

# **The Role of ICT in the Transformation of Government and Citizen Trust**

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## **Abstract**

We present an empirically tested conceptual model based on exit-voice theory to study the influence of information and communications technology (ICT)-enabled transformation of government (IETG) on citizen trust in government. We conceptualize and address the key factors affecting the influence of transformation of government on citizen trust, including government performance and transparency. Based on 313 survey responses randomly collected from citizens in Bahrain, the top-ranked country in ICT adoption in the Gulf Cooperation Council (GCC) region, we test government performance and transparency as mediators between transformation of government and citizen trust in government. The resulting preliminary insights on the measurement and manifestation of citizen trust in the context of IETG have multiple policy implications and extend our understanding of how IETG can improve the government-citizen relationship and digital services adoption.

**Keywords:** Citizens Trust, ICT, Transformation of Government, Performance, Transparency, Bahrain

## 1. Introduction

Information and communications technology (ICT) has dramatically changed how people live and interact with their environment. The vast public investment in ICT-based digital government initiatives to transform government includes 36.65 billion dollars in the United States (US) between 1992 and 2014; 1.6 billion dollars in South Korea since 2003; and 0.18 billion dollars in Russia since 2002 (Mukhoryanova et al., 2016). In addition, the World Bank has funded 1,129 investment lending projects totaling 292.7 billion dollars in 135 countries since 1995 (World Bank, 2017).

This spending aims to enhance performance, cost savings, and citizen trust and participation in government activities through digital transformation of public administration processes. However, citizen trust remains low, and digital service participation and adoption levels have not increased (Bannister and Connolly, 2011; Kim et al., 2009; Mahmood et al., 2018; Morgeson et al., 2011; Weerakkody et al., 2009; Welch et al., 2005). Moreover, digital government projects have failed around the globe (Gunawong and Gao, 2017; Miyata, 2011; Rodríguez Bolívar et al., 2016). For instance, in the UK, projects totaling £2 billion were cancelled or failed to deliver expected outcomes, including the C-Nomis project, e-Borders system, BBC digital and video archives system, Ministry of Justice back-office project, NHS's National Programme for IT, and the Universal Credit and Common Agricultural Policy Delivery Programme (*The Economist*, 2008; House of Commons, 2017; Jee, 2014; Syal, 2014). Given these failures, new research on the influence of IETG on the delivery of public services and citizen trust and engagement with government is needed.

Enhancing citizen trust in government (hereafter, simply 'citizen trust') requires the functional interplay of transparency, accountability, and ICT-enabled transformation of public administration functions (Bannister and Connolly, 2011; Kim et al., 2009; Mahmood et al., 2018; Morgeson et al., 2011; Tolbert and Mossberger, 2006). The definition of 'transformation of government' warrants careful consideration, and here IETG is defined as 'improvements to the way government functions and delivers services as a result of fundamental changes to the structure, functions, and core processes of government'. Many ICT projects claimed as transformational are instead enabling transactional activities (e.g., Bannister and Connolly, 2011; Mahmood et al., 2018; Omar et al., 2017; Waller and Weerakkody, 2016), suggesting that actual transformation requires a central role of technology in the policy design process. However, several normative studies have provided secondary evidence that digital-enabled transformation projects have largely failed (Anthopoulos et al., 2016; Bannister and Connolly, 2011; Choi et al., 2016; Das Aundhe and Narasimhan, 2016; Waller and Weerakkody, 2016).

Our paper contributes to the literature by investigating the influence of IETG on citizen trust as mediated by performance and transparency. The study setting is Bahrain, a member of the Gulf Cooperation Council (GCC). In Bahrain, the rapid evolution of digital government since 2007 has improved the quality of services, the efficient use of financial and human resources, and citizen satisfaction with government services (Mahmood et al., 2018; United Nations, 2012, 2014, 2016). Bahrain ranks 29<sup>th</sup> globally, 5<sup>th</sup> in the Asia region, and 1<sup>st</sup> in the GCC region in the E-Government Development Index (EGDI) (United Nations, 2016) and 32<sup>nd</sup> globally and 1<sup>st</sup> in the GCC region in the E-Participation sub-index of the EGDI. These rankings reflect the complete commitment and support (including financial) of the government at all levels to driving transformation of government through ICT (Mahmood et al., 2018). However, citizen trust is a key challenge for electronic participation in GCC countries (Alrashedi et al., 2015; Alzahrani et al., 2017; Al-Sobhi et al., 2010; Rodrigues et al., 2016; Saxena, 2017), including Bahrain, and studies of the potential of government transformation to reverse the decline in citizen trust are lacking (Mahmood et al., 2018).

