

# Trust and e-government acceptance: The case of Tunisian on-line tax filing

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**Abstract:** Public services are an interesting area for the application of ICT which helps to improve both the performance of government services and the modernization of administrative operations. The current study focuses on the determinants of companies' acceptance of electronic public services : the case of on-line tax filing in Tunisia. To identify these determinants, we conducted an investigation in 190 Tunisian companies using the on-line tax filing system. The results of the quantitative analysis confirm the hypothesis that links trust, technical and individual determinants to the intention to use the on-line tax filing system. Trust determinants are the factors that most affect the intention to use the on-line tax filing system.

The findings provide several important implications for e-government research and practice in Tunisia. The model developed here can be applied in other similar e-government projects to test users' intention to accept the system and therefore enhance its success. This research also has limitations which can be addressed in future research.

**Keywords:** e-government, on-line tax filing, acceptance factors, personal innovativeness, computer self-efficacy, online trust, system quality, information system.

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## 1. Introduction

Information and communication technology (ICT) and the Internet have changed our personal and professional habits (Sahu and Gupta, 2007). The working environment is becoming globalized and mobile as new services appear, while former services are being transformed and modernized (Berkhout and Hertin, 2004). In some contexts, ICT initiatives are seen as a means to fight against poverty and social exclusion (Matavire, et al., 2010). Public services are actually an interesting space for the application of ICT which helps to improve the efficiency and effectiveness of government services (Gil-García and Pardo, 2005; Wong, Tam, and Cheng, 2006). E-government has appeared as a means by which governments, and therefore the public sector, provides better services to citizens (Matavire, et al., 2010).

Based on an interview carried out with officials in the general direction of administrative reform at the Prime Minister's Office, we concluded that Tunisia became aware of the important role of ICT in building the knowledge society and started to invest in this field. Applying a strategy to develop e-government, it has aimed to strengthen the use of Information and Communication Technology by its administration, improve the relationship between the government and citizens and finally to enhance government performance through better quality service, good public governance, greater transparency and the fight against corruption. Moreover, the Tunisian strategy aims to improve the international positioning of Tunisia by reference to United Nations (UN) indicators system called "UN e-government survey" composed of the following measurement indicators: the web presence, telecommunication infrastructure and human resources. In 2014, Tunisia was ranked first in Africa in terms of e-government. Globally, she became at the 75th rank achieving a progress of 28 places compared to the 2012 study.

To maintain this position and progress internationally, Tunisia has stepped up the pace of implementation of several e-government projects. Indeed, several projects were launched aiming at putting 200 services online by 2014. Currently, there are 202 online services divided into three categories G to G, an administration-to-administration service (7 services); G to B, an administration-to-business service (57 services) and G to C, an administration-to-citizen service (138 services). By focusing on the component of G to B services and on the basis of an exploratory study designed to explore the specific characteristics of the Tunisian context and evaluate the use of these services within Tunisian companies, we found that on-line tax filing is the best known

and most used system. It involves the monthly release of the income tax return, which includes 11 taxes namely, the monthly tax return, the companies' tax return, the advance tax return owed by partnerships (such as recognized economic groupings), the income tax instalment and the natural people's tax return. This service offers three levels of consultation: an advisory and inquiry service, a simulation service to calculate the amount of income tax payable and a service for tax collection. On-line tax filing became mandatory for some taxpayers. During an interview conducted at the Tunisian general department of taxes, the director of the on-line tax filing system affirmed that: *"e-government services in general, and online tax filing in particular, are sources of performance and value creation for both the private and the public sectors. Indeed, this system saved the financial resources of the Tunisian state coming from taxes during and after the period of revolution; a period of instability during which many public administrative offices (including tax departments) were destroyed and burned and several strikes were organized"*. Hence, the interest of the study of the determinants of acceptance of e-government system and more particularly the On-line tax filing. In fact, this research is motivated firstly by the perceived positive impact of on-line tax filing on public administration and firms and the continuous increase in numbers of users (individuals and enterprises), and secondly by the nascent state of research on the acceptance of e-government systems and its relationship to organizational performance in Tunisia. Our research aims to answer the central question; "What are the factors of companies' acceptance of on-line tax filing services in Tunisia?"

This question has been the subject of several empirical studies (Hung, Chang and Yu, 2006; Horst, Kuttschreuter and Gutteling, 2007; VanDijk, Peters and Ebbers, 2008; Wang, 2002; and Fu, Farn and Chao, 2006). Therefore, the aim of this work is to study the acceptance determinants of on-line tax filing system in the Tunisian context.

## 2. Theoretical framework

Understanding the acceptance of new technologies has been proved to be one of the most difficult issues in information systems research (Davis, Bagozzi and warshaw, 1989; Agarwal and Prasad, 1998). Indeed, this concept is essential to the success of information systems because the lack of user acceptance prevents new Information Systems from being successful. Moreover, if information systems are not accepted by end users, they can not improve organizational performance (Davis, 1993).

The concept of acceptance is defined in many ways in the literature and has been the subject of a wide theoretical debate. On the basis of the literature (Sahu and Gupta, 2007; Hung, Chang and Yu, 2006; Kim and Lee, 2008), we have defined it as the intention to use information technology willingly.

TAM or the technology acceptance model has been adapted from TRA (Theory of reasoned action). It has the advantage of integrating several aspects of theories of individual behaviour developed by social psychology. This model postulates that the acceptability of an IS is specified by two factors: perceived usefulness and perceived easy use.

