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A Conceptual Framework to Examine Abu Dhabi's Police Force E-Service Initiatives

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Abstract

This research-in-progress paper aims to identify and understand factors affecting the diffusion, adoption and use of e-services in a public sector organisation. For this purpose a theoretical framework is required, which is proffered within this paper. Additionally, the proposed research approach that is qualitative in nature is briefly explained along with the reasoning for its use. Finally, conclusions, future directions and limitations to this research are provided. The contributions of this research are viewed to be the development of a theoretical framework that is specific to a public sector organisation in a developing country. For policy makers this research provides a theoretically sound framework which has applied certain constructs taken from Diffusion of Innovations Theory (DOI), Technology Acceptance Model (TAM) and e-Commerce's Trustworthiness models that can then be employed to understand the adoption, use and diffusion of e-services in a developing country. For industry this research also understands factors that are important for the adoption, use and diffusion of ICTs within a developing country.

Keywords

ICTs, E-services, public sector, Abu Dhabi government, Police Force, Developing Countries

1. Introduction

Presently new forms of Information and Communications Technologies (ICTs), such as Broadband are viewed as critical tools for the future prosperity and growth of economies. This has led to a drive from both public and private sectors to have ICTs diffused, adopted and used in daily lives. Many governments have formed and implemented policies and undertaken

programmes to encourage internet awareness and usage. In Information Systems (IS) research, the provision of government online services is generally known as electronic (e)-government. There are various definitions of e-government, but for the purpose of this research e-government is defined as “use of information technology to enable and improve the efficiency with which government services are provided to citizens, employees, businesses and government agencies” (Carter and Belanger, 2005: 5). Online government services which is identified in this research as “e-services” is defined as “deeds, efforts or performances whose delivery is mediated by information technology (including the Web, information kiosks and mobile devices). Such e-service includes the service element of e-tailing, customer support and service, and service delivery” (Rowley, 2006: 341). E-government also exists in various forms each dependent upon the relationship between user groups and government. E.g. Government to citizens (G2C); Government to Business (G2B); Government to Government (G2G); Government to Non-profit (G2N); Government to Employee (G2E) (Fang, 2002). This research focuses on G2E e-government.

Not all e-government projects and programmes across the globe are successful. This is particularly evident in the instance of developing countries. Many developing countries are below the United Nations (UN) global index for E-government development (Index is 1.62). As an example, based on the United Nations e-government survey (UN, 2010) it was found that e-government development in the United Arab Emirates (UAE), which also forms part of the context of this research, has fallen from an index of 0.6301 in 2008 to 0.5349 in 2010.

In developing and transitional countries, an estimated 15 per cent of e-government projects are successful with the remaining 85 per cent being either total failures or considered as partial failures (Heeks, 2003). This is partly attributed to theories and policies designed in developed countries being employed in developing countries (Stahl and Elbeltagi, 2004).

When considering many Middle Eastern countries from regions such as, United Arab Emirates (UAE), there are attempts to implement the fundamental infrastructure of e-government in order to provide integrated, simplified and effective services, and to reduce the cost of government services delivery (Aljaghoub and Westrup, 2003; Basu, 2004; Zaied et al. 2007; Kettani et al. 2008; Al-Shafi and Weerakkody, 2009). However, not all initiatives are achieving overall success. A possible reason could be developing countries viewed to consist of existing infrastructures that are not mature and compatible to cultural needs (Mofleh et al. 2008); therefore, hindering development.

UAE has undergone rapid development over the last 40 years following the discovery of oil and the formation of the country from 7 emirates. E-government is reliant upon the provision of ICTs, which in UAE is: “ICT diffusion and usage that has been impressive in recent years” (GITR, 2009: 22). However, this stage of transformation faces many obstacles such as cultural issues, inexperienced staff, and resistance from citizens and staff in different organisations (Hesson, 2007). What has also been found is that: “The movement toward implementation of e-government in the UAE has in recent years received the attention of the authorities and policy makers, acknowledging the necessity of utilizing the new electronics, information, and communication technologies” (Mansar, 2006). A large city of the UAE and neighbour to Abu Dhabi that has recently witnessed both economic downturns and rises was academically researched on its e-government efforts that revealed: “it is indicative to notice that despite the high number of on-line services available through Dubai e-government, usage levels remain below expectations” (Sahraoui, 2005: 8).

