Transforming Government: People, Process and Policy

Are government employees adopting local e-government transformation? The need for having the right attitude, facilitating conditions and performance expectations

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Abstract

Purpose: This study examines the association of technology acceptance variables with the intention of adopting e-government transformation, as defined by four dimensions: using new technology systems; redesigning of governmental processes; restructuring of governmental organization; and, changing the organizational culture and behavior; from the perspective of city government employees in Indonesia and the Philippines.

Design/Methodology/Approach: Quantitative approach was used in the conduct of this research. Variables were operationalized into indicators, which were transmuted into a self-reported survey questionnaire. Survey data obtained from purposively-sampled city government employees were analyzed using structural equation modeling.

Findings: Findings suggest that attitude is a pivotal predictor of intention to adopt e-government transformation across all four dimensions, while performance expectancy, social influence and facilitating conditions also positively influence the intention to adopt process redesign, organizational structuring, and cultural and behavioral change in the city government. Respondents' length of work experience appears as a significant moderating variable.

Research Limitations: This study reports only on the findings from two cities in two countries, Surabaya in Indonesia and Davao in the Philippines. The determination of the sample size was done through purposive sampling, so the application of results should be done with prudence. The constructs used for the research model were chosen due to their prominence in the literature. This study made use of a simple linear regression model in hypothesizing the relationships of the constructs.

Practical Implications: For e-government transformation to be adoptable and efficacious, supporting and facilitating conditions are necessary. Structural, technical and financial support, as well as legal framework, for local e-government transformation should be in place. Maintaining and sustaining the positive attitude towards it should be done.

Originality/value: Although many studies have been done on adoption of e-enabled government services from the citizens' viewpoint, little has been done from the local government employees' perspective and no prior cross-country study has been made. This study fills those gaps in the e-government adoption literature. Further, this study has shown that technology acceptance variables' roles as predictors of behavioral intention can be extended to other dimensions of e-government.

Keywords: e-government adoption; transformation; government employees; local government; Indonesia; Philippines

1. Introduction

As a result of the advancement in information and communication technology (hereafter referred to as ICT), delivery of services to citizens is now by e-government. E-government or the use of ICT and its application by the government for the provision of information and public services to the people (UNDESA 2004) is now the norm. In fact, as of 2014, e-government is practiced in all 193 member-states of the United Nations (UNDESA 2014). Local governments, being at the frontline of public service delivery, had to keep up with e-government practice in order to satisfy the

imperatives of efficiency, effectiveness, social inclusion and transparency in governance (Falk 2011; Bannister and Connolly 2012; van der Meer et al. 2014).

According to a 2012 United Nations report, "with public sectors offering an increased number of services, the focus is shifting from what kinds of services are provided to *how* they are provided" (UNDESA 2014 p.85). At present, the 'how' is basically the use of ICT systems. While technological changes such as new hardware and software and media may not be difficult to keep abreast with, there are related elements in the bureaucratic organization that need to be transformed as well. In a proposed framework of transformational change (Weerakkody et al. 2011), three other elements are identified, all of which are interrelated and are consequential to the utilization of new ICT systems: process redesign; organizational structuring; and, cultural and behavioral change. These are subsumed under two concepts which have been prominent in many scholarly works on e-government: integration and transformation (Layne and Lee 2001; Hiller and Belanger 2001; Wescott 2001; Moon 2002; West 2004; Cisco 2007; Alhomod et al. 2012).

E-government development is one plausible indicator that a state's bureaucracy is on the path of transforming into the way it should be, designed and fitted to a state's context. The UN has, for a period covering eight years, surveyed and measured its member states using the e-government development index or EGDI (UNDESA 2003). This framework placed importance on three dimensions: availability of online services; telecommunication infrastructure; and human capacity. Generally, the series of findings show how a state has fared e-government-wise in terms of development and participation. Viewed simply, it tells a state's current state of e-government relative to other states, and a world region relative to other regions. Of particular interest to this study are the states of Indonesia and the Philippines, and both states have scored on the index corresponding to the 'middle' level (UNDESA 2014). The implications of these findings could be best appreciated in view of the suggestion that "with clear strategies, smart investment in ICT infrastructure, continued investment in primary, secondary and tertiary education, as well as through *radical transformation in offering online public services,* governments can achieve more to follow the upward trend (UNDESA 2014 p.16). In view of these, it is now opportune to investigate the factors affecting why e-government transformation is adopted or not. Identifying which factors are crucial is the basic step. That knowledge gained then could guide the significant actors in steering their organizations towards development and transformation.

