GENDER AND E-GOVERNMENT ADOPTION IN SPAIN

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ABSTRACT

TAM and DOI models, which include trust as a central factor, are currently standard tools for studying the process of new technology acceptance, but some further research is needed to gauge how different variables could influence this process. This is the case of the gender factor, given that there is no general accord in the literature as to the role of this variable. Thus, the present research focuses on the hypothetical gender-based differences that could affect the explanatory model for e-Government adoption by citizens. The results of the study show that the effects of gender on e-Government involvement are nearly none—probably because these technology-based activities are quite broadly implemented in Spain by now. This in turn implies both, that in Spain e-Government usage level is similar between genders and that the behavior explaining model is virtually the same, with no gender traits acting on it -apart from a slightly particular role played by compatibility in the female case.

Keywords: Administration; Government; e-Government; Adoption; Gender

1. INTRODUCTION

Use of Information and Communications Technologies (ICT) by governments and public administrations contributes to the development of a profound institutional change: from the public management perspective, by improving its efficiency; and from a political perspective, by fostering citizen participation. ICT can be used to build new venues for citizen participation and offers the potential to bring on government processes that are increasingly transparent and receptive to citizen opinion. The interaction between the administration and society aims to redefine the terms according to which the administration relates to citizens. Increased ICT use could aid in improving public services, but in many cases administrations do little more than publish their information online; the next step is to use technology to change their internal processes and develop collaboration between different institutions (Beynon-Davies & Martin, 2004; Ford & Murphy, 2008).

The term "e-Government" has been coined to capture this entire potential for change and to depict the most ambitious dimension of ICT's contribution to all levels of public administration. Electronic government refers to governments' use of technology, particularly Internet-based applications, to enhance access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities. It has the potential to help build better relationships between government and the public by making interaction with citizens smoother, easier, and more efficient (Layne & Lee, 2001). In other cases, it is defined as a new way of organizing public

management to increase its efficiency, transparency, accessibility, and its ability to provide proper responses to citizens with intensive and strategic use of ICT, both in the internal management of the public sector and in its everyday exchanges with citizens and public service users. According to this point of view, intensive ICT adoption offers a particular way of structuring management in public entities aimed at improving both public service and internal operations (Rivera, 2006). Successful e-Government initiatives are not simply technological innovations, but rather processes that involve rethinking and redesigning the entire way in which governments operate (Schaupp et al., 2010).

E-Government has become an essential strategy for many governments in their efforts to increase accessibility and facilitate improved diffusion of public sector services. It is important to bear in mind that the success of e-Government initiatives can be determined by contextual factors associated with the demand for electronic services and by the organizational structures and processes that characterize the administrations in charge of technology maintenance (Luna-Reyes, Hernández García, & Gil-García, 2009). The rapid uptake of new technologies is occurring among most groups of citizens, regardless of income, education, age, and gender. Nonetheless, noticeable gaps still exist between different levels of these attributes. Citizens' adoption of online public services has been obstructed by factors such as, digital divide, accessibility, and lack of trust (Akman, Yazici, Mishra, & Arifoglu, 2005; Al-Sobhi, Weerakkody, & El-Haddadeh, 2012).

In Western literature, the digital divide has been an important academic and policy concern over the last two decades. While the first generation of studies of the digital divide focused on internet access, more recent research has considered the importance of the skills and usage gaps (Polat, 2012). Although there is also a significant gap between genders in internet usage, most of e-Government initiatives have been implemented without taking into account the potential gender-based differences in technology usage behavior (Sarabdeen, & Rodrigues, 2010).

Once we have confirmed the possibility of carrying the explanatory models for new technology adoption over to the area of e-Government, we must further explore the behavior of these models by including the role of several moderating variables (Rufín, Medina, & Sánchez-Figueroa, 2011; Venkatesh, Davis, & Morris, 2007; Venkatesh, Morris, & Ackerman, 2000; Zhang, 2009).

One of these variables mentioned in the literature concerns gender, which has drawn considerable attention in the field of e-Commerce on account of its interaction with attitudinal and behavioral variables (Okazaki, 2007). Although initially gender-based differences were indeed observed in technology development and adoption (Ahuja, 2002; Ong & Lai, 2004; Sánchez-Franco, Villarejo, & Martín, 2009), other studies qualify this view considerably by suggesting that as technology use becomes increasingly widespread, the gender gap narrows in terms of its use (Knight & Person, 2005; Okazaki, 2007). At any rate, the impact of gender in the use of e-Government has long been attracting interests of academics, but in order to establish a secure trend

towards the shrinking of the gender gap it is necessary to identify the potential barriers to gender-based adoption capabilities (Akman, Yazici, Mishra, & Arifoglu, 2005; Al-Rababah, & Abu-Shanab, 2010).

Hence, if we focus our analysis on e-Government adoption in Spain today, primarily based on the Internet—a consolidated technology in Spain—we must consider the following question: Will the gender-based differences considered in the explanatory models for technology adoption and intended use continue to hold over time? Will they disappear altogether as the technology they are based on becomes increasingly widespread?

