

## Citizen Adoption of Electronic Government Initiatives

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### Abstract

*Electronic government, or e-government, increases the convenience and accessibility of government services and information to citizens. Despite the benefits of e-government - increased government accountability to citizens, greater public access to information, and a more efficient, cost-effective government - the success and acceptance of e-government initiatives, such as online voting and license renewal, are contingent upon citizens' willingness to adopt this innovation. In order to develop "citizen-centered" e-government services that provide citizens with accessible, relevant information and quality services that are more expedient than traditional "brick and mortar" transactions, government agencies must first understand the factors that influence citizen adoption of this innovation. This study integrates constructs from the technology acceptance model (TAM), diffusions of innovation theory (DOI) and Web trust model to form a parsimonious, yet comprehensive model of factors that influence citizen adoption of electronic government initiatives. The findings and implications of this study are discussed in the paper.*

### 1. Introduction

E-government is the use of information technology, especially telecommunications, to enable and improve the efficiency with which government services and information are provided to citizens, employees, businesses, and government agencies. Federal, state and local government agencies have implemented numerous e-government initiatives to enable the purchase of goods and services, the distribution of information and forms, and the submission of bids and proposals [10]. These online services are beneficial to both citizens and government. Government agencies realize benefits in the form of cost reduction and

improved efficiency [40]. Citizens receive faster, more convenient services from a more responsive and informed government [40].

In light of these benefits, e-government is expected to grow considerably in the next few years. There are predictions of more than \$600 billion of government fees and taxes to be processed through the Web by 2006 [19]. U.S. federal government spending is predicted to reach \$2.33 billion by 2005 [11]. While there seems to be substantial growth in the development of e-government initiatives, it is not clear that citizens will embrace the use of such services.

The success and acceptance of e-government initiatives, such as online voting and license renewal, are contingent upon citizens' willingness to adopt these services. Numerous studies have analyzed user adoption of electronic commerce ([12], [26], [33]). Yet, to date, no study has identified the core factors that influence citizen adoption of e-government initiatives. According to a survey conducted by the International City/County Management Association (ICMA) administered to chief administrative officers (CAO) at government agencies, 74.2% of CAOs reported that their government agency had a Web site. However, 90.5 % of these agencies have not conducted a survey to see what online services citizens and businesses actually want [17].

This study integrates constructs from established models in electronic commerce literature –TAM ([12], [14], [29], [33]), DOI ([41]) and Web trust ([3], [12], [26]) - into a parsimonious model of the fundamental elements of e-government adoption.

### 2. Background Literature & Theoretical Foundations

#### 2.1. E-government vs. E-commerce

**2.1.1. Similarities.** Both e-commerce and e-government are based on Internet technology designed to facilitate the exchange of goods, services and

information between two or more parties. E-commerce is the commercial use of Internet technology to sell and purchase goods or services. Laudon (2003) identifies three major electronic commerce categories: business-to-consumer (B2C), business-to-business (B2B), and customer-to-customer (C2C) [22]. B2C commerce refers to the retailing of products or services to individual shoppers. B2B commerce is the sale of goods and services among businesses. In C2C commerce, consumers sell goods and services to other consumers.

The GAO (2001) identifies comparable categories for electronic government: government-to-citizen (G2C), government-to-employee (G2E), government-to-government (G2G), and government-to-business (G2B). G2C government seeks to develop “easy to find, easy to use, one-stop points-of-service that make it easy for citizens to access high-quality government services [10].” *Savings Bond Direct* is an example of a G2C government initiative. *Savings Bond Direct* supports the online sell of United States savings bonds directly to the public. G2E government allows governments to interact with employees more effectively, which enhances productivity and human resources management [10]. The Office of Personnel Management’s *Employee Express* is an example of a G2E initiative. *Employee Express* is an automated system that allows federal employees to manipulate their Thrift Savings Plan accounts and health benefits online. G2G government makes it easier for government agencies to interact with one another. The *National Environmental Information Exchange Network* is one such initiative that establishes a “voluntary, standards-based system that links different state systems and the Environmental Protection Agency’s systems, using common language and secure connections through the Internet [10].” G2B government reduces “governments burden on businesses by eliminating redundant collection of data and better leveraging E-business technologies for communication [10].” *FedBizOpps* is an example of a G2B initiative. It serves as the only online, government wide point of entry for access to federal government business opportunities greater than \$25,000 [10].