It is thus important to know what could account for Indonesia's and Philippines' present e-government state and what variables, aside from the UN index, could be pivotal for the 'transformation' necessary for development and to 'follow the upward trend' in e-government. Of course, any attempt to examine this at the state level would be a huge task. However, examining a whole through its parts could facilitate in shedding light to the larger picture. Therefore, an examination of a specific organization within the states' e-government bureaucracy is a valuable academic endeavor.

2. e-Government Transformation

The study of e-government development and transformation factors has been pursued 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 require 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, 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.

Transforming e-government 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 draws from the transformational change framework (Weerakkody 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. 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 (Weerakkody et al. 2011). Essentially, there are four models assessed in this study, each model corresponding to the four dimensions of e-government transformation. Stated in behavioral terms, the following are the dependent variables in this study:

Model 1 – intention to use new ICT systems;

Model 2 – intention to adopt process re-design;

Model 3 – intention to adopt organizational structuring; and,

Model 4 – intention to adopt 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; Weerakkody 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 make 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; Weerakkody 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; Ziemba 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 (Weerakkody 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 (Weerakkody et al. 2011; Hammer and Champy 1993; Peristeras et al. 2009; Bertot et al. 2014; Chatfield and AlAnazi 2013; Kim et al. 2009).

3. 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 1 below presents a 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 1. 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, facilitating condition	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	perceived usefulness, perceived ease of use, training, compatibility, external influence, interpersonal influence, self-efficacy, facilitating conditions	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 governments
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	perceived usefulness, perceived ease of use, trust, interactivity, external influence, interpersonal influence, self-efficacy, facilitating conditions	Mobile e-government services (not specified)	Citizen-users
Rana, N. P., Dwivedi, Y. K., Lal, B., Williams, M. D., & Clemnt, 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
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

As the literature has shown, adoption of e-government services and systems by citizens has been studied extensively, while adoption by government employees has been scantily done. An analysis of the literature reveals the recurrence of variables in both citizen- and employee-centered studies. But even among studies which focused on citizen adoption, there are differences in variables used. For instance, the UTAUT (Venkatesh, et al., 2003) utilized 'gender', 'age', 'experience' and 'voluntariness of use' as moderators, while the extended UTAUT model in Weerakkody, et al. (2013) did not use the same variables but instead proposed 'trust of internet' and 'trust of intermediary' as moderating variables. The UMEGA (Dwivedi, et al., 2017) likewise made use of another variable, 'perceived risk'. The study on government employees' adoption (Huang, et al., 2009) notably employed 'training' as a variable. Thus, it is apparent that even among studies that focused on a common sample population – citizens – different theoretical models have been applied. Studying the adoption intention of government employees needs a different theoretical model/s as well.

In the context of e-government, citizens and government employees must be viewed differently. Citizens are on the demand-side of the public service delivery spectrum. Using information and communication technology at their end is voluntary, and is also contingent on their capability and technology accessibility. On the other hand, government employees are important supply-side actors, being at the frontline of public service delivery. The use of technology in doing tasks is involuntary. Besides, they are in that organizational setting which is a major factor for their predispositions to adopt or use whatever change thereto is implemented. Therefore, factors accounting for this predisposition needs to be investigated and known.

This study utilizes a research model that could: a) determine the associations of variables in the use and adoption of e- government transformation; and, b) determine which variables are pivotal in the use and adoption of e-government transformation from the perspective of city government employees in the cities of Surabaya, Indonesia and Davao, Philippines. This research sought to answer the following questions: 1) how are performance expectancy, effort expectancy, social influence, facilitating conditions, anxiety, and attitude associated with the intention of using and adopting e-government transformation in both cities? and, 2) how do age and length of work experience in the organization moderate these associations?

