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E-GOVERNMENT ADOPTION IN SAUDI ARABIA: THE MODERATION EFFECT OF WASTTA

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Abstract

This paper presents an investigation of the moderation effect of the Saudi culture referred to as Wastta on the adoption of e-government in Saudi Arabia from the perspective of citizens. A hierarchical multiple regression analysis is conducted on the data collected through the survey of Saudi citizens. The study shows that Wastta influences the adoption of e-government through its moderating effect on the perceived ease of use and the perceived usefulness of e-government. This study contributes to the e-government research by highlighting the moderation effect of Wastta on e-government adoption in a developing country context.

Keywords: E-government; Technology adoption; Culture; Wastta

1. Introduction

Electronic government (e-government) is about the use of information and communications technologies (ICTs) for improving the delivery of public services (Deng, 2008; Karunasena and Deng, 2012a; 2012b). It is becoming popular across the world (Alkalbani et al., 2014; Deng, 2008). The popularity of e-government is due to the benefits that can be brought including streamlining interactions between citizens and public organizations, improving transparency, and promoting the efficiency and effectiveness of public organisations (Ebrahim and Irani, 2005; Karunasena and Deng, 2012b). As a result, many countries across the world have introduced e-government programs for utilizing the benefits of e-government (AlKalbani et al., 2015; Almukhlifi et al., 2017; Karunasena and Deng, 2012a).

Following the global trend, Saudi Arabia has actively pursued the development of e-government (Alharbi et al., 2016). A unique e-government initiative consisting of two specific e-government development plans has been implemented. The first one aims to provide both businesses and citizens with specific public services through e-government (Almukhlifi et al., 2017). The second one focuses on enhancing the effectiveness and efficiency of the delivery of public services in public organizations. As a result, many e-government projects have been introduced, and significant progress has been made in the development of e-government in the country. Despite these efforts, the adoption of e-government in Saudi Arabia is still low (Alharbi et al., 2016).

There are many studies that have been conducted for better understanding e-government adoption across the world from different perspectives. Carter et al. (2011), for example, examine the critical factors for adopting online tax filing in the United States. Shareef et al. (2011) investigate the critical factors for the adoption of e-government in Canada. Rufin et al. (2012) study the critical factors that affect the citizens' decision to adopt e-government in

Spain. Ziembra et al. (2013) examine the critical factors for improving the adoption of e-government in Poland. The majority of these studies have been conducted in the context of developed countries. There is lack of studies on the investigation of the critical factors for the adoption of e-government in developing countries from the perspective of citizens (Dwivedi et al., 2012; Shareef et al., 2016).

Culture is the set of customs, traditions, and values of a specific society (Groenfeldt, 2003; Xiong and Deng, 2008; Zhao et al., 2014). Wastta is a reflection of the culture in Saudi Arabia. Such a culture has a fundamental impact on the way in which businesses are conducted and public services are provided (Fawzi and Almarshed, 2013). There are some studies that have investigated the effect of culture on the adoption of e-government in developing countries (Nurdin et al., 2010; Ranaweera, 2016; Sabri et al., 2012; Vo et al., 2016). To what extent such a culture can influence the adoption of e-government in Saudi Arabia, however, is unclear.

This study develops a conceptual framework by drawing on the technology acceptance model for investigating the adoption of e-government in Saudi Arabia from the perspective of citizens. It explores the moderation effect of Wastta on the adoption of e-government. A hierarchical multiple regression analysis is conducted. The study shows that the perceived ease of use, the perceived usefulness and the computer self-efficacy positively influence the adoption of e-government. It further reveals that Wastta influences the adoption of e-government. This study contributes to the e-government research by highlighting the moderation effect of Wastta on e-government adoption.

In what follows, this study first reviews the existing literature about e-government adoption, leading to the development of a research framework for investigating the moderation effect of Wastta on the adoption of e-government. It then describes the methodology followed by data analysis and results. Finally, the limitations and future research are presented.

2. Literature review

E-government is a broad concept that can be approached from different perspectives. Heeks (2003), for example, defines e-government as the use of ICTs for enhancing the work process of public organisations. Akman et al. (2005) consider e-government as the use of ICTs in public organisations for improving the delivery of public services. Ebrahim and Irani (2005) treat e-government as the use of ICTs for improving the accessibility of public services. In this study, e-government is referred to as the use of ICTs for improving the delivery of public services in public organizations (Deng, 2008).

