



Received: 23 July 2024

Revised: 30 August 2024

Accepted: 30 August 2024

# DETERMINANTS OF INTENTION TO ADOPT E-GOVERNMENT: MEDIATING EFFECT OF TRUST IN E-GOVERNMENT

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UMY, Indonesia

(This article belongs to the Theme 2: Public Organization and Management in the Digital Age)

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## Abstract

In the present economy, adoption of e-Government is one of the important concepts to deliver facts about government to the public by using online tools, websites, social media, etc. The aim of study is to examine the influence of trust in government (TIG), trust in technology (TIT), and perceived usefulness (PU) on the intention to adopt e-Government (IAEG). The present study also identified the intervening effect of trusts in e-Government (TIEG) and how they mediate the IAEG. The data is collected through an administrated survey questionnaire that is free from any type of ambiguities. The questionnaire is collected from 200 administrative citizens' students by convenient sampling technique. This study used the Smart PLS software for analyzing the relationship variables. The findings of the study reveal that TIG, TIT, PU, and TIEG have a significant and positive relationship with IAEG.

**Keywords:** e-Government, Trust, Technology, Perceived Usefulness, Intention to Adopt

**Citation Information:** Jermsittiparsert, K., Singh, B., & Kaunert, C. (2024). Determinants of Intention to Adopt e-Government: Mediating Effect of Trust in e-Government. *Asian Political Science Review*, 8(2), 48-59. <https://doi.org/10.14456/apsr.2024.15>

## Introduction

In today's world, research related to inhabitants' acceptance of e-Government is essential because citizens of many countries face many difficulties and challenges for adoption of e-Government services. The public trust in government has declined in the last few years, because of corruption, inefficiencies, and ineffectiveness of the government. Conversely, e-Government has in recent times perceived an accumulative dispersion and approval globally. Unless e-Government is very important and has great potential but still people are not fully used e-Government in every aspect (Kurfalı, Arifoğlu, Tokdemir, & Paçın, 2017; Karniawati, Redjo, Suwaryo, & Mulyawan, 2017). Here are some elements that were modifying the e-Government adoption in the essences of trust in government (TIG), trust in technology (TIT) and perceived usefulness (PU) and trusts in e-Government (TIEG). On the factors as mentioned earlier trust is a more important factor. However, trust in any perspective is a major issue which mostly ignored; the technology is not maintaining; it is change day by day and growing the e-Government services (Codagnone & Wimmer, 2007).

For adopting the e-Government, the critical issue faces by the government the establishment of the trust factor of the people (Park, 2008; Patel & Jacobson, 2008). Moreover, trust deliberated as an crucial aspect for constructing the circumstances for extensive usage of the services, and it is considering a factor in speculation of e-Government services (Akkaya, Obermeier, Wolf, & Krcmar, 2011). TIG is considered as the belief and perception of an individual on the government departments. Trust in the government department is an initial step for following the e-Government services for longer time that create success in economy. Similarly, TIG permits the individuals to keep an eye on the latest know-how that is provided by the government organizations (Kurfalı et al., 2017). Furthermore, TIT means the faith of individual which they have on internet services that internet services provided precise information and makes the safe transaction (Kurfalı et al., 2017). TIT save time and create effectiveness for its users. Besides, another factor PU also takes an active part in the adoption of e-Government services. According to Pavlou (2003), PU is the perception of individuals about the worth of any new technology which increases the quality of performance of any organization. For example, if the individual perceives that the technological use in government services enhances their living standard, thus he or she easily adopts the changes which arrive in organization due to latest technologies. Therefore, PU or ease of usage improves internet technology usage. The citizens of the one economy who have TIG, TIT and also perceived that the services that government providing is for his/her success then general public easily can TIEG services that government agencies provided and they follow the e-Government services for long period of time (Voutinioti, 2013).

The current paper aims to study the effect of TIG, TIT, and PU on the IAEG. This study also examines the mediating effect of TIEG on TIG, TIT, PU, and IAEG. To fulfill the purpose of study, it has followed some objectives such as:

- 1) To determine the effect of TIT on the IAEG services.
- 2) To examine the effect of TIG on the IAEG services.
- 3) To examine the effect of PU on the IAEG services.
- 4) To elaborate the effect of TIEG on the IAEG.
- 5) To determine the effect of TIG, TIT, PU on TIEG
- 6) To elaborate on the effect of TIG, TIT, PU on the IAEG services while mediating by TIEG.