Other studies have resulted in similar categories of e-government. The Office of Management and Budget (OMB) also categorizes e-government into four types: G2C, G2B, G2G, IEE. Instead of G2E, OMB includes IEE, Internal Efficiency and Effectiveness, as its fourth category. IEE initiatives “bring commercial best practices to key government operations, particularly supply chain management, human capital management, financial management and document workflow [32].” Hiller and Belanger (2001) classify e-government into

six categories: Government Delivering Services to Individuals (G2IS), Government to Individuals as a Part of the Political Process (G2IP), Government to Business as a Citizen (G2BC), Government to Business in the Marketplace (G2BMKT), Government to Employees (G2E), and Government to Government (G2G). G2IS and G2IP are comparable to G2C government. G2IS refers to the government communicating and providing services to citizens. G2IP refers to the “relationship between government and its citizens as a part of the democratic process [15].” G2BC and G2BMKT are comparable to G2B. G2BC supports capabilities such as paying taxes and filing SEC reports online, while G2BMKT refers to e-procurement. Hiller and Belanger’s (2001) G2E and G2G categories are comparable to those defined by GAO and OMB.

**2.1.2. Differences.** Jorgensen and Cable (2002) identify three major differences between e-commerce and e-government: access, structure and accountability. In e-commerce, businesses are allowed to choose their customers; however, in e-government, agencies are responsible for providing access to information and services to the entire eligible population, including individuals with lower incomes and disabilities. The digital divide makes this task of providing universally accessible online government services challenging. Also, the structure of businesses in the private sector is different from the structure of agencies in the public sector. Decision-making authority is less centralized in government agencies than in other businesses. This dispersion of authority impedes the development and implementation of new government services. The third difference identified by Jorgensen and Cable (2002) is accountability. In a democratic government, public sector agencies are constrained by the requirement to allocate resources and provide services that are “in the best interest of the public [20].”

Warkentin et al. (2002) recognize the political nature of government agencies as a distinguishing feature of e-government from e-commerce. They also note another difference between e-commerce and e-government: mandatory relationships. Mandatory relationships exist in e-government. For instance, legislation, such as the Government Paperwork Elimination Act of 1998, obligates government agencies to “give persons who are required to maintain, submit, or disclose information the option of doing so electronically, when practicable, by October 21, 2003 [25].”

While e-government and e-commerce differ in terms of access, structure, accountability [20] and mandatory relationships [44], e-commerce models can be used to study the adoption of electronic services in

the public sector. Previous research has found that factors from TAM and DOI play a role in user acceptance of electronic commerce in the private sector ([3], [12], [14], [29], [33]). In the public sector, citizen adoption of e-government is also subject to these factors [44]. Considering the aforementioned similarities between electronic commerce and electronic government, the constructs used to study e-commerce adoption, are also applicable to e-government adoption.

## 2.2. Technology Acceptance Model

Davis' (1989) technology acceptance model (TAM) is widely used to study user acceptance of technology. The measures presented in Davis' (1989) study target employee acceptance of organizational software, but these measures have been tested and validated for various users, experienced and inexperienced, types of systems, word processing, spreadsheet, e-mail, voice-mail, etc., and gender ([5], [9], [18], [21], [35], [42], [43]). Several studies have also used TAM to evaluate user adoption of electronic commerce ([12], [13], [29], [33]).

TAM is based on the theory of reasoned action (TRA) which states beliefs influence intentions and intentions influence one's actions [2]. According to TAM, perceived usefulness (PU) and perceived ease of use (PEOU) influence one's attitude toward system usage, which influences one's behavioral intention to use a system, which, in turn, determines actual system usage. After refinement, attitude toward usage was eliminated from the model.