The unified theory of acceptance and use of technology (Venkatesh, Morris and Davis, 2003) includes four basic determinants of acceptance: expected performance, expected effort, social influence and facilitating conditions. Moreover, gender, age, experience and willingness to use were considered as moderators of the main relationships of the model.

Based on a literature review of the main research examining on-line tax filing (Wang and Liao,, 2008; Fu, Farn and Chao, 2006; Hung, Chang and Yu, 2006; Horst, Kuttschreuter and Gutteling, 2007; Carter and Belanger, 2005; Teo, Srivastava and Jiang, 2008), we noticed that the theory of planned behaviour (Ajzen, 1991), The unified theory of acceptance and use of technology (Venkatesh, Morris and Davis, 2003) the technology acceptance model (Davis, Bagozzi and Warshaw, 1989) , Delone And Mclean's model of information systems' success (1992; 2003), innovation diffusion theory (Moore and Benbasat, 1991, Rogers, 1995) and the trust model are the models most frequently used for studying the acceptance of on-line tax filing.

**Table 1:** Outline of studies examining the acceptance of e-government

Study	Objective	Context	Results
Wang, 2002	To identify the factors affecting the adoption of electronic tax-filing systems using the technology acceptance model (TAM) as a theoretical	Electronic tax filing	The findings of this study provide important implications for developing effective electronic government services in general and effective electronic tax-filing systems in particular.

Study	Objective	Context	Results
	framework		
Fu, et al., 2004	To develop an understanding of the factors that influence citizens' adoption of electronic tax-filing services, using the technology acceptance model (TAM) and Theory of planned behaviour (TPB) as a theoretical framework	Electronic tax filing in Taiwan	Taxpayers who adopted the manual tax-filing method perceived lowest overall satisfaction level. Internet filing seemed to perform best in most of the sub dimensions of satisfaction and was perceived as the most efficient.
Chang, et al., 2005	To examine taxpayers' acceptance of the Internet tax-filing system using TAM	Users Internet tax filing system	TAM proved to be a valid model to explain the taxpayers' acceptance of the Internet tax-filers' system.
Hung, Chang, And Yu, 2006	To identify the factors that determine the publics' acceptance of e-government services	Online tax filing and payment system in Taiwan	Theory of planned behaviour with some modifications is proved to be a valid model explaining 72% variations in behaviour intention to use the system.
Horst, Kuttschreuter and Gutteling, 2007	To identify the role of risk perception and trust in the intention to adopt government e-services, using TAM and TPB and Trustworthiness	Users of e-government services in Netherlands	The perceived usefulness of electronic services in general is the main determinant of the intention to use e-government services. Risk perception, personal experience, perceived behavioural control and subjective norm were found to significantly predict the perceived usefulness of electronic services in general, while trust in e-government was the main determinant of the perceived usefulness of e-government services
Van Dijk, Peters and Ebbers, 2007	To identify the factors that determine the public acceptance of e-government services using the unified theory of acceptance and use of technology (Venkatesh, Morris and Davis, 2003)	Users of e-government services in Netherlands	The acceptance and the use of government Internet services is a matter of learning, and that acceptance and use should be analyzed as a dynamic process.  In this respect, social cognitive theory (stressing learning and the influence of habits and expected outcomes) might have made a better psychological core for our multidisciplinary
Carter and Belanger, 2005	To identify the factors that determine the publics' acceptance of e-government services using constructs from TAM, innovation diffusion theory and Web Trust models	Users of e-government services in USA	The findings indicate that perceived ease of use, compatibility and trustworthiness are significant predictors of citizens' intention to use an e-government service
Belanger and Carter, 2008	This study analyzes the impact of trust and risk perceptions on one's willingness to use e-government services	Users of e-government services in USA	Disposition to trust positively affects Trust of Internet (TOI) and Trust of Government (TOG), which in turn affect intentions to use an e-government service. TOG also affects negatively perceived risk, which affects use intentions as well.

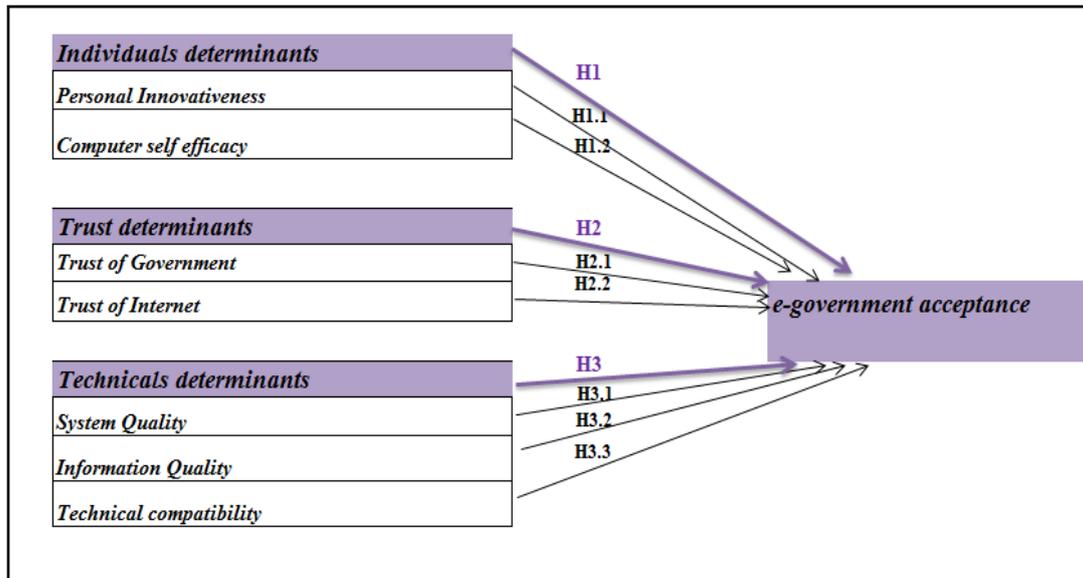
Study	Objective	Context	Results
Venkatesh, Tracy Ann Sykes and Venkatraman, 2014	To understand the factors (demographic and personality factors) that contribute to e-government portal use in a developing country. This study hypothesised demographic and personality factors (inspired by the The unified theory of acceptance and use of technology (Venkatesh, Morris and Davis, 2003) as predictors of e-government portal use.	e-government portal in India	Most variables are significant and explaining 40% of the variance in e-government portal use