For fulfilling the following objectives, the current study research questions which are as follows:

- 1) Does TIT affect IAEG services?
- 2) Does TIG affect IAEG services?
- 3) Does PU affect IAEG services?
- 4) How does TIG affect the IAEG?

5) Do TIG, TIT, and PU effect on TIEG?

6) To what extent, TIG, TIT, PU effect on the IAEG services while mediating by TIEG?

The next section represents the literature review. Under the literature review heading the paper discuss the different variables such as the IAEG, TIT, TIG, PU, and TIEG. It also discusses the hypothesis of the study, the research framework of the study under the literature review heading. After discussing all the variables in detail, this paper discusses the methodology of the study, finding the understudy variables and finally discusses the limitation and future direction of the current study.

## **Literature Review**

### **Adoption of e-Government**

e-Government uses information technology toward progress and improve the competencies and usefulness of the administration process and make an online government that is secure, accessible and open. By using internet services in government departments people can communicate more easily, it is helpful in external communication with the general public and also in internal communication with other departments of government that may be in another place (Ebrahim & Irani, 2005; Janowski, 2015; Sriyakul & Jermsittiparsert, 2020). The internet services in government departments largely depend upon the number of citizens that use e-Government services. Users of these services are the crucial aspect which define its success (Hwang, Li, Shen, & Chu, 2004). By increasing importance of e-Government, many studies have been done on e-Government, and still, there is a necessity to do more studies on e-Government and its adoption. Now in this regard, Gilbert, Balestrini, & Littleboy (2004) described in his study e-Government that shows that willingness to adopt e-Government is one of the most important component e-Government. According to Gilbert et al. (2004) preparedness to practice e-Government is dependent on the perception of hurdles such as confidentiality, comfort of use, consistency, and safety and the hand perception of benefits included reduces cost, avoid personal interaction, save time and can gain access to the e-Government virtually from any place. Moreover, they suggested that age also acted significantly in the embracement of e-Government. Young people can understand internet use easily, so it's more productive for them. Further, another study was done on the adoption of e-Government. This study demonstrated that "trust" is one and only of the significant elements for the adoption of e-Government. Another component that discusses under this study is "perceived risk", "perceived behavioral control", "perceived usefulness", and "perceived ease of use". This study discussed the online tax payer and concluded that trust is most crucial component that has strong influence on adoption of e-Government (Warkentin, Gefen, Pavlou, & Rose, 2002).

Earlier scholars merely discuss intent towards the e-Government"(EG) usage and also included the person in the embracement of e-Government services that only one-time use that services (Gilbert et al., 2004; Warkentin et al., 2002). In addition, Kumar et al., 2007 described that these services acceptance is not enough to generalize the adoption of e-Government by intention to use e-Government because it did not cover all the aspects of adoption of e-Government. Moreover, they also demonstrated that one time of e-Government is not included in the final adoption of e-Government services and mostly research did not discuss that how frequently these are used (Kumar, Mukerji, Butt, & Persaud, 2007). The adoption of these services and internet availability and access is mostly discussed in previous studies. The adoption is largely affected by the trust in the actual government administration department, TIT and PU of e-Government. These factors discussed below in detail affect the adoption of e-Government.

## **Factors Affecting the Adoption of e-Government**

**Trust:** Trust is an exceptionally mind-boggling, multi-dimensional (Barber, 1983; Butler Jr, 1991) and specifically in a particular context (Luhmann, 1979) spectacle. It has customarily been an idea that is hard to characterize and quantify (Tan, Benbasat, & Cenfetelli, 2008; Wang & Emurian, 2005). Trust is a subject of study in various disciplinary arenas, for example, sociology, psychology, economics, and marketing. Fundamental to a wide range of trade, it is various ideas, applying to various types of association and including a mixture of things. Further, this has led to an accumulation of various, different meanings of trust, which proves overall controls where trust is considered. The struggle in characterizing trust and distinguishing the components that make it available in offline and on the other hand online settings, including e-Government (Horst, Kuttschreuter, & Gutteling, 2007; Wang & Emurian, 2005).