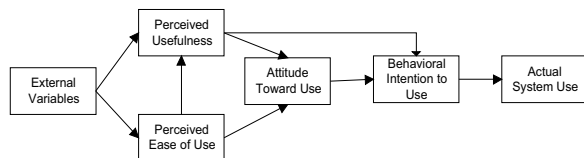


Figure 1  
Davis' (1989) Technology Acceptance Model

Davis defines perceived usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance [8].” He defines perceived ease of use as “the degree to which a person believes that using a particular system would be free of effort [8].” Perceived ease of use is predicted to influence perceived usefulness, since the easier a system is to use, the more useful it can be. These constructs reflect users' subjective assessments of a system, which may or may not be representative of objective reality. System acceptance will suffer if

users' do not perceive a system as useful and easy to use [8].

## 2.3. Diffusion of Innovation

Rogers' (1995) diffusion of innovation (DOI) theory is another popular model used in IS research to explain user adoption of new technologies. Rogers (1995) defines diffusion as “the process by which an innovation is communicated through certain channels over time among the members of a social society [36].” An innovation is an idea or object that is perceived to be new [36].

According to DOI, the rate of diffusion is affected by an innovation's relative advantage, complexity, compatibility, trialability and observability. Relative advantage is “the degree to which an innovation is seen as being superior to its predecessor [36].” Complexity, which is comparable to TAM's perceived ease of use construct, is “the degree to which an innovation is seen by the potential adopter as being relatively difficult to use and understand [36].” Compatibility refers to “the degree to which an innovation is seen to be compatible with existing values, beliefs, experiences and needs of adopters [36].” Trialability is the “degree to which an idea can be experimented with on a limited basis [36].” Observability is the “degree to which the results of an innovation are visible [36].”

Tornatzky and Klein (1982) conclude that relative advantage, compatibility, and complexity are the most relevant constructs to adoption research, thus we include these three constructs in our study [39]. Moore & Benbasat (1991) present image, result demonstrability, visibility, and voluntariness as additional factors that influence the acceptance and use of an innovation [30]. Given the amount of coverage Web-based systems have received in the popular press, we include image in our study.

We do not explore the constructs of voluntariness or trialability. Voluntariness is the degree to which individuals feel they have the option to use an innovation or not. Since citizen use of a Web-based state government service is an individual choice and is not likely to be mandated, voluntariness would be unlikely to show significant variability, and is therefore inappropriate to include in this study.

A comparable argument can be made for excluding trialability from the study. Trialability is degree to which potential adopters feel that they can use the innovation before they actually adopt it. Since it was dubious that perceived trialability would display adequate variance to offer explanatory power, this construct was not included in the study.

### 2.4. Trustworthiness

Belanger et al. (2002) define trustworthiness as “the perception of confidence in the electronic marketer’s reliability and integrity [3].” According to the Hart-Teeter national survey (2000), Americans believe that e-government has the potential to improve the way government operates; but they have “concerns about sharing personal information with the government over the Internet, fearing that the data will be misused and their privacy diminished [10].” Privacy ([15], [16], [31]) and security ([3], [4], [10], [31], [34]) are reoccurring issues in e-commerce and e-government research.

Extending the work of ([24], [27], [37], [38], [45], [26]) establish measures for a multidimensional model of trust in e-commerce, focusing on users’ initial trust in a Web vendor. Initial trust refers to “trust in an unfamiliar trustee, a relationship in which the actors do not yet have credible, meaningful information about, or affective bonds with, each other [26].” In initial relationships, “people use whatever information they have, such as perceptions of a Web site, to make trust inferences [26].”

One of McKnight et al.’s (2002) four major constructs, institution-based trust, is associated with an individual’s perceptions of the institutional environment, such as the structures, regulations, and legislations that make an environment feel safe and trustworthy. This construct contains two dimensions: structural assurance and situational normality. Structural assurance means “one believes that structures like guarantees, regulations, promises, legal recourse or other procedures are in place to promote success [26].” Situational normality presumes the environment is normal, favorable, in proper order and that vendors have the attributes: competence, benevolence, and integrity [26].

