

Original Article

The Factors Affecting on E-Government Adoption in Algeria: The Moderating Role of Trust

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Abstract - This paper explores the effect of e-government implementation on businesses in Algeria's e-business climate. It investigates whether technological factors and organizational factors would be advantageous or hinder Algerian firms' e-government adoption. The role of trust also examines in moderating the interrelationship. Employing integrated Technology-Organization-Environment (TOE) structure and Diffusion of Innovations (DOI) theory, this paper illustrates the implementation of e-government by Algerian companies. Enhanced comprehensions of e-government adoption are expected and further might help rectify the disparity and conflicting the literature findings.

Keywords - E-Government Adoption, DOI theory, TOE Framework, Trust, Algeria.

I. INTRODUCTION

Information and communication technology (ICT) has developed considerably over the years. It has a broad impact on human life, particularly on how they interact with other people, businesses, and even the government (Abdulai and Huffman, 2005). In the same vein, the prominence of ICT has also altered government and public engagement. Thus, this phenomenon encourages the development of e-government globally, especially in industrial and developing countries (Napitupulu & Sensuse, 2014; Napitupulu, Sensuse, & Suchahyo, 2017), including Algeria. To better understand e-government, the current study, subsequent with WorldBank (2015), defined e-government as information technologies that can enhance relations with citizens, businesses, even within the government.

The concept of e-government has started to trickle down among nations, and e-government adoption has become a significant priority for many countries worldwide (Al-Rashidi, 2010). It is proven by the development of e-government in developed countries since the 1990s (UNDESA, 2008). It is attributed mainly to the ability of e-government in offering better transparency, accountability, and sensible governance, as mentioned by the earlier work by Rehman, Kamal, and Esichakul (2016). However, e-government can result in different ends, such as more outstanding government services, enhanced communication with businesses and industries, citizen empowerment through equal exposure to information,

more competent or effective management style employment of the government. E-government may also result in other notable advantages: less corruption, increased transparency, greater convenience, growth of revenues, and cost reduction. Schware and Deane (2003) asserted that e-government implication on G2B websites facilitates firms strategically by providing the information required to complete business transactions electronically.

The importance of G2B that referred to the interaction between government and businesses through the web environment is also indicated by some prior research (Awan, 2008; Joseph, 2009). They highlighted that e-government adoption could reduce the amount of time and business cost required to comply with the rules and regulations. Complimentary, Merhi and Koong (2016) added that it could be achieved in any of the following ways; firstly by offering easily accessible information. Secondly, simplifying and monitoring reporting requirements. Next, streamlining the number of forms. Or by making easier transactions (paying fees, obtaining permits). Finally, by helping business entities to be aware of the regulations and how to adhere to them.

Harmoniously, previous empirical work by Aladwani (2016) also revealed that many business failures are caused by the low-level implementation of e-government or unsuccessfully adopt with e-government. One plausible reason why some developing countries usually fail to practice e-government effectively is corruption (Corojan & Criado, 2012; Kim, 2014).

In certain instances, it is argued that business failures, especially in developing countries, arise from the poor deployment of e-government or ineffective e-government adoption (Aladwani, 2016). One plausible reason is that in developing countries, the corruption level tends to be high, potentially impacting e-government practice success (Corojan & Criado, 2012; Kim, 2014). As for in Arab countries, e-government adoption has been practiced since the beginning of the 21st century. Egypt, UAE, Jordan, and Syria are among the first practitioners of e-government adoption and further motivated other Arab countries to experience its benefits. However, not all Arab countries can fully adopt e-government efficiently.



Algeria is one of the Arab countries that is still struggling to execute the e-government fully. Guemide and Benachaiba (2012) pointed out that the adoption of e-government in Algeria is still in the infant stage. On top of that, up until 2010, Algeria ranked 131st among the 193 countries based on E-Government Development Index (EGDI). For years, the e-government practices in Algeria are going downhill. According to UNDESA (2010), in 2010, Algerian ranked 132nd and fell to 136th position in 2014. The worst condition was in 2016 (UNDESA, 2016), when Algeria ranked 150th.

