



ADOPTION AND USE OF E-GOVERNMENT SERVICES IN THE ABU DHABI POLICE FORCE: A QUALITATIVE STUDY

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Abstract

Information and Communication Technologies (ICTs) are becoming increasingly prevalent in peoples' daily lives due to the presence of e-government. 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, in this case, Abu Dhabi Police Force (ADPF) in the United Arab Emirates (UAE). A qualitative approach involving 39 participants' interviews was used in this study. The questions used in the interviews were based on a conceptual framework that applied certain constructs taken from Diffusion of Innovations Theory (DOI), Technology Acceptance Model (TAM) and e-Commerce's Trustworthiness models. The research study results show that age, education, position within an organisation and the job that an individual is involved with inhibit or encourage the use and adoption of e-services. The contributions from this research are anticipated to be a better understanding of the diffusion, adoption and use of e-services in the UAE region.

For industry the findings offer a diverse perspective as they provide some information on the impacts of e-services in public sector organisations of Abu Dhabi. Policymakers, particularly in the UAE and developing countries can learn of the impacts of e-government efforts in the public sector of Abu Dhabi.

Keywords: *ICTs, E-government, E-services, Public sector, Developing Countries, Abu Dhabi government, Police Force, Qualitative Research, Case study.*

1 Introduction

Due to the potential of Information and Communication Technologies (ICTs) in promoting and seeking economic growth and development at government, business and citizens levels, countries around the globe are striving to achieve e-government success (UN, 2012). In a UN e-government development index report (2012) a survey of 193 global countries online provision revealed that 190 of the examined countries had online services.

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.

As mentioned earlier, global efforts to obtain e-government are on the increase, but 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). With e-government development still being low in such countries, citizens are still reliant on traditional means of government products and services provisions and governments are still faced with large increasing costs in the form of printing, storing and filing paper costs, mailing the hard, or having large staff levels with skills still dated. 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; Schappan, 2009).

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 seven emirates. E-government is reliant upon the provision of ICTs, which in UAE: “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, Dubai has recently witnessed both economic downturns and rises that were academically researched for 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 is the largest city and the capital of the United Arab Emirates (UAE). The United Arab Emirates (UAE) located in the Middle East region, has a total land area of approximately 77,700 sq. km and a population of an estimated 4.5 million (BBC, 2009). It consists of 7 different states /

emirates which are; Abu Dhabi, Dubai, Sharjah, Ajman, Umm al Quain, Ras al Khaymah and Fujayrah. Across the UAE, Emirati citizens make up nearly 20% of the total population. The remaining 80% are expatriates from Asia, Africa, Australia, Europe and North America (Visit Abu Dhabi, 2012).

The UAE contains leading developing emirates that are aware of the various changes occurring in the relationship between citizens and government due to Information Systems (IS), ICTs and striving hard to obtain them. Abu Dhabi executive council have formed a committee which is called Abu Dhabi Systems and Information Centre (ADSiC) which was established in 2008 (e-Abu Dhabi, n.d.). Its main task is to create an “IT agenda of the Abu Dhabi government and leads the e-government effort across entities” (e-Abu Dhabi, n.d.). Many government organisations in Abu Dhabi have a direct link with this committee to improve its e-government services such as, Abu Dhabi Health Authority, Abu Dhabi Police, Municipality of Abu Dhabi, Ministry of Presidential Affairs, Marriage Fund and more.

Based on the United Nations reports, the growth of e-government services in the UAE increased from the year 2005 to 2012. In 2005 e-government readiness was at 0.571 and ranked 42 worldwide; 2008, e-government readiness was at 0.631 and ranked ten places higher at 32 and most recently in 2012 the index was at 0.734 but UAE ranked 28 worldwide and 5th in Asia (UN, 2012). This suggests that efforts are being made in the region, but there is still time for the region to become leading in the Asian region, or globally.

For e-government a telecommunications infrastructure is pertinent with the UAE consisting of two telecommunication companies in the UAE, which are Etisalat and Du. Etisalat was formed in 1976 and introduced dial up internet in 1995 (Etisalat.ae, n.d.). In 2006 “Internet subscribers at around 660 thousand internet users increased in 2010 to 1323 thousand” (Etisalat annual report, 2010: 12). Comparatively, Du was established in 2006 (Du.ae, n.d.), to rival Etisalat and offers internet based technologies such as, broadband, satellite, or 3G networks.

There are currently around 560 e-government services in various UAE public sector organisations with the government aiming to reach 1500 e-government service in February 2014. For this a budget has been established at estimated 41million US dollars, which is to be spent in the coming 2 years (Alarabi, 2012). However, this stage of transformation faces many obstacles such as cultural issues, not experienced staff, and resistance from citizens and staff in different organisations (Hesson, 2007).

With the UAE region striving to provide world leading e-government development and Abu Dhabi a large country of the region recognising and aiming to fulfil that aim, this research identified a research gap being in the form of minimal studies on Abu-Dhabi’s e-government efforts. Therefore, to reduce the gap, we aimed to identify and understand factors affecting the diffusion, adoption and use of e-services in a public sector organisation.

This research offers several contributions. First for theory, the qualitative aspect of e-government adoption and use in a public sector organisation in a rapidly emerging developing country of the UAE is minimal in the literature; therefore this research is expected to reduce such an existing gap. For policymakers, the contribution is viewed to be the identification and understanding regarding such an important area in such a country. For industry, such research offers insights into e-government and staff using its e-services something that organisations could consider when developing or implementing future ICTs in the region.