4. The contexts of Surabaya, Indonesia and Davao, Philippines

This study surveyed government employees in Surabaya City, Indonesia and Davao City Philippines. Surabaya is Indonesia's second largest city, it is Indonesia's 'other' industrial heartland and metropolis next to Jakarta (Dick 2003). Surabaya is regarded as the leading 'digital city' in Indonesia since it has been awarded the Indonesia Digital Society Award (IDSA) in 2014, evidenced by yearly increases in ICT spending which has been induced by the perceived benefits of giving greater attention to IT usage in providing citizen services (Adnani 2014). In an e-government evaluation study of Indonesian cities, Surabaya came out first-ranked in the index of reform (IR) based on the following parameters: citizen service, business permission, planning transparency and finance transparency (Prahono and Elidjen 2015). Further, it has been found out that the e-government of Surabaya has a significant effect in

moderating reliability on the city government, and has a strengthening characteristic to community satisfaction with the city's public services (Nadjib et al. 2014).

Davao City is the regional capital and largest city of Mindanao, Philippines. (Catubig et al. 2015). Davao is deemed an interesting case of e-government transformation. The UNDESA (2014) has cited the city as one of the examples of local portal features that are indicative of integration and transformation. Specifically, the UN study referred to the creation by the Davao Medical Center, as a result of gender and development mainstreaming efforts, of the Women and Children Protection Unit (WCPU) which is a one-stop family crisis intervention center that provides legal, psychiatric and medical services to its patients. This is line with the continuing transformation of the agency based on one of its transformation pillars: sound information technology, that is, the linking of systems and services using the most appropriate technology for their specific needs (Vega 2015). Moreover, Davao City is one of the cities in Southeast Asia which is developing a 'smart city' (Obi and Iwasaki 2015). It is apparent that both cities show indicators of e-government transformation, hence their selection.

5. Research data and methods

Data utilized for this study was obtained from the employees of the local government units of Surabaya, Indonesia and Davao, Philippines. To ensure bias reduction, employees from the staff and middle-level bureaucracy, i.e., department or division heads, were requested to take part in the survey. The researchers decided to distribute 120 survey questionnaires for each city, for a total of 240 questionnaires. Prior to this survey, a pilot testing of the questionnaire was conducted among 20 respondent-employees of the city government of Yogyakarta, Indonesia. This pre-test yielded affirmative results regarding the reliability and validity of constructs' items. The questionnaire consisted of 37 items, 27 of which report about the constructs while the remaining ten delved into demographic attributes of the respondents (please see Appendix 1). The respondents were asked to state their level of agreement with the items on a 5-point Likert scale, where 1 denoted "strongly disagree" and 5 "strongly agree". The researchers handed out 120 questionnaires to 23 agencies/offices, and another 120 questionnaires to 12 departments/offices, in Surabaya and Davao, respectively. Out of these, 78 and 82 usable questionnaires were returned by the respondents, respectively, generating a total of 160 usable responses for analysis. Data was analyzed using licensed versions of IBM SPSS Statistics (version 19) and Smart PLS or Partial Least Squares (version 3) for structural equation modeling.

6. Theoretical framework and hypotheses

This study is anchored on three theories of technology acceptance: the unified theory of acceptance and use of technology (UTAUT); the theory of reasoned action (TRA); and, social cognitive theory (SCT). Select core constructs are drawn from these theories to compose the linear regression model for this study. The UTAUT (Venkatesh et al. 2003) consists of four main constructs: performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC), which are variables hypothesized to 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 range of technologies, application scenarios, and geographical settings for

which technology adoption has been studied validates the generalizability of UTAUT's core constructs (Al-Gahtani et al. 2007; Chan et al. 2010; Gupta et al. 2008).

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 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.

This study also employs the social cognitive theory (SCT) as applied by Compeau and Higgins (1995). In particular, this study took the SCT construct anxiety and made it as a predictor variable, taking into consideration that Compeau and Higgins' (1995) model permit it to cover the study of technology acceptance and use in general. Appendix 1 shows the measurement of constructs as used in this study.

6.1 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 and it 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; Fetscherin and Lattemann 2008; Lu et al. 2005). Performance expectancy also has significant effect on intention to use various systems and processes (Yu 2012; Xu and Gupta 2009; Aoun et al. 2010). For intention to use ICT-enabled education and learning, performance expectancy was observed to be influential (Moran et al. 2010; Pynoo et al. 2010; van Raaij et al. 2006; Nassuora 2013; Jairak et al. 2009). Performance expectancy likewise has positively influenced the adoption and use of e-government services (Im et al. 2011; Gupta et al. 2008; AlAwadhi and Morris 2009; Alshehri et al. 2013). Although the extant literature on performance expectancy as a predictor of e-government adoption is prolific, its role as predictor of other e-government dimensions is scantily studied. 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.