Culture plays an important role for the development of e-government (Ndou, 2004). This is because a specific culture affects how individual citizens act in their adoption of e-government. To ensure a successful development of e-government, the characteristics of a specific culture have to be carefully considered (Zhao et al., 2014). The benefits of e-government might not be materialized if the culture of the country is not adequately considered in the development of e-government (Dwivedi et al., 2012).

There are many principles that shape Saudi's culture (Aldraehim et al., 2012). Firstly, Islam has an essential role on traditions, obligations, social manners and practices of a society (Aldraehim et al., 2012). The constitution of Saudi Arabia comes from two main elements including the Holy Quran and the Sunnah. Secondly, tribal systems influence the behaviours and perceptions of individual citizens (Aldraehim et al., 2012). Saudi Arabia is a collective

society (Hofstede, 1984) in which social networks affect the daily life of citizens. It is common in Saudi Arabia that citizens use their relationships for conducting public services (Aldraehim et al., 2012). Such a practice is called Wastta which is widely valued.

Wastta signifies the use of personal relationships for conducting public services to acquire benefits that cannot be acquired otherwise (Aldraehim et al., 2012; Alomari et al., 2014). It is a common phenomenon that exists across many cultures under other forms such as nepotism and cronyism in the western culture and Guanxi in the Chinese culture (Mohamed and Mohamad, 2011; Roberts, 2010). These forms differ partially in terms of the focus and impact. While nepotism focuses on the utilisation of relatives and cronyism focuses on the utilisation of friends, Wastta goes beyond to include these perspectives beside the utilisation of all other relationships in conducting businesses (Mohamed and Mohamad, 2011).

Wastta is widely used in the Saudi culture (Fawzi and Almarshed, 2013). This is because Saudi citizens highly value tribalism, regionalism and relationships. In such a culture, citizens' loyalty to their personal relationships can be reflected particularly in simplifying public services. The presence of Wastta, however, leads to inequity, citizens' dissatisfaction, corruption and decreasing the efficiency and effectiveness of public organizations (Aldraehim et al., 2012; Laker and Williams, 2003).

Several studies have investigated the e-government adoption in developing countries. Abu-Shanab and Al-Azzam (2012), for example, investigate to what extent trust affects the e-government adoption in Jordan. Wang and Lo (2013) examine the critical factors affecting the use of e-government services in Taiwan. Rodrigues et al. (2016) and Alathmay et al. (2016) investigate the critical factors for the adoption of e-government in the United Arab Emirates. These studies have explored the adoption of e-government from the perspective of developing countries. Many contextual factors related to developing countries that need to be investigated for improving the e-government adoption have not been adequately considered (Dwivedi et al., 2012). In particular, it is unclear to what extent the adoption of e-government is influenced by Wastta in Saudi Arabia.

There are a few studies that have investigated the influence of culture on the adoption of e-government. Zhao and Khan (2013), for example, study the critical factors that affect the adoption of e-government from a cultural perspective. Aida and Majdi (2014) investigate the impact of culture on e-government adoption. Zhao et al. (2014) examine the influence of culture on e-government diffusion. These studies have focused on the development of cultural indices using a secondary data to assess the influence of culture on e-government adoption. The opinions of citizens who are the major users of e-government services have not been comprehensively explored. To address this issue, this study explores the effect of Saudi culture referred to as Wastta on e-government adoption from the perspective of citizens.

3. Hypotheses development

There are several theories for exploring the technology adoption such as the theory of diffusion of innovations (DOI), the theory of reasoned action (TRA), the theory of planned behaviour (TPB), and the technology acceptance model (TAM). These theories, however, have some criticisms. The DOI and the TRA are criticised for ignoring the influence of personal factors on the adoption of a specific technology (Grandón et al., 2011; MacVaugh and Schiavone, 2010). The TPB is criticised for its inadequacy in producing reliable results (Ajzen, 1991).