2 Background of the Case Study and E-Government studies in the UAE

To ensure members of the public are protected and will abide to the law, in 1957 Abu Dhabi Police Force was formed (Gulfnews, 2007). Since then many changes have been undertaken whether in police structure, regulations or services to reach a better standard within the organisation that is capable of handling all types of security issues. An example is the improvements of traffic safety in Abu Dhabi in the year 2010. Due to paying attention to quality, training, education of ADPF and citizens awareness and use: “deaths resulting from traffic accidents have declined by 17%, compared with the same period last year” (Adpolice.gov, 2010). For more details on ADPF, an organisational structure is provided in Appendix 1.

ADPF located in the capital of the UAE, is considered to be the largest police headquarters in the country, covering most of the UAE. As shown in appendix 1, ADPF consists of many directorates and departments. To ensure that protection is offered to citizens, ADPF has a recruitment policy allowing the organisation to recruit anyone capable of improving the organisation. Therefore, the organisation considers applications not only from individuals with armed forces backgrounds, but also civilians from diverse nationalities.

Currently, e-services offered by the ADPF are still in early stages, but many new e-services are being introduced on a daily basis; therefore, identifying and understanding how different factors might affect the diffusion and adoption of these e-services is an important issue of consideration. To limit and to provide a detailed study, e-services implemented within four different departments were used by this research study.

2.1 Studies of the UAE region

From the literature review conducted on the UAE region (appendix 2) it was discovered that studies had been conducted on UAE region countries such as Kuwait (Zaied et al, 2007), Qatar (Weerakkody et al, 2011), Oman, Saudi Arabia (Abanumy et al, 2005) or Dubai (Sethi and Sethi, 2009). To date minimal studies on Abu Dhabi had been conducted. From the literature review it was also found that most of the studies were either quantitative, mostly citizen centric, focused upon website accessibility and usability, evaluation of policies or upon growth models. This provided further impetus to this research team to conduct this research. Of public sector organisations studies in the UAE region Zaied et al (2007) study of Kuwait stood out where 20 public organisations in Kuwait were examined and it was found that only 47% of the organisations had suitable connectivity, infrastructure and skills. The recommendations made were that employees should be trained in implementing and using e-government and should more collaboration between organisations. Al-Busaidy and Weerakkody (2009) examined 3 public sector organisations in Oman and learnt that top management support, integration between public agencies, and IT skills are needed. In continuation Al-Busaidy and Weerakkody (2009) once again examined 3 public sector organisations in Oman and 105 participants for a survey. It was concluded that some barriers for e-government development, such as, low information exchanges between governments existed.

3 Theoretical Framework

Since e-government involves the acceptance and use of ICTs, adoption and use theories are more commonly examined in e-government research. This has meant that studies usually understand, investigate and explain these issues using theories such as, Diffusion of Innovations Theory (DOI) (Rogers, 1983), adoption using Davis Technology Acceptance Model (TAM) (Davis, 1986). Since we are also investigating the adoption and diffusion of e-services, we are also applying concepts from DOI, which are: DOI's Relative Advantage, Compatibility, and Complexity. Previous e-government research (Carter and Belanger, 2005) found that the aforementioned factors of DOI are associated with TAM's 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). 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). Status is of immense importance in the Arab region; hence applied to this research. 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) it 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. The research theoretical framework is available in appendix 3.

4 Research Method

This research applied the case study method where each ADPF department was viewed to be a case study. The departments used for this research are: Security Information Department, IT and Communications Department, Strategic Management Department and Policing Operations Department. The departments were selected upon the basis of accessibility as well as role in e-government and e-services development and implementation. The security information department deals with security issues of networks, police data and different services and offered the research with information regarding security issues when developing and implementing e-government in the ADPF. The IT and communications department is responsible for IT provision and policy, which would allow this team to form an understanding regarding the impacts and reasons for pursuing certain policies. The strategic management department is responsible for forming and implementing strategic visions for ADPF; therefore also pertinent to understand the process followed for implementing policies. Finally, the policing operations department is in charge of field work operations. The reason for having this department is to examine a non-administrative department; that is, this department was viewed to be important to understand the impacts and operations of e-government.

The data to be acquired for this research was deemed to be qualitative as this would allow a rich and in-depth understanding to be formed. To obtain the data both face-to-face interviews and direct observation data collection methods were employed. Culturally, language differences and clarification to questions also led to the team to consider face-to-face interviews being more appropriate for this research.

This research study was conducted for 2 months (January 15-March 15, 2012) and involved 39 participants from different management levels and ranks. All face to face interviews were formal and took place in ADPF premises and during working hours. This helped in having a quiet suitable environment that made participants focus more on the interview questions rather than having informal interviews out of the office which could make the participant distracted with the surroundings, mobile phones, or television. Face-to-face interviews were also viewed necessary due to cultural issues in the United Arab Emirates. People trust each other easily when speaking face to face rather than having other interview methods, such as telephone interviewing in the UAE; therefore, face to face interviews were used. Three categories of staff were formed, which are, low level staff, middle level staff and high level staff.

A questionnaire that was used during the interviews was disseminated to the participants beforehand to ensure awareness of questions. The questionnaire was organised in 2 sections with the first section seeking demographic and internet experience. The second consisted of the questions drawn from the conceptual framework that was formed from certain elements taken from the theories DoI, TAM and e-commerce trustworthiness. The interview questions were both closed and open ended questions. This allowed the research to gain rich data and gave participants the chance to speak freely of any issues that could be important for the research. Each interview was held for about one hour, with a colleague who works in Abu Dhabi police to assist with note taking. This allowed the researcher to focus more on the interview questions and responses, especially that some of the interview questions were open ended and needed more attention rather than writing down notes. A further precaution was taken in the form of a Dictaphone, but it was not always allowed by participants and in those cases, the note taker greatly assisted the research.

