

# E-Government Services Adoption Assessment From the Citizen Perspective in Jordan

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## ABSTRACT

Jordanian government has made a commendable effort towards designing and disseminating e-government portals on the web. However, there are certain barriers that have caused a significant deterioration in the e-government development index (EGDI) rank for Jordan in the last few years. The paper aims to understand the influence of the factors relating to e-government adoption to improve upon the trailing factors and move further on the EGDI. This study proposes a research model considering constructs such as relative advantage, perceived trust, computer self-efficacy, perceived awareness, resistance to change on behavioral intention. The data were collected through questionnaire survey. The data were analysed using structural equation modeling (SEM) of AMOS 25.0. The results of the analysis showed that relative advantage, perceived trust, computer self-efficacy and perceived awareness have a positive and significant influence on behavioral intentions whereas resistance to change found to negatively influence the citizens' behavioral intentions to adopt the e-government services.

## KEYWORDS:

E-Government, behavioral intention, trust, awareness, resistance to change, Jordan

## INTRODUCTION

Electronic government, also called e-government, involves utilizing information technology (IT) to improve the efficiency, effectiveness, transparency, and accountability of governmental operations. This approach is regarded as one of the most noteworthy advancements in information and communication technology (ICT) in recent times (Rana et al., 2011). As per the UN e-government report, e-government pertains to the government's utilization of information and communication technologies to provide information and public services to the public (UN E-government Survey,

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2014). E-government services provide a number of different benefits to citizens such as cost savings and increased revenue, economic growth, decreased duplication, improved transparency and accountability, improved cost-effective delivery of public services, a unified view of citizens for providing all government services and capability to promptly meet the expectations of citizens (Venkatesh et al., 2012).

To date, a number of studies (e.g., Janssen et al., 2018; Lallmahomed et al., 2021; Rana and Dwivedi, 2015; Rana et al., 2015, 2017) have been published to understand the adoption of e-government services for developed as well as developing countries. Most of these studies have used one or the other theories of technology adoption or diffusion such as theory of reasons action (Fishbein and Ajzen, 1975), technology acceptance model (Davis, 1989), theory of planned behavior (Ajzen, 1991), social cognitive theory (Bandura, 1985), diffusion of innovation theory (Rogers, 1983), unified theory of acceptance and use of technology (Venkatesh et al., 2003), extended UTAUT (Venkatesh et al., 2012) to implement them in the e-government context. The e-government research undertaken in the Jordanian context is no different where only the handful of studies (e.g., Abu-Shanab et al., 2010; Al Nagi and Hamdan, 2009; Al-Ryalat et al., 2012; Nofal et al., 2021) have been published. These studies largely endeavor to understand factors influencing the adoption of digital government services where the similar predominant theories were used to analyse the factors such as website usefulness, ease of use, subjective norms, facilitating conditions, perceived behavioral control, compatibility, trialability, hedonic motivation, attitude, self-efficacy, etc. So these studies provide only the initial understanding and repeated performance of some key constructs originating from the key theories of technology adoption and diffusion. We also argue that most of the studies on e-government adoption use well-known theoretical models could be constraining as the effectiveness of these theories is largely context specific. Moreover, these theories mostly explain the functional and social aspect of e-government adoption but miss out on the other pertinent and overlooked aspects of public services adoption such as emotional and relational drivers. By using the various constructs under each one of these categories, this research analyses the influence of constructs belonging to all these categories including functional (e.g. relative advantage), social (e.g. awareness), emotional (e.g. computer self-efficacy, resistance to change), and relational (e.g. trust) on to citizens' intention to use them.

The extant research indicates that Jordan does not appear to have infrastructure issues similar to those faced by African nations. According to the Jordanian Department of Statistics and UNESCO, almost all Jordanians have access to electricity, and the literacy rate ranges from 92% to 94% (UNESCO, 2015). In 2014, a UN survey placed Jordan among the top six Arab countries in terms of the online services available. Despite this, Jordan continues to encounter developmental obstacles, and the adoption of online services is not as widespread as the government desires (Abu-Shanab, 2017). Out of the total e-government services provided by the government in Jordan, only 75% can be fully implemented online whereas the government still aims to promote services such as online payment systems and online customer services and helpdesks (Almaiah and Nasereddin, 2020). The prior studies on e-government adoption in Jordan have analysed only the key factors associated with the well-known theories such as theory of reasoned action (Alryalat et al., 2015), technology acceptance model (Alryalat et al., 2013), theory of planned behavior (Alryalat et al., 2012) and unified theory of acceptance and use of technology (Almaiah and Nasereddin, 2020) to name a few. However, none of these models present some of the important constructs that could be analysed and provide important perspective when presented together. Considering this aspect, the paper aims to answer the following research question (RQ), which presents the relevant and unique set of constructs to analyse their influence on citizens' adoption of e-government services in Jordan:

**RQ:** Can the combination of factors such as relative advantage, perceived trust, perceived computer self-efficacy, perceived awareness and resistance to change influence citizens' intention to use e-government services?

