The Antecedent of Continuance Usage Intention of Electronic Government Service by Integrating UTAUT and Perspectives of Expectation-Confirmation Models in the Conflict Environment

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Abstract: Electronic Governance (EG) refers to the deployment and utilization digital platforms for the execution of government duties and responsibilities, enabling both government and private institutions to interact and conduct business via the internet. In this regard, the EG procedure has been largely untouched in the academic context of Iraq, and only a few recent studies have tackled the issue. In this relationship, the determinants that require examination are social affectation, performance expectations, ease factor, input expectations and repeated use of EG. These factors need careful attention to measure the continual EG usage in a country that is rife with conflict like Iraq. Therefore, this paper contextualized and explained the knowledge of Iraqi EG services, employing UTAUT (Unified Theory of Acceptance and Use of Technology). Accordingly, 315 questionnaires were sent to academic and non-academic university employees for data collection, after which data was examined through correlation and multiple regression analysis to pinpoint the determinants of continual use intention of EG services in the Iraqi universities context. The findings of the study indicated that performance expectancy and effort expectancy are determinants of continual usage intent, whereas facilitating conditions and social influence are not. This work is expected to contribute to literature concerning continual use intention of EG among Iraqi staff in universities and to help policy makers and executors to develop the basis for the EG use.

Keywords: UTAUT, EG service, facilitating conditions, performance expectancy, social influence and effort expectancy.

I. INTRODUCTION

The advent of the Information Communication Technology (ICT) era led to the introduction of EG towards the end of the 1990s (Alsohybe, 2007; Mubarak, 2012). Following its emergence as a significant digital platform used by parastatal firms to interact and relate with staff, citizens, governments and business entities (AlShishi, 2006). Owing to their growing importance in the digital era, it has become a necessity to research EG history using the UTAUT model, particularly as studies dedicated to the topic is few and far between. While considerable studies have employed the model, none of the studies used it to examine Iraqi EG service usage in government entities in the face of conflict in the environment.

II. ELECTRONIC GOVERNMENT IN IRAQ

Throughout the past years, Iraq has been facing high degrees of conflict and dysfunctions in different areas including healthcare, STEM (science, technology, engineering, and mathematics), education and the availability of E-governance) as highlighted in literature (e.g., James, 1995; Sanging *et al.*, 2007; Shajari *et al.*, 2010). In relation to this, both the Ministry of Science and Technology (MOST) and the Iraq Commission for Computers and Informatics (ICCI) function as the core components of collaboration that links government parastatals through Broadband technology (wireless platform) to guarantee smooth connection of EG with the platform of Management information System (MIS) in place (UN & ESCWA, 2007). In the Iraqi environment, EG deployment levels has remained low as government agencies need financial inputs to ensure their deployment to direct business growth and facilitate licensing and other needs. Aside from facilitating government uses, EG services provide other advantages including enhanced government services, inter-agency honesty and transparency, and heightened trust of citizen-users on public agencies. Moreover, EG services also benefit governments by decreasing costs, making clear and doable budgets that are centered on citizens, facilitating government agencies interactions in different intra-agency levels and external citizens (UN & ESCWA, 2007). Therefore, in this study, the predictors of EG in conflict-prone Iraq are investigated in terms of its positive or negative prospects.

III. CONTINUED USAGE INTENTION OF EG SERVICES

In this study, the researcher ensured a full examination of the continual EG usage by considering the general area of the topic in a cross-disciplinary approach. The continued use intention of EG is the same as the use intention towards repurchase or visiting decisions. Nevertheless, the intention to display a certain attitude indicates the push determinant engulfing the level of user intention to reflect the desired attitude (Teo *et al.*, 2009). There are several EG platforms and IT characteristics that are called for to conduct tasks and ensure continual intention to use (Teo *et al.*, 2009). In this background, the effect of repeated use, following digital adoption influences the determinants deciding the behavior of the user that can either be repetitive or stoppage of EG use and this highly contributes to the outcome (Hong *et al.*, 2006). In prior literature on IT uptake, the variations in the attitude of users between the initial uptake and repeated use have been largely unsuccessful (Bhattacherjee, 2001; Hong *et al.*, 2006; Karahanna *et al.*, 1999). Also, the utility of an MIS is often exhibited as dependent on its repeated use over initial use (Bhattacherjee, 2001; Limayem *et al.*, 2003; Wangpipatwong *et al.*, 2008). Along the same line of study, the initial EG use marks its successful uptake or otherwise, although this is not always followed by repeated use, with the exception of the case of significant numbers of citizen-users adoption (e.g., EG tools). Moreover, citizen users may