Trust is a significant research topic for providing e-Government services to the public. For effective adoption and make friendly use of e-Government for a longer time period not for only one time trust having much importance (Jacob, Fudzee, Salamat, & Herawan, 2019; Saengchai, Sriyakul, & Jermitsuparsert, 2020). Numerous studies done by many researchers on trust and e-Government (Hung, Chang, & Yu, 2006; Tan et al., 2008; Warkentin et al., 2002). Under the above-mentioned studies trust has been considered as single construct as general or specific objects related to it. The concept of trust is not clear in terms of every aspect that involve in e-Government, in some studies, it shows empirically as an important factor (Gilbert et al., 2004; Park, 2008) So it is still understudied literature of trust in e-Government. Warkentin et al. (2002), described that trust in e-Government conceptualized as certainty inducing intentions to involve in e-Government.

### **Trust in Government**

The people's belief in the government agencies shows a vital role in the adoption of e-Government agencies. The public TIG activities is falling in previous decades because of ineffective, inefficiency and corruption of the different government departments (AlAwadhi, 2019). Trustworthiness in government-related with the perception of the individuals on the integrity and ability of the government departments (Carter & Bélanger, 2005). TIG means that the user perceives that the government department has an ability and integrity to provide the services. TIG allows the individual to follow the latest technologies that are provided by the government agencies. Previously studies also show the positive result of TIG on the IAEG (Bélanger & Carter, 2008; Voutinioti, 2013). TIG allows the individual to follow the latest technologies that are provided by the government agencies.

### **Trust in Technology**

TIT means the belief of individual which he/she has on the reliability of internet services in provided that precise information and makes the safe transaction (Kurfalı et al., 2017). The use of technology in government services enhances the relationships among departments and makes it easy for government departments to increase the public relation and shared information with the public. Therefore, TIT from a general citizen is indispensable in IAEG services, and previous research shows the positive and noteworthy relationship with TIT and adoption of e-Government services (Bélanger & Carter, 2008; Voutinioti, 2013). The TIT enables the individual to adopt the new technology and take an active part in social, economic development.

Both TIT and TIG play an active role in the adoption of e-Government services. Trustworthiness enhance the positive perceptions of individual about adopting the latest internet facilities for government departments that ultimately scale up the development of economy and create efficiency and effectiveness in doing government activities with fewer resources and reduce cost by using upgraded internet technologies (AlAwadhi, 2019).

## Perceived Usefulness

It is the individual perception of the usefulness of any innovation which helpful to enhances the performance, quality of the performance, and knowledge challenges. Therefore PU or easiness of use improves the use of internet technology (Pavlou, 2003). For example, if citizens of the country perceive that usefulness of e-Government is easy and users friendly, then they try to save time by paying taxes and bills to the government by using e-Government applications. The PU of internet technologies helps enhance employees' performance. It enhances the TIG and plays a positive role in enhancing the IAEG services (AlAwadhi, 2019; Park, 2008).

## Trust in e-Government

The government agencies which are responsible for the automated and internet services to the public are identified as e-Government. Public trust in e-Government agencies is crucial in the adoption of e-Government services for a longer time. It will be helpful for the development of the economies because the government agencies efficiently perform their task and the public also follow those electronic services for performing their task which creates quality (Kurfali et al., 2017; Welch, Hinnant, & Moon, 2004). Similarly, the TIEG improves the public interest in e-Government services the TIEG is largely depended upon the TIG and TIT. TIG and TIT are two constructs that improve the interest in e-Government agencies. Currently, economies are more involved in the latest technological systems; TIEG is an important and almost new concept in literature. Previously research available on TIEG and adoption of e-Government, it shows that the more the people have TIEG the more they perform the behavior that enhances the adoption of e-Government (Akkaya et al., 2011; Shajari & Ismail, 2012; Voutinioti, 2013). Further, trust is highly complex and difficult to define in single construct so different studies use different constructs for defining the relation of TIEG and its adoption of e-Government (Papadopoulou, Nikolaidou, & Martakos, 2010).