Given these questions, the present study aims to analyze the current validity of the moderating role of gender in e-Government adoption in Spain, pursuing a goal in order to do so: to study the moderating role that gender may play in the intention to accept e-Government efforts offered by the public administration.

2. DIFFERENT PERSPECTIVES CONCERNING E-GOVERNMENT ADOPTION

E-Government studies consider its implications both from a supply and from a demand perspective. The former analyzes how public authorities provide information and public services online, and four stages have been observed in the development of this process: presence, interaction, transaction, and transformation (Layne & Lee, 2001). Meanwhile, Torres & Pina (2001) developed a methodology for classifying e-Government efforts according to the

level of maturity of the service, thus determining how complete the public service system offered actually is. This level of maturity is calculated as the product of two elements: the breadth and the depth of service maturity. Sharma & Gupta (2002) propose a model for the transformation associated with e-Government development that requires: (1) digitizing information; (2) re-engineering and distributing interactive services; (3) getting citizens involved in developing programs and services; and (4) harnessing the potential of existing media. Siau & Long (2005) suggest the existence of five stages in e-Government development (web presence, interaction, transaction, transformation, and e-Democracy), whereas other authors (Bélanger & Hiller, 2006; Moon, 2002; Royo, 2008) posit a very similar model, where the difference is essentially the terminology used to define the stages, which in this case are the following: static information, bi-directional interaction, online services and transactions, transformation (horizontal and vertical integration), and political participation. Lee (2010) recently suggested that all the analyzed models indicate the existence of five stages: presenting, assimilating, reforming, morphing and e-Governance.

The usual pattern in these models is for the last stage to involve e-Government adoption harnessing its full potential, referred to as e-Democracy, e-Governance, or T-Government (King & Cotterill, 2007; Layne & Lee, 2001; Sarikas & Weerakkody, 2007; Weerakkody & Dhillon, 2008). Given that e-Government includes offering online services, electronic democracy initiatives (e-Democracy), and using electronic media as an aid in carrying out public policy and political processes (e-Governance), it seems advisable to clarify the

relationship between e-Government, e-Democracy, and e-Governance. E-Democracy refers to all the activities carried out to increase online citizen participation and involvement in public affairs, and is applied to the mechanisms requiring the most active participation in decision-making processes (Royo, 2008). Meanwhile, Bhatnagar (2004) defines e-Governance as ICT use by the administration, civil society, and political institutions to encourage more active citizen participation in those institutions' government processes through dialogue and a greater concern for citizens' preferences and opinions. E-Governance not only includes e-Government, but also key aspects of the way in which government operates, such as ICT use to promote greater citizen participation in development, debate, implementation, and evaluation processes in public policy (Rufín & Medina, 2012).

The second area, concerning the demand perspective, addresses the factors that determine e-Government adoption proposals, considering that those that play a key role in the different online consumer behavior models will also influence adoption (Carter & Bélanger, 2005; Reddick, 2009; Warkentin, Gefen, Pavlou & Rose, 2002).

3. DEVELOPMENT OF AN EXPLANATORY MODEL FOR THE INTENTION TO USE E-GOVERNMENT

The applicability of the antecedents for e-Commerce adoption to the realm of e-Government must be considered with caution, given the greater legitimacy and authority associated with public organizations. Introducing information

technology into public management involves certain particularities as compared to the process of private companies going online (Rivera, 2006): the complex structure of public administration objectives and performance of multiple additional functions. However, although governments are essentially political by nature and have certain authority to impose the use of e-Government, its use is optimized when acceptance by citizens is voluntary rather than mandatory.

The most broadly accepted explanatory model for consumer behavior is the Technology Acceptance Model, TAM, proposed by Davis (1989), which is an adaptation of the Theory of Reasoned Action (TRA) focused on new technology-related behavior. The TAM replaces the beliefs defined in the TRA with two elements referred to as perceived usefulness and ease of use, based on the assumption that they are beliefs that have an influence on shaping attitudes and, hence, on individuals' intention and behavior concerning their use of technology, with perceived usefulness mediating the relationship between ease of use and intention of use (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989; Gefen & Straub, 2000). Perceived usefulness refers to the degree to which an individual considers that using a particular system will improve his or her performance of an activity, whereas ease of use is defined as the degree to which the potential user of the technology expects its use to be fairly effortless.

The TAM model is considered a robust structure for explaining how users develop their attitudes towards technology and its use (Davis, 1989; Hu, Chau, Sheng, & Tam, 1999; Koufaris, 2002). The survey method and the TAM theory were predominantly used when investigating the topics of the adoption and

diffusion of technology within the consumer/household/residential context (Dwivedi, Williams, Lal, & Mustafee, 2010). Despite being widely supported, there is not a consensus as to its formulation; alternative specifications have been posited (Adams, Nelson, & Todd, 1992; Chau, 1996; Szajna, 1996) and additional variables have been included (Taylor & Todd, 1995; Shih, 2004a; Vathanophas, Krittayaphongphun, & Klomsiri, 2008).

