

CHAPTER II

REVIEW OF RELATED LITERATURE, THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 e-Government Policies of Indonesia and Philippines

The introduction of ICT for the public sector in Indonesia began in 2000 with the establishment of the coordinating team for ICT Development, through Presidential Instruction No. 50/2000, as a high-level task force to advance the use of electronic media, facilitate the government's communication, interaction and transactions, and to provide guidelines and recommendations on ICT development including e-government (Pudjianto, et al., 2011). Further, Presidential Instruction No. 6/2001 officially introduced the term 'e-government' in the country at the same time mandated the Indonesian government to use ICT to support the practices of effective governance. To this end, a specific national e-government policy was ordered in Presidential Instruction No. 3/2003 which, aside from providing a legal basis for nationwide e-government implementation, also laid down several objectives: to facilitate communication between central and local governments; to gain openness and transparency; to control and ensure accountability towards implementation of effective governance; and, to enable a transformation towards the information society era (ibid).

Transforming e-government thus is one key objective of the national e-government policy. In this regard, the current Indonesian President, Mr. Jokowi, warned all local authorities that he will stop the general allocation fund and special allocation fund if they cannot setup and manage One-Stop Services unit by the end of 2015 (Susanto, 2015). As a result, the central and local governments in Indonesia allocated billions or even trillions budget for designing and implementing e-government for public services (Tif, 2014 in Susanto, 2015). Furthermore, a five-phase roadmap was framed to provide a direction towards achieving an e-government vision and sustaining the benefits of a mature e-government environment: 1) create e-leadership; 2) enable the environment for strengthening e-government legislation and cyber laws; 3) build out an ICT infrastructure that has a cross-cutting effect throughout the country; 4) implement national pilot projects; and 5) manage changes and business process re-engineering which incorporates the best practices (Harjadi and Satriya,

2000 in Pudjianto, et al., 2011). Implementation of e-government in the country's governmental institutions show major disparities which accordingly are caused by factors such as management obstacles, infrastructure problems and inadequacy of resources (Furuholt and Wahid, 2008 in Pudjianto, et al., 2011).

The implementation of e-government in Indonesia outside of the central government is conditioned by the state's constitutional and legal framework. Regional autonomy was enacted in Indonesia through Law No. 22/1999 and was delegated to the regional/district level by Law No. 32/2004, hence providing local governments with the freedom to regulate their internal and external affairs with consent from provincial governors (Pudjianto, et al., 2011). As a city with the best e-government services in Indonesia, Surabaya has already had a master plan for e-government and has been developing e-government systems based on it. Also, the local authority has defined two e-government success indicators (output and usage indicators) and their target levels declared on the Medium-Term Local Development Plan (Susanto, 2015).

A series of policies ushered in government computerization and e-government in the Philippines since 1971 until recently. Chronologically, the following took place (Lallana, Pascual and Soriano, 2002): Executive Order 322 created the National Computer Center (NCC) in 1971 as the primary agency responsible for directing IT use for national development and rationalizing computerization in the country. Through Executive Order 190 in 1994, the National Information Technology Council (NITC) was created and designated as the central policy body on ICT matters in the country, which was later reorganized in 1998 as the highest planning and policy advisory body on IT matters by Executive Order 469. In 2000, Republic Act 8792 or the e-Commerce Act was enacted, an important milestone for ICT development and e-government in the Philippines, because it defines the government's policies on electronic transactions and provides the legal framework for enabling the country to engage in e-commerce. It also mandates government online by 2002. Also in the same year, Executive Order 265 approved and adopted a Government Information Systems Plan (GISP) as a framework and guide for all computerization efforts in government. The GISP aims to create a system of governance that will lead to: faster and better delivery of public goods and services; greater transparency in government operations; increased capacities of public sector organizations; and proactive participation of citizens in governance. The GISP

was to be implemented in three phases: Phase 1 - Setting Up the Enabling Environment; Phase 2 - Building the GISP Information Infrastructure; and, Phase 3 - Sustaining GISP.

The current administration of the Philippine government has come up with the e-Government Master Plan (EGMP) that serves as a blueprint for the integration of ICTs for the whole of government (<http://i.gov.ph/>). In particular, the government has formulated the Philippine Digital Strategy (PDS) for 2011-2015 with the following targets: improved efficiency in government operations; public online services become increasingly interactive, transactional and ultimately interconnected (networked); increased citizen participation in governance and innovation; enhanced public trust and increased transparency in government; enhanced competitiveness of the country's industries; and more empowered citizens and communities (<http://icto.dost.gov.ph>). Among the policy changes being proposed is the establishment of a Department of Information and Communications Technology (DICT) which is seen as crucial in developing and promoting a policy and legal environment, as well as an effective and efficient regulatory regime that will help steer the Philippines to the forefront of the global information economy. In this regard, Republic Act 10844 was enacted on May 23, 2016, creating the said DICT dedicated to the functions of: ICT policy-making and planning; improved public access; resource sharing and capacity-building; and consumer protection and industry development (Sabillo, 2016). The law also mandates the creation of regional offices to help implement plans and programs while there is an option to form sectoral and industry task forces.