> H1a. Performance expectancy is positively associated with intention to use new ICT systems.
>
> H1b. Performance expectancy is positively associated with intention to adopt process re-design.
>
> H1c. Performance expectancy is positively associated with intention to adopt organizational structuring.
>
> H1d. Performance expectancy is positively associated with intention to adopt cultural and behavioral change.

6.2 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). Effort expectancy was found out to be a significant determinant of citizens' adoption of e-government technology and services (Chan et al. 2010; AlAwadhi and Morris 2009; Alshehri et al. 2013; Alrashidi 2012). In learning technology platforms, effort expectancy is also a strong predictor of behavioral intent (Moran et al 2010; Pynoo et al. 2010). Even though effort expectancy has been steadily observed as a predictor of e-government adoption, as well as of other technology platforms, its role as transformational government adoption predictor remains under-investigated. 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.

> H2a. Effort expectancy is positively associated with intention to use new ICT systems.
>
> H2b. Effort expectancy is positively associated with intention to adopt process re-design.
>
> H2c. Effort expectancy is positively associated with intention to adopt organizational structuring.
>
> H2d. Effort expectancy is positively associated with intention to adopt cultural and behavioral change.

6.3 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). Studies have shown that social influence significantly impacted intention and usage of various technology platforms (Yu 2012; Lu et al. 2005; Gupta et al. 2008; van Raaij et al. 2006; Nassuora 2013; Jairak et al. 2009; Pynoo et al. 2010; Im et al. 2011; Sledgianowski and Kulviwat 2009; Harden 2012). However, social influence has no significant effect on citizens' behavioral intention and satisfaction in a mandatory adoption setting (Chan et al. 2010). While a lot of studies confirm that social influence significantly affects intention to adopt e-government and other ICT systems, studies need to be done in order to test it as a predictor of e-government transformation. 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.

> H3a. Social influence is positively associated with intention to use new ICT systems.
>
> H3b. Social influence is positively associated with intention to adopt process re-design.
>
> H3c. Social influence is positively associated with intention to adopt organizational structuring.
>
> H3d. Social influence is positively associated with intention to adopt cultural and behavioral change.

6.4 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). Facilitating conditions have significant effects on use behavior of e-government services and other technology modes, according to studies (Im et al. 2011; Gupta et al. 2008; Alshehri et al. 2013; Jairak et al. 2009; Nassuora 2013; Chan et al. 2010). Despite the fact that facilitating conditions have significant effects on use intention and actual use of technology in government, its effects

on intention to adopt transformation in e-government ought to be examined too. 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.

H4a. Facilitating conditions are positively associated with intention to use new ICT systems.

H4b. Facilitating conditions are positively associated with intention to adopt process re-design.

H4c. Facilitating conditions are positively associated with intention to adopt organizational structuring.

H4d. Facilitating conditions are positively associated with intention to adopt cultural and behavioral change.

6.5 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 and transformation 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.

H5a. Anxiety is negatively associated with intention to use new ICT systems.

H5b. Anxiety is negatively associated with intention to adopt process re-design.

H5c. Anxiety is negatively associated with intention to adopt organizational structuring.

H5d. Anxiety is negatively associated with intention to adopt cultural and behavioral change.

6.6 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). 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. 2015a; Dwivedi, et al. 2017). Attitude plays a significant influence on behavioral intention across different ICT platforms in different countries (Moran et al. 2010; Jairak et al. 2009; Nassoura 2013; Mahadeo 2009; Suki and Ramayah 2010; Olatubosun and Rao 2012; Rabaa'i 2015; Nam 2012). Although attitude has been substantively shown through studies as meaningfully affecting adoption and use of various e-government services, platforms and systems, it also has to be examined whether it is a predictor of transformational government adoption. 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.

> H6a. Attitude is positively associated with intention to use new ICT systems.
>
> H6b. Attitude is positively associated with intention to adopt process re-design.
>
> H6c. Attitude is positively associated with intention to adopt organizational structuring.
>
> H6d. Attitude is positively associated with intention to adopt cultural and behavioral change.

6.7 Age and Length of Work Experience

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). This study postulates that age and length of work experience of city government employees moderate the relationships between the independent and dependent variables under study.