Here, we propose and test a new conceptual model based on exit-voice theory that includes performance and transparency within IETG. Hypothesized relationships between these constructs are then tested in the context of Bahrain. Our empirical analysis offers insights to policy makers to facilitate IETG and, in turn, enhance citizen trust. Moreover, our findings are applicable to other GCC countries with similar cultures and mindsets. We pose three research questions:

- (1) How is IETG related to citizen trust?
- (2) How does the moderator of ICT influence the relationships of transformation of government with government transparency and with government performance?
- (3) How do the mediators of transparency and performance influence the relationship between transformation of government and citizen trust?

The remainder of the text is organized as follows. In Section 2, we review the literature, the overarching theory and the proposed conceptual model. Section 3 presents the research hypotheses. Sections 4 and 5 report the methods and results, respectively. Section 6 discusses the theoretical contributions, practical implications, and limitations, and Section 7 concludes.

## **2. Theory and Hypotheses**

### *2.1. Literature Review and Context*

Studies have found either a positive (Srivastava and Teo, 2009; Tolbert and Mossberger, 2006; Welch et al., 2005; West, 2004) or no relationship (Grimmelikhuisen, 2009; Morgeson et al., 2011; Pina et al., 2009) between digital government and citizen trust. However, in these studies, the digital provision of government services was not accompanied by major changes in policy functions, structure, processes, and implementation (Tolbert and Mossberger, 2006; Waller and Weerakkody, 2016). To enhance citizen trust, IETG must be linked with factors such as transparency, accountability, and performance (Bannister and Connolly, 2011; Mahmood et al., 2018; Morgeson et al., 2011; Waller and Weerakkody, 2016; Welch et al., 2005; West, 2004).

ICT is used by governments to deliver services, develop policies, and change the way core functions operate. The term ‘transformation of government’ refers to improvements in operational efficiency or to changes in process, structure, lines of authority, focus, and power (Bannister and Connolly, 2011; Mahmood et al., 2018; Waller and Weerakkody, 2016; West, 2004). Some scholars (e.g., Layne and Lee, 2001; Waller and Weerakkody, 2016) and international organizations (United Nations, 2014) consider transformation an advanced stage of digital government development. However, many initiatives have failed to transform the core functions or structure of government, and citizen trust remains low (Bean, 2015; Edwards, 2015; International Labour Organization, 2015, 2016, 2017; Morgeson et al., 2011; Teo et al., 2008). We posit that IETG can contribute to reversing the decline in citizen trust.

Previous studies support our hypothesis, although without empirical validation (e.g., Bannister and Connolly, 2011; Kim et al., 2009; Mahmood et al., 2018; Morgeson et al., 2011; Weerakkody et al., 2009; Welch et al., 2005). A key limitation of many studies is their focus on the technical rather than the core social, political, and policy functions of government (Bannister and Connolly, 2011; O’Neill, 2009; Waller and Weerakkody, 2016). We argue that ICT can change the implementation and delivery of government policies to achieve real government transformation by facilitating transparency, accountability, and performance.

Transparency is the visibility of government to outsiders (Chen et al., 2003; Welch et al., 2005), while accountability is normally associated with the provision of justifications by a responsible

party (Giddens, 1984; Huse, 2005; Swift, 2001). Although the effects of transparency depend on national culture and associated values (Grimmelikhuijsen, 2012; Grimmelikhuijsen et al., 2013; O'Neill, 2002), transparency naturally produces accountability and can improve both performance and trust in government; both transparency and accountability are synonymous with transformation (Bannister and Connolly, 2011; Kim et al., 2009; Mahmood et al., 2018; Said et al., 2015; Welch et al., 2005). Ensuring the visibility of information related to services, transactions, and related processes as well as policy/regulations/legal instruments, decision-making processes, and escalation and appeal mechanisms to stakeholders creates the necessary environment for enhancing citizen trust. A key factor influencing trust in government is performance (Kim et al., 2009; Mahmood et al., 2018; Morgeson et al., 2011; Tolbert and Mossberger, 2006; Van de Walle et al., 2008; Welch et al., 2005; West, 2004), defined as the effective and efficient utilization of available resources to achieve the desired objectives of transformation (Hameed and Al-Shawabkah, 2013). We posit that IETG can enhance the relationship between citizens and their governments by improving government performance.