2.2 The e-Government Contexts of Surabaya and Davao

Surabaya is known to be the leading e-government in Indonesia. In the technological aspect, the city has progressed through the different stages of e-government development. Its website services range from the basic informational, to interactive online services (applications for birth, marriage, death, online patient registration, etc.), and transactional (GRMS). These are all in one portal or Single Point of Access (www.surabaya.go.id). The GRMS or Government Resources Management System is a system implemented through the integration and consistency of the starting step of activity planning/budget - the implementation - the process of selecting the provider of goods/services, controlling and monitoring as well as evaluating the

performance of the implementation of the activities/personnel. It consists of the following processes: e-Budgeting, e-Project Planning, e-Procurement, e-Delivery, e-Controlling, e-Performance. The GRMS was developed by Surabaya City Government in order to support local financial management (Surabaya City Government, n.d.). Through this, the city has achieved its target level for the delivery of online services, and is predicted to increase the number of online services in the near future (Susanto, 2015). The city is also making optimal use of the Web 2.0 technology. Social media platforms such as Twitter, Facebook, Google+ and LinkedIn are presently utilized. The policy on ICT implementation in the city is evidenced by the institutionalization of ICT management, exemplified by the operations of the following city agencies: ICT Office, Media Center, Information Services, and Command Center. The political leadership commitment of immediate past Mayors and the present Mayor can be garnered through the awards and achievements for e-Government received by the city government since 2004 up to the present. The city government's vision and mission express the principles that guide its organizational culture: good governance, innovativeness, efficiency, empowerment, and transparency. Thus, it is apparent that conditions which are facilitative to e-government transformation in Surabaya are existing.

Davao has been recognized as relatively ahead in terms of e-government in the Philippines (Obi and Iwasaki, 2015). Technologically, the city has also advanced through the various e-government stages. Its website services span from the basic informational to interactive online services, e.g. applications for licenses and permits, assistance, life events-birth, marriage, death, annulment, e-procurement bids and awards, on-line inquiry on legislation, investment, infrastructure permits, business directory, etc. (www.davaocity.gov.ph). The city government also has intranetworking facilities. All of these are in a single point of access or Portal. In addition, the city is making optimal utilization of the Web 2.0 technology via the social media networks such as Twitter and Facebook. Moreover, most of the contents on the city's resources and available services were promoted in the city's website, aside from its compliance with the Full Disclosure Policy mandated by the national government (Hari, 2014). The policy on ICT by the city government is demonstrated by the implementation of the City Computerization Program starting 1990, and in the current institutionalization of ICT management and development through the Information and Communication

Technology Center and City Information Center. The leadership and commitment of the current Mayor towards e-government development is shown through her prioritization, in the top ten, of infrastructure development, which includes the ICT infrastructure of the city government. This is steered by what she calls as ‘leadership by example’ and establishment of mechanisms that will ensure an efficient and effective governance. The city government’s vision and mission articulate the principles which guide its organizational culture: efficiency, effectiveness, empowerment, and being state-of-the art by the use of research and application. Hence, conditions that are facilitative of e-government transformation are obviously in place in Davao.

2.3 e-Government Transformation

The study of e-government development and transformation factors has been pursued vigorously by individual scholars and organizations since e-government was utilized by states. Two studies on a global scale highlight crucial factors in the transformation of e-government. According to the UNDESA (2014), transforming government through a ‘whole-of-government’ approach requires the following enabling factors: a) new forms of collaborative leadership and shared organizational culture manifested by re-shaped values, mindsets, attitudes and behaviors; b) new forms of institutional frameworks for effective coordination, cooperation and accountability across government, between governments and with relevant non-public actors; c) innovative coordination processes and mechanisms, which are inclusive and accessible, for service delivery, and citizen engagement and empowerment; d) citizen- and user-centric collaborative mechanisms to engage citizens in service delivery and decision-making; and, e) appropriate ICT management strategies in harnessing the power of new technology for enhanced collaboration.

A longitudinal study of the world’s e-governments, for a period spanning a decade or ten years, by the Waseda University-International Academy of Chief Information Officers (or Waseda-IAC) ranks e-governments utilizing nine main indicators: network preparedness/infrastructure; management organization/efficiency; online services/functioning applications; national portal/homepage; government chief information officer (CIO); e-government promotion; e-participation/digital inclusion; open government; and cyber security (Obi and Iwasaki, 2015). The study’s findings

point out certain factors that explain the e-governments' development or lack thereof, which include: a) the lack of ICT human resources, especially CIOs, development and capacity building; b) key for success of e-government projects is enough funding or financial resources; c) more encouragement of citizen engagement as digital inclusion in e-government initiatives; d) developed countries showcase progression of numerous online service applications; e) local e-government issues must be given more attention; f) high usage of mobile devices may be taken advantage of for the practice of 'mobile-government'; g) implementation of 'open government'/'open data' and sharing with 'big data'; and h) because the digital gap has become wider in terms of accessibility, usability, and affordability, ways to narrow down the gap must be put in place. Evidently, the two studies yield several common factors observed from e-governments worldwide which are essential for transformation.

Factors on the technological aspect of transformation have been and continue to be investigated on by scholars. In a study, Peristeras et al. (2009) attempted to look into how and how much information and communication technologies could or should change or even revolutionize the interfaces of society and governance. They classified society-governance interfaces as society to political system interface (includes interactions through public policy analysis, formulation and selection), and society to administrative system interface (includes interactions through public-service provision process). Consequently, the authors propose that ICT or 'intelligent technology' could benefit four major areas: a) linked data, information reuse, and semantic interoperability; b) knowledge creation, storage and distribution; c) mass collaborative public networks; and d) cross-organizational processes.

The use of new technologies such as Web 2.0, also known as 'read-write web', which includes blogs, wikis, social networking hubs, Web-based communication modes, photo-sharing, video-casting and sharing, audio-sharing, mash-ups, widgets, virtual worlds, micro-blogs, social annotation, bookmarking of websites (Chun, et al., 2010; Choudhury, 2014) has generated more researches on e-government. For Mergel, et al. (2009), Web 2.0 technologies has presented public organizations the prospect of creating actual transformative opportunities regarding key issues of transparency, accountability, communication and collaboration and to further civic engagement with government. Moreover, by adding in Web 2.0, e-government is making extra leaps in

its transformation over the last decade, evidenced by its being well-received and supported after adoption (Sivarajah, et al., 2014).