5 Data Analysis

A within and cross case analysis was utilised in this research. Prior to that, themes and codes were formed from the interview transcripts for each case study. The appendices illustrate the themes, codes and constructs that were formed following formation of the conceptual framework. The framework was formed from certain elements of the theories DoI, TAM and e-commerce trustworthiness. For the coding and themes phase initially, open coding was employed that “involves analysing and summarizing the text by the use of a succinct code” (Myers, 2009: 110). The advantage of using codes when understanding text is that codes allow researchers to easily “retrieve and organise the data” (Miles and Huberman, 1994: 57). Therefore, for this research team the researchers could provide each reply with a specific code and allowed comparison of data in all four departments.

For the research team prior to conducting analysis, a decision had to be made regarding whether software should be utilised for this task. Different computer-assisted qualitative data analysis software were considered since software is viewed to be a means of assisting in coding and categorising text, such as, NVivo, Atlas.ti, HyperRESEARCH etc. (Yin, 2009). However, these software packages do not analyse the text. They organise the text and help the researcher in finding specific words or codes, but required training as well as analysis, which the research team felt would not be beneficial at this point in time.

6 Findings and Analysis

Relative advantage taken from DoI involved the researcher attempting to ascertain whether participants expressed preferences towards the innovation or for the traditional communication channels. Within three departments of ADPF, there was a preference towards use of e-services in comparison to traditional communications channels of face-face communication, telephone or e-mail. The three departments were Security Information, IT & Communications and Strategic Management. More details about the findings is available in the appendices.

Within Security Information 6/9 participants had used some of the e-services, and hailed mainly from the middle and high level staff. Education levels and positions in the department featured when determining usage of e-services in this department. Participants not using the e-services have an educational level of either high diploma or high school; on the other hand, 2/3 participants not using the e-services were lower level staff. Staff in this department showed some interest in new e-services, therefore, they are accepting the idea of adopting different e-services, however, all argued that it should be useful and beneficial to them. In the IT and communications department, all the ten participants had already used some of the e-services. This was attributed to the working environment of staff in this department as all of them had to deal with different issues related to computer usage. Furthermore, participants claimed that e-services were immediately adopted when launched in ADPF. Most participants were also been involved in the pilot testing of some of the e-services before being launched, therefore, had an idea about them and did not need intense training. In the strategic management department age had a large role to play. Younger participants from this department showed more interest in e-services adoption and usage rather than older participants. The 2 participants who never used the e-services were between 41-50 and 51-60 years old. Similar to the aforementioned departments, most staff in this department relied on e-services and internet usage, which concludes that their work routine is compatible with e-service usage.

Responses of participants from the strategic department showed that they were concerned with their ‘image or status’, unlike the IT department that thought of e-services in view of e-services benefits to work procedures. 3 participants were using e-services because that meant that they were more valued by higher level colleagues and called upon to attend important decisive meetings. Another 3 thought that they are experienced in the organisation and considered a higher level individual. Finally 4 participants thought that staffs using e-services are considered smarter than other staff members.

When it came to trust in the e-services and trust in internet in general, most staff in this department trusted the e-services launched in ADPF, but lacked trust in internet services not related to the police, such as, shopping or cinema websites.

The police operations department displayed the least e-service usage, with only 4 out of 10 using some of the e-services. Education level and age of participants differed between participants using and not using the e-services. For example, most participants not using the e-services had a low level of education, such as, below high school, high school and high diploma. Furthermore, their age was also considered older than participants using the e-services. Most participants (6/10) had less than one year internet experience for both personal use and work purposes. These results showed that staff members in this department are still new when it comes to internet and e-services. Furthermore, most staff in this department work outside their offices and in the fields with no access to computers. Due to their daily job patterns and routines, these participants concluded that e-services usage is not compatible with the environment they are currently in. The majority of participants also complained that using e-services is complicated which led them to not use it anymore. Furthermore, when it came to usefulness of e-services participants argued that e-services are only useful in specific departments and for certain staff members with jobs dealing with computers. The police operations department also did not display trust of the internet. In the daily news of the UAE, it was stated that 72 online users have been hacked to their online bank accounts only in 2011 (Emaratalyoum.com, 2012). This might be one of the main reasons for lack of trust.

7 Discussion

E-government research examining the acceptance of ICTs are usually synonymous with a G2C, demand perspective that involves DOI, TAM based theories, quantitative, survey based questionnaires (Choudrie and Dwivedi, 2005; Bwalya, 2008; Al-Shafi and Weerakkody, 2009). This research adopted a diverse perspective and applied a qualitative approach to the DOI, TAM and e-commerce theories in a G2E context. Using a small sample population it was understood that departments within the organisation that are far sighted, strategic and involved with technology development and implementation readily accept and use innovation. Comparatively departments that involve daily operation functions are not readily willing to embrace innovation. Instead the department displayed a certain amount of resistance to change. Departments employing and accepting innovation also emphasised other factors such as, image or status being critical for e-services use. The routine operations department also displayed no enthusiasm or interest towards accepting or using the technology, instead it showed negative tendency towards use of the internet. What has also been realised is that employing such a diverse research approach can lead to a different understanding to previous studies from the UAE region as individual attributes such as, age, education and position within organisations could become apparent and may become pertinent in forming an understanding. Therefore, even though top management support may exist as in Al-Busaidy and Weerakkody (2009), or in Zaeidi et al (2007) the demographics of staff members may need to be understood to implement and develop organisational change issues.

7.1 Implications for Academia

Previous adoption studies have revealed citizens awareness and acceptance of innovation. This research study adopted a diverse approach and studied the G2E context using a novel e-services conceptual framework. The implications of this research study are that academic studies can begin to understand using demographic factors and organisational levels the influences of e-services upon various public sector departments. For instance, using this study it is found that departments involved in developing and implementing policies and strategies, develop and implement technology and involved with the security of the organisation were more accepting of innovation than those involved with the daily operations of the organisation. This implies that further understanding from an organisational perspective of organisational change and culture could lead to novel research not evident in e-government academic research.