Agreement on a common set of factors influencing trust remains lacking (Alzahrani et al., 2017; Bannister and Connolly, 2011; Bélanger and Carter, 2008), and studies including trust in government as a dependent variable have reached conflicting conclusions (Mahmood et al., 2018; Morgeson et al., 2011; Pina et al., 2009; Tolbert and Mossberger, 2006). Generally, trust refers to beliefs or expectations communicated by partners in a transaction (Srivastava and Teo, 2009; Teo et al., 2008). Here, trust is “the level of confidence citizens have in their government to ‘do the right thing’, to act appropriately and honestly on behalf of the public” (Barnes and Gill, 2000).

In summary, transformation of government is a complex term that has not been properly defined. Few studies have investigated the relationship between IETG and citizen trust or included transformation of government as a construct in a conceptual model. Moreover, no conceptual model has examined the potential of these concepts to enhance the citizen-government relationship. We bridge this research gap by focusing on the relationship between IETG and trust and the mediating effects of performance and transparency.

## *2.2. The Overarching Theory*

Citizen trust is the dependent variable in our proposed conceptual model. Research from the citizen perspective using trust in government as a dependent variable is limited. Tolbert and Mossberger (2006), West (2004) and Welch et al. (2005) focus on the relationship of government websites with citizen trust. More relevant to our research, Mahmood et al. (2018) investigate the relationship between transformation of government and citizens' trust and confidence in government as well as factors influencing transformation of government. Morgeson and Petrescu (2011) and Morgeson et al. (2011) also focus on e-government and its relationship with trust and confidence in government.

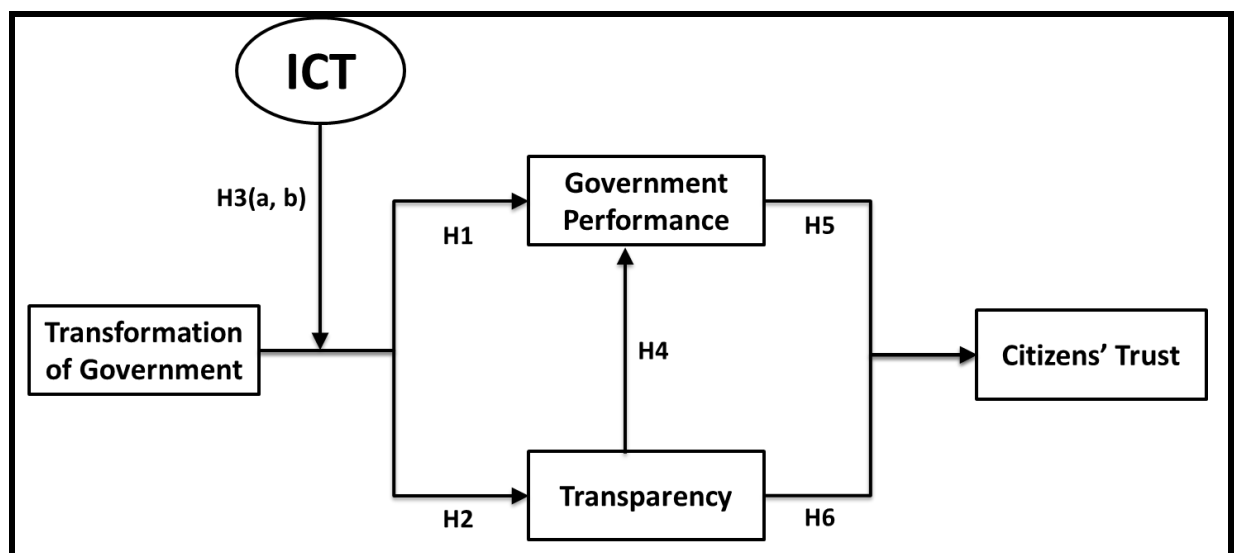
Morgeson and Petrescu (2011) examine elements of citizen-perceived performance, such as e-government and service quality, as determinants of satisfaction, trust, and confidence in government. In their model based on micro-performance (performance-satisfaction-trust) theory (Kampen et al., 2003; Kampen et al., 2006; Van de Walle and Bouckaert, 2003), performance and citizen trust are the main determinant and outcome of citizen satisfaction, respectively. Morgeson and Petrescu posit that good government performance will improve citizen satisfaction followed by citizen trust. Their model expands the concepts of micro-performance theory into a number of sub-elements, including quality of services, dissemination of information, e-government, citizen expectations, and citizen demographic variables.

