INTRODUCING A NEW CITIZEN-CENTRIC MODEL OF E-PARTICIPATION IN IRAQ

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ABSTRACT

The study objective is to validate and evaluate the proposed model of adopting an e-participation model for e-government in Iraq. The new integrated model was constructed throughout the utilization of variables from three main theories and models, namely, the Diffusion of Innovation theory (DOI), the Technology Acceptance Model (TAM) and Uses and Gratification theory (U&G), in addition to three ICT related constructs, namely, ICT Infrastructure, Security and Privacy. A survey was conducted and answers are analyzed from the respondents of 392 citizen participants in Iraq. As a result of this study, all hypothesis were accepted, additionally, the measurement and structural models showed a good fitness indexes. This study contributes to the body literature of e-government adoption and to the technology adoption literature in Iraq.

Keywords: *E-government, E-participation, Adoption, Information and Communication Technology, structural equation modeling (SEM),SPSS, AMOS and Survey.*

1. INTRODUCTION

Many important factors have an impact on the success of e-government services delivered to citizens, factors of Information and communication technologies (ICT) are considered among the major factors affecting the success of e-government systems [1]. E-government is defined by many authors, according to [2], e-government refers to the utilization of ICT technologies to offer public services to the governments stockholders. While [3] defines e-government as Internet based technologies that offers information as well as services to its users.

This study objective is to exam the adoption of E-participation in the e-government services by Iraqi citizens. This examination is done by developing and testing a conceptual framework which includes variables adopted from past international research. The dependent variable is E-participation, while the independent variables includes 9 variables which in turn have not examined before collectively.

This research is essential because in developing countries, especially Iraq, there is a lack of studies in e-government as well as e-participation adoption. Hence, the purpose of this study is to validate and evaluate the proposed model of adopting an e-participation model for e-government in Iraq.

2. THEORETICAL FRAMEWORK

The framework of this study is adopted by utilizing the theory of Diffusion of Innovation (DOI) as a basis, and this theory is integrated with the Technology Acceptance Model (TAM) and the theory of Uses and Gratifications (U&G). This study presents a comprehensive integrated model covering different prospective such as (Technological side (DOI), User acceptance side (TAM) and User needs side (U&G)) which is applicable on the individual levels.

Rogers (1995), introduced the DOI theory. This theory is used to investigate the users' technology adoption, for example "e-government"[4]. Rogers defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of social society". The innovations diffusion is reliant on 5 suggested constructs by DOI: (1) Relative advantage, (2) Compatibility, (3) Complexity, (4) Trialability and (5) Observability (Rogers, 1995).

In this study the variable of compatibility is adopted from DOI.

Moreover, Davis (1986), introduced TAM's model, which is a robust as well as significant model explaining the technology acceptance behaviour [5]. This model hypothetically determines the users IT acceptance throughout the voluntarily intentions to use the technology. Intentions in turn are determined by two constructs: perceived ease of use (PEU) as well as perceived usefulness (PU). Davis defines PEU as "the degree to which the user expects the target system to be free of efforts" while the definition of PU is "the prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context". Both variables are included within the integrated model.

Furthermore, Katz (1973), introduced the U&G theory based on psychological and sociological foundations [6]. This theory was utilized for the explanation of choosing a specific medium over another assuming that, "people's needs influence their media selections; by seeking out and using specific media, people can meet these individual needs". According to [7], this theory was used to study different technological topics and it's been applied to technology and Internet subjects before, but it is never been utilized to study the adoption of E-government in particular. This contribution suggest that users might adopt and e-participate in the applications and portals of E-government (as a medium) to satisfy their needs, whether they were getting a knowledge or completing a transaction on the government portal. Three constructs are utilized from this theory: (1) Cognitive need, (2) Affective need and (3) Social need.

3. LITERATURE GAP IN RELATED WORK

According to the massive review done by [8,9], it is noticeable that the investigation of ICT variables is not well utilized throughout the literature. Hence, introducing three variables based on ICT concept (i.e. ICT Infrastructure, Security and Privacy) to fill this gab and provide better understanding of the mentioned variables and how they contribute to the adoption of e-participation in Iraq.