Abu Dhabi, which is the largest city and the capital of the United Arab Emirates (UAE) is also experiencing economic gains such that crime and violence are increasing as in the instance of every developing country around the globe. Protection to its citizens and residents is proffered using a police force. Abu Dhabi Police Force (ADPF) that is considered the largest police headquarters in this country is currently undergoing transformation and changes as the implementation and development of ICTs occurs within the organisation. From early studies, the electronic (e)-services offered by the Police Force are still in the early stages. Currently, the Police Force provides basic automated services such as, paying traffic fines online and checking staff profile and details online. However, many services such as, renewing vehicle registration, dealing with job applications, some internal communication within the organisation are still conducted manually within the organisation; thereby resulting in time consuming processes and substantial costs in the form of large files of paperwork and storage for the paperwork.

Identifying an existing gap for ADPF this research-in-progress paper aims to *identify and understand the diffusion, adoption and use of e-services in a public sector organisation*.

Based on the research aim, this had led us to the following research question.

How is ADPF diffusing, adopting and using ICTs?

From this research the anticipated academic contribution is the development of a theoretical framework specific to developing countries, more to the UAE region. For industry the benefits are the understanding of a public sector in the UAE, which is currently minimal. For policymakers, the benefits are the formation of a theoretical framework developed from IS research that will provide an understanding of departments under their jurisdictions.

To familiarise readers to this paper, an overview of this paper is provided. This section introduced the research problem being addressed within this paper. The next section explains and understands the theoretical frameworks being used by this paper. This is then followed by a description of the proposed research approach. To end this paper, some conclusions that also contain the future directions and limitations are provided.

2. Theoretical Background

A literature review revealed that research on e-government and Gulf Arab States are few with most research examining e-government in a general manner, such as, identifying current problems and issues when implementing e-government. Appendix 1 provides a theoretical review of some of the conducted research.

3. Development of Model

For the theoretical framework (appendix 2) concepts have been taken from previous e-government Government to Citizen (G2C) research (Carter and Belanger, 2005). We are also applying certain constructs from Diffusion of Innovations Theory (DOI), Technology Acceptance Model (TAM) and e-Commerce's Trustworthiness models. Further, demographic factors are being used as variables to form an understanding for this research.

3.1 Diffusion of Innovations (DOI)

Diffusion is “the process in which an innovation is communicated through certain channels over time among the members of a social system” (Rogers, 2003: 5). Innovation is defined as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption”, in addition “newness in an innovation may be expressed in terms of knowledge, persuasion or a decision to adopt” (Rogers, 2003: 12). In this research ADPF is implementing an online system that is an innovation. The online system impacts several departments causing diffusion; thereby qualifying DOI for this research. Five innovation attributes are typically identified as being important for rapid diffusion (Rogers, 2003): Relative advantage (RA), compatibility (Compa), complexity (Compl), trialability, and observability; however, only 3 are applied to this research: RA, Compa and Compl. Previous IS and e-government research has found only 3 DOI attributes provide knowledge regarding user’s intention: RA, Compa, Compl (Tornatzky and Klein, 1982; Agarwal and Karahanna, 1998; Carter and Belanger, 2004).

During the innovation-diffusion process information regarding adopters formed that eventually led to a classification of diffusion research in terms of demographic factors (Rogers, 1983). In his adoption model, Rogers (1958) recognized differences between age groups, stating that innovators and early adopters are more likely to be younger, while laggards are more likely to be advanced in age.

This research also applied Moore and Benbasat (1991) construct of image defined as: “the degree to which use of an innovation is perceived to enhance one’s image or status in one’s social system” (Moore and Benbasat, 1991: 195)¹.