not adopt EG tools in circumstances where it fails to meet their needs and desires, despite the positive initial use as evidenced in prior studies (e.g., Rogers, 1995; Limayem *et al.*, 2004; Wangpipatwong *et al.*, 2008).

On the basis of the above argument, first-time and repeated EG use has to be methodically examined from several angles including digital, socio-economic, government and climate (Basu, 2004; Mubarak, 2012).

In the present study, the determinants were examined and cross-references to investigate their affects on Continued Usage Intention of EG in the context of Iraq, a conflict-ridden country.

IV. RESEARCH METHODOLOGY

(a) Expectation-Confirmation Theory

A common theory that has been adopted among consumer behavior studies to assist in examining service marketing, consumer satisfaction and post-purchase behavior (repurchase/complaint) and service marketing is the expectation-confirmatory theory (ECT) (Bhattacherjee, 2000). The ECT comprises of primary constructs and the linkages as presented in Figure 1.
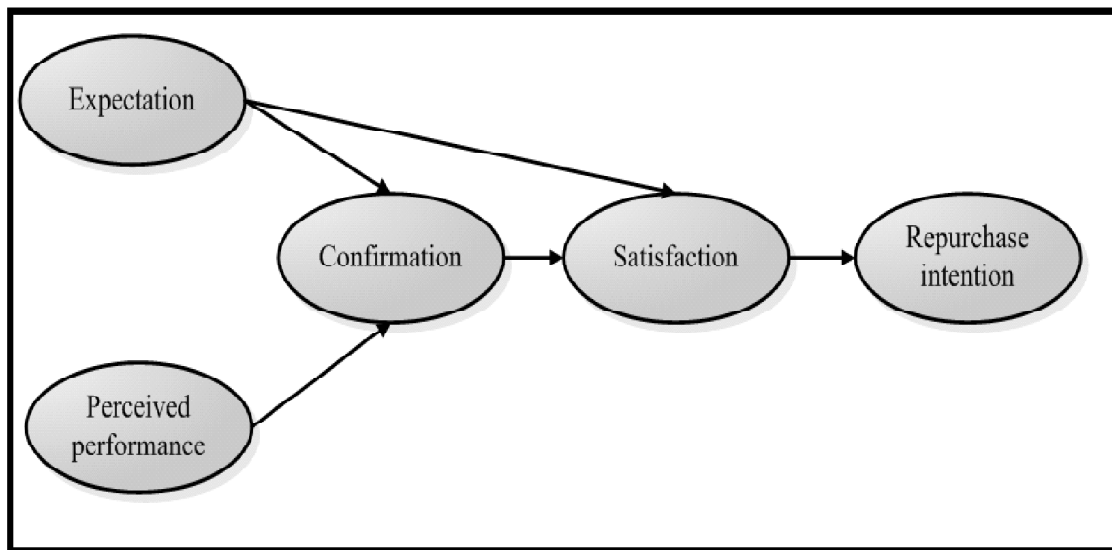

Figure 1: Expectation-Confirmation Theory

Source: (Bhattacherjee, 2001)

The continual decision of IS users is aligned with the repurchase decision of consumers as both originate from the purchase/initial decision, both are affected by the first experience of the product, and both can lead to initial decision's exposit reversal as argued by the expectation-confirmation model of IS continuance.

However, there are several drawbacks to the theory. These include the several variables that can influence the use and continuous use of online applications (e.g., social influence, facilitating conditions, effort expectancy, and performance expectancy). Studies have largely left out the effect of environment on the e-service users.