Moreover, until before this study, there is no study investigating the e-participation adoption from citizen perspective in Iraq. Thus, this study introduce a novel integrated e-participation adoption model for the Iraqi e-government services.

4. METHODOLOGY

This study follows a Positivist philosophy which is associated with the determination of main links regarding a phenomenon (e-participation). This philosophy is linked with confirmatory research which in turn related to the confirmation of predefined factors relationships. Moreover, positivism is associated with quantitative approaches, for instance experiments, survey and questionnaires [8]. Hence, this study follows a positivist philosophy by utilizing a quantitative research throughout the distribution of a survey. The chart flow of the study methodology is shown in Figure 1 at the end of the article.

Furthermore, the sample of the study was choose to be Iraqi citizens of Baghdad city, as it is the capital city of Iraq and have the highest population of 7,665,000. Depending Krejcie and Morgan, (1970) equation, for a 7,665,000 population, the required minimum sample size is 385 [9].

5. STUDY QUESTIONNAIRE

A quantitative method is utilized in this study and a survey is conducted to test the hypothesis of the study. The study have two (2) sections of questions, firstly, Background Information of the participants which include 5 questions, while the second section is associated with the integrated model factors. This section include 41 questions.

E-participation as the dependent variable have four (4) items in the questionnaire. Moreover, TAM have two variables and each one of them have four (4) items in the questionnaire. Moreover, DOI theory have one (1) variable which have five (5) items in the questionnaire. Furthermore, U&G theory have three (3) variables and each one of them have four (4) items in the questionnaire. Besides the items of theories and model, three more variables were added and integrated to the model namely, ICT Infrastructure, Privacy and Security. Each of these three added variables have four (4) items in the

questionnaire. Appendix A shows the items utilized in this study.

Moreover reversed items methodology was utilized to detect if there is any bias in the answers of the survey.

6.   NORMALITY ANALYSIS

The data set was tested for the normality of distribution utilizing the test of Skewness. According to [10], samples larger than 200 should have a range value of $\pm$ 2.58. This value can be determined by dividing Skewness Statistic on Std. Error. Table 1 below presents the Skewness values of all variables.

TABLE 1: SKEWNESS RESULTS

Variable	Skewness / Std. Error	Result
E-participation	0.165 / .123	1.341
Perceived Usefulness	-0.133 / .123	-1.081
Perceived Ease of Use	0.098 / .123	0.796
Compatibility	-0.214 / .123	-1.739
ICT infrastructure	-0.071 / .123	-0.577
Privacy	0.246 / .123	2.00
Security	0.144 / .123	1.170
Cognitive Need	-0.032 / .123	-0.260
Affective Need	0.047 / .123	0.382
Social Need	0.054 / .123	0.439

7.   RELIABILITY ANALYSIS

The most common method for testing the questionnaire reliability of this study is Cronbach's alpha [11–13]. The test of Cronbach's alpha have a range of values from 0 to 1, a higher range level indicates a greater reliability value [14,15]. An excellent values of Cronbach's alpha are those ranging from 0.9 and above, an acceptable values are ranging from 0.7 to 0.899, while values ranging from 0.6 to 0.699 are questionable, and values less than 0.6 are considered poor values [7].

Table 2 demonstrate the Cronbach's alpha values of the variables.

TABLE 2: RELIABILITY TESTING RESULTS OF THE ITEMS

Variables	Cronbach's Alpha	No. of Items
PU	.788	4
PEU	.839	4
ICT	.894	4
CB	.880	5
P	.890	4
S	.879	4
CN	.896	4
AN	.839	4
SN	.888	4
EP	.951	4

8.   VALIDITY ANALYSIS

For the collected data to be validated, both convergent and discriminant validity should be computed before the evaluation of the structural model.

7.1 Convergent validity

According to [16], convergent validity is defined as "the extent to which indicators of a specific construct converge or share a high proportion of variance in common". In this study, convergent validity was evaluated by computing: (1) factor loadings (> 0.5), and (2) the average variance extracted (AVE) (>= 0.5), which represents the general variance amount in the latent constructs indices. Table 3 at the end of the article verifies the convergent validity of the data set.

