific terms in the questionnaires were corrected as soon as possible.

Measurement Model

AMOS has been used to evaluate the validity of the measurement model and criteria have been examined for the evaluation of convergent validity. These are; (1) average variance extracted, threshold range for this is greater than 0.50, (2) factor loading λ, its value has to exceed the specified limit 0.70. Discriminant validity has been assessed on the grounds of criterion such as square root of AVE and has to be greater than inter-related coefficients of all other constructs. Reliability of the measurement model has been evaluated with SPSS, and it has been examined with criteria such as Cronbach's α and composite reliability. Both must have values greater than 0.70, for ensuring internal consistency and items reliability respectively.

Researchers have to be vigilant while selecting the suitable option for diagnosing the existence of CMB, because due to the corruption of measures in the same direction, outcomes may get contaminated. Researchers used Harman's single factor test, which evaluate the variables on the ground of criterion such as inexistence can only be ensured if not more than 50% of variance is accounted by a single factor. Only 19% of variance accounted for by a single factor so inexistence of CMB is ensured.

Measures

To measure the independent, dependent and mediating variables of the proposed study, researchers adapted measures from earlier studies of different authors, because these measures are reliable and valid. Researchers adapted the different number of items for different variables, such as; e-governance researchers adapt 4 items from Pathak, Singh, Belwal, Naz, & Smith, (2008), for transparency of governance 3 items have been adapted from Paul, Juric, Kuljis, & Adeshara, (2004), for accountability of governance 2 items adapted from Rajput, Aharwal, Dubey, Saxena, & Raghuvanshi, (2011), for transformation of governance 2 items adapted from Sakowicz, (2003) and for citizen satisfaction researchers adapt 4 items from Shalini, (2009). For these survey items, responses have been recorded over 5-point Likert scale, in which responses categorized in range from 1 strongly disagree to 5 strongly agree.

Hypothesis Testing

In this section, researchers described the procedures with which they tested the hypotheses of the proposed structural model. As the researchers have to narrate what hypothesis is rejected or accepted, they take into account the structure equation modelling for analysing the relationship among the hypotheses. SEM works under AMOS and approach with which researchers test the hypotheses is path analysis approach. Researchers performed the analysis in two steps; checking the significance of influenced paths and checking the standardization of

paths. After performing the tes,t researchers report which hypothesis is negatively related or which hypothesis is positively related.

Data Analysis and Interpretation

Demographical Details of the Respondents

Out of the total 303 respondents of this research, 112 of the respondents were between the age of 21 to 30 years, 99 of the respondents were in the age range of 31 to 40 years, 91 of the respondents were between the age of 41 to 50 years, and lastly 1 of the respondent was more than 50 years old in age.

Descriptive Statistics

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
E_Gov	303	1.00	5.00	3.5886	1.08333	-.884	.140
Trans	303	1.00	5.00	3.5495	1.13640	-.755	.140
Accou	303	1.00	5.00	3.5866	1.10898	-.823	.140
TrEGo	303	1.00	5.00	3.5802	1.06759	-.856	.140
CitiSat	303	1.00	5.00	3.4554	1.12778	-.561	.140
Valid N (listwise)	303						

Table 1. Identifies descriptive statistics of the study. The descriptive statistics are a detailed description of the variables and they summarise descriptive coefficients. This set of given data represents the entire sample of the population. The data identifies that there is no outlier in the given data, because maximum values are in the threshold range of 5-point Likert scale and skewness value is between -1 to +1. This shows a threshold range of normality, so the data is normal and valid, enabling further testing.