(b) Unified Theory of Acceptance and Use Technology (UTAUT)

In Venkatesh *et al.* (2003) study, the authors conducted a comparison of the similarities and differences of prior theories and the models of user acceptance to develop the Unified Theory of Acceptance and Use of Technology (UTAUT). The models compared were the Technology Acceptance Model (TAM) by Davis *et al.* (1989), the Theory of Planned Behavior (TPB) by Ajzen (1991), the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975) and the TAM-TPB combination (C-TAM-TPB) by Taylor and Todd (1995). It also includes the Model of PC Utilization (MPCU) by Thompson *et al.* (1991), the Innovation Diffusion Theory (IDT) by Rogers (2003), the Social Cognitive Theory (SCT) by Compeau and Higgins (1995) and lastly, the Motivational Model by Davis *et al.* (1992).

There are four predictors of users' behavior intention and behavior of use in the UTAUT and they are performance expectancy, effort expectancy, social influence and facilitating conditions. The constructs relationship with behavior intention and behavior towards use is moderated by four major demographic factors namely, age, gender, voluntariness and experience (Venkatesh *et al.*, 2003). Figure 2 depicts the UTAUT model.
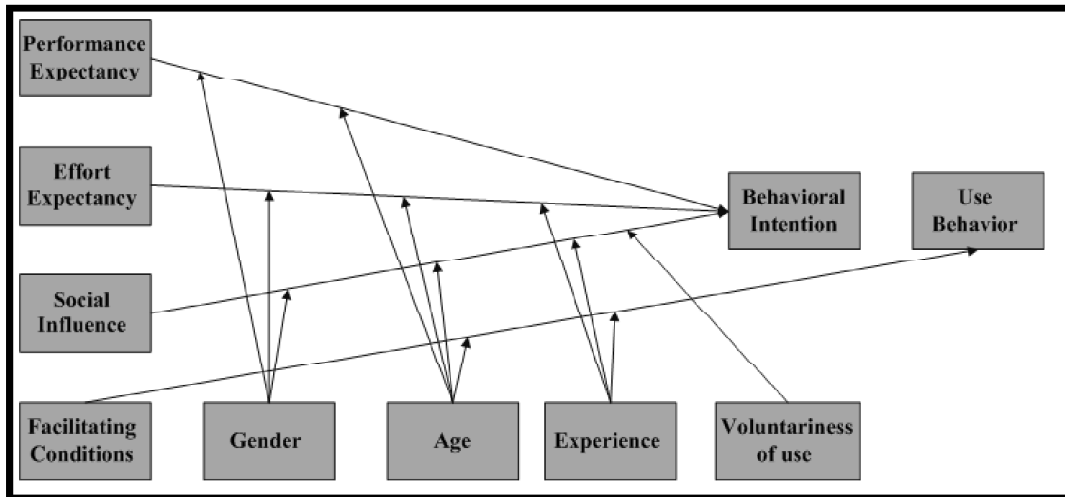

Figure 2: UTAUT

Source: Venkatesh *et al.* (2003)

1) Performance Expectancy (PE): it is the belief of the individual that making use of a certain system will improve his performance at work (Payne & Curtis, 2008). According to Venkatesh (2003), the previous information technology acceptance models lead to performance expectancy that consists of outcome expectations (SCT), perceived usefulness (TAM), relative advantage (IDT), extrinsic motivation (MM) and job fit (MPCU). Table 1 provides the summarized list of sources, areas, statuses, and measurements of performance expectancy in prior literature.

The relationships between PE and several variables affecting the technology use are tabulated above and the table highlights mixed results, with some studies demonstrating significant relationships (e.g., Al-Awadhi & Morris, 2008; Venkatesh *et al.*, 2003), while others revealing insignificant relationships (e.g., Al-Sobhi *et al.*, 2011).

