

DETERMINANTS OF CITIZEN'S INTENTION TO USE ONLINE E -GOVERNMENT SERVICES: A VALIDATION OF UMEGA MODEL

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Abstract: The aim of this research is to determine the citizen intention on online e-government services. The unified electronic government model (UMEGA) was used in the existing study to investigate in details regarding the individual attitude towards the intention. In addition, the trust factor was investigated as per the strong recommendations of previous researchers. In total of 396 valid responses have been taken from the tax-payers citizens of the Thailand. The findings of the study revealed that the attitude and trust are strong predictor of intention and attitude mediates among the relationship of trust and intention. Furthermore, the limitations of the study along with the future recommendations are also mentioned. Finally, practical implications are also discussed.

Key words: unified model of electronic government adoption (UMEGA Model), trust, attitude, intention to use e-government services

DOI: 10.17512/pjms.2019.20.1.10

Article history:

Received September 2, 2019; *Revised* November 6, 2019; *Accepted* November 23, 2019

Introduction

Now a day the citizens of any country are apt to be more contemptuous and skeptical towards the government around the globe (Bere, 2015). On the positive node, these expectations from the general public can help the government authorities to develop such mechanism or strategies to fulfil the desired high requirements of the public towards the public organizations. E-government also known as electronic government is a tool to offer online government related services to the citizens and has significant impact on the individual attitude leads towards the usage of e-government services (Zahid and Haji Din, 2019). Numerous prior researchers have different affirmative views on e-government like ease to use or convenient for access or retrieve data and information easily (Schaupp and Carter, 2010).

According to the United Nations e-government Survey Report 2016, the ranking of Malaysia was 60th, Qatar at 48th, Turkey at 68th and Portugal at 38th. Additionally,

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the UN e-Government Survey Report 2018, the ranking of Malaysia was 48th, Qatar at 51th, Turkey at 53th and Portugal at 29th. These rankings have shown that Thailand rankings were lower as compared with other countries of same region of Asia. In the line of the present study, the unified model of e-government adoption UMEGA model is used as underpinning because of the frequent use in investigating those factors have better understanding towards the e-government settings. The construct of trust is incorporated in the proposed conceptual framework and attitude was tested directly with ITUEG services and mediator among the relationship of trust and ITUEG services among the citizens of Thailand.

Table 1: e-Government Rankings of Thailand (United Nations e-Government Survey Reports (2016-2018))

SN	Countries (High EGDI)	Region	UN Rankings	
			2016	2018
1	Malaysia	Asia	60	48
2	Qatar	Asia	48	51
3	Turkey	Asia	68	53
4	Thailand	Asia	77	73
5	Portugal	Asia	38	29

Note: EGDI=Electronic Government Development Index

Literature Review

Attitude is defined as “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question” (Ajzen, 1991). According to Strahan et al. (2002) “human intentions (positive or negative) firstly initiated from attitudes then the feelings (positive or negative) forecasting to specific behavior”. Several past researchers have used the construct of attitude in different technology adoption theories like TRA (Fishbein), TAM (Davis, 1989), TBP (Ajzen, 1991), DTPB (Taylor and Todd, 1995) for its measurement towards intention to use particular systems. TRA defines attitude as “a person's behavioral intention is jointly determined by the individual's attitude and subjective norm concerning the behavior in question” (Fishbein). Similarly, the TAM postulates attitude as “an individual's behavioral intention is determined by the individual's attitude toward using the system” (Davis, 1989). Additionally, Nripendra P Rana et al. (2015) conducted research on PAN card online users among the different districts of India. Probability sampling techniques was employed to collect data from the citizens of the India along with the support of the DTPB. The study concluded that the attitude played significant role towards the adoption of any e-government services among the end-users i.e. the citizens of the various districts of India. Therefore, from the abovementioned discussion regarding the construct of attitude towards the intention the following hypothesis is formulated to test the relationship;

H1: “Attitude significantly and positively influence the ITUEG services”

Carter and Bélanger (2005) defined trust as *“is an important determinant of citizens’ intent to use e-government services, Utilization of e-government services compatibility, trustworthiness and perceived ease of use all have direct positive relationships with citizens’ intent to use e-government services”*. In addition, trust is defined by Bélanger and Carter (2008) *“is the perception of confidence in the electronic marketer’s reliability and integrity. This perception usually involves concerns related to security and privacy”*. Once the web interface is considered then the initial trust of the individual has the foremost factors towards the behavioral intention. Numerous researchers have conducted and empirically investigated the trust factors on different fields like e-commerce. In addition, the individual on the initial level must have not trust the web site and their relationship become weak to develop the long term relationship (McKnight et al., 2002).