To answer this generic question based on the specific barriers of the widespread adoption of e-government services, this study considers relatively less explored factors to understand citizens' intentions to use the e-government services in the Jordanian context. By undertaking this research, we provide multi-fold theoretical contributions to the existing research. First, the proposed research model is unconventional in nature and provides the understanding of some less explored variables (relative advantage, computer self-efficacy, perceived trust, perceived awareness and persistence to change) together and their role in e-government services adoption among the citizens in Jordan. The combination of these more context specific constructs to examine the intentions to use the e-government services is a further contribution as these constructs provide a more accurate reflection of the overlooked services. The high variance explained by these variables on the intentions to use the e-government services indicate their relevance in the current research. Also, the findings of this paper provide implications for the government as well as policymakers on how to manage the advantage and usefulness of the online government services they provide to the users as well as how to manage users' trust, self-efficacy and also keep them well informed to all such services, which can be used effectively and motivate them to use such services to save their time, effort, cost and convenience so that availing such services can be made to realise much more better to them than availing these services using government offices.

The rest of the paper is structured as follows: The next section proposes the research model, highlights the importance of constructs used and formulates the hypotheses. The subsequent section discusses the research methodology. The next section analyses the data and presents the results. The section after this discusses the findings of this research in the backdrop of the available literature, implications for theory and practice and limitations and future research directions. Finally, the paper ends with the conclusive remarks of this study.

## **Theoretical Background, Proposed Research Model, and Hypotheses**

A review of literature on e-government adoption indicates that they have used a number of different alternative theories or their combination of the information systems (IS) and IT adoption and success including theory of reasoned action (Alryalat et al., 2020), TAM (Rana et al., 2014), TPB (Rana et al., 2016), Diffusion of Innovation (DoI) theory (Sang et al., 2009), SCT (Rana and Dwivedi, 2015), UTAUT (Ahmad et al., 2013), UTAUT2 (Alharbi et al., 2017), and DeLone and McLean's (1992, 2003) IS success model (Rana et al., 2015) to name a few. However, we believe that all these models examine only a standard set of constructs whereas some more relevant constructs appropriate for the current context of the research are overlooked. For example, the construct such as 'perceived awareness' of some of the underused websites in Jordan could be the potential reasons for not being accessed and used them. As a result, we propose that this construct should be used in the model.

Likewise, some of the underrepresented websites in Jordan are the ones through which the transaction can take place. Although the country has a large percentage of digital literacy, the research indicates that citizens do not feel comfortable on making transactions through the web portals. The reasons for this insecurity of their personal information getting breached is very obvious as the security investigation of government portals in Jordan reveals that confidential data of individuals who use e-government services could potentially be compromised and made susceptible to exploitation not just by experienced hackers, but also by novices using basic tools (Almasri, 2018). Considering that we have considered to use the construct 'resistance to change' as one of the antecedents of behavioral intentions to use the e-government services. As 'perceived trust' is a key issue for the citizens accessing e-government services due to various issues of security and privacy, this is important to explore this construct in the proposed research model. In addition, we have also used a couple of constructs such as 'relative advantage' from the DoI and 'computer self-efficacy' from the SCT model. The reason for using these constructs is motivated by the rationale that it is firstly very important to understand the benefit of using such services as well as if the users of such systems would feel confident while using online systems. Considering the above discussion, the current research proposes a research model as shown in Figure 1.

This proposed model contains a total of five antecedents including relative advantage, perceived trust, computer self-efficacy, perceived awareness and resistance to change and the only outcome variable i.e. intention to use e-government services. As a result, the model contains five hypotheses – one each with the independent variable with the outcome variable. The hypothesis for each relationship is formulated below.

### Relative Advantage → Intention to Use E-Government Services

DoI is one of the well-known models of IS research to elucidate the users' adoption of the emerging technologies. Relative advantage is one of the core constructs of the DoI theory. It is defined as the extent to which the e-government service is superior to the other information system or technology it is replacing (Lawson-Body et al., 2014). Tornatzky and Klein (1982) found relative advantage as a significant predictor in assessing the adoption of new innovations. This construct has also been studied across the literature on e-government adoption.