7.2 Discriminant validity

According to [16], discriminant validity is defined as "the extent to which a construct is truly distinct from other construct". In this study, discriminant validity was evaluated by comparing two construct's square correlation corresponding average variance extracted (AVE). The AVE of the two constructs should be higher than the two construct's squared correlation. Table 4 at the end of the article verifies the discriminant validity of the data set.

9. RESULTS OF THE STUDY

The adoption of E-participation in the Iraqi culture is tested in this study. This purpose is to validate and evaluate the proposed model of adopting an e-participation model for e-government in Iraq. So the questions that this study answers is: How to validate the proposed e-Participation model?

10. VARIABLES   RELATIONSHIP RESULTS

The correlations value ranges of +1 (perfect correlation) to −1 (perfect but negative correlation) with 0 denoting the absence of a relationship and the value of the dependent variable is generally one [17]. The correlation results showed that Perceived Usefulness (r = .320, $p < 0.01$), Perceived Ease of Use (r = .318, $p < 0.05$), ICT infrastructure (r = .379, $p < 0.01$), Compatibility (r = .320, $p < 0.01$), Privacy (r = .374, $p < 0.01$), Security (r = .306, $p < 0.05$), Cognitive Need (r = .228, $p < 0.01$), Affective Need (r = .208, $p < 0.01$), and Social Need (r = .358, $p < 0.01$) were significantly as well as positively associated with E-Participation. These results supports that the adopted theories and models are positively and significantly associated with Electronic Participation (EP).

These results assures the existence of the relationships between E-participation in the e-government services and the chosen variables.

11. PROPOSED MODEL FITNESS

Hypothesis testing needs a structural model to be developed with all the ten variables evaluated in measurement model. Therefore, the hypothesized relationships between the constructs have been developed as shown in Table 5. The structural model is shown in Figure 2.

A good model fitness is shown when the structural model is analysed, as shown in Table 6.

Table 6: Model Fitness Index

Index	Value	Status
CMIN/DF	2.119	Accepted
CFI	.916	Accepted
IFI	.917	Accepted
TLI	.911	Accepted
RMSEA	.053	Accepted

12. CONCLUSION

This study has been conducted in order to overcome the problem of low e-participation in the services of Iraqi e-government by introducing and validating a new integrated e-participation model. Three theories and models have been integrated i.e. the Diffusion of Innovation theory (DOI), the Technology Acceptance Model (TAM) and Uses and Gratification theory (U&G) in addition to three other ICT related variables namely, ICT Infrastructure, Security and Privacy to present a new conceptual model for e-participation in Iraq. All hypothesized relationships were proved, moreover, the proposed structural model was validated and confirmed answering the question of the study. Hence, the results contribute to the body of knowledge and literature of ICT and e-government in general and in Iraq specially. Having mentioned that, this result is true for Iraq culture only.

As a limitation of this study, the sample was taking from only one city, which is Baghdad, furthermore, the study results is applicable to the Iraqi culture and similar developing countries cultures only.