The technology acceptance model (TAM) is widely used for exploring the adoption of technologies in various situations (Venkatesh and Morris, 2000). It argues that the perceived ease of use (PEOU) and the perceived usefulness (PU) of a specific technology affect the decision of individuals on the adoption of such a technology (Davis, 1989). The popularity of TAM is due to (a) the reliability and credibility for predicting the adoption of specific technologies and (b) the simplicity in applications and validation (Holden and Karsh, 2010).

There are some criticisms about TAM for not considering the influence of social and personal factors in exploring the adoption of technologies (Venkatesh and Morris, 2000). E-government adoption, in particular, should not only be investigated from a technological point of view. A more comprehensive perspective needs to be adopted in order to better understand how citizens are motivated to adopt e-government (Carter et al., 2011). This shows that the incorporation of personal and cultural factors with the original TAM would improve the understanding of the adoption of e-government services (Venkatesh and Morris, 2000).

To overcome the shortcomings of TAM, a conceptual framework is developed that incorporates computer self-efficacy (CSE) and Wastta with the original TAM for investigating the adoption of e-government from the perspective of citizens in Saudi Arabia. Fig 1 presents the framework.

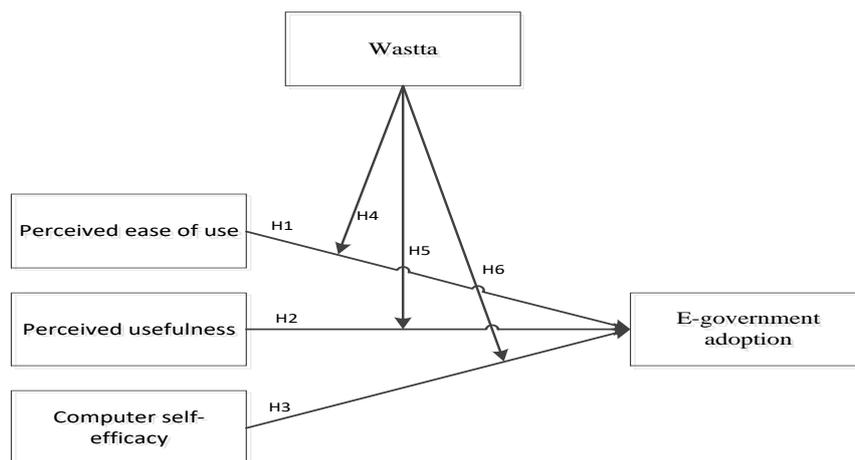


Fig 1. A Research Model

3.1. Perceived ease of use (PEOU)

PEOU refers to how much effort that the use of e-government requires (Davis, 1989). It is measured by the easiness to become skilful, the availability of instructions, the availability of e-government websites, and the clarity of instructions (Davis, 1989). Any difficulties faced when using e-government websites may discourage the utilisation of e-government (Hung et al., 2013). Improving the ease of use can boost the willingness of citizens to utilise e-government (Shareef et al., 2011). Public organisations can make it easy for citizens to use e-government by overcoming the difficulties that may occur. Hung et al. (2013) indicate that PEOU positively influences the adoption of e-government. Based on the above discussion, the following hypothesis is formulated.

H₁: The PEOU positively affects the use of e-government services

3.2. Perceived usefulness (PU)

PU refers to what extent the use of e-government services provides citizens with the benefits (Carter and Bélanger, 2005). It is commonly measured by convenience, speed, effectiveness,

and the overall usefulness of e-government services (Choudhury and Karahanna, 2008). Citizens' use of e-government services would be increased if e-government services can help them to gain the intended benefits (Hung et al., 2013). Citizens are likely to adopt e-government if they perceive the advantages of using e-government (Rehman et al., 2012). Overall, the more benefits citizens expect from the adoption of e-government, the more likely they use e-government services (Hung et al., 2013). Rehman et al. (2012) indicate that PU has a positive influence on citizens' adoption of e-government. Based on the above discussion, the following hypothesis is developed.

H₂: The PU positively affects the use of e-government services

3.3. Computer self-efficacy

CSE is about the confidence of citizens in their ability to utilise e-government (Susanto and Goodwin, 2013). It is measured by the availability of instructions, the user intuitiveness, and the availability of supports (Compeau and Higgins, 1995). This is related to citizens' judgment about their skills and abilities for carrying out online services (Hung et al., 2013). Such skills and knowledge may make citizens more confident towards the utilisation of e-government services. Understanding to what extent citizens are confident about their ability in using information systems would improve the adoption of e-government (Susanto and Goodwin, 2013). Hung et al. (2013) assert that CSE has a positive influence on the adoption of e-government. Based on the above discussion, the following hypothesis is developed.