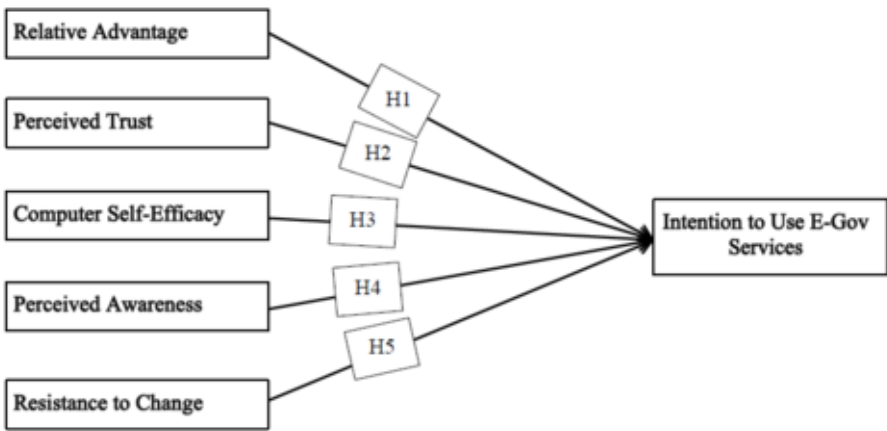
For example, Shareef et al. (2011) stated that relative advantage goes beyond the limited scope of perceived usefulness to capture the benefit that the citizens receive by using e-government services in comparison to the tradition government services. Several studies (e.g., Carter and Belanger, 2005; Liang and Lu, 2013) on e-government have shown the positive influence of relative advantage on intention to use e-government services. We also argue that if citizens view the e-government services as beneficial in comparison to the traditional government services, they intend to use such services more with the hope that these services not only save their time and money but also bring in certain degree of convenience and transparency with which their work is done on time without any fear or favor. Based on the above discussion, the following hypothesis can be formulated:

**H1:** Relative advantage has a positive and significant influence on citizens' intention to use the e-government services.

### Perceived Trust→Intention to Use E-Government Services

The adoption of the e-government services is limited due to impersonal nature of the Internet and citizens' concerns about the privacy and security about their personal information, but their trust on the system can offset these factors (O'Neill, 2018). Trust is a critical part of the human relationship that is based on the honesty, integrity and reliability in the third party (Zaheer et al., 1998). When

Figure 1.  
Proposed research model (Adapted from Rogers 1983, Bandura 1985)



there is a mutual trust between the two parties, it can reduce the anxiety linked with the perceived risk and the individuals would tend more to use the new information systems or technology about which they would be uncertain about otherwise (Zahid and Haji, 2019). Several studies (e.g., Alharbi et al., 2017; Hooda et al., 2022) have provided support for the significant influence of perceived trust on intention to use such systems. While some studies (e.g., Fakhoury and Aubert 2015) have used perceived trust as a single construct, some other studies (e.g., Wang and Lo 2013) have used this separately for trust on Internet and trust on government. We argue that higher level of perceived trust will help citizens to exert greater degree of confidence and faith in the e-government system and hence they will tend to use it more than in absence of it. Therefore, we hypothesise:

**H2:** Perceived trust has a positive and significant influence on citizens' intention to use the e-government services.

### **Computer Self-Efficacy → Intention to Use E-Government Services**

Self-efficacy has been adapted from the social cognitive theory and can be defined as the citizens' self-confidence in their ability to access the e-government systems (Bandura, 1982). Bandura (1982) argued that individuals with higher degree of self-efficacy will be more likely to perform the expected behavior in the future. In the context of e-government, computer self-efficacy could be linked with individual's confidence to perform any online task to get their work done through the government websites. Citizens with high computer self-efficacy tend to have a positive perception of IT-related issues and more likely to use the e-government systems (Mensah and Mi, 2019). A number of studies (e.g., Shareef et al., 2011) have established the relationship between self-efficacy and intention to use e-government services in the prior literature. We also argue that higher degree of computer self-efficacy will help the citizens to gain a higher degree of confidence in using the e-government services and hence they will intend to use it more likely for any future assignment. Therefore, we hypothesise:

**H3:** Computer self-efficacy has a positive and significant influence on citizens' intention to use the e-government services.

### **Perceived Awareness → Intention to Use E-Government Services**

Perceived awareness is defined as the level of knowledge, education and consciousness that the citizens believe is sufficient to understand the features of the e-government systems (Shareef et al., 2011). It is believed that perceived awareness plays a crucial role in the adoption of e-government services because informing citizens about these services, their advantages, and the reliability of the system is likely to lead to their adoption (Lallmahomed et al., 2017). Awareness is particularly important as people are not very much responsive about the services that are available to them through the government websites and they tend to go from one center to the other for getting their work done. Some researchers (e.g., Zhao et al., 2012) have argued that lack of awareness is a major issue to the adoption of e-government services. In the context of this research, we argue that higher level of citizens' awareness will help them to know more about the e-government services and hence they will be more likely to use it in the future. Therefore, we hypothesise:

**H4:** Perceived awareness has a positive and significant influence on citizens' intention to use the e-government services.