Another one of the models that have been used to study technology acceptance and use is the Diffusion of Innovations model (DOI), in which Rogers (1995) establishes how diffusion of innovation is conceived as a process for gathering information and reducing uncertainty with the purpose of evaluating technology, identifying five elements that can have an influence on it: relative advantage, complexity, compatibility, trialibility, and observability of its results. Compatibility is considered to be the fundamental attribute in the explanation of technology-related behavior (Tornatzky & Klein, 1982; Moore & Benbasat, 1991). Rogers (1995) defines it as the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. Carter & Bélanger (2005) point out that citizens are more willing to use online government services if those services are congruent with the way in which they like to interact with others.

Although DOI (Rogers, 1995) suggests the existence of five elements in its initial formulation, later studies (Agarwal & Prasad, 1998; Carter & Bélanger, 2005; Tornatzky & Klein, 1982) argue that three of these are the strongest determinants for explaining consumer use of new technologies: relative

advantage, compatibility, and complexity. When developing comprehensive models for technology adoption, it is important to consider the similarity between the TAM and DOI components, because although complexity can be determined according to perceived ease of use, relative advantage is related to perceived usefulness (Carter & Bélanger, 2005; Venkatesh, Morris, Davis, & Davis, 2003).

E-Government is based on performing transactions over large distances without personal interaction (Van Slyke, Bélanger, & Comunale, 2004), and hence trust is worked into the generic adoption models (Gefen, 2002; Pavlou, 2003; Kim & Prabhakar, 2004; Warkentin et al., 2002). Bélanger & Carter (2008) point out that trust is essential for developing e-Government, since it influences intention of use in its many different dimensions. Trust in e-Government refers to the prevailing perception of the integrity and ability of an agency to provide a service (McKnight, Choudhury, & Kacmar, 2002; McKnight, Cummings, & Chervany, 1998). Hence it is crucial to establish a relationship of trust with the public, to ensure confidentiality of the supplied data, and to provide updated and reliable information online (Gilbert, Balestrini, & Littleboy, 2004).

Based on these premises, and in line with previous works (Rufín, Medina, & Sánchez-Figueroa, 2011), we can posit that compatibility, ease of use, perceived usefulness, and trust are the explanatory variables for the intention to use e-Government activities.

- Compatibility is the degree to which the new technology is consistent with past experience and modifies the user's behaviour by facilitating the acquisition of information influencing the intention to adopt the new technology. In terms of the alignment between behaviour and the values required of a potential adopter, compatibility is the critical determinant of electronic platforms adoption (Chen, 2011; Hernández et al., 2010; Lai, Wang, & Lei, 2012).
- Perceived usefulness refers to the degree to which an individual considers that using a particular system will improve his or her performance of an activity. Several studies confirm that perceived usefulness, one of the components from which *performance expectancy* is drawn, has a positive effect on intended and actual use of an e-learning platform (Liu, Li, & Carlsson, 2010; McGill, & Klobas, 2009; Van Raaij, & Schepers, 2008).
- Ease of use is defined as the degree to which the potential user of the technology expects its use to not require an effort. In some cases it has been posited that its effect on online platforms adoption is only indirect, through perceived usefulness (Van Raaij, & Schepers, 2008).
- Trust is defined as the belief that the trustee will act comparatively to fulfill the expectation of the individual who trusts without exploiting its vulnerabilities (Pavlou, & Fygenson, 2006). The role of trust is partially mediated over attitudes. This means that trust precedes both the attitudes and the intentions, but does so not in a direct way (Ozkan, & Kanat, 2011). Higher trust will result in a more positive attitude toward e-Government services (Hung, Chang, & Kuo, 2013). Of greatest interest

to governments is not just that trust in government will lead to more e-Government take-up, but that e-Government take-up will lead to greater trust in government (Bannister, & Connolly, 2011). Trust is thus a significant factor affecting e-Government usage (Das, DiRenzo, & Barbridge, 2009).

Whereas Carter and Bélanger (2005) observed that ease of use, compatibility, and trust were the elements that influenced the intention to use e-Government other researchers stress the role played by perceived usefulness as the principal determinant of e-Government adoption and satisfaction (Orgeron, & Goodman, 2011), and the only consistent explanatory variable for intention to use behavior (Benbasat, & Barki, 2007). Later studies (Carter, 2008; Carter, & Weerakkody, 2008) included the role of trust, although perceived usefulness continued to be considered the most relevant variable.

Greater perceived usefulness and perceived ease of use will result in a more positive attitude toward e-Government services and in increasing intention of use of the technological platforms involved in such processes (Hung, Chang, & Kuo, 2013; Sahu, & Gupta, 2007). Higher compatibility will result in a more positive attitude toward e-Government services. Such an attitude may result from a user's belief evaluations about useful and manageable e-Government services content. Manageable e-Government services content is associated with their compatibility with a user's working ways (Hung, Chang, & Kuo, 2013).