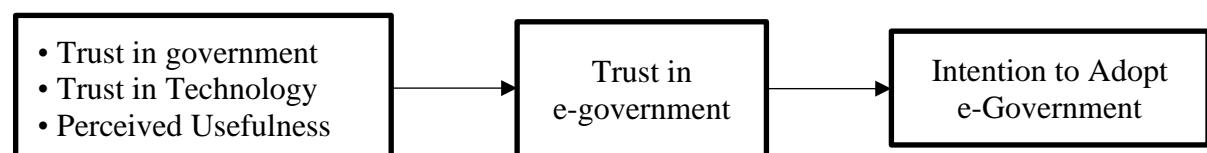
## Hypothesis Development

Following is the hypothesis of the current study:

- H1: TIG has positive and significant relationship with IAEG services
- H2: TIT has a positive and significant relationship with IAEG services.
- H3: PU has a significant and positive relationship with IAEG services.
- H4: TIG has a significant and positive relationship with IAEG and is mediated by TIEG.
- H5: TIT has a significant and positive relationship with IAEG and is mediated by TIEG.
- H6: PU has a significant and positive relationship with IAEG and is mediated by TIEG.

## Conceptual Framework

Based on the purpose of the study the following are the research framework of this study:



**Figure 1** Conceptual framework

## Research Methodology

The population of study is the public of Thailand. The data was collected from the public of Thailand, so the unit of analysis of study is individuals. The sector of study was the public that uses government services directly, data collected from them related to factors affecting the IAEG services and TIG as an intervening variable. Kotrlik & Higgins (2001), examine one technique for sample size which shows that the sample size is at least 20% of the whole population. Even though most of the total number of populations is restricted in such situations, it uniforms much at simplicity to select the sample and collect data. For the defined number of

the population, the Krejcie & Morgan table is used for selecting the sample size (Krejcie & Morgan, 1970). However, in the present study, the population was unlimited. Likewise, 200 to 400 respondents are enough for the sample size for the structural equation model (Oke, Ogunsami, & Ogunlana, 2012). On the bases of the above-mentioned discussion, data were collected, by randomly selecting, from 200 citizens of Thailand.

The questionnaires were used to gather data. The questionnaire is distributed through electronic mail, post mail, and face to face distribution. The questionnaire depends on two parts, part 1 related to demographics of the respondents and part 2 consisted of the entire variable related to this study. Previously developed measures have been used; the 5 points Likert scale is used under this study for collecting the response from students and evaluating the relationship among variables. The 4-item scale is used for TIG. The scale adopted from previous study for TIG. The 4-item scale adopted from the previous study for TIT (Colesca, 2009). The 4-item scale adopted from the previous study for PU (Pavlou, 2003). Further, the 3-item scale used for TIEG under this study which adopted (Colesca, 2009). The 4-item scale used under this study for IAEG adopted from the previous research (Kalu & Remkus, 2010). The smart PLS used under this study for analysis.

## Research Result

Table 1 showing the results for CFA which was carried out for measurement model assessment. The values of composite reliability and average variance should be higher than 0.8 and 0.5 respectively. As per the findings reported in the abovementioned table all the values of CR and AVE satisfy the criteria. Further the factor loadings should be greater than 0.5. Furthermore, as per the table all the factor loadings are fulfilling the criterion. Therefore, it is stated that there is no problem with convergent validity.

**Table 1** Confirmatory Factor Analysis

Constructs	Items	Loadings	Alpha	CR	AVE
Intention to Adopt E-Government (IAEG)	IAEG 1	0.792	0.776	0.849	0.553
	IAEG 2	0.831			
	IAEG 3	0.836			
	IAEG 4	0.825			
	IAEG 5	0.264			
Perceived Usefulness (PU)	PU 1	0.864	0.808	0.873	0.634
	PU 2	0.782			
	PU 3	0.718			
	PU 4	0.815			
Trust in E-Government (TIEG)	TIEG 1	0.927	0.878	0.925	0.803
	TIEG 2	0.856			
	TIEG 3	0.905			
Trust in Government (TIG)	TIG 1	0.810	0.849	0.898	0.688
	TIG 2	0.851			
	TIG 3	0.835			
	TIG 4	0.821			
Trust in Technology (TIT)	TIT 1	0.731	0.841	0.894	0.679
	TIT 2	0.837			
	TIT 3	0.838			
	TIT 4	0.884			

### Discriminant Validity

Table 2 is showing the values for the Fornell and Larcker Criterion according to which the correlation values of a variable must be greater than the values of its correlation with other variables. The findings reported in table 3 are fulfilling the criterion which establishes the discriminant validity.