H₃: The CSE positively affects the use of e-government services

3.4. The moderation influence of Wastta

Wastta refers to the use of personal relationships for conducting public services to acquire benefits (Aldraehim et al., 2012; Alomari et al., 2014). It is measured by its role in simplifying procedures and requirements, improving interaction, and the dependency on Wastta. It significantly influences citizens' decision-making (Tlaiss and Kauser, 2011). With the introduction of e-government services, Wastta can inhibit e-government development (Alomari et al. 2014). Citizens who are accustomed on using their personal relationships to conduct public services and gaining personal benefits would resist the adoption of e-government (Aldraehim et al., 2012). This is due to the ability of e-government in limiting Wastta. Based on the above discussion, the following hypotheses are formulated.

H₄: The Wastta negatively moderates the relationship between PEOU and e-government adoption: the higher the wastta, the lower the PEOU towards e-government adoption.

H₅: The Wastta negatively moderates the relationship between PU and e-government adoption: the higher the Wastta, the lower the PU towards e-government adoption.

H₆: The Wastta negatively moderates the relationship between CSE and e-government adoption: the higher the wastta, the lower the CSE towards e-government adoption.

4. Research methodology

This study aims to investigate the moderation effect of the Wastta on e-government adoption in Saudi Arabia. To achieve this aim, a quantitative methodology is applied due to two reasons. Firstly, a quantitative method is able to investigate the causal relationships among variables by collecting and analysing the numerical dataset (Creswell, 2013). Secondly, the findings of the study can be generalised (Straub et al., 2004).

Data is collected through the use of survey of citizens. The questionnaire was pre-tested with academic experts for ensuring the content validity. It includes three parts. The first part explains the purpose of the survey. The second part is designed for gathering the demographic information. The third part is used to collect the information related to the identified constructs. The sample of this study is Saudi citizens who have used e-government services. A total of 477 responses are received. The number of responses is reduced to 419 after deleting 58 cases due to missing values and outliers.

A hierarchical multiple regression analysis (HMRA) is used for analysing the data. The use of such a data analysis technique allows the addition of variables sequentially to evaluate the influence of added variables on the dependent variable (Pallant, 2010). It is widely used due to (a) its ability in predicting a dependent variable through independent variables, and (b) its appropriateness to analyse the influence of a moderating variable on other variables (Fairchild and MacKinnon, 2009; Pallant, 2010).

5. Data analysis

The conceptual framework is examined with the use of construct reliability, convergent validity, discriminant validity and the goodness of fit. Construct reliability is about the inter-relatedness of items in a construct (Hair et al., 2010). A cronbach's alpha is used for examining the reliability of constructs. Cronbach's alpha approaching the 1.0 threshold shows a high level of reliability of the item (Hair et al., 2010). The Cronbach's alpha values as shown in Table 1 are ranged between 0.76 and 0.89 across all constructs. This supports the reliability of the constructs.

The convergent validity refers to what extent multiple items measuring a construct converge together to measure a particular construct (Hair et al., 2010). For testing the convergent validity, the average variance extracted (AVE) and the factor loading of each construct's items are considered. The results indicate that the AVE values of the all factors are greater than the accepted value of 0.5 as shown in Table 1 (Hair et al., 2010). The values of factor loadings of all identified constructs are greater than 0.6 (Hair et al., 2010). This shows that the convergent validity of all constructs is supported.