The prior literature indicated that trust level must be enhanced to win the trust of the individuals while using the online services or web based services. A lot of insecurities like *“mishandling the information, privacy, security and personal data”* came across the mind of the individual while using the online services. The individual hesitate to share the personal information because of insecurity in their minds. Therefore, the trust level must be enhanced and more investigated in the future studies (Bélanger and Carter, 2008; McKnight et al., 2002; Zahid and Haji Din, 2019). From the above mentioned discussion the following hypothesis is formulated to test the relationship of the existing study.

H2: “Trust significantly and positively influence the ITUEG services”.

Attitude is defined as *“a person’s behavioral intention is jointly determined by the individual’s attitude and subjective norm concerning the behavior in question”* (Ajzen, 1991). In the arena of public management or public administration, several studies have investigated the relationship of attitude and intention and recommended to further investigated attitude in causal relationship *“attitude as a mediator”* *“For example, analyzing users’ acceptance of mobile e-government services in Taiwan”* (Hung et al., 2013; Hung et al., 2009). The study conducted by Dwivedi et al. (2017) have examined various antecedents of attitude *“i.e. performance expectancy, effort expectancy, social influence, perceived risk”* leads towards the intention towards the usage of technology adoption services. The researcher strongly recommended to investigate the construct of attitude as a causal relationship in the future researchers especially the technology adoption services. Therefore, the present study has investigated attitude as mediator among the relationship of trust and the ITUEG services among the citizens. From the above mentioned discussions and recommendation by the prior researchers the following hypotheses were formulated;

H3: “Trust significantly influence the attitude”

H4: “Attitude mediates the relationship among the trust and ITUEG services”

Research Methodology

In the line of the present study, the researcher has employed the survey method to test as well as to analyze the proposed research model. The respondents of the study were the tax payer's citizens of Thailand. The citizens those were paying the annual taxes to the government of Thailand. Therefore, the self-administrative questionnaire technique was employed to collect data from the respondents of the study. Firstly, the questionnaires were distributed through emails but the response rate was very low as less than five (5) percent. Then the self-administrative questionnaires were distributed with the help of some personals for the collection of data from the target population. Probability sampling and non-probability sampling are the two techniques used by the prior researchers while collecting the data. In addition, seven (7) Likert scale "from 1 (strongly disagree) up to 7 (strongly agree)" has been used to take response from the respondents of the present study. The measurements of the variables of the study have been taken from the previous studies conducted by different researchers. The items of intention were adapted from (Taylor and Todd, 1995) attitude were adapted from the (Nor, 2005), questions of trust have been adapted from the study of (Nor, 2005).

Results

According to Hair Jr et al. (2016), the second generation multivariate analysis techniques are considered more suitable, robust and significant as compared to the first generation analysis techniques. Therefore, structural equation modeling (SEM) is considered as a influential multivariate analysis technique to investigate the structured relationship. Several statistical methods or techniques like "factor analysis, regression analysis, Path analysis and discriminant analysis" can allow the researchers to examine various relationship among the endogenous and exogenous variables (Chin and Marcoulides, 1998). Numerous past researchers have reported that the second generation analysis technique is far better in terms of "accuracy, efficiency and convenience" as compared to the first generation multivariate analysis techniques (Ali et al., 2019; Zahid and Haji Din, 2019). In addition, the second generation analysis technique especially the SEM has gained popularity among the scholarly circle of behavioral studies and social sciences researches (Hair Jr et al., 2016). SEM is categorized into "covariance-based (CB-SEM), partial least squares (PLS-SEM), or variance-based (VB-SEM) SEM". PLS-SEM is considered as more appropriate tool as compared to the CB-SEM and advanced tool as well. According to Hair et al. (2011), the allow to investigate the complex relationship and used to investigate the explanatory studies with better predictive accuracy (Ramli et al., 2018). As suggested by Hair Jr et al. (2016), dual-stage approach was employed for the findings of the present study. First was the assessment of the measurement model and second was the structural model. As per the recommendation of Lomax and Schumacker (2004) "the two-stage analysis approach that consists of the measurement model and structural model evaluation is superior to the one-step evaluation. The measurement model defines the

measurements of the constructs and the structural model is a part that relates the measured variable to the latent variable”.