7.2 Implications for Policymakers

When forming strategies and policies policymakers can determine from this study the types of departments that will be more accepting and willing to change than those less open to the idea of change.

7.3 Implications for Industry

From such a study, organisations that act as consultancies in the UAE can identify and act upon strategies, policies and actions that could motivate and encourage adoption and use of e-services within government departments; thereby achieving more success in e-services implementation.

8 Conclusions and Future Directions

This research study aimed to identify and understand factors affecting the diffusion, adoption and use of e-services in a public sector organisation. Using a qualitative approach involving interview questions based on certain constructs taken from different theories; Diffusion of Innovations Theory (DOI), Technology Acceptance Model (TAM) and E-commerce's Trustworthiness models it was concluded that age, position within an organisation and job that an individual is involved with inhibit or encourage the use and adoption of e-services. Results from interviews concluded that younger participants in certain departments displayed more interest in adopting and using e-services. It was also found that education has a large hand in changing individuals' attitudes towards acceptance and use of innovative technologies. Finally, the position that one holds within the organisation impacts the acceptance and use of innovation. For example, low level staff showed more resistance to using new procedures (in this case e-service) unlike middle and high level staff. Trust of the internet was also emphasised as most participants do not trust the internet.

8.1 Limitations and Future Directions

Since a small sample population was employed in this research; that is, 39 participants, generalisations cannot be made. However, an initial attempt to understand the adoption, use and diffusion of e-services has been made. To overcome this weakness, it is anticipated that in the next phase this research will be conducted using a sample population of 150 or more participants.

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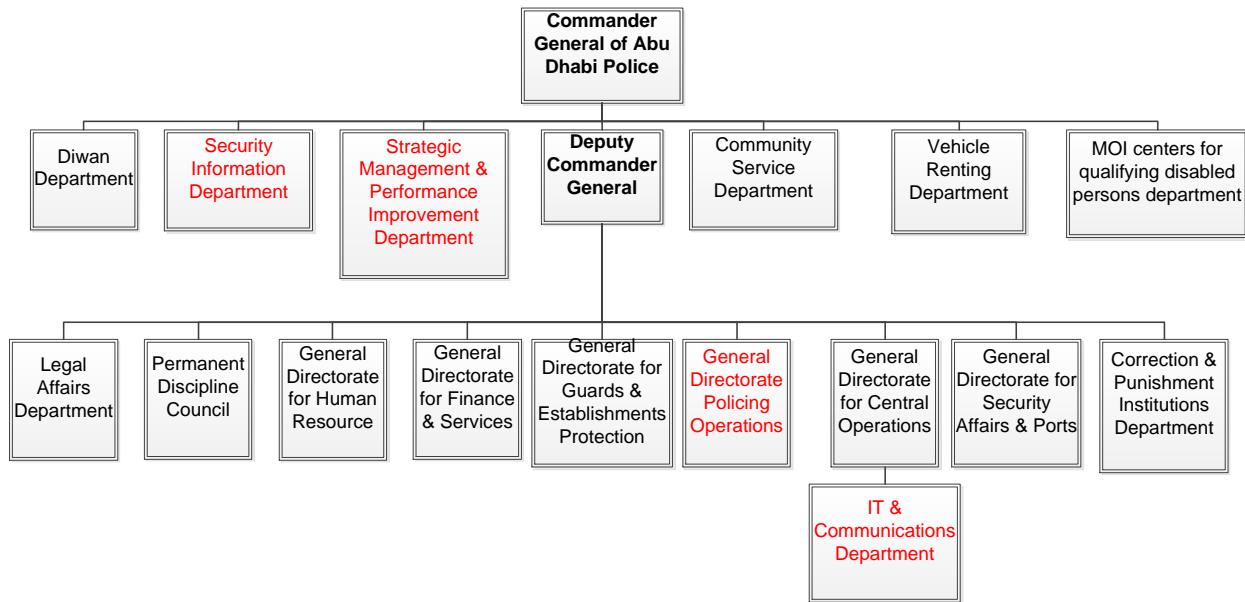
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Appendix 1: ADPF organisational chart



Appendix 2: The Literature Review of UAE e-government studies

| Author / Year | Research Context | Research Topic | Summary / Conclusion |
|--------------------------------|-----------------------|--|--|
| Sahraoui (2005) | Arabian Gulf | Challenges of e-government in Arabian Gulf countries | Referred to 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. |
| Abanumy et al. (2005) | Saudi Arabia and Oman | Examining website accessibility and evaluation of e-government websites in Saudi Arabia and Oman | In depth literature review of website accessibility was undertaken and showed different guidelines that should be followed. A lot of work is needed to improve the current website standard in Saudi Arabia and Oman. Recommendations: spreading awareness, improving IT skills, develop own guidelines appropriate to their needs etc. |
| Awan (2007) | United Arab Emirates | Evaluation of Government to Business (G2B) websites in Dubai | 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 | This paper looked at several challenges of e-government adoption. Interviews were conducted with 6 government workers involved in Qatari e-government. Furthermore, a |