Table I
The summary of the (Sources, Country, Status, and Measurements) of Previous Studies Related to (PE)

Source	Country	Status (significant or Not)	Measurement
Venkatesh, *et al.* (2003)	USA	Significant (+)	It is measured by finding the system usefulness to the job which makes it quicker, productive and I will increase my chances of getting a raise.
Al-Sobhi, *et al.* (2011)	Saudi Arabia	Not	Measured by the degree to which an individual believes that using the EG or intermediary's (e-Office) system will help him or her to attain gains in personal performance.
Abdul-Rahman *et al.* (2011)	Malaysia	Significant (+)	Measured by the degree to which digital library users believe that using the digital information resources in the digital library will provide them with the advantages in their study or/and research. PE comprises five (5) items.
Adulwahab and Dahalin (2011)	Nigeria	Significant(+)	It is measured by finding the ICTs in telecentre are useful to the job which makes it quicker, productive and I will increase my chances of getting a raise.

2) Effort Expectancy (EE): it is the perception of the individual that a specific system is easy to use. The variable stems from three constructs obtained from prior models (Payne & Curtis, 2008) namely, perceived ease of use from TAM and TAM2, complexity from MPCU, and ease of use from IDT (Venkatesh *et al.*, 2003). According to Venkatesh *et al.* (2003) and Foon and Fah (2011), effort expectancy significantly affects behavioral intention of user towards IT use. Effort expectancy sources, areas, statuses and measurements in prior studies are tabulated in the following table (Table II).

Table II
The summary of the (Sources, Country, Status, and Measurements) of Previous Studies Related to (EE)

Source	Country	Status (significant or Not)	Measurement
Venkatesh*et al.* (2011)		Significant (+)	Interaction with the system would be clear and understandable, become skillful at using the system, easy to use. Alongside, learning to operate the system is easy for me.
Foon and Fah (2011)	Malaysia	Significant (+)	It is easy to use.I find the system flexible to interact with.Using Internet banking saves me a lot of time.
Adulwahab and Dahalin (2011)	Nigeria	Not	It is measured by interaction with the ICTs in telecentre would be clear and understandable, become skillful at using the system, easy to use. Alongside, learning to operate the system is easy for me.

The above table shows that EE is a significant reference explaining the level of ease related to the effort exerted to using the new innovation. In IS realm of information kiosks and mobile settings, EE has a key role as a determinant of users' intention towards technology adoption (Adulwahab & Dahalin, 2011).

3) Social Influence (SI): it is the perception of the users that their important others opinions matters in the performance of specific behavior (Payne & Curtis, 2008). The construct comprises of subjective norms from TAM2 and TRA, social factors from MPCU, and image from IDT. According to Venkatesh *et al.* (2003), the relationship between social influence and behavior intention is susceptible to the moderating effect of age, gender and experience. Social influence factor in terms of its sources, areas, statuses and measurements in past research is tabulated in the following table (Table III).

Table III
The Summary of the (Sources, Country, Status, and Measurements) of Previous Studies Related to (SI)

Source	Country	Status (significant or Not)	Measurement
Wang and Shih (2009)	Taiwan	Significant (+)	It is measured by the people who influence my behavior and who are important to me that I should use the information kiosks and the information kiosks is helpful and supported.
Al-Sobhi*et al.* (2011)	Saudi Arabia	Not	Measured by the important people pressure (family or friends) that influences the intentions to use EG, and the influence that an intermediary has on increasing the awareness and the social marketing to adopt EG services.
Venkatesh *et al.* (2011)		Significant (+)	People who influence my behavior and who are important to me that I should use the system and the system is helpful and supported.
Chiu and Wang (2008)		Not	1- People who influence my behavior that I should participate in Web-based learning activities. 2-People who are important to me think that I should participate in Web-based learning activities 3-The senior management of the organization has supported my participation in Web-based learning activities.

Prior studies results are evidently mixed and in conflict with each other, with some authors stressing on the SI significant role (e.g., Wang & Shih, 2009; Venkatesh *et al.*, 2011), while others evidencing an insignificant role of the construct (e.g., Al-Sobhi *et al.*, 2011; Chiu & Wang, 2008).