One of the technologies of Web 2.0 is the social networking hub or platforms. Today, e-governments all over are using social networks. In fact, in 31 ‘informational world cities’, even if only a few services realize a high number of users, governments actually access user-citizens with their social media activities in platforms such as Twitter, YouTube and Facebook (Mainka, et al., 2014).

Although there are policy challenges still to be addressed, ‘Open Data’ and ‘Big Data’ presents substantial potential and capacities for e-government services for the reasons that Big and Open Data can promote collaboration, create real-time solutions to challenges, boost greater openness and bring in a new era of policy- and decision-making (Bertot, et al., 2014). As public organizations are transforming, so is citizen involvement. Resulting from the combination of Open Data and mobile e-services, citizens have become significant participants in data generation, data acquisition, and service generation and development (Johansson, et al., 2015). Related to this is the finding that especially in transformed e-government services such as self-service delivery, citizen ‘loyalty’ is explained by the quality of service and citizen satisfaction (Chatfield and AlAnazi, 2013). In other words, acceptability of e-service transformation is influenced by its perceived service- and citizen-centricity.

A distinctive government service, public procurement, is one of those which has transformed because of ICT. Thai (2009) articulates that public procurement officials are those who have to act decisively on utilizing new technology to enhance efficiency in such function and service, thus the widespread practice of e-procurement. Along this, Nurmandi and Kim (2015) say that developing the e-procurement process, organizational structures and initiatives, for more efficiency and effectiveness, are dependent on a high degree of the public organization’s human resources program.

South Korea’s Online Procedures Enhancement for Civil Applications (OPEN) system, of the Seoul Metropolitan Government, has often been mentioned as a transformational breakthrough or benchmark in e-government. A study of the OPEN using an institutional framework of analysis (Kim, et al., 2009) concluded that among three institutional mechanisms: normative, regulatory and mimetic; the regulatory mechanism or the enactment of an enforceable regulation was the most prominent in

causing the development, enforcement, modification and institutionalization of the system, making it an effective mechanism for anti-corruption. Further, strong and determined leadership and strategic planning were found out to be major influences for the system's institutionalization.

In a study of the 20 most populated cities in the US, it was found out that aside from having plenty of financial resources, larger technological capacity through the presence of expansive ICT departments determine the sophistication of e-government and e-governance (D'Agostino, et al., 2011). Some of the assumed functions of an ICT department in a public organization such as a city are to design, implement and develop the city's website or e-government portal. An e-government portal is an important link between citizens and government, therefore regular evaluation of portal quality needs to be done, and improvement should be acknowledged by city administrators. A framework for e-government portal quality evaluation can be done by factoring in the following dimensions (Ziemba, et al., 2014): functional suitability; performance efficiency; compatibility; usability; security; maintainability; and, portability. Ensuring the quality of the portal is fundamental and essential in transforming e-government.

Transforming e-government then necessitates a broad range of changes in the bureaucratic environment. It must be cognizant of new available ICT systems and applications. Steps to improve or totally change designs of service processes must be done considering largely the demands of citizens and the maximum provision to them. Elements of the organization, both human (and their internal qualities) and structural, should be adaptable to change.

This study utilizes the transformational change framework (Werrakody, et al., 2011) which shows the process as moving from one state or situation ('as is') to another state or situation ('to be'). The 'to be' situation, as adapted from Hammer and Champy (1993), should show basic developments and major change in the organizational structure, its culture, and processes driven by the introduction of new ICT in order to realize actual government transformation (see Table 2.1 below).

Table 2.1 e-Government Transformation Core Constructs

Core Constructs	Indicators	Source
New ICT systems	<ul style="list-style-type: none"> - optimal use of Web 2.0 - implementation of Open Data - use of text-based Short Message System (SMS) 	Werrakody, et al. (2011) Hammer and Champy (1993) Obi and Iwasaki (2015) Peristeras, et al. (2009) Chun, et al. (2010) Choudhury (2014) Mergel, et al. (2009) Sivarajah, et al. (2014) Manka, et al. (2014) Bertot, et al. (2014) Johannson, et al. (2015)
Process re-design	<ul style="list-style-type: none"> - providing citizen-centered services - setting up 'one-stop-shop' or single-point entry portal - integration of processes - service delivery through multiple channels 	Werrakody, et al. (2011) Hammer and Champy (1993) UNDESA (2014) Peristeras, et al. (2009) Ziemba, et al. (2014)
Organizational structuring	<ul style="list-style-type: none"> - establishment of ICT department - institutionalizing professional leadership and management of ICT through CIO/CDO - shifting back-office activities to front-office - vigorous human training and re-tooling 	Werrakody, et al. (2011) Hammer and Champy (1993) UNDESA (2014) Obi and Iwasaki (2015) Nurmandi and Kim (2015) Kim, et al. (2009) D'Agostino, et al. (2011)
Cultural and behavioral change	<ul style="list-style-type: none"> - collaborative leadership in the organization - shared services within the organization - shared services among organizations - citizen service-centeredness in carrying out of job 	Werrakody, et al. (2011) Hammer and Champy (1993) Peristeras, et al. (2009) Bertot, et al. (2014) Chatfield and AlAnazi (2013) Kim, et al. (2009)

2.4 e-Government Adoption Literature

Whether e-government is adopted or not by stakeholders in society is a question that has challenged many scholars. In e-government adoption literature, a range of theories and models have been used to determine which variables could account for the adoption and use of e-government by different stakeholders. Table 2.2 below presents a mapping and classification of recent scholarly works which indicate that much attention has been focused on the adoption of e-government services and systems, and data have been collected mostly from citizen-users. Thus, there is a need for more researches which shall focus on other essential e-government aspects and stakeholders. To fill this gap, this study focused on the adoption intention of local government employees, a less-studied population. This is the first cross-country study on the adoption of practices and activities essential for e-government transformation.