Nevertheless, in two years, Algeria back in 130th position (UNDESA, 2018). Regarding these altered circumstances, the current study investigates the practical application of e-government in nowadays Algerian business conditions. The following table summarises the index values and rankings for e-government growth in Algeria from 2008 to 2018.

Table 1. E-government development index values and ranks in algeria during the period 2008-2018

Years	World Ranking
2008	121
2010	131
2012	132
2014	136
2016	150
2018	130

Regarding the reason elaborated above, to understand e-government adoption in developing counties, there is an ideal opportunity to look at Algeria. The Electronic Algeria Project (e-Algeria) 2008 – 2013 was launched by the Algerian Ministry of Post and Information and Communication Technologies to investigate how e-government adoption benefits the Algerian government and the Algerian society. The government recognized that an urgent need for e-government is to ensure the benefits. By utilizing the e-government adoption, Algeria expected to meet the World Trade Organization (WTO) requirements to be more efficient and practicing market-based custom rules in practicing their business, as mentioned by Ayashi and Brahimi (2015).

The current study aims to examine and determine critical factors that could help or hinder Algerian firms in adopting e-government, supporting the Technology-Organization-Environment framework (TOE), the role of trust moderates between TOE factors, and e-adoption. Harmoniously this study is expected to make a substantial contribution to researchers and practitioners in developing countries. This research focuses on the integrated Diffusion of Innovation (DOI) theory and TOE structure and the role of trust as a moderator. It would help the researchers comprehend the precursors to e-government adoption. Hence, it would be of great interest. Besides, this study has shown that the proposed framework is credible and suitable for e-government adoption in developing countries. On the other hand, this research stresses the

essential variables that enhance greater e-government adoption for practitioners.

II. THEORETICAL FRAMEWORK

DOI Theory and TOE framework are acknowledged by prior studies (Ramdani, Chevers, & Williams, 2013; Zhu, Kraemer, & Xu, 2006) as the most applicable theories to illustrate the e-government adoption. The theories are based on the importance of technological, organizational, and environmental determinants in influencing e-government adoption. Hence, both, DOI Theory and TOE Framework are used as the underpinning theories of the current study to develop the proposed conceptual research model. DOI theory is known as the theory that could assess innovation based on its characteristic, which is further known as innovation attributes, as proposed by E. M. Rogers (1995). He has suggested the five innovation attributes: relative advantage, compatibility, complexity, observability, and trialability. However, some previous studies (Tornatzky & Klein, 1982; Wu, Zsidisin, & Ross, 2007) only used three out of five innovation attributes to assess the innovation related to technology usages, such as relative advantage, compatibility, and complexity. Therefore, the current study will use these three key attributes to examine technological factors in the present study.

However, the TOE framework focuses on three contextual considerations that could impact the e-government adoption among the firms, comprising technological, organizational, and environmental factors. In brief, the TOE framework is the initial framework used to explain the antecedents of e-government adoption by almost all the previous studies (Hasan, Tretiakov, & Whiddett, 2017). Subsequently, the combination of DOI Theory and TOE framework is expected to stipulate a valuable theoretical framework to explain the adoption of e-government by business organizations (Lippert & Govindarajulu, 2006; Mohamad & Ismail, 2009; Ramdani et al., 2013).

III. CONCEPTUAL FRAMEWORK AND HYPOTHESES

The current study will look at the variables that support or impede e-government adoption amongst Algerian companies. A proposed research framework is exhibited in figure 1, which identifies the association of independent variables and the dependent variable, which is also a moderator effect on the interrelationships. The role of technology, organization, and environment are investigated as the factors that could impact the e-government implementation. Thus, the hypotheses of the current study are deemed critical in completing the research model.