4. GENDER AS A MODERATING VARIABLE IN E-GOVERNMENT ADOPTION

A strong theme in demand-side studies is the so-called digital divide between those with, and those without, internet access, and between those that use and do not use ICT. In this realm, several differences in e-Government usage have been detected which are based on demographic variables such as age, gender, educative level, marriage state or ethnical origin (Gauld et al., 2010). Specifically, the overall theoretical approach to gender and technology has been summarized as follows: "… gender relations can be thought of as materialized in technology, and gendered identities and discourses as produced simultaneously with technologies" (Wajcman, 2007, p. 293).

Gender is one of the moderating variables included in explanatory models for technology adoption aimed at a better understanding of its features and development. Although this variable was initially analyzed from a biological perspective, it is now done in psychological terms. In fact, an analysis of gender-based differences in behavior concerning new technology acceptance was developed after psychology had established the existence of gender-based differences in information processing patterns (Ventakesh, Morris, & Ackerman, 2000).

Venkatesh et al. (2003) show that often men are more objective-driven than women. For Nysveen et al. (2005) women tend to show a lower self efficacy, to be less computer-oriented, and to experience stronger anxiety in computer

usage than men. These authors also suggest that men ponder productivity related factors more strongly than women when it comes to new technology adoption. Some other researchers posit that women tend to prefer printed material over online texts (Enoch, & Soker, 2006). Ong and Lai (2006) showed that the utility arising from contents is comparatively important in order to attract male users to adopt e-platforms. Male subjects are more aware of usefulness, whereas female subjects are more attuned to ease of use (Gefen & Straub, 1997; Moon & Kim, 2001; Weijters, Rengarajan, Falk, & Schillewaert, 2007). Lastly, Zhang (2009) suggests the moderating effect of gender on the relationship between ease of use and perceived usefulness.

Several studies establish slight gender-based differences in trust development (Kolsaker & Payne, 2002; Okazaki, 2007), observing that women perceive trust more than men when it comes to adopting electronic services (Nel, Raubenheimer, & Bounagui, 2009; Okazaki, 2007; Reid, & Levy, 2008; Tamimi & Sebastianelli, 2007). Comegys, Hannula, and Väisänen (2009) hold a somewhat opposing view, confirming the existence of gender differences in online trust development, with higher values for men in the case of a Finnish sample but not in an equivalent case examined in the United States.

In later studies, these levels of perception were linked to the intention to use or adopt a technology, verifying that gender moderated the effect of ease of use and perceived usefulness on intention of use, with a higher impact of perceived usefulness among men and of ease of use among women (Al-Gahtami, 2008; Chui, Ling, & Tang, 2005; Amin, 2007; Ilie, Van Slyke, Green, & Lou, 2005).

Meanwhile, Jayawardhena, Kuckertz, Karjaluoto, & Kautonen (2009) observe that, in certain cases, as in that of virtual environments, trust has a stronger impact on intended use among men than among women.

However, some other studies have shown that gender-based differences in online platforms adoption had been diminishing (Morris et al., 2005), and lately many studies of the digital divide have demonstrated that the gender gap in internet access and use is closing (Van Dijk, 2009). To the extent that in some researches there is no trace of any influence of gender on either perceived usefulness or ease of use (Letchumanan & Tarmizi, 2011; Tan, Ooi, Sim, & Phusavat, 2012).

Thus it is important to bear in mind that gender-based behavior differences are not always established for the relationships among variables. Venkatesh & Morris (2000) confirm the absence of a moderating effect of gender in the relationship between ease of use and perceived usefulness; some other works observe that, although it may moderate the relationship between perceived usefulness and use, it does not do so between ease of use and adoption (Lin & Chou, 2009; Weijters, Rengarajan, Falk, & Schillewaert, 2007), ultimately positing that there are no gender-based differences in the relationships that usefulness and perceived ease of use have with intention of use (Alshare & Alkhateeb, 2008; Calisir, Gumussoy, & Bayram, 2009; Nel, Raubenheimer, & Bounagui, 2009).

Specifically, the impact of gender on use of Internet and e-Government has been analyzed in various studies. Thus, it has been shown that men exhibit a higher e-Government use incidence than women (Li, 2010). Performance expectancy influences behavioral intention to use e-Government more strongly for men than for women. This may be because men usually have higher achievement motivation, and thus their usefulness perceptions of e-Government will strongly influence their intention of using kiosks (Wang & Shih, 2009). The result also indicates that social influence affects behavioral intention to use information kiosks more saliently for women than for men. This means that women will be more strongly influenced by their important others in using e-Government than will men (Wang & Shih, 2009).

Also, there are minute gender-based differences than have been observed in the effect of perceived ease of use on intention to use e-Government, and none in the influence of perceived usefulness on intention to use (Sarabdeen & Rodrigues, 2010). For some authors, gender in not even a factor affecting e-Government use at all (Gauld et al., 2010). Furthermore, gender gap in using Internet was reported to be wider in less advanced countries than it is in the leading ones, and gender differences in the perception of e-Government seem to be significantly large in the former ones (Akman, Yazici, Mishra, & Arifoglu, 2005; Brännnström, 2012).