Morgeson et al. (2011) investigate the relationship between government and trust and confidence in government as mediated by citizen satisfaction and influenced by citizen expectations and demographics. They develop a model based on theories and models verified in both private- and public-sector contexts (e.g., Donnelly et al., 1995; Fornell et al., 1996; James, 2009), including exit-voice theory (Hirschman 1970). Exit-voice theory states that dissatisfied customers will move to a competitor and/or complain, whereas happy customers will become more loyal toward a product/service. Accordingly, Morgeson et al.'s model uses government and expectations as determinants of citizen satisfaction that influence citizen trust and confidence in government. Demographic variables such as Internet use, age and gender are linked to both government and citizen expectations, and e-government is linked directly to citizen trust and confidence in government. Thus, citizen trust and confidence in government improve when citizens are happy with government services. The recent conceptual model of Mahmood et al. (2018) builds on this model.

Either micro-performance theory or exit-voice theory could serve as the overarching theory for developing our conceptual model. However, we expand more readily on the model developed by Morgeson et al. (2011) by replacing government with IETG and including variables other than IETG and citizen trust. We thus examine IETG using exit-voice theory because IETG involves fundamental changes in the structure, functions, and core processes of government to improve the way government delivers services to citizens. Our research is the first to explain the relationship between IETG and citizen trust while also considering the performance and transparency of the transformed government.

### 2.3. The Conceptual Model

Our proposed conceptual model is shown in Figure 1. Morgeson et al. (2011) reveals that citizen satisfaction and expectations are key factors influencing trust in government, whereas neither citizen satisfaction nor trust in government is influenced by e-government. We posit that digital government or ICT is not sufficient to transform government and must work in synchrony with other factors. Accordingly, we include other factors to investigate the influence of IETG on citizen trust.



**Figure 1. Research Model: Transformation of Government and Citizen Trust**

Because transformation also requires changes in the core functions of government, such as the issuance of policies and regulatory instruments (Mahmood et al., 2018; Waller and Weerakkody, 2016), we posit that digital government, as a specific solution, and satisfaction and expectations are

not relevant when examining the relationship between transformation and citizen trust. The two key factors that should be linked are transformation of government and ICT as a moderator (Kim et al., 2009; Mahmood et al., 2018). We consider digital government part of the broader ICTs used to transform government and, in turn, influence government performance (Bannister and Connolly, 2011; Kim et al., 2009; Mahmood et al., 2018). However, the general agenda of transformation includes transparency (Bannister and Connolly, 2011), and government performance and transparency influence trust (Kim et al., 2009; Morgeson et al., 2011; Norquist, 2007; Tolbert and Mossberger, 2006; Welch et al., 2005; West, 2004) and act as mediators between transformation of government and trust in government. Thus, we include transformation of government, ICT and transparency as variables in our proposed conceptual model.

### **3. Research Hypotheses**

#### *3.1. The Relationship between Transformation of Government and Government Performance*

Public administration theory supports the relationship between government transformation and citizen trust because IETG fundamentally changes traditional public administration by improving the way government functions and delivers services to its citizens and by enhancing efficiency and effectiveness. Zouridis and Thaens (2003) highlight the influence of transformed governments on the fundamental character of public administration and the basic structure of its institutions. Thus, we draw the following hypothesis:

H1: Transformation of government positively influences government performance.

#### *3.2. The Relationship between Transformation of Government and Transparency*

Transparency is a core component of a transformed government and improves citizen trust by increasing information availability (Bannister and Connolly, 2011; Kim et al., 2009; Welch et al., 2005). The relationship between transformation of government and transparency is supported by public administration theory (Zouridis and Thaens, 2003) and studies using institutional theory to explain institutional-level changes in public administration introduced by IETG (e.g., Kim et al., 2009; Luna-Reyes and Gil-García, 2011; Pina et al., 2009; Weerakkody et al., 2016). According to these studies, IETG facilitates transparency in the operations and activities of public administration and, in turn, citizen trust in the institution. The adoption of transparency by governments can also be explained by agent-principal theory (Kim et al., 2009). We posit that a transformed government (agent) will ensure that information about its functions and operations is available to its stakeholders, that is, citizens (principal), leading to the following hypothesis:

H2: Transformation of government positively influences transparency.

#### *3.3. The Relationship between ICT-Enabled Transformation of Government and Government Performance*

Transformation of government and government performance should be linked with ICT to explain the relationship between IETG and performance (Kim et al., 2009), as supported by both public administration theory (Zouridis and Thaens, 2003) and institutional theory (Luna-Reyes and Gil-García, 2011; Weerakkody et al., 2016). Thus, we draw the following hypothesis:

H3a: ICT strengthens the relationship between transformation of government and government performance.