Table 2.2 Mapping and Classification of e-Government Adoption Literature

Author/s	Theory/model	Variables or key concepts	Adoption or use target	Sample population
Hung, S. Y., Chang, C. M., & Yu, T. (2006)	Theory of planned behavior (TPB)	perceived usefulness, ease of use, perceived risk, trust, compatibility, external influences, interpersonal influence, self-efficacy, <u>facilitating condition</u>	online tax filing and payment system	Citizen-taxpayers
Hung, S. -Y., Tang, K. -Z., Chang, C. -M., & Ke, C. -D. (2009)	Theory of planned behavior (TPB)	perceived usefulness, perceived ease of use, training, compatibility, external influence, interpersonal influence, self-efficacy, <u>facilitating conditions</u>	electronic document management system	Government employees
Aboelmaged, M. G. (2010)	Technology acceptance model (TAM), theory of planned behavior (TPB)	perceived usefulness, subjective norm, attitude, social influence, behavioral intention	e-procurement	Supply chain partners
Lin, F., Fofanah, S. S., & Liang, D. (2011)	Technology acceptance model (TAM)	attitude, perceived usefulness, perceived ease of use, information system quality, information quality, behavioral intention	e-government initiatives (not specified)	Citizen-users
Carter, L., Schaupp, L. C., Hobbs, J., & Campbell, R. (2012)	N/A	performance expectancy, social influence, facilitating conditions, optimism bias, perceived reputation, perceived risk	e-tax filing	Citizen-taxpayers
Bonsón, E., Torres, L., Royo, S., & Flores, F. (2012)	N/A	Sophistication index, public administration style	Web 2.0 and social media	Local government
Weerakkody, V., El-Haddadeh, R., Al-Sobhi, F., Shareef, M. A., & Dwivedi, Y. K. (2013)	Extended unified theory of acceptance and use of technology (UTAUT)	performance expectancy, effort expectancy, social influence, facilitating conditions, trust of the internet, trust of intermediary, behavioral intention, usage behavior	e-government services (not specified)	Citizen-users
Hung, S. -Y., Chang, C. -M., & Kuo, S.-R. (2013)	Theory of planned behavior (TPB)	perceived usefulness, perceived ease of use, trust, interactivity, external influence, interpersonal influence, self-efficacy, <u>facilitating conditions</u>	Mobile e-government services (not specified)	Citizen-users
Rana, N. P., Dwivedi, Y. K., Lal, B., Williams, M. D., & Clement, M. (2015)	Unified model of e-government adoption (UMEGA)	performance expectancy, effort expectancy, social influence, facilitating conditions, anxiety, attitude, behavioral intention	e-District system (broad range of services)	Citizens
Alryalat, M.A.A., Rana, N. P., & Dwivedi, Y. K. (2015)	Extended theory of reasoned action (TRA)	perceived usefulness, perceived trust, self-efficacy, attitude, subjective norm	online PAN card registration system	Citizen-users

Table 2.2 continuation

Rana, N. P., Dwivedi, Y. K., Williams, M. D., & Weerakkody, V. (2016)	Unified model for e-government adoption (UMEGA)	performance expectancy, effort expectancy, social influence, facilitating conditions, anxiety, attitude, behavioral intention	Online public grievance redressal system	Citizen-users
Dwivedi, Y.K., Rana, N.P., Janssen, M., Lal, B., Williams, M.D., & Clement, M. (2017)	Unified model for e-government adoption (UMEGA)	performance expectancy, effort expectancy, social influence, facilitating conditions, perceived risk, attitude, behavioral intention	online permanent account number card registration system	Citizen-users
Venkatesh, V., Hoehle, H. & Aljafari, R. (2017)	N/A	Interface design (with 16 dimensions), satisfaction, behavioral intention	Website	Citizens

2.5 Theoretical Framework

The intention to use technology and its use behavior has been studied and analyzed on account of certain variables believed to be affecting it. This study is firstly anchored on the unified theory of acceptance and use of technology (UTAUT) by Venkatesh, et al (2003). This theory consists of four main constructs: performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC), which are independent variables that influence the dependent variables behavioral intention (BI) and technology usage (TU). Behavioral intention is seen as a critical predictor of technology use. Gender, age, experience and voluntariness of use are moderating variables hypothesized to influence on behavioral intention by the independent variables. The wide use of this theory in the study of technology adoption across a range of technology platforms, application scenarios and geographical settings shows the validity of the constructs' generalizability (Al-Gahtani, et al., 2007; Chan, et al., 2010; Gupta, et al., 2008). However, some recent studies have shown weaknesses of the model. Although variables' relationships have been found out to be significant, relationships of performance expectancy and facilitating conditions with behavioral intention are non-significant (Rana, et al., 2013; Dwivedi, et al., 2017). Further, the model's fit indices were found to have significantly underperformed (Rana, et al., 2015; Dwivedi, et al., 2017). Despite these, as observed by Rana, et al. (2013), the UTAUT has not been so comprehensively tested in e-government adoption research, and its true theoretical capability could be evaluated by more research on e-government adoption.

Hence, this research paper argues that the UTAUT's core constructs be tested further through this study.