Rotated Component Matrix

Table 2: Rotated Component Matrix

	Component				
	1	**2**	**3**	**4**	**5**
EG1	.723				
EG2	.772				
EG3	.842				
EG4	.838				
EG5	.827				
EG6	.806				
TP1					.773
TP2					.819
TP3					.819
TP4					.809
AC1				.809	
AC2				.839	
AC3				.874	
AC4				.804	
TF1			.781		
TF2			.804		
TF3			.801		
TF4			.827		
TF5			.810		
CS1		.817			
CS2		.839			
CS3		.879			
CS4		.892			
CS5		.905			

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Table 2. Shows in the rotated components matrix that almost all of the indicators have a factor loading of more than 0.7. This means that all the indicators are eligible to be exposed to further hypothesis testing techniques, as all the factors are in suitable threshold level and are in suitable and a valid sequence range. This data is able to be further tested and there is no cross loading in the data shown in the RCM. This data is reliable.

Convergent and Discriminant Validity

Table 3: Convergent and discriminant validity

	CR	AVE	MSV	MaxR(H)	TF	EG	TP	AC	CS
TF	0.933	0.736	0.371	0.934	**0.858**				
EG	0.946	0.745	0.373	0.970	0.568	**0.863**			
TP	0.939	0.793	0.373	0.980	0.609	0.611	**0.890**		
AC	0.937	0.788	0.360	0.985	0.520	0.534	0.600	**0.888**	
CS	0.912	0.800	0.233	0.990	0.474	0.483	0.380	0.428	**0.895**

A validity master sheet was used to confirm the convergent and discriminant validity of the research model variables. Discriminate validity provides the discrimination between variables, while the convergent validity was measured with the help of composite reliability and average variance extracted. The results of the validities are shown in Table 3. The results and convergent and discriminant validity show that the overall model is a good fit because the composite reliability of each variable is more than 70%, and average variances extracted is more than 50%, while the discriminant validity show that loading of each variable discriminates from others. Every variable has maximum loading with itself as compared with others so, these validities prove the authenticity of the collected data.

Confirmatory Factor Analysis

Table 4: CFA

Indicators	Threshold range	Current values
CMIN/DF	Less or equal 3	2.120
GFI	Equal or greater .80	.877
CFI	Equal or greater .90	.963
IFI	Equal or greater .90	.963
RMSEA	Less or equal .08	.061

Table 4 is a Confirmatory factor analysis (CFA) which is used to confirm the fitness of the hypothetical model before structural equation modeling. Current results are showing that CMIN is less than 3, GFI is more than 0.80, CFI is greater than 0.90, IFI is greater than 0.90, and RMSEA is less than 0.08. Therefore the data is in a valid range and is reliable for further testing. Following is the screenshot of CFA in Figure. 1.