#### *3.4. The Relationship between ICT-Enabled Transformation of Government and Transparency*

IETG enhances government transparency and, consequently, accountability by making government-related information publicly available (Kim et al., 2009). Transparent institutions are more accountable by default (e.g., Chen et al., 2003; Welch et al., 2005), thereby improving government performance, efficiency, and effectiveness, the shape and structure of government institutions, and interactions with key stakeholders. Public administration theory (Zouridis and Thaens, 2003), institutional theory (Kim et al., 2009; Luna-Reyes and Gil-García, 2011; Pina et al., 2009; Weerakkody et al., 2016), and agent-principal theory (Kim et al., 2009) support the relationship between IETG and transparency and the following hypothesis:

H3b: ICT strengthens the relationship between transformation of government and transparency.

### *3.5. The Relationship between Transparency and Government Performance*

The transparency of transformed governments improves performance (Bannister and Connolly, 2011; Kim et al., 2009; Welch et al., 2005), consistent with public administration theory (Zouridis and Thaens, 2003) and institutional theory (Kim et al., 2009; Luna-Reyes and Gil-García, 2011; Weerakkody et al., 2016), by changing the way public administrations function and communicate with citizens through changes in structure and processes. Thus, we draw the following hypothesis:

H4: Transparency positively influences government performance.

### *3.6. The Relationship between Transparency and Citizen Trust*

Government performance and transparency influence trust (e.g., Morgeson et al., 2011; Norquist, 2007; Tolbert and Mossberger, 2006; West, 2004), and transformation of government and transparency enhance citizen engagement (Bannister and Connolly, 2011; Kim et al., 2009; Welch et al., 2005), as supported by rational choice theory. The government's (trustee's) adoption of transparency in its functions and operations helps citizens (trustors) rationally choose to increase their engagement due to improved trust. Thus, we propose the following hypothesis:

H5: Transparency positively influences citizen trust.

### *3.7. The Relationship between Government Performance and Citizen Trust*

According to micro-performance theory (Kampen et al., 2003; Kampen et al., 2006; Van de Walle and Bouckaert, 2003), improved government performance increases citizen trust, leading to the following hypothesis:

H6: Government performance positively influences citizen trust.

## **4. Methods**

### *4.1. Sampling Method and Data Analysis*

Following related studies (e.g., Morgeson et al., 2011; Teo et al., 2008; Tolbert and Mossberger, 2006; Weerakkody et al., 2013), we adopted a quantitative research method using an online survey as the sampling technique. Considering the sensitivity of this research in a small country that is surrounded geographically by many political and economic issues, we used a 7-point Likert scale to ensure sufficient availability of choices and minimize the selection of 'neutral' (Bhattacharjee, 2012). Partial least squares path modelling was selected as the multivariate technique (Esposito Vinzi et al., 2010), and the fitness of the proposed conceptual model and the hypotheses were tested by confirmatory factor analysis (CFA) and path analysis, respectively (Hair et al., 2010). Data analysis was performed using the R statistical package (Arbuckle and Wothke, 1999; Blunch, 2012; Byrne, 2016; Field, 2013; Green and Salkind, 2010; Pallant, 2013).

#### 4.2. Pilot Survey

To test the proposed conceptual model and hypotheses, we conducted a pilot survey between September and October 2015 comprising 34 questions adopted from previous studies. The questions were reviewed by two academics for language and appropriateness. A weblink to the online survey was distributed randomly to 100 citizens living in the Kingdom of Bahrain using SMS, email and social media applications (Kayam and Hirsch, 2012). Forty-eight responses were received, giving a response rate of 48%. Validity and reliability tests eliminated 8 questions.

#### 4.3. Main Survey

Using the same methodology, the main survey was commissioned three times over six months in 2016. Approximately 3000 citizens living in Bahrain were randomly contacted with consent of the Bahraini government. In total, 313 good responses were received for analysis, giving a response rate of approximately 10%, which is acceptable for an online survey at this scale (Sauermann and Roach, 2013). Most respondents were educated to the bachelor's degree level and had earnings of more than US\$1500 (monthly); no significant gender or age bias was observed (Table 1).