The decision to engage in electronic government transactions requires citizen trust in the state government agency providing the service and citizen trust in the technology through which electronic transactions are executed, the Internet [23]. We adapted items from McKnight et al.’s (2002) structural assurance sub-construct to evaluate citizen trust of the Internet. We adapted items from [41] and [33] to evaluate citizen trust of state government.

### 3. Research Model & Hypotheses

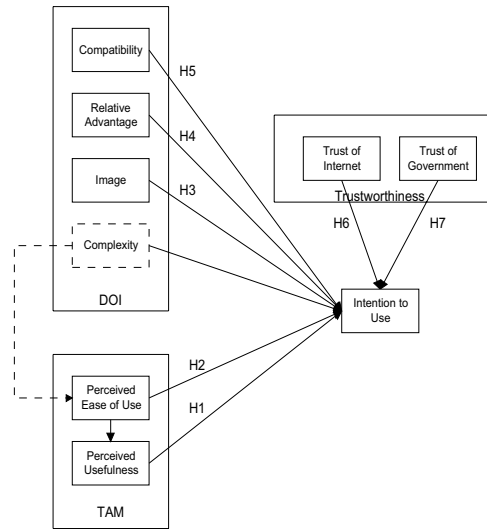


Figure 2 Model of TAM, DOI & Trust in E-government Adoption

The model (figure 2) summarizes the constructs discussed above. Note that complexity from DOI and PEOU from TAM measure the same concept. We therefore decided to use the well tested PEOU construct to represent this concept. From the model and the literature, a number of hypotheses can be derived (table 1).

<i>Table 1 - Hypotheses</i>		
#	Hypothesis	Construct
H1.	Higher levels of perceived usefulness will be positively related to higher levels of intention to use a state e-government service.	Perceived Usefulness (PU)
H2.	Higher levels of perceived ease of use will be positively related to higher levels of intention to use a state e-government service.	Perceived Ease of Use (PEOU)
H3.	Higher levels of perceived image will be positively related to higher levels of intention to use a state e-government service.	Perceived Image (IM)
H4.	Higher levels of perceived relative advantage will be positively related to higher levels of intention to use a state e-government service.	Perceived Relative Advantage (RA)
H5.	Higher levels of perceived compatibility will be positively related to higher levels of intention to use a state e-government service.	Perceived Compatibility (CT)
H6.	Higher levels of trust in the Internet will be positively related to higher levels of intention to use a state e-government service.	Trust of the Internet (TRUS_I)

H7.	Higher levels of trust in state government agencies will be positively related to higher levels of intention to use a state e-government service.	Trust of State Government (TRUS_S)
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\* Originally this construct was measured with 5 items. One reverse worded item was dropped to improve reliability.

#### 4. Methodology

This study surveyed young consumers to elicit their perceptions of state e-government services. The results were analyzed using multiple linear regression analysis.

##### 4.1. Sample

The instrument was administered to 140 undergraduate students at a southeastern research university. Of the 140 surveys administered, 136 were complete and used in the analyses. The subjects had an average of 9 years of experience using a computer; the average age was 19 years; and, 63% were male. 98% of the sample uses the Web everyday; however, the majority (52%) use the Web to gather information about or from the government less than once a month and 32% have never used the Web to gather information about or from the government. Also, 89% have never used the Web to complete a government transaction, such as license renewal.

##### 4.2. Instrument Development & Validity

The items used in this survey were adapted from previous studies. Each item is rated on a scale of 1 to 7 (Strongly Disagree to Neutral to Strongly Agree). The measures of perceived usefulness and perceived ease of use were adapted from [8], [14] and [33]. The measures of compatibility, relative advantage, and image were adapted from [41]. The items used to measure use intentions were adapted from [33] and [14]. The measures of trust of state government were adapted from [41] and [33]. The measures of trust in the Internet were adapted from [26].