	Factor Loading					AVE	Constructs Reliability	Items' Source
	1	2	3	4	5			
PEOU1	0.701					0.59	0.86	(Davis, 1989)
PEOU2	0.826							
PEOU3	0.772							
PEOU4	0.769							
PU1		0.812				0.64	0.88	(Davis, 1989) and (Choudhury and Karahanna, 2008)
PU2		0.755						
PU3		0.784						
PU4		0.852						
CSE1			0.773			0.62	0.76	(Compeau and Higgins, 1995)
CSE2			0.812					
CSE3			0.777					
ADOP1				0.693		0.55	0.89	(Pituch and Lee, 2006)
ADOP2				0.786				
ADOP3				0.746				
WASTTA1					0.743	0.62	0.83	Self-developed
WASTTA2					0.834			
WASTTA3					0.868			
WASTTA4					0.717			

Table 1. The Convergent Validity Assessment

The discriminant validity refers to what extent to which constructs are uncorrelated and distinct from each other (Hair et al., 2010). It is assessed through comparing the value of the square root of the AVE for each construct with the inter-construct correlation estimates between that construct and other constructs (Fornell and Larcker, 1981). The square root of the AVE should be higher than the correlation of other constructs (Hair et al., 2010). As shown in Table 2, all values are acceptable indicating the discriminant validity.

Factors	ADOP	PEOU	PU	CSE	WASTTA
ADOP	0.742				
PEOU	0.550	0.768			
PU	0.656	0.532	0.801		
CSE	0.396	0.465	0.181	0.787	
WASTTA	-0.467	-0.256	-0.296	-0.273	0.793

The square root of the AVE values is presented on the diagonals

Table 2. The Discriminant Validity Assessment

The goodness-of-fit (GOF) assesses each construct in the model for its validity with several fitness indices. These indices include the ration of χ^2 to degrees of freedom (χ^2/df), comparative fit index (CFI), goodness of fit index (GFI), adjusted GFI (AGFI), tucker-lewis index (TLI), normed fit index (NFI), standardized root mean residual (SRMR), root mean square error of approximation (RMSEA), and probability of close fit (PCLOSE). Table 3 shows the values of these indices indicating the GOF for each construct.

Factor	P	χ^2/df	CFI	GFI	AGFI	TLI	NFI	SRMR	RMSEA	PCLOSE
ADOP	.46	.53	1	.99	.99	1	.99	.075	0	.65
PEOU	.61	.49	1	.99	.99	1	.9	.015	0	.82
PU	.72	.32	1	.99	.99	1	.99	.012	0	.88
CSE	.26	1.2	.99	.99	.98	.99	.99	.068	.023	.48
WASTTA	.23	1.4	.99	.99	.98	.99	.99	.056	.033	.53

Table 3. The GOF Results

6. Results and findings

Following the model evaluation, the hypotheses were tested using HMRA (Tabachnick and Fidell, 2007). The data were analysed in four steps. In step 1, demographic variables including age, gender and education level were entered as control variables. In step 2, PEOU, PU and CSE were entered to assess the main effect on e-government adoption. In step 3, Wastta were entered to investigate how much it adds to the regression model. In step 4, the interaction between PEOU and Wastta, PU and Wastta, and CSE and Wastta were considered.

Table 4 indicate that all hypotheses in this study are supported. PEOU has a significant positive influence on e-government adoption (standardized path coefficient = 0.185, $p < 0.01$), supporting H₁. PU has a significant positive influence on e-government adoption (standardized path coefficient = 0.417, $p < 0.01$), supporting H₂. CSE has a significant positive influence on e-government adoption (standardized path coefficient = 162, $p < 0.01$), supporting H₃. The results, furthermore, indicate that Wastta has a significant negative influence on e-government adoption (standardized path coefficient = -0.254, $p < 0.01$).

The study shows that all three hypotheses of the moderation effect are significant. It reveals that the interaction between Wastta and PEOU is negatively significant (standardized path coefficient = -0.090, $p < 0.05$), supporting H₄. The interaction between Wastta and PU is positively significant (standardized path coefficient = 0.104, $p < 0.01$), rejecting H₅. The interaction between Wastta and CSE is positively significant (standardized path coefficient =

0.072, $p < 0.05$), rejecting H_6 . Furthermore, the results show that the research framework explained around 59 per cent of the variance in e-government adoption.