The previously mentioned theoretical models have been mobilized in research on the acceptance of e-commerce. Thus before conceptualizing our research model we will highlight, as several other authors have done (Belanche, Casaló and Guinalú, 2012), the differences and similarities between e-commerce and e-government. Three major differences are identified: access, structure and accountability (Jorgensen and Cable, 2002). First, in terms of access to e-commerce, companies are able to choose their customers. However, in e-government, public agencies are responsible for providing access to the entire eligible population. The digital divide makes general access to e-government services very difficult. In addition, the structure of a company is different from that of a public agency. The authority of decision-making is less centralized in government agencies than in companies. This dispersion of authority hinders the development and implementation of new government services. The third difference is accountability. In a democratic government, public sector organizations are bound by the obligation to allocate resources and provide services while acting in the best public interest (Jorgensen and Cable, 2002). Moreover, several authors (Warkentin, et al., 2002) recognize the political nature of government agencies as a distinguishing feature between e-government and e-commerce. They also note that mandatory relationships exist only in e-government. On the other hand, there are also many similarities between e-commerce and e-government. By analogy to e-commerce, that enables companies to conduct transactions with others more effectively in «Business to Business (B to B)" relationships and to keep customers close to the business in "Business to consumer (B2C)," relationships, e-government can establish interactions between government and citizens (G2C) on one hand, and between government and business on the other (G2B). Finally, regarding inter-institutional relations (G2G), these are more friendly, more practical, more transparent and less costly than their non-digital equivalents.

Previous research showed that the factors mobilized by the above mentioned models and theories have a significant effect on user acceptance of e-commerce (Gefen and Straub, 2000; Gefen and Karahanna, 2003; Pavlou, 2003). We therefore anticipate that they will also affect companies' acceptance of e-government (Warkentin, et al., 2002; Bélanger, Hiller and Smith, 2002).

### 3. Conceptual framework

The next section will be devoted to the conceptualization of the research model that takes into account several variables whose significant effect on intention to use has been empirically proven by the above mentioned studies (Table 1). The research design aims to identify factors that determine end user acceptance of e-government systems in Tunisian companies. By interacting with the users of on-line tax filing, the initial study of the Tunisian context identified certain issues related to acceptance of e-government. These issues are mainly trust, compatibility, information quality, system quality, and so on. These variables are essentially subject to the TAM model (Davis, Bagozzi and Warshaw 1989), Delone and Mclean's information systems' success model (Delone and Mclean 1992; 2003), innovation diffusion theory (Moore and Benbasat 1991, Rogers 1995), cognitive and social theory (Bandura 1977) and trustworthiness models. We propose a model that includes three categories of determinants: individual, trust and technical (see Figure 1).



**Figure 1:** Research conceptual model

Personal characteristics have a great effect on the way we perceive technology and then intend to accept it (Venkatesh, Morris and Davis 2003). In fact, in addition to the moderating factors of age, experience, gender and desire, other factors may influence the acceptance of a technology or of information systems. Consistent with these findings, regarding Intranet use, other authors (Masrek, Karim and Hussein 2008), in Malaysia found that individual characteristics, including Web efficacy, personal innovativeness, seniority and experience, had a significant impact on the use of the Intranet.

Therefore, we formulate our first hypothesis as follows:

**H1:** Individual determinants have a positive effect on the acceptance of online tax return.

For this model, personal innovativeness of ICT and computer self-efficacy are individual determinants. Personal innovativeness is defined as “the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system” (Rogers 1995). In other words, it is the speed with which a person adopts a new product compared to others. Innovativeness is a determinant of the success of innovations (Rogers 1995). Indeed, it is an individual and invariable characteristic across all technologies.

Hence, people who are highly innovative in the field of ICT show more positive attitudes toward paperless tools (Agarwal and Prasad 1998). Personal innovativeness has been proven to be a strong predictor of intention to use in the domain of e-commerce (Jackson, Yi and Park 2013). Personal innovativeness towards e-government services was defined as the tendency to learn about and adopt e-government services (Doong, Wanga and Foxallc 2010, p. 460). Several empirical studies have found relationships between personal innovativeness and e-government services acceptance in public administration and e-government literature, (Hung, Chang and Yu 2006, Fu, Farn and Chao 2006; Wu and Chen 2005). The formation of positive attitudes towards IT innovation increases with individual innovativeness towards the acceptance of IT. The e-government's on-line tax filing services are generally considered an innovative IT.

For this reason, we propose the following addition to the first hypothesis:

**H1.1:** Personal innovativeness of ICT has a positive impact on the acceptance of on-line tax filing.

Computer self-efficacy, refers to a judgment of one's capability to use a computer. It is not concerned with what one has done in the past, but rather with judgments of what could be done in the future (Campeau and Higgins, 1995, p.192). Computer self-efficacy then refers to the judgments that an individual forms about his/her ability to use technology. Indeed, high levels of self-efficacy will lead to higher levels of behavioural intention and use of IT (Taylor and Todd, 1995).