This study is also anchored on the theory of reasoned action (TRA) (Ajzen and Fishbein 1980) which proposes that behavioral intention, and consequently behavior, is influenced by two variables: attitude toward behavior and subjective norm. It posits as well that 'attitude' towards an innovation is hypothesized to be determined by the users' perceived usefulness and perceived ease of use. Both the TRA and TAM (theory of acceptance model) argue that, all other conditions constant, individuals execute behaviors towards which they have a positive affect (Ajzen and Fishbein 1980). In the TPB (theory of planned behavior) model, Ajzen (1991) proposes that attitude towards behavior is generally found to precisely predict the individual's behavioral intentions. In spite of these, these models were found to be not performing ideally in terms of degree of freedom and fit of indices (Rana, et al., 2015; Dwivedi, et al. 2017). Moreover, Armitage and Conner (2001, p. 475) remark that "more generally, previous meta-analyses of the TRA/TPB have tended to analyze data from participants more than once, have failed to report reliability statistics, and treated all studies as equivalent, with no attempt to weight their data in favor of studies with more participants." Besides, an analysis of the literature reveals that only a very few number of relationships for the TRA model have been tested and therefore any conclusion about its performance, and the nature of the relationships' exact effect sizes, would be premature (Rana, et al., 2013). Yet, despite these flaws, the TPB is a valuable model for predicting a broad array of behavioral intentions and behaviors as indicated by studies and meta-analytic evaluations (Armitage and Conner, 2001), and empirical tests of the TRA has shown that attitude performs an exceptionally crucial role in determining behavioral intention. For these reasons, this research paper employs attitude as one of the determinant variables.

And thirdly, this study also employs the social cognitive theory (SCT) to explain behavioral intention in the ICT context. As applied by Compeau and Higgins (1995), the model has the following core constructs: outcome expectations (performance); outcome expectations (personal); self-efficacy; affect; and, anxiety. In particular, this study took the SCT construct anxiety and made it as a predictor variable, taking into consideration that the model permits it to cover the study of technology

acceptance and use in general even though studies indicated a problem in its measurement (Compeau and Higgins, 1995). Also, studies have shown that the SCT model have underperformed as regards some of the variables, majority of the fit indices, and variance on behavioral intention, which is low compared to other models (Rana, et al., 2015; Dwivedi, et al., 2017). Still, anxiety has been found to be a significant determining variable in the behavioral intention to adopt e-government (Olatubosun and Rao, 2012). This research paper contends that anxiety needs to be tested as a factor for behavioral intention because the literature shows that it has not been studied as much as the other factors.

This research looks into the use and adoption of transformative features of e-government in the two cities from the lenses of the e-government use and adoption models discussed above.

2.6 Application of Model

Behavioral Intention

The dependent variable for this study is e-government transformation defined by the core constructs: new ICT systems, process re-design, organizational structuring and cultural and behavioral change (Werrakody et al., 2011). Stated in behavioral terms, the following are the dependent variables:

Behavioral intention 1 (BI1) – use of new ICT systems;

Behavioral intention 2 (BI2) – adoption of process re-design;

Behavioral intention 3 (BI3) – adoption of organizational structuring; and,

Behavioral intention 4 (BI4) – adoption of cultural and behavioral change.

In transforming e-government, new ICT systems are important. It must make optimal use of Web 2.0 technologies, implement Open Data, and utilize text-based mobile short message service (SMS) technology. One of the key factors in e-government transformation is the use of new technologies which consequently requires transformation in the other key areas: process, organization structure and culture, and members' behavior (Hammer and Champy, 1993; Peristeras, et al., 2009; Werrakody, et al., 2011). In this regard, using the Web 2.0 technologies (Chun, et al., 2010; Choudhury, 2014; Sivarajah, et al., 2014) is now a must if e-governments are serious

in creating actual transformative opportunities regarding key issues of transparency, accountability, communication and collaboration (Mergel, et al., 2009), and actually accessing user-citizens through social media platforms (Mainka, et al., 2014). Implementing Open Data presents substantial potential and capacities for refreshing and boosting e-government services (Bertot, et al., 2014) and at the same time making citizens become significant participants in data generation, data acquisition, and service generation and development (Johansson, et al., 2015). Further, e-service transformation through Open Data is perceived as service- and citizen-centric (Chatfield and AlAnazi, 2013). Significantly important likewise is the use of mobile-based technology such as SMS in the delivery of government services (Obi and Iwasaki, 2015; Johansson, et al., 2015).

Transforming processes through redesigning results from the utilization of new technology (Hammer and Champy, 1993; Werrakody, et al., 2011). E-procurement is one widely practiced transformed process (Thai, 2009). With regard to redesigning processes, transformation accordingly necessitates the provision of citizen-centered services, 'one-stop-shops', integration and the use of multiple channels to deliver service (UNDESA, 2014; Peristeras, et al., 2009; Ziembra, et al., 2014). In addition, organizational structuring must be done in the following ways: establishment of ICT department; institutionalizing professional leadership and management of ICT through Chief Information Officer/Chief Data Officer; shifting of back-office activities to front-office; and vigorous human resource training and re-tooling (Werrakody, et al., 2011; Hammer and Champy, 1993; UNDESA, 2014; Obi and Iwasaki, 2015; Nurmandi and Kim, 2015; Kim, et al., 2009; D'Agostino, et al., 2011). Finally, e-government transformation subsequently requires cultural and behavioral change including collaborative leadership in the organization, shared services within the organization and among organizations, and citizen service-centeredness in carrying-out the job (Werrakody, et al., 2011; Hammer and Champy, 1993; Peristeras, et al., 2009; Bertot, et al., 2014; Chatfield and AlAnazi, 2013; Kim, et al., 2009).