### **Resistance to Change → Intention to Use E-Government Services**

The reluctance to embrace change has been identified as an obstacle to the adoption of e-government services and can lead to the failure of new systems (Alomari et al., 2014; Dwivedi et al., 2015). There

is a lack of research on resistance to change specifically in the context of e-government. Many African governments face challenges due to resistance to change (Lallmahomed et al., 2017). In this research, resistance to change can be considered as citizens' opposition not to use e-government services and stick to the traditional way to interacting with the government for availing the services. It is therefore obvious that citizens offering resistance to e-government services will have a negative influence on their intention to adopt such services. Therefore, we hypothesise:

**H5:** Resistance to change has a negative and significant influence on citizens' intention to use the e-government services.

## RESEARCH METHODOLOGY

The research involves creating and testing hypotheses, and for this reason, a survey was deemed an appropriate method (Galliers, 1992). When selecting a data collection method for a survey, various factors such as sampling, question form, question content, response rate, available facilities, and length of data collection should be considered, taking into account the context of the study (Fowler, 2002). In this research, the questionnaire was considered the best option compared to other methods. Considering this as a quantitative research, the survey based questionnaire was deemed appropriate for this context where responses for the questions were gathered using seven-point Likert scale. Prior literature has suggested that seven-point Likert scale will provide more adequate perception of respondents' perception than the five-point scale (Debets et al., 2020). Hence, we have used this seven-point scale for getting responses for our close-ended Likert scale based questions.

The questionnaires were distributed among the citizens of Jordan in the city of Amman. One of the co-authors used his two PhD students to the various key shopping centers in the city and asked them to get the citizens' responses based on their consent. So, we can say that the sampling method used for this research was based on non-probability sampling where the data were collected using convenience of the researchers. Data were gathered between the month of January and February 2023 based on the time students spared to visit the shopping centers and get some responses in each attempt. The questionnaire is largely divided under two broader categories. The section contains 10 questions relating to the demographic characteristics of the respondents whereas the second section contains questions relating to the items of the selected constructs of the proposed model.

In this section, we asked 28 questions on the seven-point Likert scale. For the sake of simplicity, the questionnaire was developed in English and then translated back in the local Arabic language using a professional proofreader. The Arabic language based questionnaire was then given to another independent professional translator to translate them back in English to ensure that there was no change in meaning while getting the questionnaire in English translated in Arabic. In the course of almost two months, almost 1000 people were handed in the questionnaire and requested to spare about 15-20 minutes of their time to fill in it. Out of these numbers, only 676 questionnaires were returned. On the manual scrutiny, it was found that only 138 questionnaires were answered partially and hence decided not to be used in the analysis. As a result, a total of 538 responses were considered to be used for the data analysis purposes. While entering the data in the spreadsheet, we decided to drop out 32 more responses as the respondents used the same Liker-scale response to answer all the questions. Hence, we finally used 508 responses for the data analysis purposes.

In this study, covariance based structural equation modeling (CB-SEM) was used for hypotheses testing. Understanding the difference between CB-SEM and variance-based PLS-SEM is important while deciding on which of these two approaches should be used in our research. CB-SEM is primarily used for the confirmation of the use of established theory in the current research in contrast to the use of PLS-SEM, which is more relevant for a prediction-oriented approach to SEM that is primarily appropriate for exploratory as well as for confirmatory research (Hair Jr. et al., 2017). We identified the structural model that best matched the data and tested hypotheses between constructs using that

model. SEM is an appropriate approach for studies that have a strong theoretical foundation. We chose to use AMOS 25.0 to estimate the model. AMOS is a covariance-based approach that fits measurement and structural equations specified in the model simultaneously, using the covariance structure derived from the observed data (Hung et al., 2006).

## Respondents' Profile

The respondents' characteristics show that the largest group of participants falls within the 30-34 years age range (# of Respondents=148, 29.1%) followed by 25-29 ((# of Respondents=144, 28.3%), 35-39 ((# of Respondents=68, 13.4%) and 20-24 ((# of Respondents=52, 10.2%) to indicate some respondents with leading age groups. Out of the total respondents, there were 294 female (C=294, 57.9%) and 214 male respondents (42.1%). The findings also revealed that more than 78% of the respondents had their undergraduate degrees and a large majority of them (i.e. more than 90%) were employed with either with the public sector or private sector organisations. As far as their experience of using Internet is concerned, the largest 32.5% (i.e. # of Respondents = 165) individuals were found to have an experience of more than 10 years, followed by 138 individuals (i.e., 27.2%) with 7-9 years of experience and the next highest being 127 with 4-6 years (i.e. 25%) of experience.