Measurement Model

The measurement model determines the connotation between perceived data and variables of the study and describes the measurement of the variables of the study. The measurement model was calculated on the basis of construct validity and reliability. According to Yeo et al. (2017), the construct reliability is defines as “the consistency of the questions in the questionnaires, meaning that the interpretation of the questions by the respondent is the same as intended”.

Table 2: Factors Loadings

	ATT	ITUEG	TR
ATT1	0.793		
ATT2	0.704		
ATT3	0.723		
ATT4	0.710		
ATT5	0.685		
ITUEG1		0.816	
ITUEG2		0.647	
ITUEG3		0.843	
ITUEG4		0.865	
ITUEG5		0.795	
TR1			0.866
TR2			0.851
TR3			0.814

While measuring the measurement model (see in Table 4 and Table 5). In the line of the existing study “Internal consistency reliability, i.e., Cronbach’s alpha, composite reliability, convergent validity, i.e., factor loading, average variance extracted (AVE), and discriminant validity” have measured the measurement model. The Table 4 showed the composite reliability (CR) values greater than the threshold value of 0.7. The average variance (AVE) values also showed the values greater than 0.5 threshold shown (in Table 3).

Table 3: Values of Composite Reliability and AVE

	rho_A	CR	AVE
ATT	0.782	0.846	0.524
ITUEG	0.853	0.896	0.635
TR	0.806	0.881	0.712

The factor loadings of all the items of the variables also passed the threshold values of 0.4 (see in Table 2) (Hair Jr et al., 2016). In the existing study, the discriminant validity was measured by incorporating the fornell-lacker criterion (see in Table 5). The fornell-lacker criterion is defined as “the square root of AVE coefficient is

then demonstrated in the correlation matrix along the diagonal. The squared root AVE should be greater than the squared correlation estimates to provide good evidence of discriminant validity” (see in Table 4) (Hair Jr et al., 2016).

Table 4: Fornell-Larcker Criterion

	ATT	ITUEG	TR
ATT	0.724		
ITUEG	0.463	0.797	
TR	0.411	0.525	0.844

Structural Model

After the confirmation of the measurement model as valid and reliable, the next step was to analysis of the structural model. Therefore, the assessment of the structural model includes “the significance of the path co-efficient R^2 , which represent the variance explained of each endogenous latent variable”.

Table 5: Results of Path Coefficient (Mediation Results)

No	Relationship	Beta	SE	t-value	Confidence interval		Decision
					LL	UL	
H4	Trust>>Attitude>>ITUEG	0.297	0.022	5.538	0.122	0.123	Supported

Note: *p<0.05 (t > 1.645); ** p < 0.01 (t > 2.33)

Discussion

The main aim of the existing study is to investigate the factors “attitude and trust” that influence the ITUEG services among the citizens of Thailand in general and tax payers of Thailand in particular. In the line of the present study, three hypotheses “H1: Attitude significantly and positively influence the ITUEG services; H2: Trust significantly and positively influence the ITUEG services H3: Trust significantly and positively influence the attitude and H4: Attitude mediates the relationship between the trust and ITUEG services”. The three proposed hypotheses H1; H2; H3 and H4 were accepted after testing through the bootstrapping procedure OD 5000 sub-samples in smart PLS. Thus, the findings of the H1 are with the line of the findings of the various prior studies in the technology adoption studies (Aziz et al., 2013; Nripendra Pratap Rana et al, 2015; Nripendra P Rana et al., 2017; Zahid and Haji Din, 2019). The second hypothesis H2 designated that ($\beta=0.403$, $p<0.05$) that trust as a strong predictor of ITUEG services between the tax-payers and the government in Thailand. Numerous researchers from different part of the world findings are conclusive with the findings of the existing study (Alharbi et al., 2016; Bélanger and Carter, 2008) in investigated the domain of trust. In Table 5 the results supported the hypothesis H4