**Table 2** Fornell and Larcker Criterion

	<b>IAEG</b>	<b>PU</b>	<b>TIEG</b>	<b>TIG</b>	<b>TIT</b>
IAEG	0.744				
PU	0.568	0.796			
TIEG	0.311	0.178	0.896		
TIG	0.623	0.573	0.287	0.829	
TIT	0.541	0.442	0.301	0.554	0.824

Table 3 shows the values for the cross loadings similar to Fornell and Larcker Criterion the loadings of a variable in its column must be greater than other variables. All the values are according to criterion which further strengthen the discriminant validity.

**Table 3** Cross Loadings

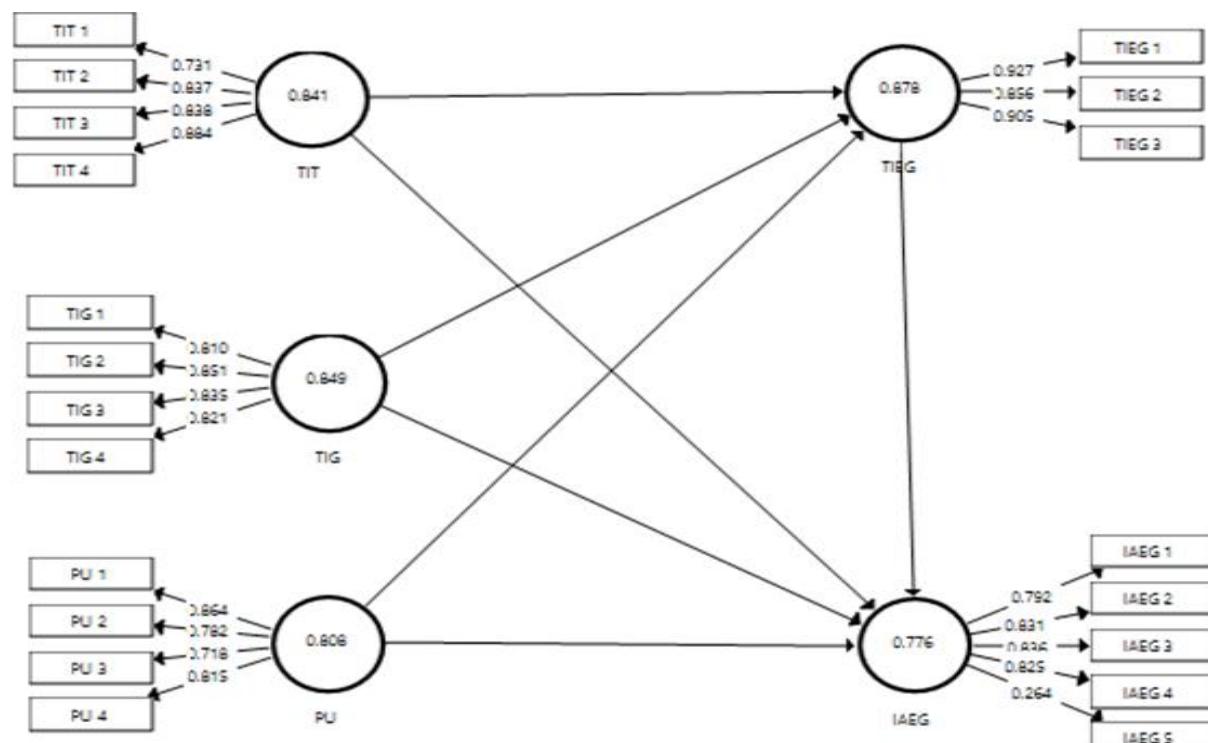
	<b>IAEG</b>	<b>PU</b>	<b>TIEG</b>	<b>TIG</b>	<b>TIT</b>
IAEG 1	0.792	0.483	0.260	0.522	0.398
IAEG 2	0.831	0.455	0.272	0.554	0.412
IAEG 3	0.836	0.475	0.249	0.487	0.491
IAEG 4	0.825	0.465	0.281	0.489	0.476
IAEG 5	0.264	0.084	-0.134	0.129	0.147
PU 1	0.521	0.864	0.152	0.524	0.392
PU 2	0.373	0.782	0.123	0.379	0.348
PU 3	0.413	0.718	0.134	0.416	0.382
PU 4	0.481	0.815	0.154	0.486	0.291
TIEG 1	0.277	0.164	0.927	0.251	0.300
TIEG 2	0.240	0.129	0.856	0.253	0.231
TIEG 3	0.313	0.181	0.905	0.270	0.274
TIG 1	0.520	0.483	0.231	0.810	0.435
TIG 2	0.553	0.454	0.271	0.851	0.451
TIG 3	0.492	0.486	0.202	0.835	0.486
TIG 4	0.498	0.482	0.244	0.821	0.470
TIT 1	0.392	0.344	0.233	0.432	0.731
TIT 2	0.443	0.327	0.233	0.417	0.837
TIT 3	0.416	0.378	0.260	0.470	0.838
TIT 4	0.522	0.404	0.266	0.504	0.884