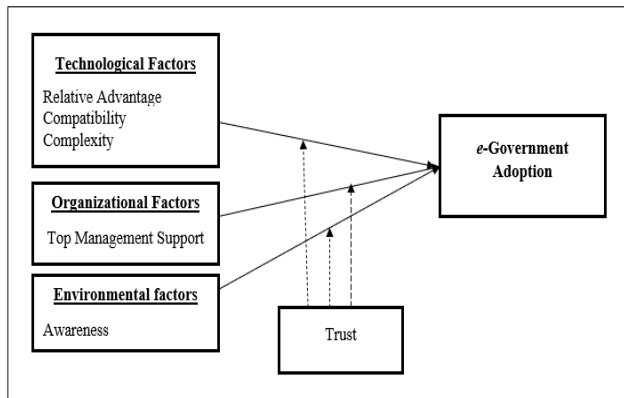


Fig. 1 Proposed Conceptual Framework

A. Technological factors

In this study, the technology context covers all technology that the company is currently using and technologies present on the market but are not yet in use. The company's existing technology is critical in the implementation process since they impose a broad constraint on how a firm can execute the technological scope and speed changes (Collins, Hage, & Hull, 1998). Meanwhile, the available technologies in the market may help the firm become more competent in facing future opportunities.

The degree of the innovation recognized is more advanced than its substitute is referred to by Rogers (2003) as a relative advantage. Previous empirical studies (Hung, Hung, Tsai, & Jiang, 2010; Rokhman, 2011; Sang, Lee, & Lee, 2009; Sin et al., 2016; Wong, Wong, & Ali, 2009) have shown that relative advantage is positively related to the technological innovation. Other previous studies (Ahmad, Abu Bakar, Faziharudean, & Mohamad Zaki, 2015; Garg & Choey, 2015; Rahayu & Day, 2015) even highlighted that relative advantage as the most crucial factors in information system usage. However, other prior studies (Lutfi, Idris, & Mohamad, 2016; Sin et al., 2016) reported that relative advantage has an insignificant role in IT-related innovation. Due to the conflicting result by previous studies elaborated above, the current study hypothesized:

H1: Relative advantage has a positive influence on e-government adoption.

Compatibility is defined as how the innovation perceived is aligned with prospective adopters' beliefs, needs, and previous experiences (Moore & Benbasat, 1991 p.195). It is considered one of the most critical factors of innovation attributes (Rahayu & Day, 2015; Zhu et al., 2006) in affecting e-government adoption. Hence the following hypothesis:

H2: Compatibility has a positive influence on e-government adoption.

Following Rogers (2003), complexity is characterized as the degree to which the difficulties of the innovation are understood and learned (p.257). Harmoniously, prior studies (Al-Hudhaif & Alkubeyyer, 2011; Greenhalgh,

Robert, Macfarlane, Bate, & Kyriakidou, 2004) have also found that the higher the complexity of the innovation, the lower the IT adoption. If the technology innovations are too complex, it will hinder people from adopting the IT implementations. Therefore, the following hypotheses are put out in this paper:

H3: Complexity has a negative influence on e-government adoption.

B. Organizational factors

The organizational context is concerned with the firm's characteristics and capacities, such as employee linking systems, intra-firm communication procedures, firm size, and slack resources. It impacts the adoption and implementation decision in some ways. One of the ways is to promote innovation by connecting internal subunits or spanning internal boundaries (Galbraith, 1973; Tushman & Nadler, 1986). Therefore, this paper anticipates top management support as the notable factor that could enhance e-government adoption.

Top management support is outlined as top management's effort to support the innovation's resources (Premkumar, 2003). Therefore, it is not surprising that past studies put some focus on the significant role given by the top management in supporting information system and e-government adoption (Altameem, Zairi, & Alshawi, 2006; Ke & Wei, 2008; Mohamed, Marthandan, Daud, & Omar, 2008; Titah & Barki, 2006). It has been revealed that top management support is positively impacting innovation adoption (Al-Zoubi, Thi, & Lim, 2011; Alshehri & Drew, 2010; Mohammed, Ibrahim, & Ithnin, 2016; Wang, Liu, Liang, & He, 2017).

Following the elaboration on the importance of top management support towards e-government adoption, it is possible to assume that the low support from top management will result in the ignorance from the firm to adopt the new technology innovation, as mentioned by several prior studies (Daoud & Marhaiza, 2018; Ifinedo, 2011; Benmoussa & Marhaiza, 2018). Thus, this paper proposed:

H4: Top management support has a positive influence on e-government adoption.