Therefore, self-efficacy is considered an important antecedent of the use of IT as it stimulates the adoption and maintenance of a new behaviour (Taylor and Todd, 1995; Campeau and Higgins 1995; Chan, et al., 2010). In the particular case of e-government, self-efficacy has been proven as a factor positively affecting user acceptance of systems such as on-line tax filing (Sahu and Gupta, 2007, Hung, Chang and Yu, 2006; Fu, Farn and Chao, 2006) and electronic tendering systems (Chu et al., 2004). For this reason, in this research, we expect self-efficacy to be an important factor that affects the intention to use online tax filing.

As a consequence, we formulate our second hypothesis as follows:

H1.2: Computer self-efficacy has a positive impact on the acceptance of on-line tax filing.

In the online context, trust is a key factor in the adoption of digital technologies because of its relevance in dealing with two critical conditions of the virtual world: uncertainty and vulnerability risk (Gefen, Karahanna and Straub, 2003).

Studies of online trust appeared in the early 2000s. They mainly come from research into e-commerce (Lee and Turban, 2001; Pavlou, 2003), management (Stewart, 2003; Gefen and Straub, 2004), information systems (Bhattacharjee, 2002, McKnight, Choudhury and Kacmar, 2002) and marketing (Bart et al., 2005).

Online behavioural studies emphasize the importance of including trust in models to better understand users' acceptance of e-services (Carter and Weerakkody, 2008). Indeed, trust in the case of electronic services has been largely analysed both regarding e-commerce (McKnight, Choudhury and Kacmar, 2002; Gefen, Karahanna and Straub, 2003) and e-government (Teo, Srivastava and Jiang, 2008, Belanche, Casaló and Guinalú, 2012; Carter and Belanger, 2005, Lean, et al., 2009, Weerakkody et al., 2013). The results for e-government often show that lack of trust is a barrier to adoption.

Many researchers (Teo, Srivastava and Jiang 2008) have shown that citizens' perceptions of the quality of a government website are affected by their trust in these sites. These studies have also shown that online trust is partly affected by confidence in the government.

Therefore, and in the light of the literature regarding the impact of trust on the acceptance and use of online services, we formulate the following hypothesis:

H2: Trust has a positive impact on the acceptance of on-line tax filing.

In this research and in accordance with literature (Teo, Srivastava and Jiang 2008; Chen, et al., 2015, and Fakhoury and Aubert, 2015), trust in government and in technology are the determinants of online trust. Several authors (Chen, et al., 2015; Fakhoury and Aubert, 2015; Weerakkody, et al., 2013) have just confirmed the previous literature on the positive impact of trust on adopting and continuing to use electronic government services. The authors (Teo, Srivastava and Jiang 2008; Fakhoury and Aubert, 2015) showed that trust in the government and technology makes citizens trust government electronic systems (specifically on-line tax filing). In addition, according to Belanger, Hiller and Smith, (2002), and Fakhoury and Aubert, (2015), users must trust both the government and the enabling technologies. We therefore formulate both sub-hypotheses as follows:

H2.1: trust in government has a positive impact on the acceptance of on-line tax filing

H2.2: Trust in technology has a positive impact on the acceptance of on-line tax filing

The impact of the technical characteristics of new technology on its acceptance has been analysed by many researchers (Venkatesh and Davis, 2000) with regard to the three following characteristics: the relevant technology, the quality of the results of using it and its tangibility. Regarding electronic tax filing, we propose the following three technical determinants: compatibility, system quality and information quality. For this reason, we formulate the following hypothesis (which includes three sub hypotheses):

H3: Technical determinants have a positive impact on the acceptance of on-line tax filing.

The quality of the system affects its use and users' satisfaction (Delone et Mclean 1992; 2003). Many authors agree (Delone and Mclean, 1992; 2003) that response time, reliability, availability and ease of use are criteria for measuring of this variable. These authors believe that system quality affects use intention. Other authors have shown that system quality is a success factor that influences user satisfaction and the adoption of e-government systems in Asia (Kuan Lai and Guilherme, 2010). Moreover, several authors (Teo, Srivastava and

Jiang, 2008; Chen, et al., 2015; Floropoulos, et al., 2010) found that system quality has a positive impact on users' perceived usefulness of online tax return.

Therefore, we formulate the first sub-hypothesis as follows:

H3.1: system quality has a positive impact on the acceptance of on-line filing.

The quality of information was considered as a critical component of the success of an information system within an organization (Delone and Mclean, 1992; 2003). In other words, a system that provides good quality information will be widely used because users will find it useful. In fact, the authors (Wang and Liao, 2008; Floropoulos, et al., 2010; Kuan Lai and Guilherme, 2010) proved the positive effect of information quality on perceived ease of use regarding an on-line tax filing system.

Hence, we formulate the following hypothesis:

H3.2: the quality of information has a positive effect on the acceptance of on-line tax filing.

The relevance of new technology, in other words, its suitability for the activity in question is defined as "*an individual's perception of how far the target system is applicable to his or her job*" (Venkatesh and Davis, 2000). This variable is similar to the concept of compatibility (introduced by the theory of the innovation diffusion (Rogers, 1995) among adoption determinants of technological innovations. Compatibility is defined as "*the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters*" (Moore and Benbasat, 1991, p 195). Therefore, innovation compatible with existing ways of working will be seen as that requiring minimum effort for use and involving little risk. Some authors concluded that new IS resources must be compatible with the existing ecological infrastructure and systems integration approach (Bidan, Rowe and Truex, 2012). Others authors emphasize that the managerial variables (organization, project team etc.) should be adequate to the complexity of information systems project (Bentahar, Benzidia and Fabbri, 2016).