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 (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).

> H7a.1 Age will significantly moderate the association between effort expectancy and intention to use new ICT systems.
>
> H7a.2 Age will significantly moderate the association between effort expectancy and intention to adopt process re-design.

H7a.3 Age will significantly moderate the association between effort expectancy and intention to adopt organizational structuring.

H7a.4 Age will significantly moderate the association between effort expectancy and intention to adopt cultural and behavioral change.

H7b.1 Age will significantly moderate the association between anxiety and intention to use new ICT systems.

H7b.2 Age will significantly moderate the association between anxiety and intention to adopt process re-design.

H7b.3 Age will significantly moderate the association between anxiety and intention to adopt organizational structuring.

H7b.4 Age will significantly moderate the association between anxiety and intention to adopt cultural and behavioral change.

H7c.1 Age will significantly moderate the association between attitude and intention to use new ICT systems.

H7c.2 Age will significantly moderate the association between attitude and intention to adopt process re-design.

H7c.3 Age will significantly moderate the association between attitude and intention to adopt organizational structuring.

H7c.4 Age will significantly moderate the association between attitude and intention to adopt cultural and behavioral change.

There is a lack of knowledge in e-government literature on the role of length of work experience in an organization. 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 includes length of work experience as a moderating variable for the basic reason that results will be extracted from local government employees, with the assumption that their work experience could influence their intentions towards transformation in the workplace.

H8a.1 Length of work experience will significantly moderate the association between performance expectancy and intention to use new ICT systems.

H8a.2 Length of work experience will significantly moderate the association between performance expectancy and intention to adopt process re-design.

H8a.3 Length of work experience will significantly moderate the association between performance expectancy and intention to adopt organizational structuring.

H8a.4 Length of work experience will significantly moderate the association between performance expectancy and intention to adopt cultural and behavioral change.

H8b.1 Length of work experience will significantly moderate the association between effort expectancy and intention to use new ICT systems.

H8b.2 Length of work experience will significantly moderate the association between effort expectancy and intention to adopt process re-design.

H8b.3 Length of work experience will significantly moderate the association between effort expectancy and intention to adopt organizational structuring.

H8b.4 Length of work experience will significantly moderate the association between effort expectancy and intention to adopt cultural and behavioral change.

H8c.1 Length of work experience will significantly moderate the association between social influence and intention to use new ICT systems.

H8c.2 Length of work experience will significantly moderate the association between social influence and intention to adopt process re-design.

H8c.3 Length of work experience will significantly moderate the association between social influence and intention to adopt organizational structuring.

H8c.4 Length of work experience will significantly moderate the association between social influence and intention to adopt cultural and behavioral change.

H8d.1 Length of work experience will significantly moderate the association between attitude and intention to use new ICT systems.

H8d.2 Length of work experience will significantly moderate the association between attitude and intention to adopt process re-design.

H8d.3 Length of work experience will significantly moderate the association between attitude and intention to adopt organizational structuring.

H8d.4 Length of work experience will significantly moderate the association between attitude and intention to adopt cultural and behavioral change.