HTMT is the latest technique to assess the discriminant validity as per the criterion the correlations between the variables must be greater than 0.85. As per the findings reported in above mentioned table all the values are less than 0.85. Thus, it confirms the discriminant validity.

**Table 4** Heterotrait-Monotrait Correlation Ratio

	IAEG	PU	TIEG	TIG	TIT
IAEG					
PU	0.673				
TIEG	0.398	0.208			
TIG	0.738	0.686	0.331		
TIT	0.652	0.538	0.349	0.657	

The following figure 2 shows the outcome for the CFA.



**Figure 2** Outcome for the CFA

Table 5 shows the relationship between the variables. As per the table 6 PU, TIG and TIT has significant positive relationship with IAEG and association is valued at 0.273, 0.318 and 0.212 respectively. Furthermore, PU, TIG and TIT has significant positive relationship with TIEG and association is valued at -0.019, 0.183 and 0.208 respectively. However, the relationship with PU is not significant thus it does not support the hypothesis.

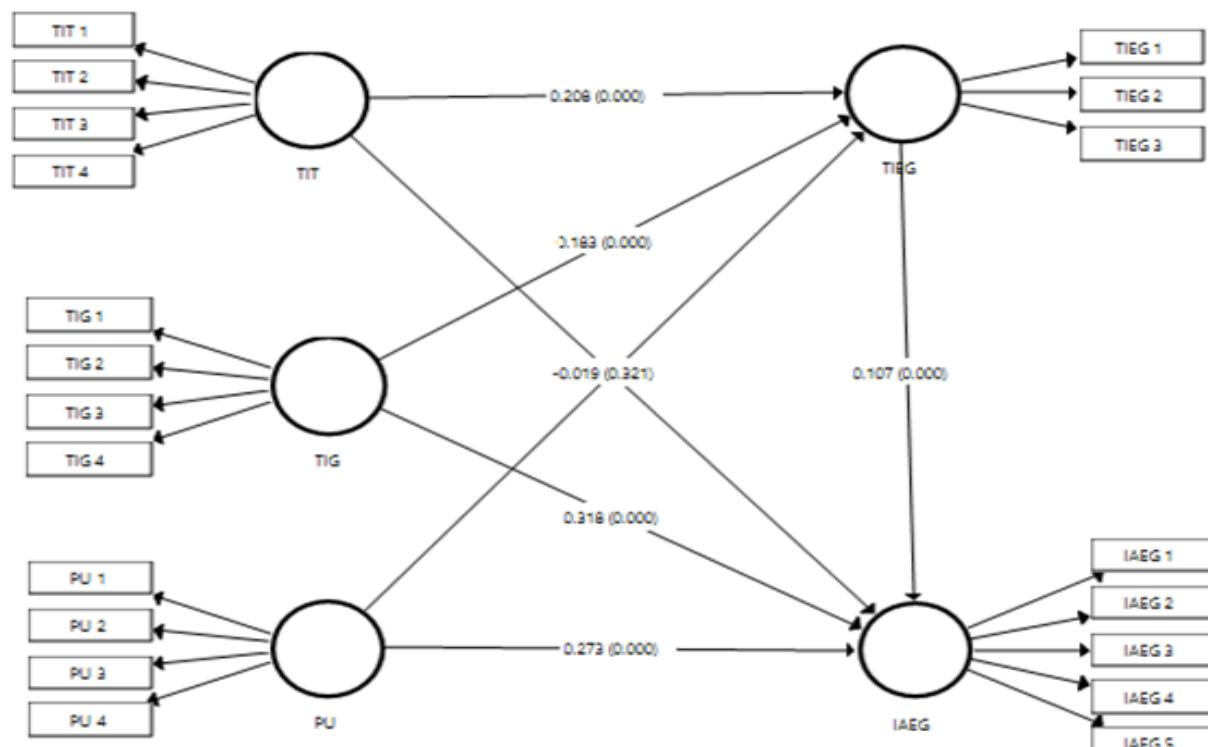
**Table 5** Structural Equation Modeling