The reliability of the items was evaluated using Cronbach's alpha [7]. Table 2 presents the results of the reliability analysis, demonstrating acceptable reliabilities (above 0.70) for all scales.

Construct	# of Items	Reliability
PU	5	.7706
PEOU	4*	.7222
IM	4*	.7824
RA	5	.7773
CT	4	.7469
Trus I	3	.7854
Trus S	4	.8901

Factor analysis using principle components with promax rotation was used to evaluate construct validity (table 3). As can be seen from table 3, most items loaded properly on their expected factors except for 2 items each for PU, PEOU and CT. Cross loading items PU1, PU2, PU5, PEOU3, PEOU4, CT1 and CT4 were dropped from further analysis.

In summary, model and hypotheses testing was conducted with seven independent variables - perceived usefulness, perceived ease of use, perceived image, perceived relative advantage, perceived compatibility, trust of the Internet and trust of state government - and one dependent variable, use. The basic characteristics of these variables are presented in table 4.

Item	Factor Loading							
	PU	PEOU	IM	RA	CT	TRUS_I	TRUS_S	USE
PU1					.785			
PU2								.896
PU3	.715							
PU4	.783							
PU5								.860
PEOU1		.809						
PEOU5		.790						
PEOU3							.684	
PEOU4							.696	
IM1			.848					
IM3			.860					
IM5			.838					
RA1				.798				
RA2				.767				
RA4				.786				
RA5				.818				
CT1				.682				
CT2					.809			
CT3					.724			
CT4								.648
TRUS_I1						.869		
TRUS_I2						.766		
TRUS_I3						.784		
TRUS_S1							.820	
TRUS_S2							.847	
TRUS_S3							.866	
TRUS_S4							.857	
USE2								.740
USE3								.859
USE5								.531

Variable	# Items	Mean	Stand. Dev.
PU	2	5.1429	1.0784
PEOU	2	5.6179	1.0047
IM	3	2.9333	1.1686
RA	4	5.0821	0.9240
CT	2	4.6000	1.0217
Trus I	3	4.5107	1.1176
Trus S	4	4.5732	1.1405
Use	3	4.8714	1.0492

#### 5. Results

Multiple regression analysis was used for hypothesis testing. The purpose of a regression analysis is to relate a dependent variable to a set of independent variables [28]. Regression analysis was seen as the most appropriate analytical technique since the goal of this study was to determine the relationship between use intention (dependent variable) and citizen perceptions of state e-government initiatives (independent variables).

Prior to hypotheses testing, a regression analysis was performed to assess the significance of the demographic characteristics. The demographic characteristics were used as independent variables and USE as the dependent variable. Prior use of an e-government service was the only significant demographic.

Assumptions of multivariate normal distribution, independence of errors, and equality of variance were then tested. There were no violations of these assumptions. Multicollinearity was not a concern with this data set (VIF range from 1.135 to 2.291), as confirmed by the main effect regression models with variance inflation factors (VIF). Outlier influential observations were identified with leverage, studentized residuals, and Cook's D-statistic. This analysis indicated that there were no problems with respect to influential outliers.

The model explains an acceptable percent of the variance in citizen adoption of e-government; adjusted R Square is .635. Since the overall model is significant (F=31.202, p=.000), we tested the significance of each variable. Perceived usefulness, relative advantage, and compatibility are significant. Table 5 illustrates which hypotheses are supported.

Hypothesis	Variable	Coeff.	t-value	Sig.	Supported
H1	PU	.192	3.073	.003	YES
H2	PEOU	.030	.484	.629	NO
H3	IM	.031	.556	.579	NO
H4	RA	.167	2.156	.033	YES
H5	CT	.413	6.050	.000	YES
H6	TRUS I	.031	.499	.619	NO
H7	TRUS S	.123	1.811	.072	NO
Covariate	Prior Use	.156	2.862	.005	N/A

## 6. Results

The intent of this research was to test a model of e-government adoption. Several adoption factors - perceived usefulness, relative advantage and compatibility - were found to be significant in predicting citizen intention to use e-government services. These factors are presented below in figure 3.