3.2 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is also applied to this research. It has been found that DOI’s RA, Compatibility, Complexity are linked with TAM’s two constructs: perceived usefulness and perceived ease of use (Carter and Belanger, 2005). Perceived usefulness is “the degree to which an individual believes that using a particular system would enhance his or her performance” (Davis, 1986: 82). Perceived ease of use is “the degree to which an individual believes that using a particular system would be free of physical and mental effort” (Davis, 1986: 82).

3.3 Trustworthiness

Since e-commerce and e-government are online services concepts of trust employed in e-commerce research (Ba and Pavlou, 2002; Parent et al. 2005; Gefen et al. 2008; Colesca, 2009; Smith, 2010; Lee et al. 2011) have been applied to e-government research (Carter and Belanger, 2005). Trustworthiness is defined as “the perception of confidence in the electronic marketer’s reliability and integrity” (Belanger et al. 2002: 252). In previous e-government research 2 forms of trust were identified (Carter and Belanger, 2005). This research used one of the forms of trust, trust of the internet. Trust of the government is amiss as this research focuses upon ADPF. Upon appointment in this organisation allegiance to the government is made; therefore, this attribute is not included.

¹ Moore and Benbasat (1991) “developed an instrument to measure perceptions of using an information technology innovation” that consisted of 8 constructs, some similar to Rogers (1983) DOI understanding.

4. Proposed Research Methodology

Due to time limits, available resources and accessibility a qualitative research approach is most suitable for this research. To form rich and in-depth understanding face-to-face interviews and direct observation will be employed. Culturally, language differences and clarification to questions has also led to the team consider face-to-face interviews being appropriate. The questionnaire will consist of 2 sections and open-ended questions. For understanding, the questionnaire will be translated in the Arabic language. A self-selection sampling approach involving 45 police officers will be employed for 4 weeks to ensure that the framework is applicable and understood by the participants. The interviews will be recorded using a Dictaphone. From the results, a deductive reasoning and content analysis method will be applied. For this, themes and codes will be formed. In the final stage “evaluation”, the researcher will verify and validate the results by meeting some of the participants again in ADPF, in order to prevent being bias. This will then be followed by a final phase of data collection consisting of 150 or more interviews with police officers of diverse levels.

5. Conclusion

To address the aim, this research-in-progress paper used Diffusion of Innovations Theory (DOI), Technology Acceptance Model (TAM) and e-Commerce’s Trustworthiness models. This paper also detailed a proposed research method for this research.

It is recognised that the limitation of this research is that this study will be focused on G2E research and may not provide a citizens perspective, which could provide triangulation. This we intend to overcome in future research using a quantitative, survey method.

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Appendix 1

Author / Year	Research Context	Research Topic	Publication	Summary / Conclusion
Sahraoui (2005)	Arabian Gulf	Challenges of e-government in Arabian Gulf countries	E-government Workshop. Brunel University	Talked about challenges that e-government projects in the gulf region are facing or will face in future, such as, no clear vision for e-government implementation, no integration between Gulf States, no research or evaluation on current situations. Recommendations were also made to overcome these issues, e.g. investing on skills rather than only investing on technologies.
Awan (2007)	United Arab Emirates	Evaluation of Government to Business (G2B) websites in Dubai	Journal of Internet Commerce	Examined several organisation websites, such as, Emirates Airlines, Emar, Etisalat, Dubai Police. Tests were conducted based on website graphic design, allowance for disabled, more than one language, regular updates, user friendly etc. Result: communication should be improved (faster response by emails), options of more languages are needed, improve security.
Al-Shafi and Weerakkody (2007)	Qatar	Challenges facing e-government adoption (citizen perspective) and investigate the current stage of e-government in Qatar	Electronic Government, An International Journal	This paper looked at several challenges of e-government adoption. Interviews were conducted with 6 government workers involved in Qatari e-government. Furthermore, a survey was also distributed to 100 citizen. Results: citizens level of trust was high, some were not satisfied with the current e-services because it is not 100% online. Websites should be more user-friendly.
Zaied et al. (2007)	Kuwait	E-Readiness in the State of Kuwait	The Electronic Journal of E-government	Examine 20 public organisations in Kuwait. Only 47% stated that organisations have suitable connectivity, infrastructure and skills. Recommendations: Training of employee to implement and use e-government, more collaboration between organisations and more investigations are needed.
Sethi and Sethi (2009)	United Arab Emirates	E-government initiative in Dubai from 2001 to 2008	E-governance in Practice	Talked about different e-services in 20 organisations in Dubai (such as, Dubai municipality, Dubai electricity and water authority) and how they are improving. E.g. of e-services implemented are: e-pay, e-job, e-library. In 2007, more than 2000 e-services were launched and available in Dubai e-government portal. A list of lessons learnt were also available so that other developing countries could follow, e.g. flexible infrastructure, strong leadership and vision, development of human resource.