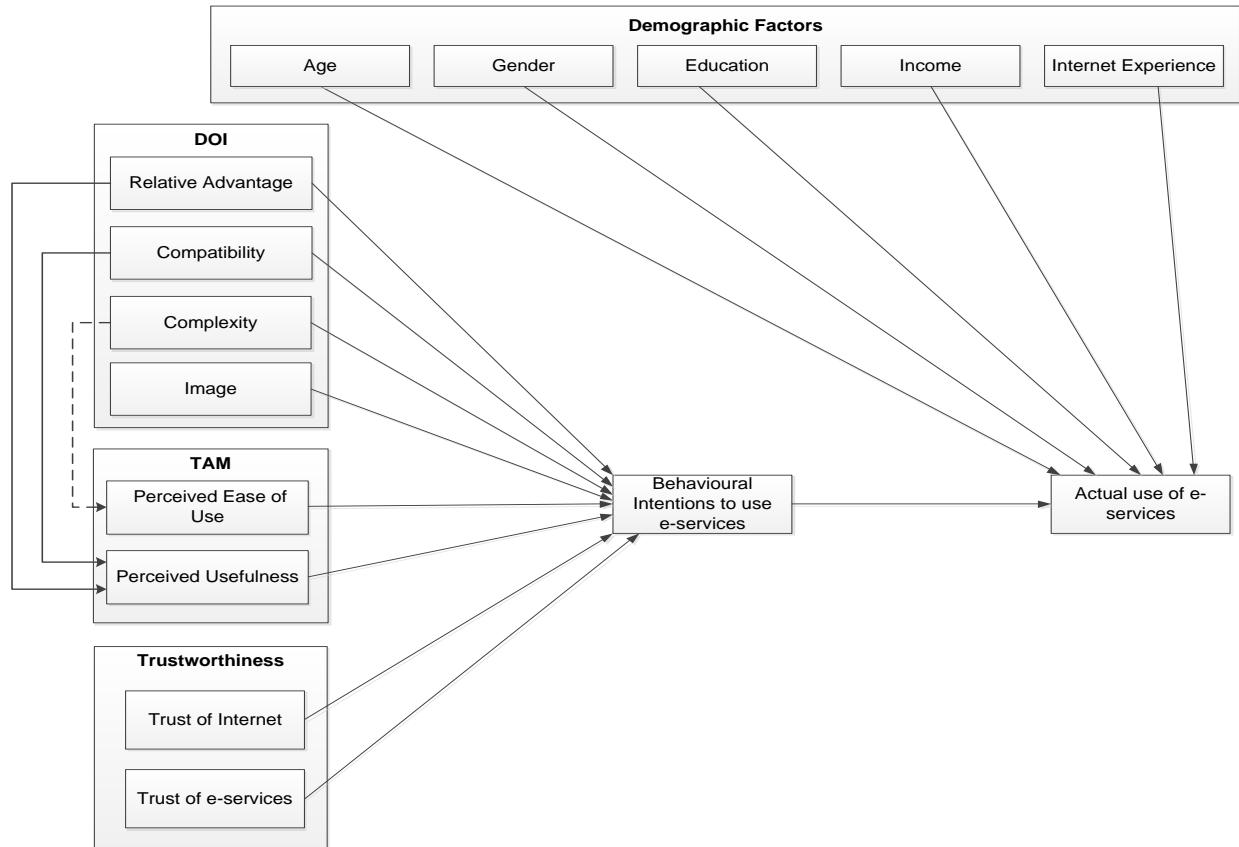
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| | | current stage of e-government in Qatar | survey was also distributed to 100 citizen. Results: citizens level of trust was high, some were not satisfied with the current e-services because it is not 100% online. Websites should be more user-friendly. |
| Zaied et al. (2007) | Kuwait | E-Readiness in the State of Kuwait | Examined 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 | 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. |
| Alsobhi et al. (2009) | Saudi Arabia | Challenges when implementing e-office and e-government | A study was conducted in Madinah city, in Saudi Arabia. Before the e-government implementation, citizens faced a lot of problems, such as, fast and reliable payment methods, digital divide etc. About 396 services were launched online. However, some challenges of the diffusion of e-government are related to information security, resistance to change in government employees, integration between government agencies. |
| Awadhi and Morris (2009) | Kuwait | Factors influencing e-government adoption | Concluded several factors could 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-Busaify and | Oman | Factors influencing the | Looked at 3 public sector organisations; Information Technology |

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| Weerakkody (2009) | | development and diffusion of e-government in Oman (employee perspective) | 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 | 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 | 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 | Examined a public sector organisation in Madinah 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 | 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 | This study examined 3 public sector organisations that have started e-government implementation; ministry of 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 |

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| | | | implementation. Recommendation: Top management support, integration between public agencies, and IT skills are needed. |
| Al-Moalla and Li (2010) | United Arab Emirates | Critical evaluation of e-procurement in the UAE | This study focused on government to business (G2B) category, which in this case was e-procurement. Furthermore, a model was proposed to show important organisational factors that can affect e-government procurement implementation, which are: planning, clear policy, change management program and Human Resource Management. Result: Only change management program and Human Resource Management have significant positive relationship with government procurement implementation. Organisational change is still a challenge in UAE. |
| Alfarraj et al. (2011) | Saudi Arabia | Examining ministries websites for readiness of e-government | 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, whereas 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. |
| Al-Khoury (2011) | United Arab Emirates | Vision for e-government implementation | A framework was proposed to guide government in UAE and in other countries to implement e-government. Several improvements are needed in the UAE, such as, improving service coverage, resources and capacity building, enhancing quality of life. |
| Weerakkody et al. (2011) | Qatar | Examining the implementation and diffusion of e-government in Qatar | A conceptual framework was proposed to explore the challenges of implementing e-government which have looked at social, political, technological and organisational |