<b>Gender</b>	<b>No. (%)</b>	<b>Age</b>	<b>No. (%)</b>	<b>Education</b>	<b>No. (%)</b>	<b>Income</b>	<b>No. (%)</b>
<b>Male</b>	195 (62.3)	<18	3 (1.0)	Less than secondary school	0 (0)	<US\$500	78 (24.9)
<b>Female</b>	118 (37.7)	18-30	142 (45.4)	Secondary school	11 (3.5)	US\$500 to US\$1,000	22 (7)
		31-40	90 (28.8)	Diploma	22 (7.0)	US\$1,000 to US\$1,500	21 (6.7)
		41-50	45 (14.4)	Bachelor's degree	184 (58.8)	US\$1,500 to US\$2,000	22 (7)
		>50	33 (10.5)	Master's degree	96 (30.7)	>US\$2,000	170 (54.4)
<b>Total</b>				<b>313</b>			

**Table 1** Profile of the Respondents

#### 4.4. Preliminary Analysis and Measurement Model

The mean values of all measures were >3 on the 7-point Likert scale (Table 2). As expected, all correlations between constructs were positive and significant. The composite reliability (CR) of all constructs was >0.7, suggesting an adequate level of reliability (Nunnally and Bernstein, 1994). With



respect to convergent validity, the average variance extracted (AVE) was >0.5 for all measures (Fornell and Larcker, 1981), supporting the validity of the measurement model. Detailed measurement items of all constructs in the research model can be found in the Appendix. Comparisons with competing models confirmed that the hypothesized model was the best model for this study.

	Mean	SD	CR	AVE	TGov	ICT	Transparenc y	Performance	Trus t
<b>TGov</b>	3.13	1.188	.944	.772	.879				
<b>ICT</b>	4.1	1.171	.917	.648	.506	.805			
<b>Transparency</b>	3.93	1.152	.906	.618	.737	.721	.786		
<b>Performance</b>	3.91	1.175	.927	.761	.607	.705	.699	.872	
<b>Trust</b>	3.58	1.191	.948	.785	.718	.632	.711	.735	.886

Note: All correlations are significant at the 0.01 level, N=313.

**Table 2** Results of the Preliminary Analysis

## 5. Results

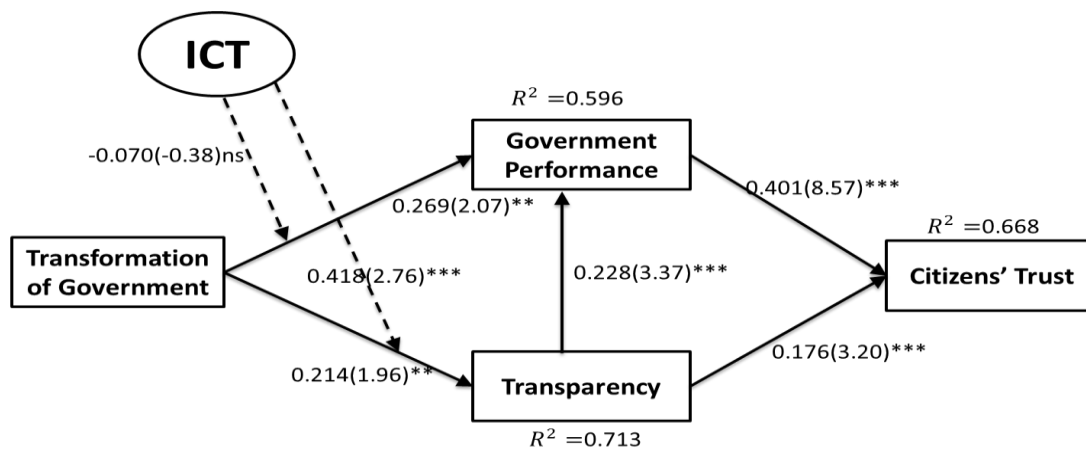
### 5.1. Hypotheses

The path analysis outcomes support the seven hypotheses, as shown in Table 3 and Figure 2.

#	Path	$\beta(t)$	Result
<b>H1</b>	TGov→Performance	.269(2.07)**	Supported
<b>H2</b>	TGov→Transparency	.214(1.96)**	Supported
<b>H3a</b>	ICTxTGov→Performance	-.070(-.38)ns	Not Supported
	ICT→Performance	.527(5.80)***	
<b>H3b</b>	ICTxTGov→Transparency	.418(2.76)***	Supported
	ICT→Transparency	.285(3.79)***	
<b>H4</b>	Transparency→Performance	.228(3.37)***	Supported
<b>H5</b>	Performance→Trust	.401(8.57)***	Supported
<b>H6</b>	Transparency→Trust	.176(3.20)***	Supported