Awadhi and Morris (2009)	Kuwait	Factors influencing e-government adoption	Journal of Software	Concluded several factors that can affect e-government adoption, such as, usefulness of e-government services, ease of use, cultural and social influences, technical issues, gender, awareness and trust.
Al-Busaidy and Weerakkody (2009)	Oman	Factors influencing the development and diffusion of e-government in Oman (employee perspective)	Transforming Government: People, Process and Policy	Looked at 3 public sector organisations; Information Technology Authority, Tender Board and Ministry of Man Power. Survey was conducted, 105 participants with IT backgrounds were involved in the study. Concluded some barriers for e-government development, such as, low information exchanges between governments.
Hamner and Alqahtani (2009)	Saudi Arabia	Accessibility of e-government by individuals	Government Information Quarterly	Developed a model (Resident decision model) to understand how users will accept or reject e-services. Furthermore, concluded factors that can affect e-government use, such as, age, education, security and internet knowledge.
Alshehri and Drew (2010)	Saudi Arabia	Challenges of E-government adoption	World Academy of Science, Engineering and Technology	Looked at issues they could face when adopting e-government. E.g. issues related to technology, culture and social. Recommendations were also made such as, train government employees to understand more about e-government, increase level of awareness of citizens, collaboration between government agencies.
Alsobhi et al. (2010)	Saudi Arabia	Examine e-government implementation	American Conference on Information Systems 2010 Proceedings	Examined a public sector organisation in Madina City that implemented some e-services for citizens (khadamatec). Concluded some factors that effected the adoption of e-services in this city, such as unawareness and trust between citizens and government.
Al-Rashidi (2010)	Developing countries, Gulf States and Kuwait	Challenges to e-government implementation	European and Mediterranean Conference on Information Systems	This study focused on developing countries and in specific the Gulf region. They have looked at internal barriers when implementing e-government and proposed a framework that will be tested at a later stage. Several factors that could affect the implementation process were concluded, such as, awareness, trust, political desire, training, resistance to change, security etc.
Al-Busaidy and Weerakkody (2010)	Oman	Examine e-government implementation in Oman	European and Mediterranean Conference on Information Systems	This study examined 3 public sector organisations that have started e-government implementation; ministry or interior, ministry of higher education and ministry of manpower. The aim was to compare the past and current challenges facing these organisations during e-government implementation. Recommendation: Top management support, integration between public agencies, and IT skills are need.