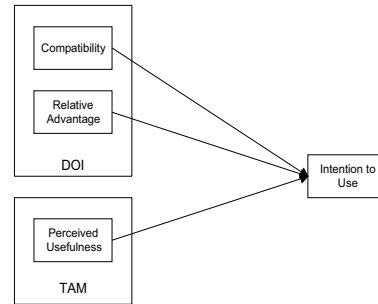


Figure 3  
Model of TAM & DOI in E-government Adoption

## 6.1. Significant Results

**6.1.1. Perceived Usefulness.** Hypothesis 1 is supported. Citizens' intentions to use a state e-government service will increase if citizens perceive the service to be useful. Online services provided by state government agencies, such as license renewal and tax filing, are activities that many citizens currently engage in by visiting a traditional brick-and-mortar government office. They are activities that most citizens are required to complete. An additional means, the Internet, to accomplish these tasks is a valuable (useful) medium.

Since increasing citizens' perceptions of usefulness increases citizens' intention to use online government services, government agencies should publicize the advantages of using these services. Agencies should assume a proactive role in communicating the benefits of online government services to the public. An understanding of these advantages will increase citizens' intention to use e-government services.

**6.1.2. Relative Advantage.** Hypothesis 4 is supported. Higher levels of perceived relative advantage increase citizens' intentions to use state e-government services. State government agencies should identify and communicate to citizens the advantages of using online services as opposed to other means of retrieving information from and completing transactions with state government agencies.

Agencies should also implement incentives, such as reduced fees for completing a license renewal application online or faster refunds from filing state taxes online, that increase the perceived relative advantage of these services. Increasing the perceived relative advantage of these services will encourage citizen adoption of e-government initiatives.

**6.1.3. Compatibility.** Hypothesis 5 is supported. Higher levels of perceived compatibility are associated with increased intentions to adopt state e-government

initiatives. Our sample consisted of 136 undergraduate college students, of which 98 % use the Web everyday. 87% of the sample have used the Web to purchase a product or service.

Undergraduates in our sample have made e-commerce purchases. The ability to interact with state agencies through e-government services can be perceived as compatible with a student's (citizen's) lifestyle. Citizens who've adopted e-commerce initiatives can be expected to view e-government as compatible with their lifestyle and to have higher intentions to use e-government services than those who view these services as incompatible with their lifestyle.

## 6.2. Non-significant Results

It is often interesting to evaluate not only significant results, but also unexpected results, especially in a relatively new field, such as e-government. Four of our hypothesized relationships did not prove to be significant. An interpretation of these results is presented below.

**6.2.1. Perceived Ease of Use.** Hypothesis 2 is not supported. Perceived ease of use does not have a direct effect on citizens' intentions to adopt state e-government services. In Davis (1989) and other studies that followed ([1], [5], [21]) the affect of perceived ease of use was not as strong as perceived usefulness on intended system usage. According to Davis the results "suggest that ease of use may be an antecedent of usefulness, rather than a parallel, direct determinant of usage [8]."

In response to the mixed results on the significance of perceived ease of use, Gefen and Straub (2000) conduct a study, using TAM to test e-commerce adoption, to determine if the importance of PEOU is related to the nature of the task. They found that "PEOU is a dynamic construct with varying levels and effects depending upon whether the type of use is intrinsic or extrinsic to the IT [13]." PEOU relates to assessments of intrinsic characteristics of IS, "such as ease of use, ease of learning, flexibility, and clarity of its interface [13]." PU, on the other hand, is related to user assessments of a task's extrinsic, task-oriented outcomes, such as how IT helps improves task efficiency and effectiveness [13]. They found PEOU directly affected intention to retrieve information and PU directly affected intention to purchase a product. Future studies should evaluate the effects of PEOU and PU on two types of use intentions: intention to gather information from state government agencies and intention to complete a transaction with state government agencies.