The positive impact of compatibility on the perception and therefore the intention to use is highlighted by several researchers (Hung, Chang and Yu 2006; Fu, Farn and Chao 2006). Compatibility was proved to be the most significant factor affecting intention to use e-government services (Carter and Belanger 2005). In this study, we follow certain authors (Kim and Lee 2008) who, limiting the definition of compatibility to its technical level, have proved the positive influence of this variable on the acceptance and implementation of EDI. The third sub hypothesis is thus formulated as follows:

H3.3: technical compatibility has a positive impact on the acceptance of on-line tax filing.

#### **4. Methodology and research results**

In order to explain the factors affecting the intention to use online tax returns, we used a positivist approach based on a hypothetical-deductive model applied to 190 Tunisian companies using online tax returns.

In the first stage of the research, we used a qualitative method based on thirty semi-directive interviews in order to understand in depth the complexity of the phenomenon and to develop a research questionnaire (Bentahar and Cameron, 2015). During the second and main stage of the study, we used a quantitative method and chose the questionnaire as a hardware support for this inquiry. Each of the individual measurement scales is ranked using a five-point Likert scale ranging from one, ("strongly disagree") to five ("strongly agree").

The study was conducted during a period of 5 months from November 2014 to March 2015. Overall, the instrument was administered to 250 users. Of the 250 surveys administered, 190 were complete and used in the analysis. This sample is representative and meets the requirement to perform Principal Component Analysis (PCA), namely: there should be at least 10 cases for each item in the instrument being used (Garson, 2008; Nunnally, 1978). The distribution of age of Individuals in the sample was from 24 to 53 years and the repartition of use experience of on-line tax filing was from 2 to 8 years of usage. In our research, the sampling units are Tunisian companies that have adopted the payment of tax by Internet. The elements (individuals) are the actual users of these services within these companies. Because of the absence of an exhaustive list of all the units of the survey, we have adopted and use the non-probability method based on a reasoned choice of

individuals in the population. More specifically, we will choose the technique of sampling of convenience. This choice is justified by the simplicity and speed. The survey units are accessible, easy to evaluate and cooperatives. We have opted mainly for face-to-face investigation. This choice is motivated by the fact that it generally provides a high response rate and a high quality of information (Malhotra, Décaudin and Bouguerra, 2004)

We selected two methods for the analysis of the collected data.

Principal Component Analysis (PCA) is a method used “to derive the minimum number of factors that account for the maximum portion of the total variance in an exploratory manner” (Kettinger and Lee, 2005, p. 612).

The CPA is carried out on limited centric data. Hence, the variables have the same variability and the same influence in calculating the distance between individuals.

In practical terms, in this factor analysis, a number of factors (whose eigen value is greater than 1) is extracted so as to represent the inter-correlations between the examined variables. The aim of a factor analysis is to reduce the information available to a limited number of variables by turning the factors so that the items are saturated on the smallest possible number of factors.

Moreover, regarding the Cronbach acceptance coefficient we use 0.55 as a minimum threshold of significance. When  $\alpha$  is lower than the retained threshold, we check the contribution of each item against the total score of the scale. For example, the deletion of some items may contribute to improving overall scale consistency.

Regarding the validation study of the research hypotheses, we used multiple regression tests at three levels: the intensity of dependence of each factor and e-government acceptance was calculated using the R correlation coefficient, the significance of the link and the model's goodness of fit was assessed through  $R^2$  coefficient and Fischer's F test and finally the residue examination to reflect the model accuracy.

It should be noted that the linear determination coefficient  $R^2$  is the main indicator of the regression quality. In other words, it summarizes the ability of the regression line to represent all the cloud points of the observed values. This should be the highest possible assessment. However,  $R^2$  interpretation should also take into account the number of explanatory variables and observations assimilated by the model. For this reason, the adjusted  $R^2$  provides a more realistic assessment of the model results.

### **The link analysis between individual determinants and acceptance of on-line tax filing**

To study the “individual determinant” scale, we used 10 items. A first Cronbach's coefficient gives a satisfactory result, 0.765. This is satisfactory given the acceptance threshold for the internal coherence analysis for this study was is fixed at 0.6. We then continued the factor analysis. The first ACP on all the items gives mixed results. It involves retaining two factorial axes to explain 62.46% of the variance. The share of each variable in the different items is clear having a contribution rate higher than 0.4 on two different axes (axis 1 and axis 2). For this reason, we established the varimax rotation of axes to clarify the meaning of the provided structure; the choice of a varimax rotation results from the perfect independence of the two factorial axes.

The major component analysis gives interesting results. The first two factors alone account for over half of the total variance. A rotation axis interprets these. The first factor accounts for almost 46.4% of the total variance that reflects the dimension relative to “self-efficacy”. The second factor (16.04% of the total explained variance) expresses the variable “personal innovativeness”.

The first relationship we wanted to check regards the assumption about the possible impact of personal determinants on levels of acceptance. Here, the multiple regression test yielded a significant result. In fact, the F value is 13.547 with a probability of p-value = 0.05 which determines the quality of the value between both variables. At this stage, we verified the two main relationships: that of computer self-efficacy and that of personal innovation evaluation.