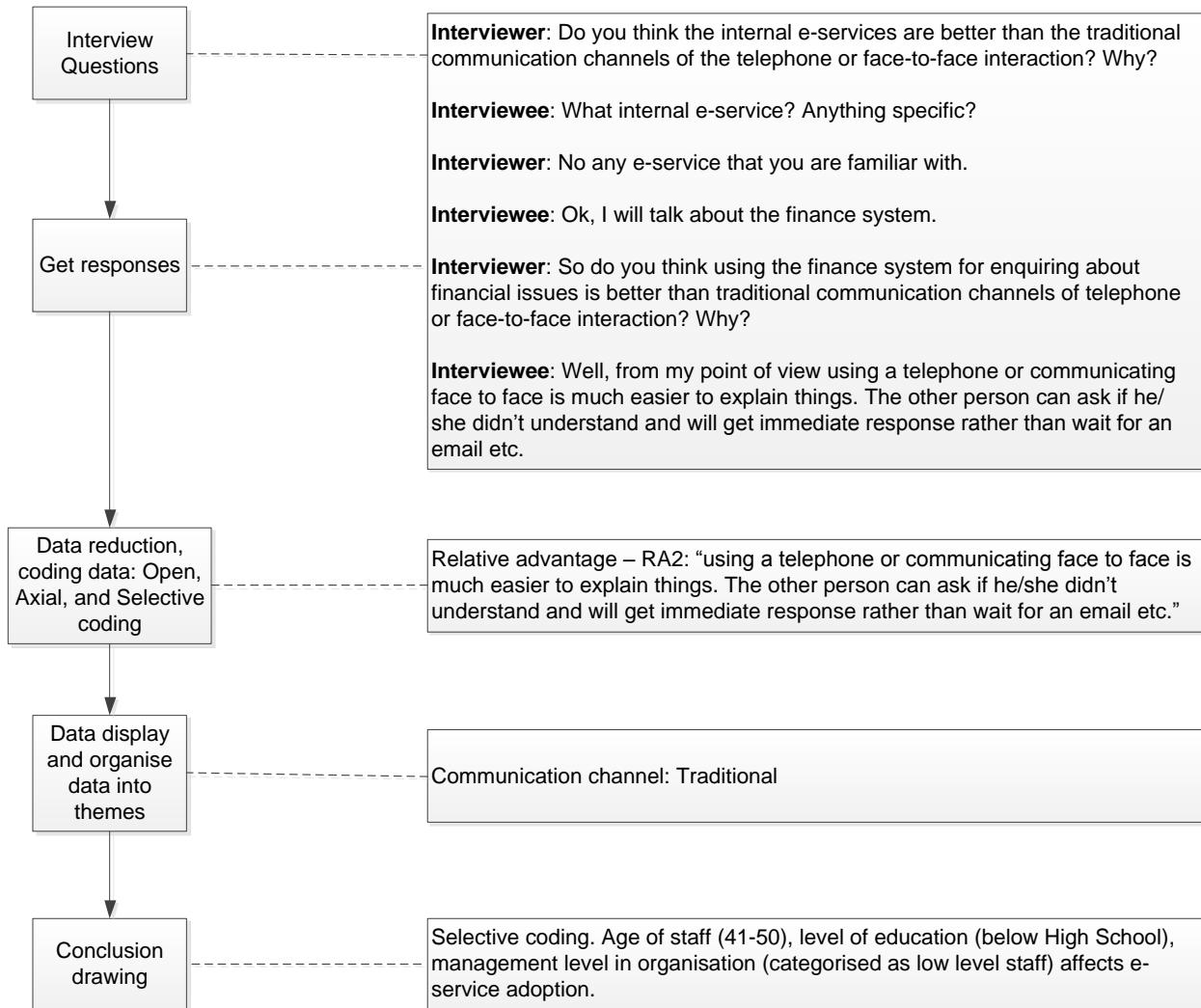
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| | | | <p>themes. Financial support and resources are important, however, not enough. Recommendations: For having a successful e-government, there should be clear legislation, guidelines and better alignment of national ICT strategies.</p> |
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Appendix 3: Conceptual Framework



-----→ Assuming that Complexity is similar to PEU

Appendix 4 – Example of analysis process



The first step of analysis was open coding, which helped in categorising the data under relevant codes based on the research question and constructs taken from the diverse theories. Therefore, using the example above, when we got a reply that sought an answer to a question on communication channels, we recognised that communication was derived from diffusion of innovations theory. Then, since the question was taken from relative advantage, we recognised it as RA as shown in appendix 4. Then, we went back and looked at whether this code that we had indeed ascended from diffusion of innovations theory relative advantage factor. Once that was done, we examined this relationship to understand what it was saying to us. This is where axial coding was pertinent. Finally to make sense of the collected data and to form a story, selective coding was used. This is how we then deduced that e.g. in the chart above that a member of staff of the age 41-50, male, and of management level; but not with much higher education but experience (formed this impression due to rank) also affects e-services adoption. This way, we then went back to each one of the replies and contrasted codes and themes to seek our understanding.

Examples of themes: Communication channel, work routine / personal habit, culture, skills / training, trust.

Appendix 5: Constructs, Definitions and codes used in this research

| Constructs | Definition | Code |
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| Actual Use | “Person's attitude toward using the system” (Davis et al, 1989: 985). The current use of e-services by staff members. | AU |
| Behavioural Intention | “Refers to a person's subjective probability that he will perform some behaviour” (Fishbein and Ajzen, 1975: 288). The intention to use or not use the e-services. | BI |
| Relative Advantage (<i>Diffusion of Innovation</i>) | “The degree to which an innovation is perceived as being better than the idea it supersedes. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be” (Rogers, 2003: 15). The advantages of e-services over traditional communications channels (e.g. telephone, face to face) or vice versa. | RA |
| Compatibility (<i>Diffusion of Innovation</i>) | “The degree to which an innovation is perceived as being consistent with the existing values, past experiences and need of potential adopters. An idea that is incompatible with the values and norms of a social system will not be adopted as rapidly as an innovation that is compatible” (Rogers, 2003: 15). The compatibility of e-services use with the current work style of staff members. | COMPA |
| Image (<i>Diffusion of Innovation</i>) | “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). The use of e-services for personal advantage (e.g. to look more educated than other staff members who are computer illiterate) rather than focusing on the real advantage of e-service work purpose. | IMG |
| Perceived Ease of Use (<i>Technology Acceptance Model</i>) | “The degree to which an individual believes that using a particular system would be free of physical and mental effort” (Davis, 1986: 82). The simplicity or complexity of current e-services. | PEOU |
| Perceived Usefulness (<i>Technology Acceptance Model</i>) | “The degree to which an individual believes that using a particular system would enhance his or her performance” (Davis, 1986: 82). How beneficial the e-services are for staff and work procedures in the organisation. | PU |
| Trust of Internet | “The perception of confidence in the electronic marketer's reliability and integrity” (Belanger et al. 2002: 252). The belief and confidentiality of staff towards e-service use. | TOI |