Summarizing, for all the TAM-related relationships that have been analyzed, including trust, although gender did initially appear to play a moderating role, later works either downplayed that role or rejected it outright. Hence there

appears to be a growing perception that as technology use becomes increasingly consolidated, gender-based differences end up dissolving, which leads to the following hypotheses in our case:

H_1: Gender does not have a moderating effect on the relationship between perceived ease of use and the intention to use e-Government.

H_2: Gender does not have a moderating effect on the relationship between perceived usefulness and the intention to use e-Government.

H_3: Gender does not have a moderating effect on the relationship between perceived ease of use and perceived usefulness.

H_4: Gender does not have a moderating effect on the relationship between trust and the intention to use e-Government.

H_5: Gender does not have a moderating effect on the relationship between compatibility and the intention to use e-Government.

5. MEASUREMENT SCALE

The model used in this study, which draws upon Carter & Bélanger (2005), includes TAM and DOI constructs and models for users' trust in virtual environments, in an attempt to create an explanatory model for the intention to use e-Government initiatives based on an analysis of compatibility, ease of use, perceived usefulness, and trust. E-Government has become an essential strategy for many governments in their efforts to increase accessibility and facilitate improved diffusion of public sector services. However, citizens'

adoption of online public services has been obstructed by factors such as digital divide, accessibility, and trust (Al-Sobhi, Weerakkody, & El-Haddadeh, 2012). In the present research two of the mentioned factors have been included in the same model by incorporating to it both gender-base digital divide and trust.

The compatibility scale is drawn from previous studies (Moore & Benbasat, 1991; Van Slyke, Bélanger, & Comunale, 2004), and includes four items. Ease of use and perceived usefulness are drawn from the works of Davis (1989) and Gefen & Straub (2000), with four and five items respectively. Trust is measured according to a feeling of benevolence towards the Public Agency (Pavlou, 2003; Van Slyke et al., 2004) with three items. Lastly, and given that there are many conceptualizations of e-Government adoption, we will refer to those most broadly used in the literature: citizens' intention to access e-Government to receive information and request public services (Warkentin et al., 2002; Carter & Bélanger, 2005); and their willingness to use e-Government services (Gilbert et al., 2004) In the present study, we focus on intention of use, given that in the case of voluntary-use public services the existence of a significant relationship between intented and actual use has been confirmed (Gupta et al., 2008; Wang & Shih, 2009).

6. DATA COLLECTION AND ANALYSIS

The method used for gathering data was a survey posted on the Internet. To attract, encourage, and diversify participants, e-mails were sent out to a variety of groups (professional organizations, students, faculty members, certain companies for distribution among their workers) with a summary of the goals for

the survey and a link to the survey form on several local government websites: *Sociedad de la Información* bulletin, published by Fundación Telefónica, (www.telefonica.es/sociedaddelainformacion), the School of Economics and Business of the UNED (National Distance Education University in Spain) (www.uned.es), and leading Spanish forums specializing in e-Government (www.sociedadenred.info, http://eadminblog.net, http://sueñosdelarazon.com, http://rosacobos.wordpress.com).

The field work was performed during five months. The sample included Internet users from all over Spain. From a total of 826 completed surveys, 48 were discarded, among a total of 791 completed surveys, 402 of the respondents were men and 389 were women. All the completed surveys were saved in real time in a database that was structured and designed specifically for the research project. To check the validity of the data during the mailing process and avoid storage errors, three control parameters were saved for each question: user IP address, date and time of response, and, lastly, a specific session ID for each hit.

We used a non-probability sampling method with quotas, using as our reference the gender, age, and geographical distribution of Internet users published periodically by the INE (Spain's National Institute of Statistics) in the New Information and Communication Technologies section of their survey on ICT equipment and use in Spanish homes. According to the results, the sample that was used is very similar to that of the demographic profile for Internet users.

The statistical analysis was performed by developing the Structural Equations Model with PLS 3.0 Build 11.30. The Partial Least Square (PLS) method seeks to predict the value of latent variables based on an estimation of the Ordinary Least Square (OLS) and on Principal Component Analysis (ACP). This approach has certain advantages over covariance-based methods, such as its requirements for the distribution of the variables in the sample, the types of variables, and the sample size (Chin & Newsted, 1999).

The purpose of PLS modeling is to predict dependent variables, both latent and present, and it leads to an attempt to maximize the explained variance (R^2) of the dependent variables. Compared to covariance-based methods, PLS adapts better to prediction and theory development applications, although it can also be used for theory confirmation.

7. RESULTS

The scales we used were the result of adapting the scales that had been validated in previous studies, and whose content we assumed to be valid. When we purified the scales for both genders, we eliminated items Compat4, EaseUse4, and PercUsef5, given that their factor loading was lower than 0.707. The remaining variables offered optimal internal consistency (Table 1).

Insert here Table 1

Convergent validity was established by analyzing the Average Variance Extracted (AVE), having stated that the AVE values must be higher than 0.5. All the constructs met this requirement. To establish discriminant validity, the AVE

value must be higher than the variance shared by the construct and the other represented constructs.