Note: \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

**Table 3** Path Analysis Results



**Figure 2. Path Analysis Results**

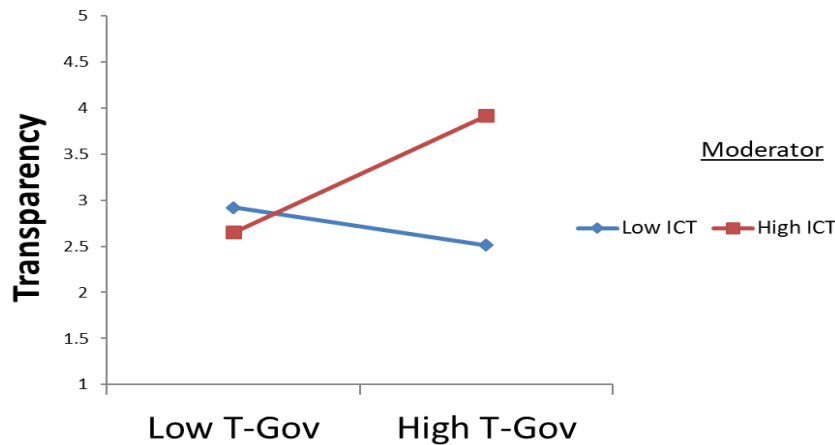
*Moderator Effects*

Our results suggest that ICT has significant positive impacts on government performance and transparency, as predicted (See Table 3: H3a, H3b). As shown in Table 4, ICT is a moderator only between transformation of government and transparency, strengthening this positive relationship. ICT does not moderate the relationship between transformation of government and performance because performance is a consequence of transparency.

Path	$\beta(t)$	Result
ICTxTGov→Transparency	.418(2.76) <sup>***</sup>	Supported
TGov→Transparency	.214(1.96) <sup>**</sup>	Supported
ICT→Transparency	.285(3.79) <sup>***</sup>	Supported

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table 4** Moderating Role of ICT between Transformation of Government and Transparency



**Figure 3. Interaction of T-Gov on Transparency by ICT**

Figure 3 shows that ICT strengthens the positive relationship between transformation of government and transparency.

### *Mediator Effects*

As shown in Table 5, government performance and transparency significantly partially mediate the relationship between transformation of government and trust.

Path	$\beta(t)$	Mediating effect
<b>TGov→Performance→Trust</b>	TGov→Performance .269(2.07)**	Significant partial mediation
	Performance→Trust .401(8.57)***	
	TGov→Trust .346(6.99)***	
<b>TGov→Transparency→Trust</b>	TGov→Transparency .214(1.96)**	Significant partial mediation
	Transparency→Trust .176(3.20)***	
	TGov→Trust .346(6.99)***	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

**Table 5** Mediating Effects of Performance and Transparency

## **6. Discussion**

### *6.1. Summary of the Findings*

Our analysis of citizen perceptions is the first to indicate that IETG positively influences citizen trust mediated by transparency and government performance. Transparency, which is inherently linked to accountability, accompanies transformation of government by default and positively influences performance. The positive significant relationships between transparency and trust in government and between performance and trust in government indicate that citizens quickly recognize ‘window dressing’ in the absence of real evidence of government performance, transparency and actions.

The apparent success of the IETG initiative in Bahrain reflects its unique characteristics: the maturity of the digital government initiative, the small size of the country, its demographic composition and the complete commitment of the government to IETG. The importance of considering transparency and performance during the planning of effective IETG initiatives is illustrated by the draft e-transaction law proposed by the Bahraini government, which includes clear measures for achieving government transparency and accountability and has the potential to attract foreign businesses, thereby increasing socio-economic benefits to Bahrain.

## *6.2. Theoretical Contribution*

We address a gap in the literature by showing that IETG contributes to restoring citizen trust. Transparency is accompanied by accountability and functions with transformation of government to improve government performance and enhance citizen satisfaction and trust. ICT is a moderator strengthening the relationship between transformation of government and transparency, consistent with the vital role of ICT in improving government transparency (Bannister and Connolly 2011; Kim et al. 2009; Norquist 2007). Furthermore, performance and transparency are partial mediators of the relationship between transformation of government and trust in government.

Our conceptual model, which is the first to include trust in government as a dependent variable whose relationship with transformation of government is moderated by ICT and mediated by performance and transparency, was tested and verified in Bahrain, which has demonstrated evidence of successful IETG (United Nations 2014; 2016). This study also synthesizes the information systems literature, particularly the digital government literature, to examine the role of ICT in transformation of government and the influence of performance and transparency on citizen trust.

Our findings indicate that citizens in Bahrain trust government based on its performance, level of transparency, and real actions against officials who hinder the transformation of government services and associated initiatives. Transparency and performance work together in this region given the presence of political, economic and social unrest. More generally, our findings provide a better understanding of the term 'transformation of government' and the roles of ICT and government transparency and performance.