7. Research Model

This research uses a linear regression model (Figure 1 below) 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). Age (AGE) and length of work experience (LWE) are proposed as moderating variables.
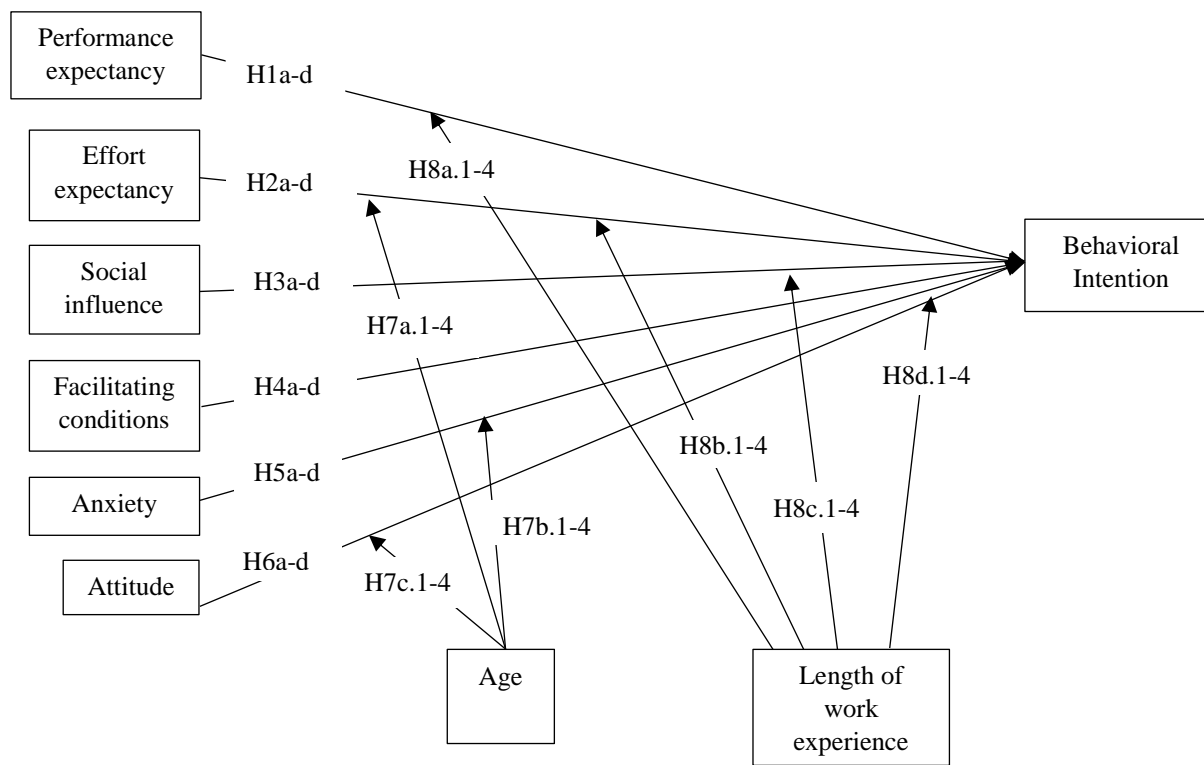
Figure 1. Research model

8. Findings

8.1 Demographic profile of respondents

Table 2 below presents the respondents' demographic profile based on the variables used for analysis in this study. There is a notable difference between the Davao and Surabaya samples in terms of age. Although majority of the samples in both cities fall under the younger age brackets (21-45), more Surabaya employees belong to this group compared to the Davao employees. Conversely, while the minority of the samples in both cities fall under the older age brackets (46-65), more Davao employees fit in this group compared to the Surabaya employees. In terms of work experience in the city government, it appears that majority of the Davao employees have worked longer (11 years and more), while majority of the Surabaya employees have worked shorter (10 years and less). Samples from both cities consisted of a minority of department or division heads, and a large majority of staff-level employees, which is likely in the bureaucracy context.

Table 2. Respondents' demographic profile

Variable	Davao	Surabaya	Aggregate
Age bracket			
21-35	28	38.5	33.1
36-45	37.8	39.7	38.8
46-55	22	19.2	20.6
56-65	12.2	2.6	7.5
Length of work experience			
0-5 years	7.3	19.2	13.1
6-10 years	30.5	33.3	31.9
11-15 years	31.7	21.8	26.9
16 years plus	30.5	25.6	28.1
Position			
Department/Division head	9.75	16.66	13.125
Staff	90.25	83.33	86.875

8.2 Reliability analysis

Table 3 shows the results of the reliability analysis applying Cronbach's alpha, which signifies the internal consistency of indicator items that measure the same construct. A minimum Cronbach's alpha value of 0.70 indicate reliability and validity of constructs (Nunnally, 1978). All constructs in all four models passed this test and showed high levels of reliability.

Table 3. Reliability analysis of constructs (*N*=160)

Construct	No. of items	Cronbach's alpha α			
		Model 1	Model 2	Model 3	Model 4
Performance Expectancy	4	.947	.931	.927	.947
Effort Expectancy	4	.816	.915	.912	.816
Social Influence	4	.925	.860	.895	.925
Facilitating Conditions	4	.939	.887	.921	.939
Anxiety	4	.931	.914	.919	.931
Attitude	4	.928	.914	.920	.928
Behavioral Intention	3	.902	.884	.870	.887

8.3 Path coefficients and hypothesis testing

In assessing the relationships of the hypothetical constructs, path coefficients should be significant (p value) at least at the .050 level (Henseler et al. 2009; Urbach and Ahlemann 2010), and a coefficient of at least .100 reports a certain impact within the structural model (Urbach and Ahlemann 2010). These are either positive (i.e. in the expected direction) or negative. The coefficient of determination (R^2) values of approximately 0.67, 0.33, and 0.19 are considered as substantial, moderate and weak, respectively, in terms of the level of explanatory power (Chin 1998). Table 4 presents the path coefficients for the relationships of the variables, and whether the research hypotheses have been supported or not.