that attitudes mediated among the proposed relationship of the study and in line with the prior studies (Dwivedi et al., 2017). On the other hand, the findings of the existing study should be beneficial both for the government authorities and academicians to take affirmative action under their own domains to increase the intention towards the usage of e-government services. The government should develop those strategies that can enhance the trust or win the trust of the individual to use online government services. Once the trust of the individual win then the attitude towards the usage of e-government services also enhance. Positive word of mouth for the government services, recommendations from the friends and families are there. So, the factor trust plays an important role for the development of these offered online e-government services and higher the trust of citizens then higher will be the ITUEG services. This study is useful for the government as well as the citizen of the state that they must use the e-government facilities that create the facilities for the users.

Limitations and Future Recommendations

The current is cross sectional because the data was collected at one shot so the longitudinal studies must be conducted by future researchers. The respondents of the study are the tax payers so in future studies the citizens from various other sectors like government servants, private employees, academic and admin staff of the universities, information technology department employees of the government sectors, students of the universities, and colleges from various parts of the Thailand. The decomposition of the variables of the study must be taken place in the future researchers. Latest technology adoption theories like “innovation of diffusion theory (DOI), technology acceptance model 2 (TAM2), decompose theory of planned behavior (DTPB)” should be incorporated to deeply investigate the determinants of the online ITUEG services. Additionally, the more causal studies and various independent variables should be investigated to determine the intention of individuals towards the usage of the e-government services. In future studies, satisfaction must be used as mediator. The trust should be decomposed by trust in government and trust in system. Government support should be used as moderator to investigate the external effect towards the ITUEG services among the citizens.

Conclusion

This study concluded that online e-government services facilitate the end users i.e. citizens as compared to the traditional way of delivering traditional way of offered e-government services. Additionally, by providing the better services to the users can win the trust of them and leads towards the increased intention. Online e-government services can provide 24/7 facility to the end users, transparency are there with the effective way to delivery of services is also in the main stream for the general public. Therefore, the findings of the existing study revealed that the attitude plays significant role and higher the positive attitude increase the trust level

among the citizens to use e-government services. On the other hand, trust is a strong predictor towards the intention. So, the government should take affirmative steps and develop those kinds of policies to win the trust of citizens to use these online services. Higher will be the trust higher and more positive will be the attitude of the individual towards behavioral intention.

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UWAGI DOTYCZĄCE ZAMIERZEŃ OBYWATELA DO KORZYSTANIA Z USŁUG E-RZĄDU ONLINE: WALIDACJA MODELU UMEGA

Streszczenie: Celem tego badania jest określenie intencji obywateli w zakresie usług administracji elektronicznej online. W istniejącym badaniu zastosowano zunifikowany model elektronicznego rządu (UMEGA), aby szczegółowo zbadać indywidualne podejście do intencji. Ponadto zbadano czynnik zaufania zgodnie z silnymi zaleceniami poprzednich badaczy. W sumie 396 ważnych odpowiedzi otrzymano od podatników będących obywatelami Tajlandii. Wyniki badania wykazały, że postawa i zaufanie są silnym predyktorem intencji, a postawa pośredniczy między relacją zaufania i intencji. Ponadto wymieniono również ograniczenia badania wraz z przyszłymi zaleceniami. Na koniec omówiono także praktyczne implikacje.

Słowa kluczowe: jednolity model elektronicznej administracji rządowej (model UMEGA), zaufanie, postawa, zamiar korzystania z usług administracji elektronicznej

公民使用在线电子政务服务意愿的决定因素:UMEGA模型的验证

摘要:本研究的目的是确定公民对在线电子政务服务的意愿。现有研究使用统一电子政务模型(UMEGA)来详细调查有关个人对意图的态度。此外,根据先前研究人员的强烈建议对信任因素进行了调查。总共有396位泰国纳税人采取了有效措施。研究结果表明,态度和信任是意图的强力预测者,态度在信任和意图的关系之间起中介作用。此外,还提到了研究的局限性以及未来的建议。最后,还讨论了实际含义。

关键词:电子政府采用统一模型(UMEGA模型),信任,态度,使用电子政务服务的意图