Regarding the impact of personal innovativeness on the acceptance on-line tax filing, the result showed a significant coefficient of 0.112 ( $p < 0.083$ ), which allows us to conclude that H1.1 is accepted. Our results confirm the findings of previous research that has shown that personal innovativeness significantly and positively affects attitudes towards the acceptance of e-government services (Fu, et al., 2006; Hung, et al., 2009; Venkatesh, Tracy Ann Sykes and Venkatraman, 2014). Moreover, people who are highly innovative in the ICT field will show more positive beliefs toward paperless tools (Agarwal and Prasad 1998). This result converges with previous research in electronic commerce (Im, Bayus, and Mason, 2003; Limayem, Khalifa and Frini, 2000). These authors concluded that intention use of technology, to an individual, is determined by his level of personal innovativeness. Limayem, Khalifa and Frini (2000) extended the theory of planned behavior (TPB) and proved the link between personal innovativeness and online purchase intention. Inversely, regarding the impact of computer self-efficacy on the acceptance of e-government, the result shows a positive but not significant relationship  $p < 0.178$ . These results diverge with previous research (Sahu and Gupta, 2007, Hung, Chang and Yu, 2006; Fu, Farn and Chao, 2006). Therefore, hypothesis H1.2, which postulates that the acceptance of SI depends on computer efficacy, is not accepted. Our results reject the conclusions of Hsu and Chiu (2004) that have proven the significant effect of computer self-efficacy on the acceptance of electronic commerce.

In this context, we can conclude that hypothesis H1 concerning the link between personal determinants and e-government acceptance, is partially validated.

**Table 2:** Results of multiple regression “Individual determinants”

Analysis of variance					
Df	RMSE	Fischer	p-value	R <sup>2</sup> -adjusted	DW
2	9.86	13.547	0.0324	21.2%	2.16
Estimated results of the parameters					
	Estimated results	Std Error	t-stat	p-value	
Computer self efficacy	0.098 ns	0.044	1.35	0.178	
Personnel innovativeness	0.112*	0.174	1.75	0.083	
Constant	14.48***	1.94	7.46	0.000	

(\*\*\*) significant coefficient at the threshold 1% (\*)

Significant coefficient at the threshold 5% (ns)

Insignificant coefficient

**The analysis of the link between trust and acceptance of on-line tax filing**

The measure of confidence required us to take up three items that had previously been subjected to an internal consistency analysis. The results reveal a satisfactory Cronbach coefficient, (0.78). The factor analysis shows that the variable is one-dimensional and contributes 59.4% of the total explained variance. The minimum contribution to the retained factors is 0.47. This leads us to retain all of the items measuring “confidence”. A first examination of the relationship between trust and acceptance reveals a very significant result. In fact, the test reveals a positive coefficient in the range of 0 to 1% risk ( $p < 0.000$ ).

These results validate the literature results (Carter and Belanger, 2005; Srivastava and Teo, 2005; Teo and Liu, 2006; Lean, et al., 2009; Fakhoury and Aubert 2015) according to which acceptance of e-government system can largely be explained by trust. This result corroborates the findings of the previous research in e-commerce namely Pavlou, (2003) and McKnight, Choudhury, and Kacmar (2002) which proved that Trust in the e-vendor will positively affect use intention of a business-to-consumer (B2C) Web site and also consumer intentions to transact on-line are positively related to trust in e-commerce.

In this respect, we can say that hypothesis 2 is validated.

**Table 3:** Results of multiple regression “Trust determinants”

Analysis of variance					
Df	RMSE	Fischer	p-value	R <sup>2</sup> -adjusted	DW
1	101.5	65.89	0.000	25.6%	65.9
Estimated results of the parameters					
	Estimated resultats	Std error	t-stat	p-value	
Trust	0.51***	0.086	8.12	0.000	
Constant	9.95***	0.675	14.7	0.000	

(\*\*\*) significant coefficient at the threshold 1%

### **Analysis of the relationship between the technical determinants and the acceptance of on-line tax filing**

To measure the technical determinants, we selected a multiple scale of 18 items. The first internal consistency analysis revealed an  $\alpha$  value of 0.57. This result is significantly lower than the retained acceptance thresholds. This leads us to examine the correlation between the items. It seems that the item affecting the scale consistency quality is “Q15”. The elimination of the latter improves the internal consistency of the scale since alpha is equal to 0.612. At this stage of the analysis, we nevertheless decided to exclude it. Therefore, we established the rotation of the axes which clarified the meaning of the provided structure. The major component analysis gives interesting results. The first three factors alone explain more than half of the total variance (64.87%). An axis rotation enables us to interpret the three factors. The first factor, which explains almost 36.6% of the overall variance, reflects the dimension related to “System quality”. The second factor (15.4% of the overall explained variance) expresses the nature of the “System quality”. However, the last factor, which contains 12.7% of the overall explained variance, rejects “technical compatibility”.

The last relationship that we wanted to check is logically related to Hypothesis 3 regarding the possible effect the three dimensions might have on e-government acceptance. The multiple regression test gives a significant result. However, the F value is 13.96 with a probability of ( $p < 0.000$ ) shows the relationship between the two variables. This appreciation is assigned a determination coefficient  $R^2$  of 41.9%.