Relationships	Beta	SD	t value	p value
PU -> IAEG	0.273	0.034	8	p < 0.05
PU -> TIEG	-0.019	0.04	0.465	p > 0.05
TIEG -> IAEG	0.107	0.029	3.669	p < 0.05
TIG -> IAEG	0.318	0.036	8.829	p < 0.05
TIG -> TIEG	0.183	0.045	4.025	p < 0.05
TIT -> IAEG	0.212	0.032	6.651	p < 0.05
TIT -> TIEG	0.208	0.041	5.023	p < 0.05

**Table 6** Specific Indirect Effects

Relationships	Beta	SD	t value	p value
PU -> TIEG -> IAEG	-0.002	0.004	0.448	p > 0.05
TIG -> TIEG -> IAEG	0.02	0.008	2.579	p < 0.05
TIT -> TIEG -> IAEG	0.022	0.008	2.879	p < 0.05

TIEG proved to be a significant mediator between association of TIG and IAEG. Furthermore, it is also proved to be a significant mediator between association of TIT and IAEG. Thus, the entire mediation hypotheses are accepted. The results can be interpreted such as when the public have trust in the government, enough confidence in the steps taken by the government and considers them for their well-being then they will more openly accept and acknowledge the e-Government services being offered to them. Similar are the findings of the results as well. When the public have enough trust in the services and they don't have any privacy or secrecy issue with the digital economy, they will tend to more happily accept and adopt it in routine life. The results did not support the mediation of trust between PU and intentions. It may have happened due to the education factor or age factor as the less educated could have responded higher on their perceived difficulty and older people may also have pointed out the difficulty to use these services. Therefore, besides the likelihood the other factors can also act as a potential driver in determination of usage of services. The following figure 3 shows the outcome of SEM. The path coefficients with the significance level are presented in the figure.



**Figure 3** Structural Equation Modeling

## Conclusion and Discussion

The adoption of e-Government services discussed by many researchers with diverse perspectives, but fewer studies discuss the IAEG services with TIG, TIT, PU and TIEG perspective. The purpose of the current study is to examine the relationship among IAEG and TIG, TIT and PU. The TIEG plays a significant role as mediation among IAEG and TIG, TIT, and PU. Moreover, the hypothesis H1, H2, and H3 are accepted which shows that the TIG has

a significant and positive relationship with IAEG, TIT, and PU shows the same result as TIG. Previous studies provide support to the above-mentioned hypothesis (AlAwadhi, 2019; Carter & Bélanger, 2005; Kalu & Remkus, 2010; Susanto, 2013) Further, the hypotheses H4 and H5 also accepted and show the positive and significant results among TIT, TIG, and IAEG services while mediating by TIEG. (Bélanger & Carter, 2008; Colesca, 2009; Jacob et al., 2019; Kumar et al., 2007; Kurfalı et al., 2017). Although, the hypothesis H6 rejected and shows that it is no relationship between PU and IAEG services while mediating by TIEG. Earlier, empirical studies also provide evidence and support the hypothesis (Papadopoulou et al., 2010; Sabani, Deng, & Thai, 2019; Yonazi, Sol, & Boonstra, 2010).

### **Future Direction and Limitation**

This study tries to cover the gap which is considered as the hurdle in e-Government adoption and create public intention to adopt the e-Government. But still there is a gap for creating TIT and TIG because of the latest decline in efficiency and effectiveness of the government department and technological issue related to confidential information. For the development of the economy, it is the need of the current generation, and government tries to reduce the issues by providing information and engaging the public in e-Government. This study only considers three elements for creating trust and boost up the behavior of individual for the adoption of e-Government but further other factors such as citizen's engagement and demographical profile of public will be considered also in future. The longitudinal study could be performed in the future for understanding the pattern of the intention of the public about the e-Government. The cross-sectional study and simple random sampling technique used under this study due to fewer resources. The future study will be done on government agencies to know what practices they perform for creating usefulness of e-Government facilities.

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**Data Availability Statement:** The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

**Conflicts of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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