Alfarraj et al. (2011)	Saudi Arabia	Examining ministries websites for readiness of e-government	International Journal of Advanced Computer Science and Applications	Two out of 28 ministries still have no website. A comparison of e-government readiness was made between Saudi Arabia and Bahrain ministries. Based on 2010 UN e-government readiness survey Bahrain was ranked the 8 th on the world on online service index, were as, Saudi Arabia ranked 75 th , therefore, a comparison was made to see the gap and see how to improve it in future. It was recommended that all Saudi ministries should take this issue more seriously and develop portals that can communicate with citizens, residents and businesses and have more comprehensive online services.
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Table 1: Review of some e-government research in Arab States of the Gulf (Gulf Cooperation Council countries, GCC)

Appendix 2

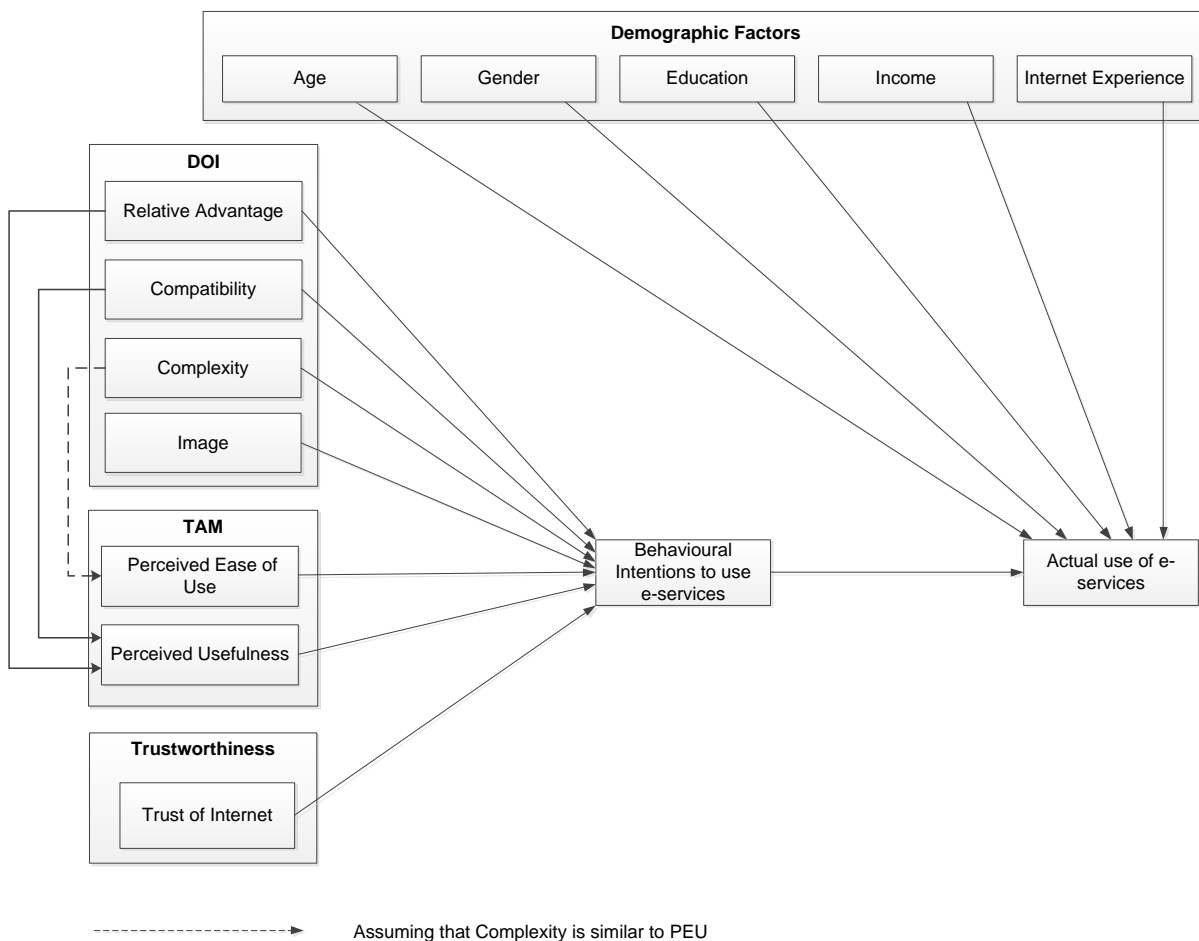


Figure 1: Theoretical framework to understand the adoption, use and diffusion of e-services in public sector organisations