	Step 1	Step 2	Step 3	Step 4
Control Variables				
Age	.033	-.017	-.018	-.012
Gender	.059	-.008	-.010	-.018
Education Level	.262***	.068	.050	.044
Main Effects				
PEOU		.169***	.162***	.185***
PU		.513***	.460***	.417***
CSE		.211***	.163***	.162***
WASTTA			-.237***	-.254***
Interaction Effects				
WASTTA* PEOU				-.090**
WASTTA* PU				.104***
WASTTA* CSE				.072**
R2	.076	.530	.578	.586
ΔR^2	.076	.453	.048	.009
Sig. F Change	.000	.000	.000	.037

* $P < 0.1$; ** $p < 0.05$; *** $P < 0.01$

Table 4. The Results of Hierarchical Regression Analysis

7. Discussion

This study indicates that the adoption of e-government is influenced by PEOU, PU and CSE. It indicates that the adoption of e-government is influenced by Wastta. The results in this study show that PEOU could improve the adoption of e-government. This is because citizens often welcome to adopt new technologies which are not too complex to use (Hung et al., 2013). This means that the ease of using e-government services should be considered for improving the adoption of e-government.

The results of the study confirm that PU has a significant influence on e-government adoption. This suggests that less perceived benefits from online public services could lead to low rate of e-government adoption. This is because citizens would not accept innovations without understanding the advantages of the use. Citizens are more willing to use e-government services if the adoption of e-government can improve the effectiveness and efficiency of public organisations. This means that public organizations should pay attention to the expected benefits that can be perceived from the adoption of e-government. This finding is in line with the findings of previous studies that indicate the significant effect of PU on the adoption of e-government (Hung et al., 2013; Rehman et al., 2012).

CSE deals with the confidence of citizens in their ability in the utilisation of e-government services. Carter et al. (2011) considers CSE as one of the critical factors for improving the adoption e-government. Although Shareef et al. (2011) indicates that CSE is not significant for improving the use e-government services, the findings in this study show that CSE has a significant influence on the adoption of e-government. This is due to the citizens' skills towards the use of e-government services may vary based on the context of e-government development (Carter and Weerakkody, 2008). This suggests that CSE should be considered when it comes to improving the adoption e-government. An increase in citizens' education may have a remarkable impact on their self-efficacy and result in improving self-confidence towards the use of e-government services.

The significant moderation of Wastta on the adoption of e-government is confirmed in this study. The significance of Wastta in moderating the relationship between PEOU and e-

government adaption confirms the assumption that the higher the Wastta, the lower the PEOU towards e-government adoption. This is because the complexity of e-government services may advocate citizens to seek help from their relationships to facilitate public services.

Wastta positively moderates the relationship between PU and e-government adoption. This is contrary to the assumption that the higher the Wastta, the lower PU towards e-government adoption. This indicates that the presence of Wastta can enhance the benefit of e-government. For example, the use of Wastta can process public services faster.

The role of Wastta in moderating the relationship between CSE and e-government adoption is positively significant. This is against the assumption that the higher the Wastta, the lower the CSE towards e-government adoption. This finding suggests that the presence of Wastta can make citizens more confident about their skills towards the use of e-government services.

Overall, the moderation effect of Wastta suggests that the adoption of e-government is dependent on the prevalence of Wastta among Saudi citizens. This can be elaborated by the fact that the society in Saudi Arabia is a collective society (Hofstede, 1984). Such a society is characterised as a group that has a strong commitment towards friendship, tribalism and regionalism. Through this commitment, they help and support each other.

This study contributes to the e-government research in several ways. Theoretically, this study brings to the literature of e-government the moderation effect of Wastta on e-government adoption. This study is the first study that addresses this issue in developing countries. It also adds to the literature of e-government with developed items for measuring Wastta. Practically, investigating the role of Wastta on the adoption of e-government can be helpful for decision makers in Saudi Arabia to improve the adoption of e-government.

8. Conclusion

Understanding what advocates citizens to use e-government services is an essential for improving the adoption of e-government (Gilbert et al., 2004). Such understanding would not occur without considering the contextual factors within a culture where e-government is developed (Dwivedi et al., 2012). The results of this study show that PEOU, PU and CSE positively affect the adoption of e-government. Furthermore, Wastta is found to significantly affect the adoption of e-government. Such results provide valuable insights on how to develop e-government successfully in Saudi Arabia.

There are some limitations in this study that can be considered in future work. First, this research only collects data from citizens in Saudi Arabia. It has not considered the perception of other stakeholders of e-government services such as employee of public and private organisations. Second, others factors could be investigated to further understand the moderation influence of Wastta on the adoption of e-government. Third, this study is conducted in Saudi Arabia where the culture is unique. The results of such a study may vary in different cultures.

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