Facilitating Conditions (FC) – it is the individual's perception that the organization and the technical infrastructure provided by it will assist in system use (Payne & Curtis, 2003). The construct comprises of three constructs namely perceived behavioral control from TPB, facilitating conditions from MPCU, and compatibility from IDT – this shows that facilitating conditions is a good predictor of IT use (Venkatesh *et al.*, 2003).

The next table contains the sources, areas, statuses and measurements of facilitating conditions in prior literature.

Table IV
**The Summary of the (Sources, Country, Status, and Measurements) of Previous
Studies Related to (FC)**

Source	Country	Status (significant or Not)	Measurement
Venkatesh *et al.* (2003)	USA	Not	It is measured by the resources, knowledge necessary to use the system. At the same time, the system is not compatible with other systems. I use in case of the availability for assistance with system difficulties.
Wang and Shih (2009)	Taiwan	Significant(+)	It is measured by the resources, knowledge necessary to use information kiosks. At the same time, the Information kiosks are compatible with other systems. I use in case of the availability for assistance with system difficulties.
AlAwadhi and Morris (2008)	Kuwait	Significant(+)	The resources, knowledge, necessary to use the system. At same time, the system is not compatible with other systems I use in case of the availability for assistance with system difficulties. Alongside, enough internet experience to use online services. Furthermore, don't like to carry out my business with government online, and at the same time, find it difficult to use online services due to lack of time.
Al-Shafi and Weerakkody (2010)	Qatar	Not	Measured by the degree to which an individual believes that anOrganizational and technical infrastructure exists to support the EG. Facilitating conditions are comprised of three root constructs: perceived behavioral control, facilitating conditions and compatibility.

Continued Usage Intention (CUI) of EG Services

The citizen's intention to continuously use EG services is similar to the user's intention to repeat purchase or revisit (Gefen *et al.*, 2003). Contrastingly, the intention to take up a specific behavior represents the motivation factor that contains the level of the inclination of the individual to attempt in doing the behavior (Teo, 2009). Following the phase of adoption, the user's intention of continuous use of EG services can be brought about by the following; prior discussion concerning using services as a mechanism of repeat behavior and prior use of services evaluation indicating a feedback mechanism (Teo, 2009). In addition to this, various EG services characteristics and IT characteristics have different roles to play in promoting continued intention of the user (Teo *et al.*, 2009). Based on the evidence revealing the effect of continued usage on successful IT, the primary factors that influence post-adoption behavior of the user (to continue or not) need determination for their critical importance (Hong *et al.*, 2006).

Research on IT adoption has largely ignored the difference in the perceptions of users between the first adoption and continued usage; for instance, in Bhattacherjee (2001), Hong *et al.* (2006), and Karahanna (1999). The success of the IS system depends largely on the user's continued use rather than the initial use as explained in past studies (Bhattacherjee, 2001; Limayem *et al.*, 2003; Wangpipatwong *et al.*, 2008).

Along a similar line of argument, the initial EG service use significantly indicates successful EG but this does not necessarily lead to the expected result unless considerable number of citizens opt for continuously using the service. Citizens may also cease to use the system if it fails to meet their requirements post-adoption (Roger, 1995; Limayem *et al.*, 2004; Wangpipatwong *et al.*, 2008). Thus, according to Mubarak (2012) and Basu (2004), the EG usage and continued use have to be examined from the perspective of technology, social, political and environmental views.

This can be exemplified by the EG's facilitation of governance participation among citizens in countries within which the occurrence of conflicts, corruption and wars are rife, this may affect the use and continuous use intention of EG services (Mubarak, 2012; Basu, 2004). Researches abound concerning user's adoption or acceptance of IS, but those that shed light on citizens' use and continuous use intention in one model under an environment that is characterized by conflicts and violence are still limited (Mubarak, 2012; Hung *et al.*, 2006). In other words, there remains a need for comprehensive models that covers personal psychology of the citizens when it comes to their desired behavior (Mubarak, 2012; Hung *et al.*, 2006).