Appendix 6-Analysis and Findings

| Constructs | Interview Questions | Security Information | IT & Communications | Strategic Management | Policing Operations |
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| Relative Advantage | Do you think the internal e-services are better than the traditional communication channels of the telephone or face-to-face interaction? Why? | <p>RA is one of the constructs frequently used in previous research that looked at adoption of Information Systems (Gilbert et al, 2004; Carter and Belanger, 2004; Carter and Weerakkody, 2008).</p> <p>In this department, most staff claimed and preferred e-services more than traditional communications in terms of speed and accuracy of transactions or enquires.</p> <p>Education level and level in organisation showed that it may affect the usage of e-services in this department. Participants who prefer traditional communications have either low level of education, are low level staff or both. A male participant, 41-50 years old, who have a high school degree and categorised as low level staff</p> | <p>All ten participants in this department argued that e-services are more preferable than traditional communications.</p> <p>A male participant (31-40 years old, level of education is below high school, considered as a low level staff), said that "<i>I don't know why some still use different procedures, such as, face to face, while they can check many things easily online</i>".</p> <p>Different staff levels, education levels, gender etc. did not affect responses in this department.</p> | <p>Similar to the security information department, majority of staff in this department also prefers e-services than traditional communication methods.</p> <p>Age factor played a big role in this department. Younger participants from this department showed more interest in e-services adoption and usage rather than older participants. The 2 participants who never used the e-services were between 41-50 and 51-60 years old and they prefer traditional methods and showed resistance towards the e-services.</p> <p>One participant (male, 51-60 years old, have a high diploma certificate, and considered as a middle level employee) said that "<i>no one can force me to</i></p> | <p>Only four out of ten use the e-services and prefer e-services over traditional communication methods. This shows that majority in this department prefer other methods, such as, using telephone or face to face communications.</p> <p>Education level and age of participants differed between participants using and not using the e-services. For example, most participants not using the e-services had a low level of education, such as, below high school, high school and high diploma. Furthermore, their age was also considered older than participants using the e-services.</p> |

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| | | <p>stated that “<i>using a telephone or communicating face to face is much easier to explain things. The other person can ask if he/she didn’t understand and will get immediate response rather than wait for an email etc.</i>”</p> | | <p><i>use a specific procedure, most important thing is that I work and know my job. I might retire any time soon so what is the point in learning new things about these e-services”</i></p> | |
| Compatibility | Having described your work routine, does the e-service fit with your lifestyle and why? | <p>Compatibility is also considered important for technology adoption (Carter and Belanger, 2004; Shareef et al, 2011).</p> <p>Most of the staff in the security department have personal computers, such as desktops, at their office and use them on a daily basis; therefore, their work routine depends on computers. This concluded that e-services are compatible with the environment they are currently in.</p> | All staff in the IT department have personal computers, such as desktops and laptops at their office and use them on a daily basis; therefore, their work routine depends heavily on computers. The working environment in this department influenced staff to use different e-services. This concluded that e-services are compatible with the environment they are currently in. | <p>Similar to previous departments (Security and IT), most staff in this department have personal computers, such as desktops at their office and use them on a daily basis; therefore, their work routine depends on computers. This concluded that e-services are compatible with the environment they are currently in.</p> | <p>Most staff in the Policing Operations department has no access to personal computers. As stated earlier most of their work is outside offices and in fields. Therefore, most of their work routine does not depend on computer and e-services usage. This concluded that e-services usage is not compatible with the environment they are currently in.</p> <p>A male participant aged under 20, with a high school certificate and considered as a low level staff stated that “<i>my work environment is to deal with security issue in the emirate, we work in different shifts. Sometimes at night or in the morning. If I want to enquire about things I can either call by</i></p> |

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| | | | | | <i>phone or maybe go during my break"</i> |
| Image | Do you think e-service users are considered smarter, more valued, experienced etc...why? | <p>In previous adoption studies it was clearly stated that image is an important factor in e-government adoption (Gilbert et al, 2004; Shareef et al, 2011).</p> <p>Five out of nine thought staff using e-services are considered smarter than other staff members, therefore, the researcher concluded that this encourages staff to use different e-services.</p> <p>A female, 20-30 years old, bachelor degree, middle level staff stated that "<i>staff using the e-services are willing to improve the organisation and co-op with the police strategy...</i>"</p> | <p>Majority of participants in this department argued that they use e-services because they believe it is beneficial for work and that all staff should use it.</p> <p>A Male, 31-40 years old, who have a postgraduate degree, high level staff stated that "<i>I use these e-services regularly, not to show others that I am smart or an expert in computers. I use it because I think they are important..."</i></p> | <p>Most claimed that using e-services gives a better impression to managers that they are up to date, therefore, better chance for promotion.</p> <p>Male, 41-50, bachelor degree, high level staff, "...<i>when your direct manager knows that you are using it this means that you have a better chance to be promoted or considered smarter than your colleagues from the same department..."</i></p> | <p>Similar to the Security Information and Strategic Management department, most staff from this department have also thought that staff using e-services are considered smarter than other staff members. Furthermore, most of them claimed that certain skills and knowledge are needed in order to use the e-services.</p> <p>The researcher concluded that most staff in this department are willing to learn and use the e-services to get promoted easily, however, because of their work routine they have no chance to use them.</p> <p>Male, 41-50 years, with a high school certificate, low level staff, said "<i>I don't have the skills and knowledge to use a computer, it needs an educated person so I think yes using e-services</i></p> |