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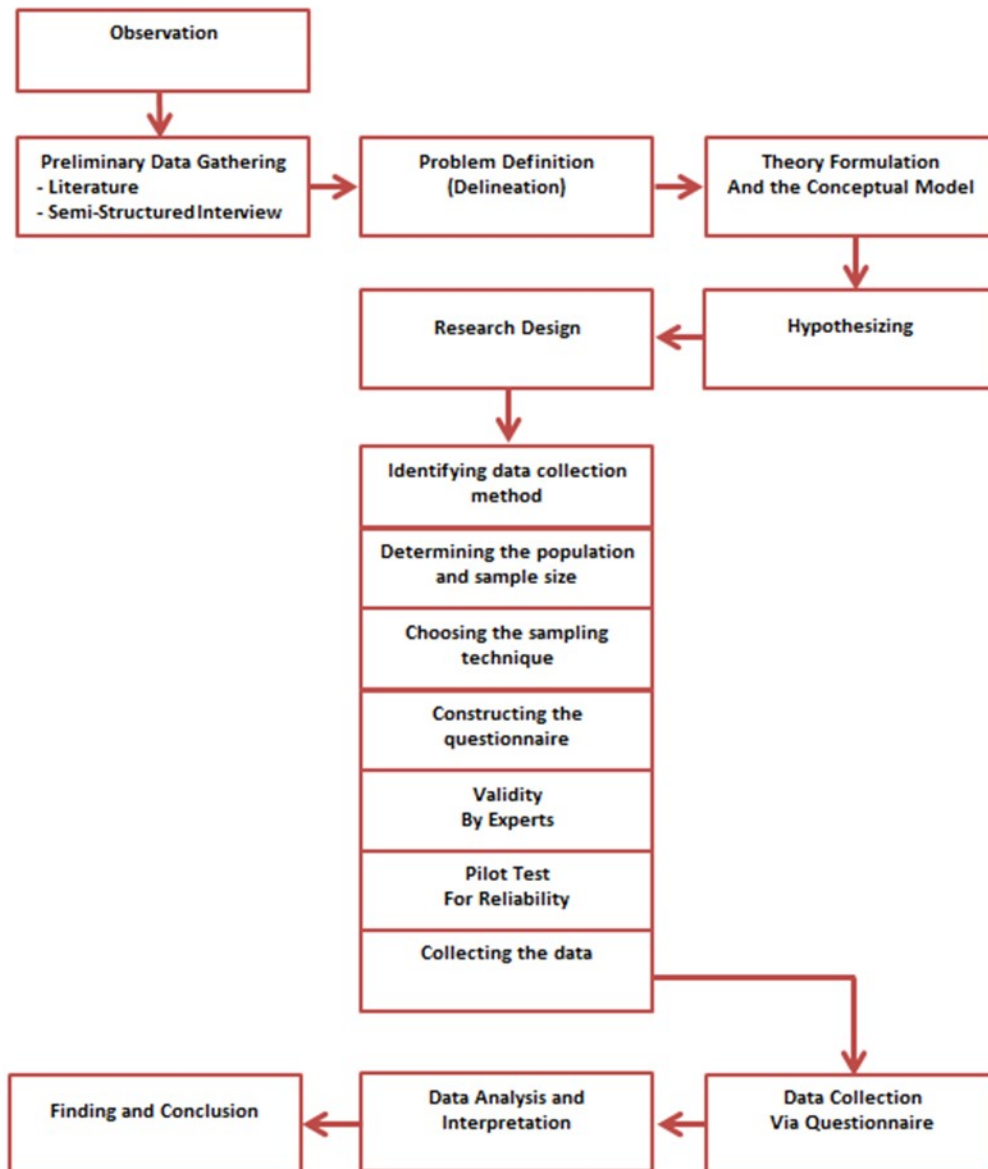
Figure 1: Research Methodology

Table 3 Convergent Validity

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Construct	Factor loadings (> 0.5)	the average variance extracted (AVE) (>= 0.5)
Perceived Usefulness		
PU1	.577	
PU2	.566	.507
PU3	.772	
PU4	.875	
Perceived Ease of Use		
PEU1	.819	
PEU2	.738	.639
PEU3	.778	
PEU4	.673	
ICT infrastructure		
ICT1	.944	
ICT2	.850	.698
ICT3	.807	
ICT4	.691	
Compatibility		
CB1R	.638	
CB2R	.748	
CB3R	.862	.652
CB4R	.839	
CB5R	.785	
Privacy		
P1	.755	
P2	.845	.699
P3	.796	
P4	.873	
Security		
S1	.840	
S2	.907	.699
S3	.752	
S4	.720	
Cognitive Need		
CN1	.614	
CN2	.909	.740
CN3	.913	
CN4	.874	
Affective Need		
AN1	.858	
AN2	.532	.653
AN3	.915	
AN4	.687	