## RESULTS

### Descriptive Statistics

Table 1 displays the mean values and standard deviations for six constructs. The results indicate that relative advantage has the highest mean value of 5.58 followed by intention to use (with the mean value of 5.51) and computer self-efficacy (with the mean value of 5.43) on the scale of [1-7], while perceived trust and perceived awareness have relatively decent mean values of 4.98, 5.08. However, resistance to change was found to have the least mean value of 3.12 as the nature of this construct is supposedly negatively perceived by the respondents. As far as the standard deviations of these constructs from the mean values are concerned they were found to have the decent fluctuation from the mean values. This fluctuation indicates that respondents were not too much digressing away from the mean values and their responses were synchronised.

### Measurement Model

To evaluate the internal consistency of the survey measures, we employed Cronbach's alpha ( $\alpha$ ) to conduct reliability analysis. The results indicated that the reliability of five constructs is high ( $\alpha$  values ranging from 0.70-0.90) whereas it is excellent ( $\alpha$  values higher than 0.90) for one construct, which is deemed acceptable for an investigative study like this one, according to Hinton et al. (2004). Table 2 displays the Cronbach's alpha values for all six constructs with the number of items for each construct.

**Table 1.**  
**Descriptive statistics**

Construct	# of Items	Mean	S.D.
Relative Advantage (RA)	4	5.58	1.34
Perceived Trust (PT)	4	4.98	1.36
Computer Self-Efficacy (CSE)	4	5.43	1.08
Perceived Awareness (PA)	4	5.08	1.15
Resistance to Change (RC)	4	3.12	1.41
Intention to Use (IU)	3	5.51	1.28

**Table 2.**  
**Cronbach's alpha ( $\alpha$ ) of the constructs**

Construct	# of Items	Cronbach's Alpha ( $\alpha$ )	Reliability Type
Relative Advantage (RA)	4	0.892	High
Perceived Trust (PT)	4	0.854	High
Computer Self-Efficacy (CSE)	4	0.749	High
Perceived Awareness (PA)	4	0.743	High
Resistance to Change (RC)	4	0.741	High
Intention to Use (IU)	3	0.908	Excellent

We further validated the scales using convergent and discriminant validity computation using confirmatory factor analysis (CFA). We considered the two-step approach suggested by Anderson and Gerbing (1988). Before testing the structural model, the measurement aspect of the model is evaluated in advance to avoid any potential impact on the interaction between the two models caused by measurement errors. In order to determine the unidimensionality of a model consisting of six factors – relative advantage, perceived trust, computer self-efficacy, perceived awareness, resistance to change, and intention to use e-government services – the correlation matrix was examined. The fitness statistics and internal consistency were used to evaluate the model's appropriateness, discriminant validity, and reliability. Table 3 shows the results of the fitness statistics. Due to sensitivity to Chi-square to sample size, we report RMSEA as an assessment of the overall fit. The recommended value of RMSEA (with a value of 0.051) (Browne and Cudeck, 1993) is considered between 0.05 and 0.08 to represent realistic errors of approximation over the entire population (Browne and Cudeck, 1993). The other fit indices such as goodness-of-fit index (GFI) (Hoyle, 1995), comparative fit index (CFI) (Hoyle, 1995) and adjusted GFI (AGFI) (Chin and Todd, 1995) were all found to be well within the recommended bracket of values.

Convergent validity of the constructs used in the proposed research model is decided based on three ad hoc test prescribed by Anderson and Gerbing (1988). Table 4 provides the list of factor loading for each item of the constructs, composite reliabilities (CRs), and average variance extracted (AVEs). The composite reliability of the constructs were found to exceed the minimal threshold of 0.70 whereas we also found the factor loadings and AVEs to be greater than the expected standard value of 0.50 each.