Regarding the relationship between system quality and the level of e-government acceptance, the estimation results show positive and significant impacts at the threshold of 1% on the level of e-government acceptance. Thus Hypothesis 3.1, (according to which e-government acceptance reacts significantly and positively to system quality,) is validated. Our results converge with previous research (Teo, Srivastava and Jiang, 2008; Chen, et al., 2015; Floropoulos, et al., 2010; Kuan Lai and Guilherme, 2010) in electronic government and in electronic commerce (Delone and Mclean, 2003)

For the test of the relation between the quality of information and the level of e-government acceptance, the result shows a significant positive coefficient of 0.55 ( $p < 0.000$ ). Thus, we accept Hypothesis H3.2, which suggests that information quality significantly affects the level of e-government acceptance. Our results corroborate previous researches (Teo, Srivastava and Jiang, 2008; Wang and liao, 2008; Kuan Lai and Guilherme, 2010; Chen, and al., 2015; Floropoulos, et al., 2010) in e-government and in electronic commerce (Delone and Mclean, 2003).

However, by refining the research on the role played by technical compatibility on the level of e-government acceptance, the test reveals a significant coefficient of at the threshold of 10% ( $p < 0.045$ ), hence, hypothesis H3.3, is validated. This result is consistent with previous research. Indeed, compatibility has often been found to have an important effect on use intentions in e-government (Hung, Chang and Yu 2006; Fu, Farn and Chao 2006, Carter and Belanger, 2005) and in other contexts, including e-commerce (Van Slyke, Bélanger, Comunale, 2004; Carter and Belanger, 2005).

In this regard, we can conclude that H3 on the relationship between the technical factors and the level of e-government acceptance is completely validated.

**Table 4:** Results of multiple regression “Technical determinants”

Analysis of variance					
Df	RMSE	Fischer	p-value	R <sup>2</sup> -adjusted	DW
3	0.224	13.96	0.000	41.9%	0.23
Estimated results of the parameters					
	Estimated results	Std error	t-stat	p-value	
Information quality	0.553***	4.02	2.72	0.000	
System quality	0.434***	0.184	2.84	0.000	
Technical compatibility	0.873*	0.00077	1.75	0.045	
Constant	-3.005 ns	0.023	0.184	0.854	

(\*\*\*) significant coefficient at the threshold 1% (\*)

Significant coefficient at the threshold 5% (ns)

Insignificant coefficient

This research has shown that all assumptions were validated with the exception of the hypothesis linking computer self-efficacy to acceptance of the e-government system. Thus personal determinants do not significantly affect acceptance of e-government. However, trust and technical determinants appear to significantly affect acceptance.

## 5. Research implications

This study has given a new empirically validated e-government acceptance model for Tunisian on-line tax filing. It presents an integrated, parsimonious model of e-government acceptance that incorporates constructs from TAM, Delone and Mclean, Diffusion of Innovation, cognitive and social theory, the unified theory of acceptance and use of technology and trustworthiness models. The model explains 92.918 % of the variance in citizen intention to use e-government initiatives. It extends previous acceptance (intention to use) research by collecting and analysing data from 190 Tunisian companies using the on-line tax filing system. This model represents a valid tool for evaluating the acceptance of on-line tax filing and consequently e-government systems in Tunisia. The results indicate that personal innovativeness, trust in technology, trust in government, information quality, system quality, and compatibility are valid measures of e-government system acceptance. The results highlight the explanatory power of each variable. Indeed, the highest value of total effect on intention to use e-government concerns trust determinants which explain 59.4 % of total variance of intention to use on-line tax filing. Trust in technology (Internet) and trust in government exhibited the strongest effects on acceptance of the system in comparison to all other variables.

This research represents a starting point for understanding the factors that improve taxpayers' (natural and legal persons) acceptance of on-line tax filing services in Tunisia. Our findings, which are limited only to tunisian context, could be a template for countries with similar taxation systems since the investigation of e-government systems acceptance models is still ongoing. Thus, the major theoretical contribution of this work is to continue the debate concerning the problematic of acceptance of ICT. Although research in this field are abundant, studies that are studies related to the electronic government system have recently begun (Venkatesh, Tracy Ann Sykes and Venkatraman, 2014). In addition, e-government system is rarely studied in the Tunisian context. This research is added to some previous works, which has already initiated the study of Tunisian e-government system.

The integration of constructs from web trust models into our model also represents another conceptual contribution because of the rarity of their use in the studies related to electronic government system. Indeed, since the beginning of the 2000s until today, on-line trust studies have never ceased to emerge. Only few researches integrated trust as a determinant of intention to use, have been identified in studies relating to the specific case of e-government system (Carter and Belanger, 2005; Teo, Srivastava and Jiang, 2008; Belanche, Casaló, and Guinalú, 2012 and Chen, et al., 2015).

Concerning the practical implications, the results of this research could have implications for policy implementation of e-government services, in general and on-line tax filing in particular. They also provide

recommendations for both system designers and companies. In fact, designers should ensure that they provide a user-friendly interface, robust security mechanisms, and improved information system design that is interactive with rich information content and that provides the possibility of updating and monitoring the user's situation in real time. Furthermore, to ensure users' acceptance of e-government services, designers must provide information and services in a manner compatible with those that citizens are used to. For example, online forms should look like the paper forms they normally use. In addition, standardized interactions and interfaces of government websites could contribute to compatibility and therefore user acceptance of e-government services. Furthermore, government officials should always encourage the adoption of good practices for encouraging the use of the internet through measures taken in this regard such as the proliferation of public internet access points and generalization of broadband internet in all regions of Tunisia with discounted rates. Otherwise, efficient and high quality e-government services will be a means of socio-economic divide. These ideas are in harmony with the recommendation of Kaisara and Pather, (2009) which concluded that without strategies facilitating adoption and access to e-government services for the majority of South African citizens, service quality in e-government would only benefit few citizens, thus rendering e-government a tool for socio-economic divide.