It is noteworthy to take into consideration the importance of the initial adoption, followed y continued use of EG services by citizens in order to obtain the EG services benefits. According to Wangpipatwong (2008), it is crucial for the government to be aware of the perceptions of the EG services among citizens and the important factors that affect their continued intention to use such services. In recent studies (Carter & Belanger, 2004; Phang *et al.*, 2005; Treiblmaier *et al.*, 2004; Wang, 2002), the influencing factors that impact the initial intention to use EG services were examined as other studies like Wangpipatwong (2008) stressed that the topic is of high priority.

Similar with any type of IS use, the balance between benefit and costs affect the continued use intention of users (Chiu & Wang, 2008; DeLeone & McLean, 2003). Along the same line of argument, the initial EG websites use is a crucial indicator of successful EG but this does not always result in the expected outcome if only a few number of citizens initially adopt and use the services continuously. Also, citizens may discontinue their use even after adoption of innovation if it fails to meet their needs (Roger, 1995; Limayem *et al.*, 2003; Wangpipatwong *et al.*, 2008). In relation to this, comprehensive models that cover personal expectations of citizens in terms of their behavioral use have yet to be proposed (Mubarak, 2012; Hung *et al.*, 2006).

RESEARCH HYPOTHESES DEVELOPMENT

The theoretical framework is presented in Figure 2. UTAUT posits that performance expectancy, effort expectancy, social influence, facilitating conditions and habit as the predictors of use behavior in EG platforms, in situations where security is challenged. The study hypotheses are presented in the figure based on the UTAUT model.
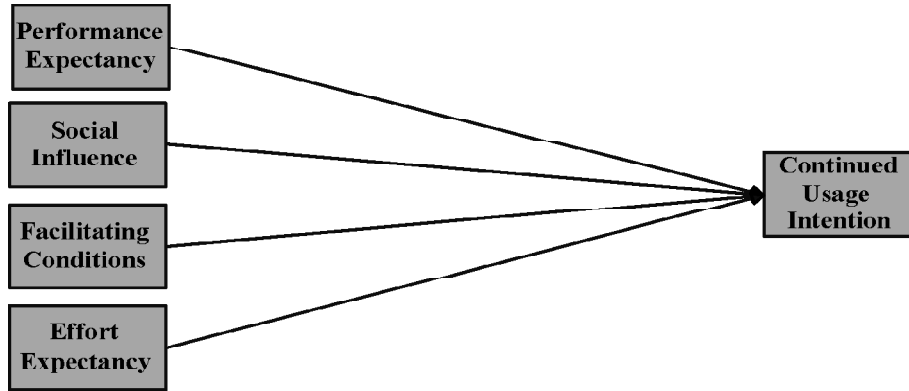
Figure 2: Research Framework of Continued Usage Intention of EG

H1. Performance expectancy has a positive effect on Continued Usage Intention of EG services.

H2. Social influence has a positive effect on Continued Usage Intention of EG services.

H3. Facilitating conditions have a positive influence on Continued Usage Intention of EG services.

H4. Effort expectancy has a positive effect on Continued Usage Intention of EG services.

V. POPULATION AND SAMPLING THAT PROPOSED TO IMPLEMENTATION UTAUT

The present research concerns Government to Citizen (G2C) functions that contain all aspects of public functions from social to economic functions, within the context of Iraq, a country rife with instability and conflict. The study thus polled Iraqi citizen-users throughout different demographic strategy after which 315 questionnaires were equally distributed to the northern, southern and middle areas of Iraq.

VI. DATA ANALYSIS

Random sampling was employed to gather data among government university teachers via questionnaires. The items were measured using a 7-point Likert scale ranging from strongly disagree (1) to strongly agree (7).

The correlation test results are tabulated in Tables VI and VII, within which performance expectancy (PE) and social influence (SI) obtained the following results respectively ($r=0.532$, $p \leq 0.01$) and ($r=0.376$, $p \leq 0.01$). This indicates significant correlation between FC, SI and continuous use intention. Moreover, facilitating conditions (FC) ($r=0.676$, $p \leq 0.01$) and effort expectancy (EE) ($r=0.618$, $p \leq 0.01$) also shows correlation with continuous use intention.