The discriminant validity test was also conducted following the recommendations of Anderson and Gerbing (1988). For the discriminant validity to be confirmed, the absolute value of the squared

**Table 3.**  
**Measurement model estimates**

Construct	CFA	Recommended Value
Chi-Square	501.046	-
Degree of Freedom	211	-
p	0.000	>0.05
Chi-Square/Degree of Freedom	2.375	<3.00
GFI	0.926	>0.900
AGFI	0.903	>0.800
CFI	0.931	>0.900
RMSEA	0.051	<0.08



**Table 4.**  
**Results of CFA**

Construct/Items	Items	FL	CR	AVE
Relative Advantage (RA)	RA1	0.760	0.896	0.683
	RA2	0.810		
	RA3	0.840		
	RA4	0.890		
Perceived Trust (PT)	PT1	0.750	0.858	0.601
	PT2	0.780		
	PT3	0.760		
	PT4	0.810		
Computer Self-Efficacy (CSE)	CSE1	0.750	0.812	0.519
	CSE2	0.700		
	CSE3	0.720		
	CSE4	0.710		
Perceived Awareness (PA)	PA1	0.770	0.839	0.567
	PA2	0.710		
	PA3	0.780		
	PA4	0.750		
Resistance to Change (RC)	RC1	0.760	0.835	0.559
	RC2	0.720		
	RC3	0.780		
	RC4	0.730		
Intention to Use (IU)	IU1	0.760	0.849	0.652
	IU2	0.840		
	IU3	0.820		

[Note: AVE: Average Variance Extracted, CR: Composite reliability, FL: Factor Loading]

correlation (i.e. modulus of the value) between each pair of construct should be less than the corresponding square root of AVE for their respective pair of constructs. From the values of squared correlation presented in Table 5, we can confirm that each pair of these values follows the expected level well within the values of corresponding SQRT (AVE). Therefore, discriminant validity for all the constructs considered for this proposed model is also conformed to the recommended level. This indicates that all six constructs are distinct and do not overlap with each other in terms of their similarity of their items and nature.

## STRUCTURAL MODEL

After establishing the CFA, we now move on to show the model fit for the structural model testing. The test of overall model fit for the structural model resulted in the  $\chi^2 = 531.185$  and the degree of freedom (DF) value = 214 and hence the  $\chi^2/DF = 2.482$ , which is well within the expected standard value of less than 3.0 whereas the other index values such as GFI = 0.922, CFI = 0.925, AGFI = 0.900 and RMSEA value of 0.053 also indicated that these values constituted reasonably good model fit for the structural

**Table 5.**  
**Discriminant validity**

Variable	RA	PT	CSE	PA	RC	IU
RA	<b>0.826</b>					
PT	0.439**	<b>0 . 7 7 5</b>				
CSE	0.564**	0 . 3 9 0 * *	<b>0 . 7 2 0</b>			
PA	0.528**	0 . 4 6 1 * *	0 . 5 7 6 * *	<b>0 . 7 5 3</b>		
RC	-0.226**	- 0 . 2 2 7 * *	- 0 . 2 1 2 * *	- 0 . 2 1 0 * *	<b>0 . 7 4 8</b>	
IU	0.668**	0 . 3 8 5 * *	0 . 5 2 7 * *	0 . 4 5 7 * *	- 0 . 1 5 0 * *	<b>0.807</b>

[Note: Bold values across the diagonal represent SQRT(AVE), \*\* indicates  $p < 0.01$ ]

model as well. Given that we have found the decent model fit for the structural model, we move forward toward examining the standardized path coefficients between the antecedents (i.e. relative advantage, perceived trust, computer self-efficacy, perceived awareness, resistance to change) and outcome variable i.e., intention to use e-government services, their significance levels and variance explained in Table 6.

The results indicate that RA ( $\gamma = 0.764$ ,  $p < 0.001$ ) (Hypothesis H1), PT ( $\gamma = 0.206$ ,  $p < 0.05$ ) (Hypothesis H2), CSE ( $\gamma = 0.202$ ,  $p < 0.01$ ) (Hypothesis H3), and PA ( $\gamma = 0.317$ ,  $p < 0.01$ ) (Hypothesis H4) are found to have significant influence on intention to use e-government services whereas RC ( $\gamma = -0.224$ ,  $p < 0.01$ ) (Hypothesis H5) negatively and significantly influences the same dependent variable. Moreover, these five independent variables were found to exert a variance of 58% on intention to use e-government services. The model was tested using structural equation modelling of AMOS. The significance level for relative advantage on intention to use e-government services was found to have the significance level of \*\*\* $p < 0.001$  whereas the relationships for three constructs computer self-efficacy, perceived awareness and resistance to use with intention to use e-government services were found at the significance level of \*\* $p < 0.01$ . Moreover, the only relationship between perceived trust and intention to use e-government services was found at the significance level of \* $p < 0.05$ .

Figure 2 shows the validated research model with all the path coefficients with appropriate level of significance and also the variance explained in the outcome variable intention to use e-government services.