Performance Expectancy

Performance expectancy is defined as the extent to which a person believes that using a system will help him or her to attain gains in job performance (Venkatesh,

et al., 2003). Performance expectancy is a strong predictor of intention to use technology in voluntary scenarios (Venkatesh et al., 2003) and satisfaction with technology in mandatory settings (Chan et al., 2010). Performance expectancy is a strong predictor of intention to use diverse technologies. Al-Gahtani et al. (2007) found that performance expectancy had a positive effect on intention of IT use among Saudi Arabians. It also has significant positive influence on intention to use Virtual World, a 3D environment and voice over IP technology (Fetscherin and Lattemann, 2008). A study on adoption of wireless Internet services via mobile technology reveals strong causal relationships between usefulness and adoption intentions (Lu, et al., 2005). Performance expectancy also has significant effect on intention to use various systems and processes. For instance, consumer intention to adopt mobile banking in Taiwan was significantly impacted by performance expectancy (Yu, 2012). Xu and Gupta (2009) found that performance expectancy was positively related to potential and experienced customers' behavioral intention and adoption of location-based services in Singapore. In Australia, performance expectancy positively influences behavioral intention and utilization of Accounting Information Systems (Aoun, et al., 2010). For intention to use ICT-enabled education and learning, performance expectancy was observed to be influential. In a study in the US, performance expectancy is a key component of the behavioral intent to use tablet personal computer integration in higher education (Moran et al., 2010). The usefulness of the technology (measured as performance expectancy) was the main predictor of secondary school teachers' acceptance and use of a digital learning environment (Pynoo, et al., 2010).

Perceived usefulness (also measured as performance expectancy) was also found out as a significant influence to the use of virtual learning environment by Chinese graduate students (van Raaij et al., 2006). Moreover, performance expectancy has a positive relationship to the intention to use mobile learning in Saudi Arabia (Nassuora, 2013) and to acceptance of mobile learning for higher education students in Thailand (Jairak, et al., 2009). An international comparison of technology adoption in the US and Korea revealed that performance expectancy significantly affects behavioral intention (Im, et al., 2011). Performance expectancy likewise has positively influenced the adoption and use of ICT in a government organization in India (Gupta, et al., 2008), the adoption of e-government services in Kuwait (AlAwadhi and Morris,

2009) and intention to use government e-services in Saudi Arabia (Alshehri, et al., 2013).

In this study, performance expectancy is the extent to which a person believes that using new ICT systems, adopting process re-design, adopting organizational structuring and adopting cultural and behavioral change will help him or her to attain gains in job performance.

Effort Expectancy

Effort expectancy is defined as the degree of ease associated with the use of the system (Venkatesh, et. al., 2003). On a conceptual level, Carter and Belanger (2005) argue that citizens' intentions to use a state e-government service will increase if citizens perceive the service to be easy to use, while Stamati et al. (2011) posits that perceived ease of use (measured as effort expectancy) will have a positive effect on the behavioral intention to adopt transformational government citizens' services in Greece. As for using ICT in a governmental organization, effort expectancy impacts significantly the behavioral intention to do so (Gupta, et al., 2008). Chan et al. (2010) found that effort expectancy was a significant determinant of citizens' satisfaction to mandatory adoption of smart cards, an e-government technology in Singapore. Acceptance and adoption of e-government services are positively affected by effort expectancy in Kuwait (AlAwadhi and Morris, 2009), in Saudi Arabia (Alshehri et al., 2013) and in the United Arab Emirates (Alrashidi, 2012). In learning technology platforms, effort expectancy is also a strong predictor of behavioral intent, such as the use of tablet personal computer integration in higher education (Moran et al., 2010) and secondary school teachers' acceptance and use of a digital learning environment (Pynoo, et al., 2010).

As used in this study, effort expectancy is the degree of ease associated with using new ICT systems, adopting process re-design, adopting organizational structuring and adopting cultural and behavioral change.

Social Influence

Social influence is defined as the degree to which an individual perceives that important others believe that he or she should use the new system (Venkatesh, et al.,

2003). A study in Taiwan (Yu, 2012) revealed that consumer intention to adopt mobile banking Taiwan was significantly impacted by social influence, the empirical evidence of the study indicates that social influence is the most powerful factor in affecting people's intention to use mobile banking. Structural equation analysis reveals strong causal relationships between social influence and adoption of wireless Internet services via mobile technology (Lu, et al., 2005). Further, a study by Gupta, et al. (2008) shows that social influence impact the behavioral intention to use ICT in a governmental organization in India. Subjective norm (measured as social influence) has significant influence to use of virtual learning environment by Chinese graduate students (van Raaij, et al., 2006), while in Saudi Arabia, social factors (also measured as social influence) have a positive influence on use of mobile learning (Nassuora, 2013). In the same vein, social factors have a significant positive relationship with attitude and behavioral intention to acceptance of mobile learning for higher education students in Thailand (Jairak, et al., 2009). In a study of secondary school teachers' acceptance and use of a digital learning environment, the construct social influence was the main predictor of self-reported frequency of use (Pynoo, et al., 2010). Social influence significantly affects behavioral intention in an international comparison of technology adoption in US and Korea (Im, et al., 2011).

In the context of a social networking site in the workplace, social influences or the expectations of others are especially significant because it refers to the extent to which members in a society (coworkers in this case) influence each other's behavior and experience social pressure to perform in a particular manner (Sledgianowski and Kulviwat, 2009). Specifically, social influences will be positively related to knowledge sharing intention when using the organization's social networking site (Harden, 2012). However, social influence has no significant effect on citizens' behavioral intention and satisfaction in a mandatory adoption setting (Chan, et al., 2010).

In this study, social influence is the degree to which a respondent perceives that significant others believe that he or she should use new ICT systems, adopt process re-design, adopt organizational structuring and adopt cultural and behavioral change.