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| | | | | | <i>means that the person is smarter than us”.</i> |
| Perceived Ease of Use | If you have used any of e-services, how many attempts did you have before you began using them? Did you need any training courses before using the e-services? | <p>Ease of use or complexity is an important factor in e-government adoption (Gilbert et al, 2004; Carter and Belanger, 2004; Alawadhi and Morris, 2009).</p> <p>Based on interviews all six participants who used the e-services found them easy to use and “rarely” seek for help or advice with the functionality or options of the current e-services. This encourages them to try and use these e-services.</p> <p>Male, 41-50 years old, postgraduate degree, high level staff stated that “...it took me couple of hours to know everything”.</p> <p>Male, 20-30 years old, with a bachelor degree, middle level staff said “I didn’t need any training to use these e-services, it was simple...”</p> | <p>Most of the participants stated that the current e-services are user friendly and easy to use.</p> <p>Furthermore, most participants were also been involved in the pilot testing of some of the e-services before being launched, therefore, had an idea about them and did not need intense training.</p> <p>Male, 31-40 years old, education level below high school, low level staff, “...all I know is that some services need common sense...”</p> <p>Male, 20-30 years old, high diploma certificate, middle level staff, “...if the user have no experience at all I think it is important to take basic courses on how to use a computer at least...”</p> | <p>The majority said that they find it easy, however, some said that introductory sessions of different e-services are important, especially for staff with no IT background.</p> <p>Female, 20-30 years old, bachelor degree, middle level staff, said that “<i>even though my background is in strategic studies, I have a slight knowledge with computers but I find out that these e-services are easy. I took 1 or 2 training session for using the correspondence system because it had a lot of different functions...</i>”</p> | <p>Responses from this department were different. Few have used the current e-services and found it easy, however, the majority have said that using e-services is complicated which led them to not use it anymore.</p> <p>Male, 31-40 years old, high school certificate, low level staff, argued that “<i>I had attended one training session and learned basic functions in it, but I have forgot about it because I didn’t use it after the training. It wasn’t easy and if you asked me to work on it now I will not know... ”</i></p> |

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| Perceived Usefulness | Are e-services useful for staff members and to you in your current role? | Staff who used the e-services confirmed that it is useful, on the other hand, staff who don't use the service thought it is not useful in their current role. One of the participants said that " <i>...it is safer for documents to be online, rather than leaving them on your desk that anyone can read them even the office boy...</i> " | All participants confirmed the importance of using e-services for Abu Dhabi police staff whether they worked in the IT section or in other departments. | Majority of staff in this department have also stated that they find e-services useful. Male, 41-50 years old, with a postgraduate certificate argued that " <i>advantages are more than disadvantages when it comes to using technologies and in specific e-services in organisations...</i> " Male, age 51-60 years old, high diploma certificate, middle level staff, did not agree and said that " <i>e-services might be useful for some of the staff, but not for me</i> " | Most of the participants stated that e-services in Abu Dhabi police are not that important and there are other ways or procedures which can overcome the e-services. Male, 41-50 years old, high school certificate, middle level staff, " <i>There are other ways you can still enquire about things or apply for different transactions, such as, using the telephone</i> ". |
| Trust of Internet | Do you use the internet for online shopping? Do you believe it is safe? Do you think it is safe and confidential to use the internal e-services? | A lot of previous research confirmed the importance of trust of government and internet in e-government adoption (Albusaidy and Weerakkody, 2009; Alawadhi and Morris, 2009; Alshehri and Drew, 2010). Nine participants work in the | Similar to the Security Information department, most participants trusted the e-services security and network at Abu Dhabi police. However, when it came to internet shopping, most of them said that they only surf online but do not trust | Few participants said that they order things online but they don't feel comfortable. On the other hand, when it came to trust of the e-services most staff in this department trust the e-services launched in ADPF. | Most said they don't buy things online. Different reasons were given, such as, some don't have a computer at home and some said they don't know how to use a computer. In addition to that, trust of |

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| | <p>security information department, therefore, most of them trust and have enough knowledge with security in Abu Dhabi Police. However, majority do not trust the internet in general.</p> <p>Male, 31-40, with high school certificate, low level staff “<i>I use the internet for searching only, but not for buying. What if a hacker took my bank details...</i>”</p> <p>Female, 31-40 years old, bachelor degree, middle level staff stated that “<i>...all data are important, so we always make sure that the network is safe and up to date...</i>”</p> | online payments. | <p>Female, 20-30 years old, bachelor, middle level staff “<i>...no that's why I have another visa card with a low limit just for the internet. If a problem occurred or the website wasn't safe I will not lose a big amount of money...</i>”</p> <p>Male, 31-40 years old, bachelor, high level staff, “<i>I always get nervous when I buy things online...</i>”</p> <p>Male, 31-40 years old, postgraduate, high level staff stated that “<i>I always hear that the IT department is updated with latest technologies, therefore, I don't think anyone can hack into the system...</i>”</p> | <p>internet was a major issue also in this department.</p> <p>When asked if they think internet is safe, all said no.</p> <p>Male participant 51-60 years old, who have below high school certificate, middle level staff, said “<i>I heard once in the news that a lot of theft occurs because of online usage.</i>”</p> |
|--|---|------------------|---|---|