## DISCUSSION

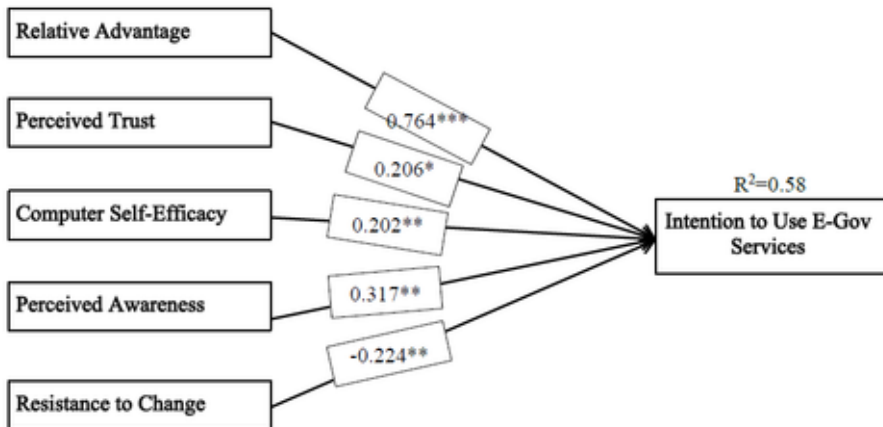
The purpose of this paper is to examine the influence of relative advantage, perceived trust, computer self-efficacy, perceived awareness and resistance to change on citizens' intention to use e-government services. The proposed research model is based on the constructs taken from the theories such as

**Table 6.**  
**Path coefficients of the proposed relationships**

H#	Hypothesis	Coefficient	CR	p-Value	Supported?
H1	RA → IU	0.764***	6.834	<0.001	Yes
H2	PT → IU	0.206*	2.151	<0.05	Yes
H3	CSE → IU	0.202**	2.494	<0.01	Yes
H4	PA → IU	0.317**	2.733	<0.01	Yes
H5	RC → IU	-0.224**	2.812	<0.01	Yes

[Note: CR: Critical Ratio, H#: Hypothesis Number, \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ ]

Figure 2.  
Validated research model



diffusion of innovation theory and social cognitive theory. The hypotheses indicated that all the five hypotheses were supported including four of them were found positive whereas the one as having negative influence on the final outcome variable.

The positive and significant influence of relative advantage on intention to use e-government services (i.e. Hypothesis H1) indicate that when citizens believe that e-government services are going to provide them with enough benefits than the traditional government channels, they are more likely to intend to use these services. Relative advantage refers to the perceived benefits of using new technology over existing technologies and channels. In the context of e-government services, these benefits could be convenience, speed, efficiency and cost savings relating to the use of digital government services (Lean et al., 2009; Liang and Lu, 2013; Shareef et al., 2011).

The positive and significant influence of perceived trust and intention to use e-government services (i.e. Hypothesis H2) indicates that when the citizens perceive the e-government system as trustworthy, they are more likely to use it. Perceived trust can be built through various mechanisms, such as providing secure authentication mechanisms, using encryption technologies, and ensuring user privacy (Zissis and Lekkas, 2012). Prior literature on e-government adoption has supported the relationship between perceived trust and behavioral intention (Lean et al., 2009; Zahid et al., 2022). This relationship indicates that building trust among users is crucial for the successful adoption and use of e-government services.

The significant and positive influence of computer self-efficacy on intention to use e-government services indicates (i.e. Hypothesis H3) that individuals who have higher levels of computer self-efficacy are likely to have a more positive attitude and intention towards using e-government services and be more confident in their ability to use them (Puthur et al., 2010). In addition, the positive impact of perceived awareness on citizens' intention to use e-government services (i.e. Hypothesis H4) indicates that citizens who have a higher level of awareness of e-government services are more likely to intend to use them. Perceived awareness refers to the extent to which citizens believe that they have adequate knowledge and information about e-government services (Hidayat Ur Rehman et al., 2023). When citizens have a high level of perceived awareness, they are more likely to have a positive attitude towards e-government services and perceive them as useful and relevant to their needs. Finally, significant though negative influence of resistance to change on intention to use e-government services (i.e. Hypothesis H5) indicate that individuals who have a higher level of resistance to change are less likely to intend to use e-government services. Resistance to change is a common barrier to

the adoption of e-government services, as some citizens may prefer traditional methods of accessing government services or may be skeptical of new technologies (Zhang and Zhu, 2021).

### **Theoretical Implications**

This research provides several implications to e-government literature. First, this is a unique research model integrating constructs from the DoI (i.e. relative advantage) (Rogers, 1983) and SCT (i.e. computer self-efficacy) (Bandura, 1985) along with some very pertinent to Jordanian e-government context including perceived trust, perceived awareness and resistance to change. Second, this research is one of the very few studies that have analysed the unique combination of constructs in the Jordanian context. Third, the variance explained by the model in the outcome variable called intention to use e-government services is 58%. This indicates that these collection of antecedent variables are important predictors of citizens' intention to use e-government services in Jordan, as they account for a significant portion of the variability in this outcome. Overall, the current research has not only provided the set of variables responsible for assessing citizens' intentions to use the emerging e-government services but also considers including the unique combination of constructs, which were never examined before in the e-government based empirical research in general and in the context of e-government services in Jordan (Alryalat et al., 2012, 2013, 2015).