Insert here Table 2

To simplify the comparison, each element along the main diagonal (square root of AVE) must be higher than the remaining elements in its row and the corresponding column—correlations between constructs (Barclay, Higgins, & Thompson, 1995) (Table 2).

Insert here Graph 1

In both models, there is a significant relationship between ease of use and perceived usefulness ($path_{men}$=0.653, $tvalue_{men}$=12.004; $path_{women}$=0.591, $tvalue_{women}$=8.958), and between perceived usefulness and intention of use ($path_{men}$=0.323, $tvalue_{men}$=4.334; $path_{women}$=0.283, $tvalue_{women}$=4.212), as well as between trust and intention of use ($path_{men}$=0.240, $tvalue_{men}$=4.572; $path_{women}$=0.168, $tvalue_{women}$=3.915). Meanwhile, the relationship between ease of use and intention of use is not significant in either one of models ($path_{men}$=-0.089, $tvalue_{men}$=1.215; $path_{women}$=0.058, $tvalue_{women}$=0.880).

The only difference in the significant relationships for each model lies in the relationship between compatibility and ease of use: although it is not significant in the case of the sample for men ($path_{men}$=0.110, $tvalue_{men}$=1.523) it is so in the sample for women ($path_{women}$=0.199, $tvalue_{women}$=3.144).

Insert here Graph 2

In studies attempting to show contingent effects, it is important to determine whether differences exist between the groups and to estimate their strength with multigroup analysis (Chin & Newsted, 1999; Qureshi & Compeau, 2009). The

hypothesis in these types of multigroup models, aiming to compare the intensity of the differences between them, could actually be tested with a statistical comparison of the different path coefficients of the structural models for each one of the samples. This comparison is made with the procedure suggested by Chin (2000) for developing multigroup analysis. Following this procedure, a Student's t-test is calculated according to an equation drawn from a Student's t-distribution with m+n-2 degrees of freedom, where S_p is the common estimator for standard error variance, m and n represent the sample size for each group respectively, and SE is the standard error of each path coefficient in the structural model for each group.

Insert here Table 3

As we can see in the table above (Table 3), none of the relationships reveal a significant gender-based difference in behavior. Therefore the posited relationships H_1, H_2, H_3, H_4, and H_5 can be accepted.

8. DISCUSSION

Overall, our results show that both trust (Gefen, 2002; Pavlou, 2003; McKnight et al., 2002) and perceived usefulness as mediators in the relationship between perceived ease of use and the intention to use e-Government (Davis, 1989; Davis et al., 1989; Gefen & Straub, 2000) play a key role in citizen acceptance of e-Government.

Ease of use, on the other hand, does not appear to have an effect on intention of use, except in those cases in which it is mediated by perceived usefulness.

This could lead to the conclusion that citizens do not view ease of use as a directly determining element for their participation in e-Government activities (Salisbury, Pearson, Pearson, & Miller, 2001; Pavlou, 2003; Shih, 2004b), probably because in many cases they have already become accustomed to using Internet-based technology for other purposes. As a matter of fact, ease of use is interpreted by citizens as an element that increases perceived usefulness (a view that is opposed to that of Gentry & Calantone, 2002): it leads to e-Government actions being considered more useful, and hence, in certain cases, to generating greater intention of use.

The only difference that could initially be perceived in the behavior of the two models that we considered (women and men) appears in the relationship between compatibility and intention of use: while this relationship is significant for women, it is not so for men. Therefore, the resulting model for the female population follows the one posited by Schaupp & Carter (2005), in which compatibility, perceived usefulness, and trust are the factors with a direct influence on the intention to use e-Government.

Compatibility is defined in the model as the degree to which the new technology is consistent with past experience and modifies the user's behaviour by facilitating the acquisition of information influencing the intention to adopt the new technology. The observed tendency of the compatibility variable to have a stronger influence on women than on men may support the thesis of Nysveen et al. (2005), i.e., that women seem to experience stronger anxiety in general computer usage than men. Also, this observed tendency of the female role

played by compatibility probably has to do with another previously recorded fact about the general use of the internet, namely that women tend to prefer printed material over online texts (Enoch, & Soker, 2006). And specifically, in the case of e-Government usage, the compatibility weight in the female model explains the effect of social influence on the behavioral intention to use information kiosks by women (Wang & Shih, 2009).

It is important to remember that, although the difference in the behavior of the compatibility variable was established initially, there may be a certain methodological controversy regarding its acceptance. According to some authors, the only relationships that can be considered significant are those with a path equal to or higher than 0.200, whereas others argue that the key for determining whether those differences are significant depends on the value of the t-statistic. Perhaps the fact that it has later been established that there are no differences in the models' behavior may suggest that the method for determining the relevance of a relationship ought to be a minimum path value.