**6.2.2. Image.** Hypothesis 3 is not supported. Higher levels of perceived image do not directly affect citizens' intentions to use state government services online. Citizens do not view the use of e-government services as a status symbol. Previous work has found image to be a less predictive indicator of use intentions when compared to the other DOI constructs [41].

**6.2.3. Trustworthiness.** Hypothesis 6 is not supported. Trust in the Internet does not have a direct effect on intention to use state e-government services. Our sample consisted of college students who are frequent and familiar users of Internet services. These users are comfortable and confident in the technology used to implement these services. 99% of the subjects have used the Internet to gather information about a product or service. And 87% of the subjects have used the Internet purchase goods or services.

Hypothesis 7 is not supported. Trust in state government does not have a direct effect on intention to use state e-government services. Citizens frequently interact with state government agencies to complete required tasks such as license renewal and tax filing. These activities must be completed regardless of the level of trust an individual has in the state government. Since these tasks must be completed anyway, and online services are perceived as useful (hypothesis 1), citizens' trust in the state government will not affect their intention to use state e-government services to complete transactions more quickly and conveniently, in a manner that is compatible (hypothesis 6) with their lifestyle.

## 7. Limitations

Our sample consists of undergraduate students at a southeastern research university. The use of student subjects may limit the generalizability of the results. Although several studies in technology acceptance have used student subjects ([8], [13], [29]), college student demographics, such as experience using the Internet, differ from the demographics of the overall population of American citizens. A majority of college students frequently use and have easy access to Internet services. However there are many American citizens, members of the digital divide, that do not have easy access to or much experience with Internet technology.

This study is the pilot of a larger scale study of citizen adoption of e-government initiatives. The next phase of data collection will elicit participation from a broad diversity of citizens (not just students) in age, gender, ethnicity and social groups. The survey will be administered to citizens at a local DMV.

Our model does not account for all the variance in use intentions. Instead it identifies a few key factors that influence citizen adoption of state e-government services. Undoubtedly, other factors that aren't included in this model influence citizens' intentions to use e-government services.

## 8. Implications for Research

This study presents an integrated, parsimonious model of TAM and DOI that explains 63.5 percent of the variance in citizen adoption of state e-government initiatives. It extends previous adoption research by testing adoption of e-government instead of e-commerce and by testing citizen's overall perceptions of e-government, as opposed to citizens' perceptions of a particular government site.

This model can serve as a starting point for future research in citizen adoption of e-government services. In our future research we will evaluate the perceptions of a more diverse population of citizens, while targeting a specific agency (a local DMV). Other researchers could also use this model as a basis for other studies of e-government adoption.

## 9. Implications for Practice

Perceived usefulness, relative advantage and compatibility were all significant indicators of citizens' intention to use state e-government services. State government agencies need to emphasize the advantages (from a citizen's perspective) of using online services: advantages such as greater public access to information, increased government accountability to citizens, and a more efficient and cost-effective government [6]. State government agencies should communicate the benefits of e-government services to citizens. Emphasizing these advantages will lead to higher levels of perceived usefulness and perceived relative advantage, which, in turn, will lead to higher levels of intention to use a state e-government service.

Government agencies can increase perceived compatibility by making the adoption of online services as seamless and natural as possible. Online services should resemble traditional government services to encourage citizen acceptance. For instance, if a state agency makes license renewal available online, the agency should present a picture of the citizen's license on the Web site to make the process resemble familiar methods of license renewal. The continued growth and integration of e-government into the daily life of American citizens will be facilitated by increasing citizen perceptions of the usefulness,

relative advantage and compatibility of state government services online.

## 10. Conclusion

This study integrates constructs from Davis' (1989) technology acceptance model and Rogers' (1995) diffusion of innovation theory, which have been used to evaluate consumer adoption of e-commerce, into a concise model of citizen adoption of e-government. The results of a multiple regression analysis indicate that perceived usefulness, relative advantage and compatibility are significant indicators of citizens' intention to use state government services online. As government agencies continue to invest in e-government development, it is imperative for agencies to enhance their understanding of the factors that influence citizen utilization of electronic government resources.

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