Social Need		
SN1	.932	
SN2	.856	.677
SN3	.695	
SN4	.775	
E-Participation		
EP1	.874	
EP2	.984	.725
EP3	.836	
EP4	.950	

Table 4: Discriminant Validity Of All Constructs In The Research Model

Construct	PU	PEU	ICT	CB	P	S	CN	AN	SN	EP
PU	**.507**	.162	.211	.169	.143	.155	.200	.081	.294	.320
PEU	.026	**.639**	.136	.127	.188	.212	.137	.106	.247	.318
ICT	.044	.018	**.698**	.182	.311	.120	.183	.112	.259	.379
CB	.028	.016	.033	**.652**	.137	.155	.047	.172	.285	.224
P	.020	.035	.096	.018	**.699**	.154	.151	.152	.234	.374
S	.024	.044	.014	.024	.023	**.699**	.094	.166	.207	.306
CN	.04	.018	.033	.002	.022	.008	**.740**	.153	.110	.228
AN	.006	.011	.012	.029	.023	.027	.023	**.653**	.186	**.208**
SN	.086	.061	.067	.081	.054	.042	.012	.034	**.677**	.358
EP	.102	.101	.143	.050	.139	.093	.051	.043	.128	**.725**

Table 5: Hypothesized Relationships between All Constructs

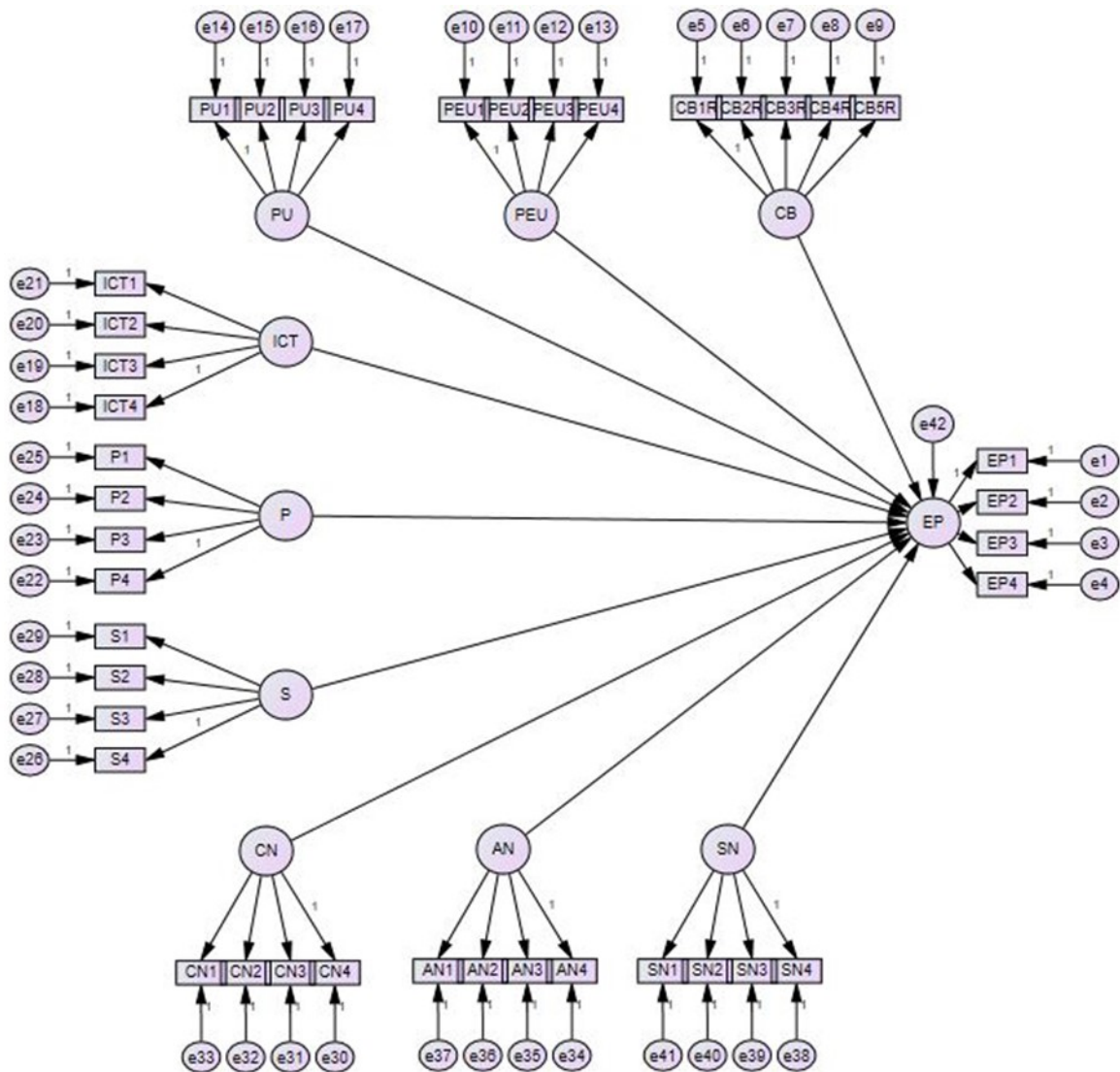| Hypothesis	Description
1	Compatibility have a significant impact on E-participation adoption.
2	Social Need have a significant impact on E-participation adoption.
3	Cognitive Need have a significant impact on E-participation adoption.
4	Affective Need have a significant impact on E-participation adoption.
5	Perceived Ease of Use have a significant impact on E-participation adoption.
6	Perceived Usefulness have a significant impact on E-participation adoption.
7	ICT infrastructure have a significant impact on E-participation adoption.
8	Security have a significant impact on E-participation adoption.
9	Privacy have a significant impact on E-participation adoption.