C. Environmental factors

The environmental context encompasses the industry structure, the involvement or absence of technology service suppliers, and the regulatory environment. Several approaches have been taken to examine industry structure. Fierce competition, for example, promotes innovation (E. Mansfield, 1968; P. Mansfield, 1977). Besides that, dominant companies in the value chain may convince other value chain partners to innovate (Kamath & Liker, 1994).

Awareness is explained as "communicating e-government opportunities to the suitable stakeholders and

delivering the means for individuals to attain projected e-government benefits” (Papazafeiropoulou, Pouloudi, & Doukidis, 2002). Therefore, (Abu-Shanab, 2017a; Al-Sai & Abualigah, 2017; Alenezi, Tarhini, Masa'deh, Alalwan, & Al-Qirim, 2017) asserted that a central concern linked to the deployment and utilization of the new technologies is lacking awareness concerning the existence of a specific technology. As a result, the following hypotheses are presented in this paper:

H5: Awareness has a positive influence on e-government adoption.

D. The moderating effect of trust

The principle of trust has evolved over the last 50 years along with human and social engagement development (Paliszkiwicz & Koohang, 2013). As it illustrates the people's interaction in building relationships, trust is seen as an essential component of the relationship (Lewciki & Wiethoff, 2000). Trust is described as the tendency to rely on an unfamiliar person despite knowing their reputation, relevant facts, or interpersonal bonds with the person, as highlighted by McKnight, Choudhury, and Kacmar (2002).

In the e-government context, trust describes how users can believe that the website will act sensibly when making any transaction. It is because having users' trust is fundamental for e-government website accomplishment. Trust is the expectation held by everyone involved in the transaction (Pennington, Wilcox, & Grover, 2003). However, in adopting the technology initiatives such as e-government, users and even businesses need to look carefully at particular service and ability to fulfill their needs (Shirish & Thompson, 2005).

In a previous study by Rao, Perry, and Frazer (2003), it has been stated that internet usage has a significant impact on trust, which is known as one of the essential relational bonds. They further show that the internet makes business easier to interact with other companies. The internet is replaced more conventional and informal modes of communication. Instead, it makes the relationships easier. Consequently, trust has been described as a crucial enabler for the effective deployment and acceptance of technological innovations such as e-government systems (Abu-Shanab, 2017b; Lallmahomed, & Lallmahomed, 2017; Shirish & Thompson, 2005; Warkentin, Gefen, Pavlou, & Rose, 2002). It is even considered more important than any technical skills required to interact within the system (Voida, Dombrowski, Hayes, & Mazmanian, 2014).

The importance of trust also shown in previous studies (A-hujran, Al-Debei, Chatfield, & Migdadi, 2015; Alzahrani, Al-Karaghoul, & Weerakkody, 2017; Kurfali, Arifoğlu, Tokdemir, & Paçin, 2017; Venkatesh, Thong, Chan, & Hu, 2016; Xie, Song, Peng, & Shabbir, 2017) which revealed a positively significant relationship towards e-government adoption. However, the conflicting

findings were found by other prior studies (Bharon, Yap, Ashar, Hanafi, & Hamzi, 2017; Eid, 2011; Ionescu, 2016; Santhanamery & Ramayah, 2016), which exhibited the insignificant between trust and innovation and new technology. Regarding the inconsistent findings in the literature, the current study would clarify the value of trust among Algerian firms' e-government adoption. Thus:

H6(A): Trust moderates the relationship between the relative advantages and e-government adoption positively.

H6(B): Trust moderates the relationship between compatibility and e-government adoption positively.

H6(C): Trust moderates the relationship between complexity and e-government adoption positively.

H6(D): Trust moderates the relationship between top management support and e-government adoption positively.

H6(E): Trust moderates the relationship between awareness and e-government adoption positively.

IV. CONCLUSION

The current study explored the variables that affect e-government adoption among Algerian companies. Present research findings are expected to enable managers, practitioners, and policymakers to discover the most important factors to foster e-government adoption. Additionally, this paper also addresses the importance of trust in the implementation of e-government. Implementing the proposed conceptual framework is also expected to identify the vital variables that could impact the e-government adoption and provide a greater understanding of the interrelationships. On top of that, this study is aimed to fill the gap that the previous studies have highlighted. Finally, the current study is expected to provide a critical foundation for the evolution of IT strategies.

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