Table VI
Pearson Correlations (n=315)

	CUIT	*PE*	*SI*	*FC*	*EE*
CUIT	1				
PE	0.532**	1			
SI	0.376**	0.550**	1		
FC	0.676**	0.532**	0.485**	1	
EE	0.618**	0.630**	0.508**	0.712**	1

** Correlation is significant at $P \geq 0.01$ level (2-tailed)

Table VII
Summary of multiple regression results

Variable	Standard Coefficient Beta (β)	P
Performance Expectancy	0.193	0.000
Social Influence	0.053	0.278
Facilitating Conditions	0.458	0.000
Effort Expectancy	0.198	0.002
R^2	0.514	
Adjusted R Square	0.508	
Sig. F Change	0.000	

VII. DISCUSSION

The obtained results showed that performance expectancy is a determinant of EG repeated usage among Iraqi citizens as they hold interest in its deployment. The results indicated significant correlation between PE and CUI at the level of significance of 0.01 (β = 0.193, p<0.01), supporting H1. The results reveal that life achievements are consistent with ensuring EG use in circumstances where conflict abounds – a result that is aligned with prior reported results. Prior studies evidenced the positive correlation between PE and other variables (e.g., Al-Shafi & Weerakkody, 2010; Al-Sobhi *et al.*, 2011).

Moving on to social influence relationship proposed in H2, SI has no effect on repeated use intention (β = 0.053, p>0.01), rejecting the hypothesis. In other words, SI may be the reason behind poor EG adoption and continuous use in the context of Iraq (Al-Majali, 2011). Prior studies of this caliber also dropped social influence effects in their examination, specifically in the level of family and friends although more examination is needed.

Moreover, the results obtained indicated no correlation between FC and CUI (β= 0.458, p ≤ 0.01) and accordingly, the hypothesis is rejected. This result is in contrast with prior works of Adulwahab and Dahalin (2011), Wang and Shih (2009) and Venkatesh *et al.* (2003; 2011). In the same way, FC is largely absent in the infrastructure area (Al-Dabbagh, 2011; Portal Iraq, 2011).

Furthermore, this study found effort expectancy (EE) to positively relate with repeated use intention (β = 0.198**, p<0.01) supporting the corresponding hypothesis and prior findings that reported a positive EE-CUI correlation (e.g., Wu *et al.*, 2007). Other prior studies like Abdul-Rahman *et al.* (2011), Al-Sobhi *et al.* (2011), Foon and Fah (2011), Venkatesh *et al.* (2011) and Yahya *et al.* (2011) confirmed EE significance when it comes to innovative nations, including some of the Middle East countries. Specifically, in the context of Iraq, there are other mitigating factors and obstacles and in order to address them, the government invested $20 million in collaboration with Italy to motivate the deployment of EG (Tai, 2008).

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Despite the contribution of this study through the obtained findings, it still has several limitations relating to sample size, few EG precedents, and context. First, this study used a relatively small sample size focusing on the staff of the Iraqi government university, limiting the generalizability of the results over other institutions in academic, industrial, farming and military sectors. Also, this study focused on Iraq and

considering that living standards vary from one country to the next, results may also be different. University academic and non-academic staff was involved throughout Iraqi states but generalization of results should still be conducted with caution. Therefore, there is a need for further researches to include broader contexts and more considerable number of citizen-users.

VIII. CONCLUSION

This work conceptualized EG CUI in Iraq, a conflict-ridden country and the results obtained highlighted determinants of CUI. More specifically, PE and EE were found to positively correlate with CUI, whereas FC and SI were not. Stated clearly, repeated use of EG hinges on the level of effort required for deploying and maintaining EG services. As for the findings contribution to the UTAUT information base and its use, this study revealed that PE and EE are the top determinants of EG CUI. This work is expected to boost Iraqi central and provincial agencies to deploy EG and maintain it through enhancing the positive factors and encouraging citizens to use its services.

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