Finally, our study shows that performance expectancy does not influence behavioral intention to use e-Government more strongly for men than for women, i.e., men usefulness perceptions of e-Government will not influence their intention of using kiosks, contrary to what was posited by Wang & Shih, 2009. Conversely, the results confirm the impact of gender traits in the relationship between ease of use and perceived usefulness, contrary to what previously observed by Venkatesh & Morris (2000).

7. CONCLUSIONS

The essential goal of this study was to determine whether, as several works suggest (Ahuja, 2002; Ong & Lai, 2004), gender-based differences in skills and psychological features make for differing behavior in the intention to use e-Government, or whether those differences are actually attenuated by the rise of Internet use. The results of our empirical research lead to the conclusion that there are no significant gender-based differences in the relationships between compatibility, ease of use, perceived usefulness, trust, and intention of use.

In this study, we examine trust in the context of benevolence, considering that the interaction between citizens and the administration is determined by relatedness. City councils must convey their e-Government commitment to their citizens, above and beyond considering an online presence as an end in itself. Offering high-quality public services coupled with active transparency policies, covering all areas of public management, will contribute to the perception of the administration's relatedness to its citizens and will aid in reinforcing trust in e-Government.

An administration's e-Government initiatives must develop policies aimed at convincing citizens that the institution and particularly its civil servants are interested in and have the ability to provide contents with a focus on citizens and services that are non-bureaucratic, designed to fulfill those citizens' needs.

Working along these lines will not only involve reinforcing citizens' trust in e-Government and improving its levels of use, but also something with a greater political impact: promoting transparency in relationships and efficient delivery of public online services.

Government affects very specific aspects and needs in citizens' everyday lives, and those citizens expect solutions for their basic demands and reasonably fast responses. This could possibly be the reason why perceived usefulness is so relevant in the municipal context. An administration's web presence must include an internal structure that provides efficient communication with citizens in terms of personal interaction, and specific help tools that will contribute to increasing the perceived usefulness mentioned above.

Considering the lack of significant differences in the final behavior of the two models (women and men, respectively), we can posit several conclusions based on the relevance of the partial relationships in the samples for both genders. In this respect, and given that the importance of compatibility among women is related to a higher level of anxiety about and lower skills for using new technologies, we must consider the possibility of ease of use having a greater effect than expected on intention of use among women, as we confirm in this study. On the other hand, we confirm that perceived usefulness, trust, and compatibility have that effect in the case of men. Therefore, our conclusions are in keeping with Jayawardhena et al. (2009), who suggested that trust may have a greater impact on intention of use among men than among women.

Also, the significant relationship that is observed between compatibility and e-Government use in the case of women could offer a political opportunity for the administration. It must be recalled here that in terms of the alignment between behaviour and the values required of a potential adopter, compatibility is the critical determinant of electronic platforms adoption (Chen, 2011; Hernández et al., 2010; Lai, Wang, & Lei, 2012).

As practical implications are concerned, conventional approaches to providing information and services in ways that are already familiar to users in order to improve compatibility (for example digital versions of forms similar to the ones women use off-line, women tending to prefer printed material over online texts as posited by Enoch, & Soker, 2006) pale in comparison with the public management potential offered by the evolution of the Internet itself and, above all, by the ways in which women use it: social networks such as Facebook or Linkedin, blogs, wikis, and other tools encourage immediate feedback in communications and can be extremely useful for promoting an administration's relatedness to its female citizens. The reason is again the observed weight of compatibility in the female model, which explains the effect of social influence on the behavioral intention to use information kiosks by women.

In the case of men, since the determining variables are perceived usefulness and trust, our conclusions are in keeping with those of Carter (2008) and Carter & Weerakkody (2008). What both gender models have in common is that perceived usefulness is the variable with the strongest influence on the intention to use e-Government.

In addition to offering a better theoretical understanding of citizens' intentions to use e-Government, the conclusions of this study enable us to provide empirical support for the absence of a need to develop further gender-differentiated public policies and actions aimed at encouraging optimal use of the range of e-Government activities offered by the administrations others than an adequate monitoring of the presence of e-Government in the social networks.

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Table 1: Items in the scales, by samples

	Men		Women	
	Mean	S.Deviat.	Mean	S.Deviat.
Comp1	0.9034	0.021	0.885	0.023
Comp2	0.938	0.009	0.929	0.014
Comp3	0.841	0.034	0.834	0.034
Comp4	-	-	-	-
EaseUse1	0.889	0.023	0.838	0.033
EaseUse2	0.917	0.017	0.893	0.029
EaseUse3	0.847	0.024	0.838	0.025
EaseUse4	-	-	-	-
PercUsef1	0.889	0.029	0.807	0.053
PercUsef2	0.906	0.022	0.918	0.017
PercUsef3	0.920	0.015	0.901	0.014
PercUsef4	0.865	0.031	0.879	0.023
PercUsef5	-	-	-	-
Trust1	0.888	0.018	0.918	0.012