Figure 2: Structural Model With The Hypothesized Relationships Between All Constructs.

Appendix A: Variables And Items

Variables	Items
E-Participation	E-Participation is more convenient than other ways of citizen participation.
	E-Participation helps to improve relationship between citizens and government.
	E-Participation is useful to increase citizen trust toward government.
	E-Participation can get more citizens involved than the traditional citizen participation.
Perceived Usefulness	E-participation makes it easier for me to use certain services.
	I find E-participation useful.
	E-participation enables me to accomplish tasks more quickly.
	E-participation improves my performance in certain tasks.
Perceived Ease of Use	Learning to use E-participation is easy for me.
	It is easy for me to become skillful in E-participation.
	I find E-participation easy to use.
	I find it easy to get E-participation to do what I want it to do.
Compatibility and ICT use	I do not need E-participation.
	E-participation makes work redundant.
	It bothers me to use E-participation when I could do manually.
	I worry about the privacy of my information when using E-participation.
	I worry that E-participation are not secure enough to protect my personal information.
ICT infrastructure	Internet services provided by the government are adequate enough for e-participation.
	Internet services provided by the government are fast enough for e-participation.
	Internet services provided by the government are reliable.
	Lack of internet availability affects e-participation process.
Privacy	I am confident that I know all parties who collect the information I provide during an E-participation.
	I know what information I need to provide during an E-participation.
	I believe I can subsequently verify the information I provide during an E-participation.
	I believe that E-participation will not disclose my information without my consent.
Security	I perceive E-participation as secure.
	I perceive the information relating to E-participation as secure.
	The information I provided in E-participation is helpful for Government.
	I do not fear hacker invasions into E-participation.
Cognitive Need	E-participation sites help me to know many things about services.
	I use E-participation sites to search for new information.
	I visit E-participation sites to answer questions coming from friend/family.
	I use E-participation sites to explore information, beyond

	my normal task.
Affective Need	I like to talk to others about E-participation.
	I like showing my friends/family how to use technology in different ways.
	Computer-based layout, animation and illustrations are good to look at.
	I enjoy E-participating.
Social Need	People who are important to me think that I should e-participate in e-government sites.
	I would e-participate in e-government sites if my friends used them.
	E-participating with e-government over the web enhances a person's social status.
	People who e-participate within e-government to obtain services have more prestige than those who do not.