### **Implication for Practice**

The significant influence of relative advantage on intention to use e-government services suggests that governments and policymakers need to emphasize the benefits of using these services to encourage adoption and usage. By highlighting the advantages of e-government services over traditional channels, governments can increase citizens' intentions to use these services, leading to increased usage and greater overall satisfaction. Similarly, the significant and positive influence of perceived trust on intention to use e-government services indicates that governments and service providers should focus on enhancing the citizens' experience by developing user-friendly interfaces, providing timely and accurate information, and offering convenient services. This will increase their satisfaction with e-government services and lead to higher intention to use and actual use of these services. Governments and service providers should provide adequate support to citizens, including training programs, help desk services, and other forms of assistance. This will help citizens overcome any barriers to using e-government services and increase their confidence in using these services (Chohan and Hu, 2022).

The significant influence of computer self-efficacy on intention to use e-government services suggests that governments and service providers should focus on enhancing computer self-efficacy among potential users to increase the adoption of e-government services. This can be achieved through various means, such as providing training programs, user-friendly interfaces, and support services to increase users' confidence in using e-government services (Chan et al., 2010). The positive impact of perceived awareness on citizens' intention to use e-government services suggests that governments and service providers need to focus on increasing citizens' perceived awareness of e-government services to encourage their adoption and use. This can be achieved through various means, such as targeted awareness campaigns, education and training programs, and user-friendly interfaces that make e-government services easily accessible and understandable. The finding on negative and significant influence of resistance to change on intention to use e-government services suggests that governments and service providers need to address resistance to change to encourage the adoption and use of e-government services. This can be achieved through various means, such as providing adequate training and support to users, offering incentives, and emphasizing the benefits of e-government services.

### **Limitations and Future Research Directions**

Like any other research, this study has some limitations as well. First, this study has tested a very straightforward and parsimonious research model to assess the e-government adoption. The future

research can extend this model to include the mediating variable such as attitude and moderating variables such as computer experience, Internet experience, anxiety, etc. to check how the resulting model performs. The future research can even take actual usage of the e-government services as the final outcome variable. Second, the sample for validating the proposed research model largely contains individuals with reasonable to high experience of using the emerging technology and information systems. The future research should also collect data from those individuals who are not much aware of the newly developed e-government systems and have hardly any experience of operating any such technologies and apps that can help them to get their e-government related work done through various portals. The data used to validate the proposed research model explains 58% variance in intention to use e-government services. The future research should incorporate some more relevant independent variables such as perceived security, perceived privacy, grievance relating to the e-government services being used, etc. to see if the variance explained by the combination of prior and additional variables is higher than before (Rana and Dwivedi, 2015). The future research can also use meta-analysis structural equation modelling to validate the existing models of e-government adoption (Mishra et al., 2023) and fsQCA (fuzzy set Qualitative Comparative Analysis) to analyse the configuration model (Majhi et al., 2021). The results of this research are more applicable to Jordanian context or the countries in the Arab world. Hence, the findings of this research should be generalized with caution (Fetais et al., 2022; Dwivedi et al., 2022; Mathivathanan et al., 2022). Also, the future research should explore the awareness of e-government services through the social media channels to make the users well-informed about the developments made by the government in this area (Banerjee et al., 2021; Dwivedi et al., 2022).

## CONCLUSION

This research aims to examine the combination of unique set of constructs that influence Jordanian citizens' intention to use the e-government services. The research model was proposed by integrating the constructs from the diffusion of innovation, social cognitive theory and some very appropriate context specific constructs to understand whether their presence influences individuals' intentions to use such services. For this, the paper included the constructs such as perceived awareness, perceived trust and resistance to change to constitute a model. The reasoning for considering these constructs is derived from the fact that the newly developed e-government services are hardly known to the individuals and hence there is not much trust of the people on such services.

Also since the people have been using some alternative way to get their work from the government done and hence they are likely to be reluctant and change the mode of availing government services through the newly designed digital platforms. The findings suggested that four constructs (i.e., relative advantage, perceived trust, computer self-efficacy, and perceived awareness) were found to positively influence the citizens' behavioral intentions whereas only one construct (i.e., resistance to change) was found to assess behavioral intention negatively. Based, on these findings, we have provide appropriate implications for the government and service providers of the e-government systems in Jordan.

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