The results of this research have shown that trust is the strongest determinant that affects the acceptance of the on-line tax filing. To strengthen the perception of trust, designers within government agencies should provide accurate, timely and reliable services. Indeed, a negative experience caused by service unavailability, incorrect information or technical error will likely have the opposite effect and negatively affect intention to use. More concretely, in the case of on-line tax filing, designers and managers responsible for the system's implementation, must guarantee not only the protection of taxpayers' private data but also provide dematerialized receipt of payment. Taxpayer trust and comfort will be enhanced if proof of payment is received in real time via the Internet. The non-recovery of the payment receipt constitutes a major obstacle that discourages the acceptance of systems similar to Internet tax declaration, namely "e-CNSS" (electronic statement of salaries and payment of social security contributions for employers and self-employed persons). To increase perceptions of reliability, government agencies should reassure citizens of the reliability of online services, for example, by having privacy statements visible on their sites. They should clearly identify the measures that have been taken to ensure online security. Such information should also be published inside government agencies or in information brochures sent to citizens. It is also necessary to improve system security features by providing training for end users about security-related issues. Government officials should create a climate of trust in government and towards Internet technology. Indeed, they should build a climate of political stability and ensure transparency, good governance, fight against corruption and acting in the best interest of citizens. The projects "open data" and the electronic sites of fight against corruption are good examples. Their implementation allows users to perceive the public administrations as reliable and trustworthy and will have a greater predisposition to adopt and accept the services provided by the e-government system; given that this system represent a proxy through which the government provides public services to citizens and businesses.

Heads of companies involved in these types of projects often organise ICT training for their staff. Indeed, user training, combined with individual determinants (personal innovativeness and computer self-efficacy) are key success factors to build up and strengthen digital culture within companies that should in turn improve acceptance of electronic public services. Thereby, the role of government officials is to convince and encourage companies' leaders to be involved and effectively support the adoption of e-government system, which will undoubtedly lead to the efficiency and competitiveness of Tunisian enterprises (SMEs).

We can also suggest that during the strategic planning of investment in e-government projects, policy makers take account of the factors determining the acceptance of on-line tax filing that we have identified. Indeed, the Tunisian strategy tends towards broadening the scope of obligatory on-line tax-filing for other non-commercial activities regardless of their turnover. Those responsible for implementing this e-strategy can exploit these results and strengthen these determinants to ensure the acceptance and success of other e-government services (e-CNSS etc.) and consequently the successful generalization of online public services. Achieving this goal implies improving the relationship with citizens and enhancing company performance.

## 6. Limitations and further research

Despite its theoretical and practical implications, this study has certain limits.

First on the methodological level, the model of our study can not be transferred only in some contexts similar to the Tunisian one.

Then, by means of the questionnaire, we wanted to measure the intention of decision makers to accept and adhere to the on-line tax filing system at the time of decision making. However, this could prove difficult, since we cannot be certain that respondents make this decision in the light of their perceptions.

Furthermore, other variables can be integrated into our model to understand e-government acceptance in Tunisia for examples: the role of demographic and personality characteristics. Indeed, these variables have been mobilized in recent research (Venkatesh, Tracy Ann Sykes and Venkatraman, 2014) and their significant impact on the acceptance of e-government has been proven.

Finally, the negligence of the point of view of users of e-government system within public administrations represents another limitation of this research. Indeed, e-government is a system established by the government for modernizing the administrative functioning and the mode of interaction between the government and other stakeholders (businesses and citizens). Thus, it is important to consider the perceptions of users in public administrations in the study of the acceptance of the system of government electronic.

Highlighting the theoretical limits of this study led us to propose future perspectives of research. First, reproducing the same survey from the perspective of users and officials in public administrations to test the robustness of our results in a different context and better understand the determinants of acceptance of the electronic system government. Then, extending the model of this research by taking into account other variables configurations (cultural, demographic and social) to further understand the acceptance of this type of system. Our model can also be enriched by the incorporation of other variables such as communication, access, web design and web esthetics proved as critical factors in assessing the quality of services e-government in South Africa (Kaisara and Pather, 2011). Afterwards, conduct a longitudinal research in order to test the robustness of our results and perceive to what extent users reproduce their perception towards acceptance issues. Finally, in future research we can develop our conceptual model and study the success of e-government projects and the impact of their use on organizational performance in the Tunisian context.

## 7. Conclusion

This study combines constructs from the Technology acceptance model, Delone and Mclean's model, diffusion of Innovation theory, cognitive and social theory and trustworthiness models to achieve an insightful model of e-government acceptance. The results showed that personal innovativeness, trust in technology, trust in government, information quality, system quality, and compatibility are significant factors of citizens' intention to use e-government services. Moreover, trust in technology (Internet) and trust in government exhibited the strongest effect on the acceptance of the system compared to all the other variables. Understanding these factors and their respective impacts on intention to use should enable public administrations to develop e-government services in accordance with citizens' requirements, consequently ensuring their acceptance and success. In fact, acceptance is a prerequisite for the success of new information systems. Information technology and systems cannot improve organizational performance if they are not sufficiently accepted by end users.

This study focused on the factors that explain companies' acceptance of e-government services through the case study of the on-line tax filing. It also represents an extension of previous research on the acceptance of ICT in developing countries given that the majority of e-government studies have focused on developed countries. In this manner we have identified, among the diversity of determinants of acceptance of ICT often studied, those that are predictive of acceptance of e-government in the Tunisian context.

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