Facilitating Conditions

Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh, et. al., 2003). In an international comparison of technology adoption in US and Korea (Im, et al., 2011), facilitating conditions have significant effects on use behavior. Moreover, Gupta, et al. (2008) found out that facilitating conditions also positively influence usage, and affect actual use in a government organization in India. In Saudi Arabia, facilitating conditions had a positive effect on behavioral intention to use e-government services, and this relationship would be moderated by Internet experience only (Alshehri, et al., 2013). Significant and positive relationships between facilitating conditions and behavioral intention to use mobile learning were shown in Thailand (Jairak, et al., 2009) and also in Saudi Arabia (Nassuora, 2013). Facilitating conditions was observed to have positive effects on users' intention and satisfaction on a mandatory adoption of government technology in Singapore (Chan, et al., 2010).

As used in this study, facilitating conditions are the degree to which a respondent believes that an organizational and technical infrastructure is available to support the use of new ICT systems, adoption of process redesign, adoption of organizational structuring and adoption of cultural and behavioral change.

Anxiety

In the context of computer technology, anxiety is an individual's apprehension or fear when he or she is faced with the possibility of using computers (Simonson, et al., 1987). In a specific sense, computer anxiety relates to users' general perception of computer usage (Venkatesh, 2000). Extended from computer anxiety, and compared with the former concept, technology anxiety focused on a user's state of mind about general technology tools whereas computer anxiety is more narrowly focused on anxiety related to personal computer usage. Moreover, technology anxiety also demonstrated the mental status specifically in terms of people's willingness as derived from the competency to use technology-based tool (Meuter, et al., 2003). A study of the readiness of public servants on the adoption of e-government in Nigeria observed that self-efficacy and anxiety appear to be significant determinants of intention, and

that in particular, computer anxiety has a significant influence on behavioral intention (Olatubosun and Rao, 2012). Even though extensive research has been done on anxiety in the fields of psychology and information systems, its role as a predictor of behavioral intention in the context of e-government adoption has not been substantially investigated.

In this study, anxiety is the respondent's apprehension or fear when he or she is faced with the possibility of using new ICT systems, adopting process re-design, adopting organizational structuring and adopting cultural and behavioral change.

Attitude

Attitude towards behavior is defined as the degree to which an individual makes a favorable or unfavorable evaluation or appraisal of the behavior in question (Ajzen, 1991). Attitude is an important construct of the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980) which theorizes that 'attitude' towards an innovation is hypothesized to determine by the users' perceived usefulness and perceived ease of use. Both the TRA and TAM (Theory of Acceptance Model) argue that, all other conditions constant, individuals execute behaviors towards which they have a positive affect (Ajzen and Fishbein, 1980). In the TPB (Theory of Planned Behavior) model, Ajzen (1991) proposes that attitude towards behavior is generally found to precisely predict the individual's behavioral intentions.

At the conceptual level, in consumer research, attitude is the construct that receives most attention and is used most widely for predicting consumers' likelihood to adopt a new technology (Erevelles, 1998). It is also believed in user participation research that, prior to system development, users are likely to have vaguely formed beliefs and attitudes concerning the system to be developed (Hartwick and Barki, 1994). A prospective user's overall attitude toward using a given system is an antecedent to intentions to adopt (Davis, 1989).

The relationship between attitude and behavioral intention have been presented in several studies (Hung, et al., 2009; Lu et al., 2010; Hung et al., 2013; Rana et al., 2015). Attitude plays a significant influence on behavioral intention across different ICT platforms in different countries. Use of tablet personal computer integration in higher education in the US (Moran, et al., 2010); acceptance and use of

mobile learning in Thailand (Jairak, et al., 2009) and Saudi Arabia (Nassoura, 2013) are positively predicted by attitude. This is also true to e-government and its services. In Mauritius, user's intention to use the e-tax filing and payment system has been strongly influenced by attitude (Mahadeo, 2009). Attitude, which is positively influenced by perceived usefulness and perceived ease of use, was an important determinant of users' acceptance of e-government services in Malaysia (Suki and Ramayah, 2010). Behavioral intention to adopt e-government in Nigeria (Olatubosun and Rao, 2012) and in Jordan (Rabaa'i, 2015) was positively influenced by attitude. A study on American citizens' attitudes toward Open Government and Government 2.0 had the following findings: recent use of Government 2.0 does contribute to positive attitudes toward Government 2.0; those who value transactions with e-government have a positive attitude regarding Open Government and Government 2.0; and, general trust in government leads to a positive attitude toward the new ends and means of e-government (Nam, 2012).

As used in this study, attitude is defined as the degree to which a respondent makes a favorable or unfavorable evaluation or appraisal of using new ICT systems, adopting process re-design, adopting organizational structuring and adopting cultural and behavioral change.

Age and Length of Work Experience

The UTAUT model hypothesizes a moderating influence by age on the relationships among performance expectancy, effort expectancy, social influence, and behavioral intention to use technology and also on the relationship between facilitating conditions and usage behavior (Venkatesh and Morris, 2000; Venkatesh et al., 2003). A study (Yu, 2012) has shown that age significantly moderated the effect of effort expectancy (more important to old respondents) and the effort of social influence (more salient to young respondents), and the effect of facilitating conditions to behavioral intention. Older consumers tend to face more difficulty in processing new or complex information, thus affecting their learning of new technologies (Morris, et al., 2005; Plude and Hoyer 1985 in Venkatesh, et al., 2012). AbuShanab and Pearson (2007) observed that performance expectancy's effect on behavioral intention was stronger for older users, contradicting the UTAUT prediction that performance expectancy's effect

on behavioral intention would be stronger for younger users. AbuShanab and Pearson (2007) also observed a stronger effect of effort expectancy on behavioral intention for younger users. On the other hand, Hamner and Al-Qahtani (2009) reported a negative relationship between citizens' age and their willingness to use e-government technology. Age appears to be under-examined by researchers studying technology adoption in developing countries (Chopra and Rajan, 2016).