## *6.3. Practical Implications*

Our results confirm that IETG should go beyond simply digitizing back-office processes and web-enabling citizen-facing ones. IETG should fundamentally change the core functions of government, including how ICT is used to facilitate policy development and implementation. Governments transformed in this manner have the potential to address declining citizen trust. Governments should regularly solicit feedback from citizens to measure performance and citizen satisfaction and trust; such continual monitoring will allow corrective and preventive actions for initiatives that fail to realize their stated objectives (such as improved performance and transparency). Feedback should also be regularly solicited from employees and other stakeholders, such as industry and non-governmental agencies. Real change requires a desire for and commitment to stakeholder engagement, transparency, and accountability across government. Finally, governments should also consider relevant academic research when developing and implementing new ICT-enabled policies and processes.

## *6.4. Limitations and Future Research*

Despite the advanced stage of digital government initiatives in Bahrain, the government should carefully consider the relationships of transparency and performance with citizen trust revealed here to enable and facilitate real transformation of government that improves citizen engagement. Our

results suggest several key factors for achieving true IETG instead of incremental and/or cosmetic changes in existing government processes and functions. Our conclusion that true IETG will improve citizen trust is based on an empirical study in Bahrain, a small but exemplary country in terms of implementing IETG. More comprehensive and broader studies of how ICT can enable this transformation and associated key issues are needed.

## 7. Conclusion

Digital government has frequently failed to reduce costs, improve performance, and reverse declining citizen trust. We show that IETG positively influences citizen trust while promoting transparency and accountability in government. The success of IETG in Bahrain may be linked to the relative newness of such projects in the GCC region in general and the characteristics of Bahrain in particular. Previous studies of the influence of IETG on citizen trust have had limited impact on practice due to their focus on website usability or adoption of digital transactions rather than fundamentally changing the way governments work and deliver services. Our study bridges this gap and advances the understanding of the relationship between IETG and citizen trust and its potential to positively influence positive citizen engagement with government. Our conceptual model can be used as a reference by policy makers in Bahrain and other countries to evaluate citizen trust pre and post IETG. From a broader perspective, our study offers insights on national policy for IETG in Bahrain and elsewhere.

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**Appendix:** Survey Measurement Items, Reliability, and Validity Results.

	<b>CR</b>	<b>AVE</b>	<b>Loading</b>
<b>TGov</b>	.944	.772	
<i>In government departments, new ideas are readily accepted.</i>			.843
<i>In government departments, management is quick to spot the need to do things differently.</i>			.892
<i>In government departments, the response is quick when changes are needed.</i>			.89
<i>In government departments, there is flexibility; they can quickly change procedures to meet new conditions and solve problems as they arise.</i>			.883
<i>In government departments, assistance in developing new ideas is readily available.</i>			.884
<b>ICT</b>	.917	.648	
<i>People can learn to use the government's information and communications technology (ICT)-based services very quickly.</i>			.679
<i>I found information related to the government's information and communications technology (ICT)-based services very useful.</i>			.874
<i>I found the government's information and communications technology (ICT)-based services helpful for accomplishing my task.</i>			.827
<i>Through every step of navigation of the government department's website, I found the website to consistently provide useful information related to the government's information and communications technology (ICT)-based services.</i>			.818
<i>Government departments are keen on providing network security to secure information.</i>			.836

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<i>Data exchange is conducted with great ease among the divisions of government departments through the available means of communication.</i>			.782
<b>Transparency</b>	.906	.618	
<i>Government departments' decision-making is transparently disclosed on the website.</i>			.755
<i>Citizens can clearly see the progress and situation of decision-making via the website.</i>			.786
<i>Government departments' websites disclose sufficient and reliable information to the citizen on their policies.</i>			.779
<i>Government departments maintain detailed and up-to-date records transparently.</i>			.826
<i>Government departments foster collaboration with other related agencies transparently.</i>			.817
<i>Government departments ensure funds are used properly and in an authorized manner transparently.</i>			.748
<b>Performance</b>	.927	.761	
<i>The performance of e-government services related to finding information is excellent (e-information).</i>			.886
<i>The performance of the e-government services related to completing transactions is efficient (e-transaction).</i>			.877
<i>The performance related to public electronic participation is noticeable and visible (e-participation).</i>			.847
<i>The overall performance of e-government services (e-performance) is effective and efficient.</i>			.879
<b>Trust</b>	.948	.785	
<i>I feel that the government acts in the citizens' best interest.</i>			.841

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<i>I feel fine interacting with the government since the government generally fulfils its duties efficiently.</i>	.876
<i>I am comfortable relying on the government to meet their obligations.</i>	.907
<i>I always feel confident that I can rely on government to do their part when I interact with them.</i>	.908
<i>I feel confident that the government department will do a good job providing the services that I used in the future.</i>	.896

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