Figure 2. CFA
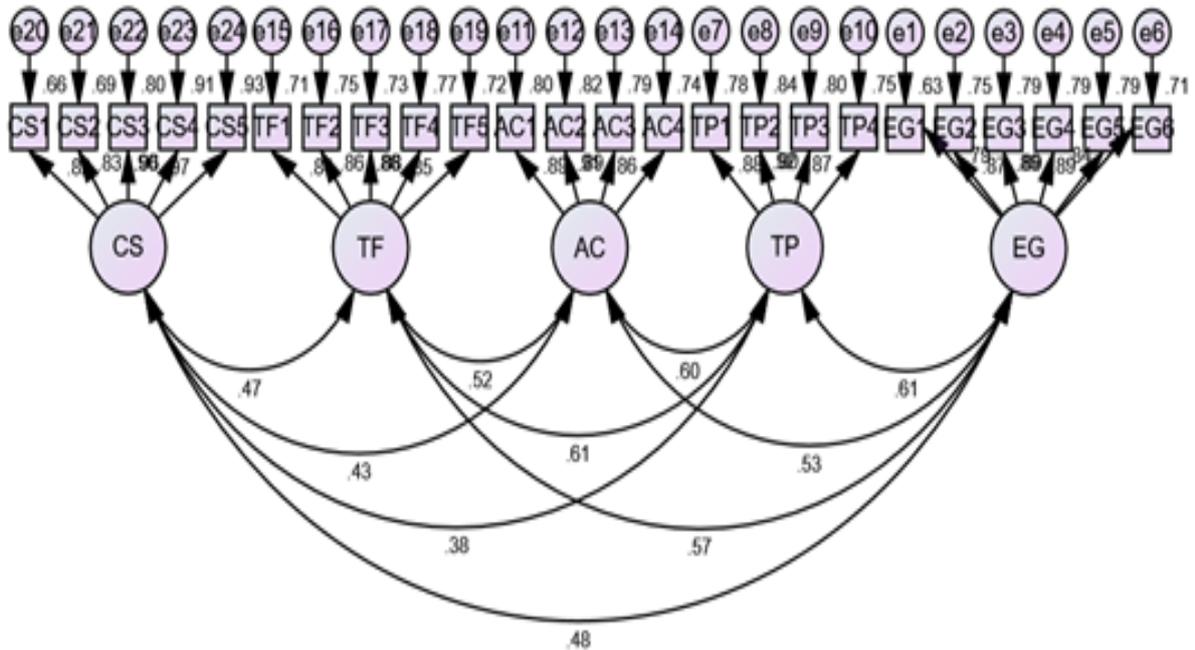
SEM

Table 5: SEM

Total	E_Gov	TrEGo	Accou	Trans
TrEGo	.533***	.000	.000	.000
Accou	.508***	.000	.000	.000
Trans	.588***	.000	.000	.000
CitiSat	.473***	.254**	.179**	-.038
Direct	E_Gov	TrEGo	Accou	Trans
TrEGo	.533***	.000	.000	.000
Accou	.508***	.000	.000	.000
Trans	.588***	.000	.000	.000
CitiSat	.269***	.254**	.179**	-.038
Indirect	E_Gov	TrEGo	Accou	Trans
TrEGo	.000	.000	.000	.000
Accou	.000	.000	.000	.000
Trans	.000	.000	.000	.000
CitiSat	.204***	.000	.000	.000

The impact of EGov on TrEGo is significant and positive. The impact of EGov on Accou is significant and positive. The impact of EGov on Trans is significant and positive. The impact

of EGov on CitiSat is significant and positive. The impact of TreGo on CitiSat is significant and positive. The impact of Accou on CitiSat is significant and positive. The impact of Trans on CitiSat is significant and positive.