There is a lack of knowledge in e-government literature on the role of length of work experience. As Rana et al. (2013) have observed, "although the UTAUT is a unified model mapped created from eight established models of IS adoption research including the TAM (theory of acceptance model), the DOI (diffusion of innovation), and the TPB (theory of planned behavior), the UTAUT has not been widely used to analyze adoption of e-government services from an employee perspective" (p. 419). In view of this, this research proposes the inclusion of length of work experience as a moderating variable for the basic reason that results will be extracted from local government employees.

2.7 Research Model and Hypotheses

This research utilizes a linear regression model (Figure 2.1) wherein the independent variables performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC) anxiety (ANX) and attitude (AT) are hypothesized to be associated with the dependent variable behavioral intention (BI). Moreover, age (AGE) and length of work experience (LWE) are proposed as moderating variables. Moderators are variables whose variation influences the strength or the direction of a relationship between an independent variable and dependent variable (Baron and Kenny, 1986). Moderator variables can either be metric (e. g., consumer psychological constructs like arousal or intelligence) or categorical (e. g., gender or social class) in nature (Henseler and Fassott, 2010).

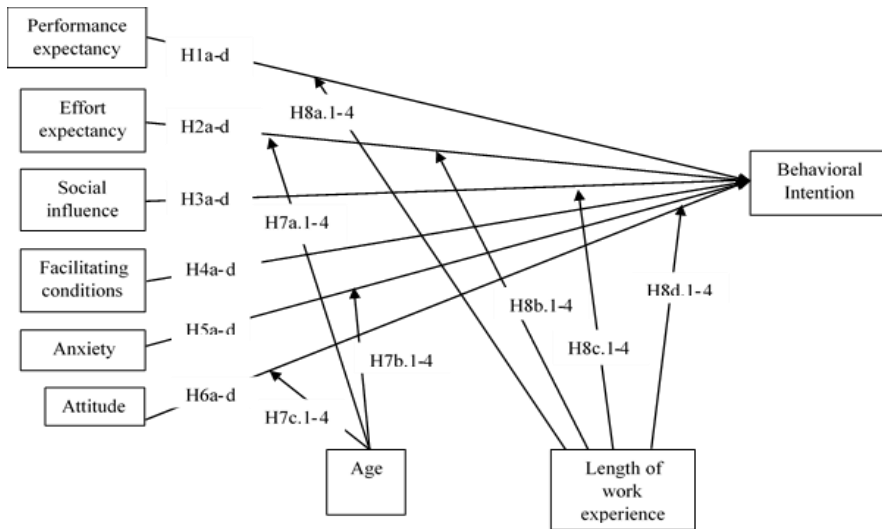


Figure 2.1 Research model showing the hypothesized associations among variables (Adapted from Venkatesh, et al., 2003; Ajzen and Fishbein, 1980; Compeau and Higgins, 1995)

This study tests the following hypotheses:

H1a-d. Performance expectancy is positively associated with BI1 – BI4.

H2a-d. Effort expectancy is positively associated with BI1 – BI4.

H3a-d. Social influence is positively associated with BI1 – BI4.

H4a-d. Facilitating conditions are positively associated with BI1 – BI4.

H5a-d. Anxiety is negatively associated with BI1 – BI4.

H6a-d. Attitude is positively associated with BI1 – BI4.

H7a.1-4 Age will significantly moderate the association between effort expectancy and BI1 – BI4.

H7b.1-4 Age will significantly moderate the association between anxiety and BI1 – BI4.

H7c.1-4 Age will significantly moderate the association between attitude and BI1 – BI4.

H8a.1-4 Length of work experience will significantly moderate the association between performance expectancy and BI1 -BI4.

H8b.1-4 Length of work experience will significantly moderate the association between effort expectancy and BI1 – BI4.

H8c.1-4 Length of work experience will significantly moderate the association between social influence and BI1 – BI4.

H8d.1-4 Length of work experience will significantly moderate the association between attitude and BI1 – BI4.

Operationalization of the variables are shown in Table 2.3 below. Studies from where some items for constructs have been sourced are cited.

Table 2.3 Operationalization of Variables

Variables	Indicators
Age	AGE1 21-35 AGE2 36-45 AGE3 46-55 AGE4 56-65
Length of work experience	LWE1 0-5 years LWE2 6-10 years LWE3 11-15 years LWE4 16 years plus
Position in organization	POS1 Department/division head POS2 Staff
Performance expectancy (PE) (Davis, 1989; Davis et al., 1989)	PE1 completion of tasks in less time and at less cost PE2 achievement of set goals and objectives PE3 enhancement of service quality PE4 increase overall productivity
Effort expectancy (EE) (Davis, 1989; Davis et al., 1989)	EE1 implementing would be easy EE2 using or adopting would be easy EE3 interaction with co-workers would be unproblematic EE4 adjustment would be uncomplicated
Social influence (SI) (Venkatesh et al., 2003)	SI1 must be done because other cities are doing it SI2 must be done because other departments/divisions are doing it SI3 must be done because citizens expect it SI4 must be done because citizens demand it
Facilitating conditions (FC) (Venkatesh et al., 2003)	FC1 having the knowledge and skill to use it FC2 technical support and assistance would be available FC3 financial support is available FC4 city administration supports it
Anxiety (ANX) (Venkatesh et al., 2003)	ANX1 feeling of hesitancy in using or doing it ANX2 feeling of worry that it will not work out as expected ANX3 feeling of being overwhelmed by it ANX4 feeling of concern that citizens will not like it
Attitude (AT) (Davis et al., 1989; Fishbein and Ajzen 1975)	AT1 it is a good idea AT2 it is a worthwhile thing to do AT3 it is likeable AT4 it is nice
Behavioral intention (BI) (Venkatesh, et al., 2003)	BI1 intending to do it BI2 predicting that one would do it BI3 planning to do it very soon