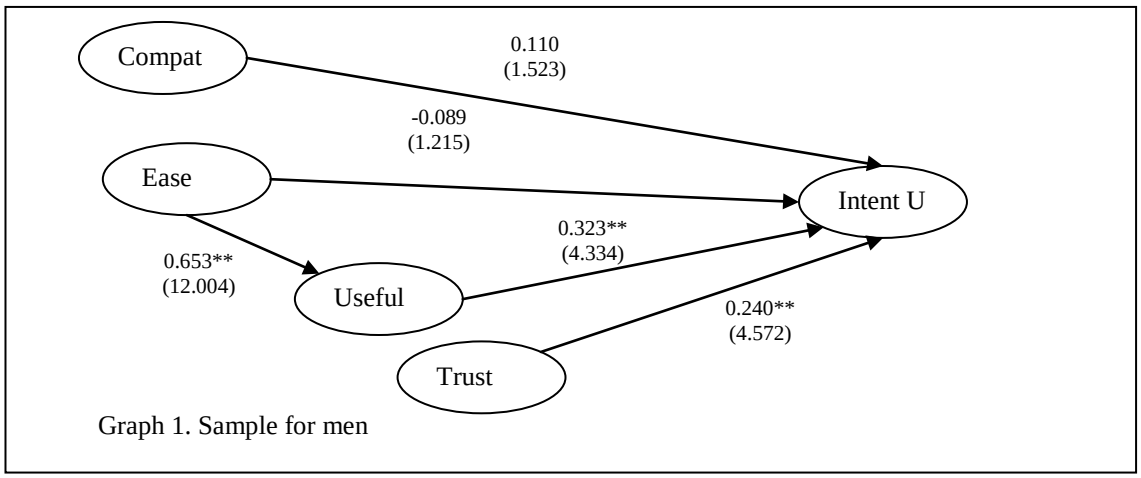
Trust2	0.854	0.023	0.909	0.017
Trust3	0.871	0.021	0.766	0.054
IntUse1	0.814	0.024	0.795	0.033
IntUse2	0.893	0.017	0.913	0.009
IntUse3	0.870	0.021	0.856	0.020

Table 2: Discriminant validity of the different samples

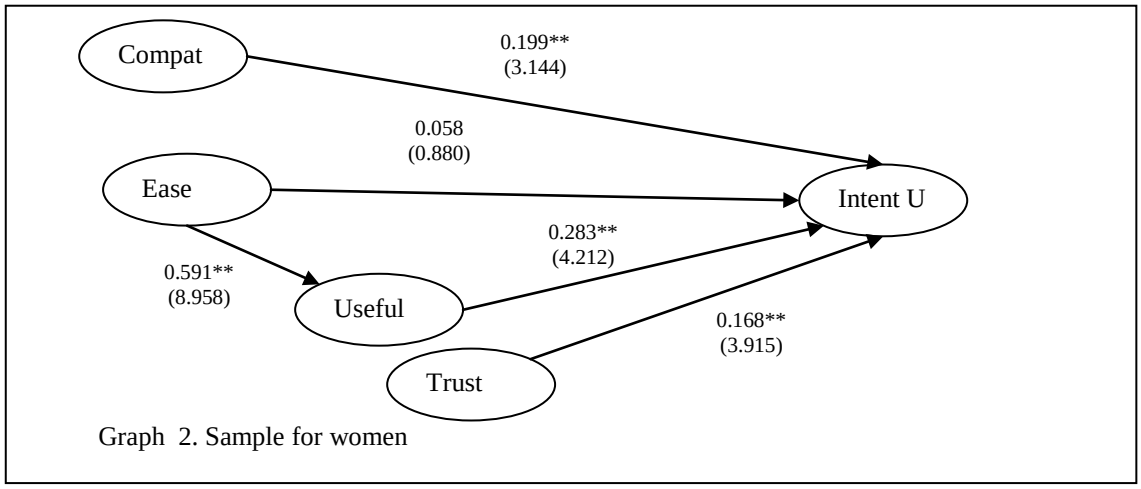
		Compat	EaseUse	PercUsef	Trust	IntUse
Men	Compat	0.896	-	-	-	-
	EaseUse	0.653	0.885	-	-	-
	PercUsef	0.655	0.653	0.896	-	-
	Trust	0.320	0.291	0.289	0.872	-
	IntUse	0.340	0.263	0.405	0.342	0.860
Women	Compat	0.770	-	-	-	-
	EaseUse	0.620	0.750	-	-	-
	PercUsef	0.647	0.591	0.786	-	-
	Trust	0.217	0.273	0.209	0.871	-
	IntUse	0.455	0.394	0.481	0.287	0.856

Table 3: Multigroup analysis for the samples

	Path. Men	Path. Women	Diff.	t-value
H_1: Ease of use→Intention of use	0.110	0,199	-0,089	-0,927
H_2: Perceived usefulness→Intention of use	0,653	0,591	0,062	0,729
H_3: Ease of use→Perceived usefulness	-0,089	0,058	-0,147	-1,492
H_4: Trust→Intention of use	0,323	0,283	0,040	0,399
H_5: Compatibility:→Intention of use	0,240	0,168	0,072	1.060



Graph 1. Sample for men



Graph 2. Sample for women