Figure 3. SEM
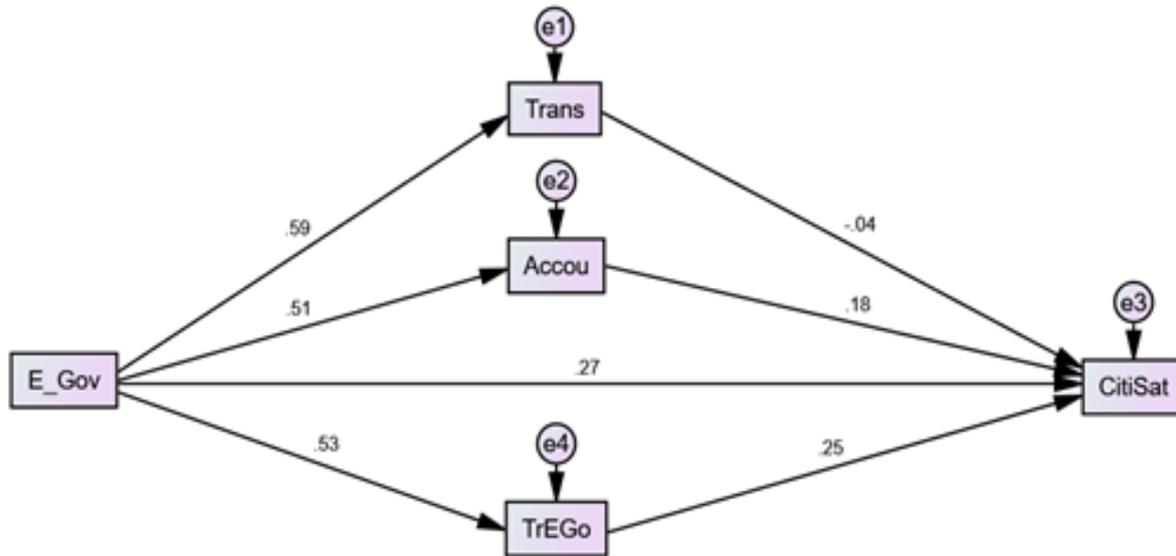
Discussion and Conclusion

Discussion

The aim of this study is to identify the impact of e-Government (EG) on citizen satisfaction (CS), and the mediating role of transparency, accountability and transformation of Government (TG) between e-Government and citizen satisfaction. The first hypothesis proposed was that, 'The impact of EG on CS is significant.' According to the study of D'agostino, Schwester, Carrizales, & Melitski, (2011) this hypothesis is acceptable because of the positive and significant relationship between EG and CS and because of the impact of EG, CS increases twice. The second hypothesis, show that "The mediating role of transparency between EG and CS is significant." According to the study, this hypothesis is rejected due to an insignificant relationship. The third hypothesis proposed is that, "The mediating role of accountability between EG and CS is significant", According to Meijer (2015), this hypothesis is acceptable because of the significant and positive mediating role of accountability. The fourth hypothesis proposed is that, "The mediating role of Transformation of government between EG and CS is significant." This hypothesis is accepted according to the study of Patrutiu-Baltes (2016), because of positive and significant mediating role of TG.

Conclusion

The aim of this study was to identify the impact of e-Government (EG) on Citizen Satisfaction (CS) and the mediating role of transparency, accountability and transformation of Government (TG) between e-Government and citizen satisfaction. This study was conducted in Thailand, with a sample size of 303 people. Most of the respondents were young, had their post-graduate degrees completed and the majority were females. This study analyses how important it is for EG to satisfy the general public because the system is introduced for the general public, It is the first priority of the state to satisfy the general public, if they want this system to be operated officially. The system must be transparent to the public and the state must make sure that they are accountable what is lacking in their systems. Every action needs a reaction, and this system ensures that the public is satisfied and following the systems. This research assists current generations and future generations. It is a two-way process by the state and the public both must make it successful by making it a ritual and tradition and forgetting the old norms and traditions.

Implications of the Study

If this system is adopted it will change the situation in Thailand. Thailand will experience a new world of electronic media and Thailand will witness the coming together of state and government. The crime rate will drop to such an extent that bills passed by government will finally have an impact, because of the speed, and evidence capabilities of electronic media. The bills that are passed will not have be rechecked or revised, because everything would be transparent between the state and the public. Safety, sanity agreement, and mutual benefits will become the priority of Thailand, which will enable Thailand to develop powerfully and competitively, with the other leading countries. This implication demands the familiarity of electronic media to the public. The government needs to start with small projects such as making phone applications and selling them to the play stores of major companys and to local companies. The general public can also be made familiar to how it works and they should make it part of their routine. Gradual understanding will not only help graduates, but also older illiterate people and pre-graduate students, and make it common place in the country. The more accessible it is, the more it will come in regular practice.

Limitations of the Study

To make this happen practically will cost a lot and Thailand must come up with strong policies for funding, which is not highlighted in this paper. It requires a large budget so Thailand must come with great preplanning and alternatives. The drawbacks are also not discussed in this paper, concerning if the money was invested and then it didn't work. This plan would need alternatives and pre planning by experts to make it happen on a large-scale to avoid risks and

losses. The country also needs to make contracts with telecom companies to come up with strong economical packages to provide fast Internet, so that all people can have access. Every region of the country should have access to the internet so it can part of the system. It is therefore recommended, that future researchers address these issues.

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