Table 4. Effects of independent variables on dependent variable

Relationship	Model 1 (intention to use new ICT systems)		Model 2 (intention to adopt process redesign)		Model 3 (intention to adopt organizational structuring)		Model 4 (intention to adopt cultural and behavioral change)	
	Coefficient (p value)	Hypothesis supported?	Coefficient (p value)	Hypothesis supported?	Coefficient (p value)	Hypothesis supported?	Coefficient (p value)	Hypothesis supported?
PE → BI	.099 (ns)	No	.347 (***)	Yes	.238 (***)	Yes	.168 (*)	Yes
EE → BI	.098 (ns)	No	-.131 (*)	No	-.001 (ns)	No	-.008 (ns)	No
SI → BI	-.090 (ns)	No	.208 (**)	Yes	-.057 (ns)	No	.054 (ns)	No
FC → BI	.080 (ns)	No	.055 (ns)	No	.165 (*)	Yes	.236 (**)	Yes
ANX → BI	-.046 (ns)	No	.014 (ns)	No	.030 (ns)	No	.001 (ns)	No
AT → BI	.669 (***)	Yes	.442 (***)	Yes	.599 (***)	Yes	.490(***)	Yes
R² (BI)	.638		.757		.795		.761	

Legend: *$p<0.05$, **$p<0.01$, ***$p<0.001$, ns (not significant)

Results show that for the intention to use new ICT systems (model 1), attitude is the only variable which has a significant impact, with a coefficient of .669 at <0.001 level. Attitude can be accounted for about 64% of the variance in the behavioral intention (with R^2 of .638). The intention to use new ICT systems is conditioned more by the positive attitude of the government employees. In this case, the sample has generally shown a positive attitude towards such behavior.

Three variables stand out as positively associated towards the intention to adopt process redesign (model 2). Social influence, with a coefficient of .208 at <0.01 level, is the least influential of the three. Performance expectancy with a coefficient of .347 at <0.001 level follows attitude, the most influential variable, with a coefficient of .442 at <0.001 level. Altogether, the variables substantially account for about 76% of the variance in the behavioral intention (with R^2 of .757). Interestingly, effort expectancy is negatively associated with behavioral intention. It has a coefficient of -.131 at <0.05 level. This indicates that the sample is trending towards disagreement with the proposition that adopting process redesign requires less effort.

Facilitating conditions are positively associated with the intention to adopt organizational structuring (model 3), with a coefficient of .165 at <0.05 level. Performance expectancy also influences the behavioral intention with a coefficient of .238 at <.001 level. Also in the same significance level is attitude, with a coefficient of .599. About 80% of the variance in the behavioral intention (with R^2 of .795) can be attributed to the independent variables in the model.

Performance expectancy is positively associated with the intention to adopt cultural and behavioral change (model 4), with a coefficient of .168 at <0.05 level. Likewise, facilitating conditions positively influences the behavioral intention, with a coefficient of .236 at <0.01 level. Having a coefficient of .490 at <0.001 level, attitude remains positively associated with this behavioral intention, as with the other models. About 76% of the variance in behavioral intention (with R^2 of .7610 can be attributed to the predictor variables.

This study analyzed the interaction effects of two moderating variables, age (AGE) and length of work experience (LWE), on selected independent variables to the dependent variable. Analysis was done using bootstrapping technique (Chin 2010) in PLS structural equation modeling. Researchers have suggested an interpretation of effect sizes (f^2) from 0.02 as weak, from 0.15 as moderate, and above 0.35 as strong (Henseler and Fassott (2010). Table 5 summarizes the effects of the variables age and length of work experience across all four models.

Table 5. The moderating effect of age and length of work experience

Model results	Moderator → Predictor						
	AGE → EE	AGE → ANX	AGE → AT	LWE → PE	LWE → EE	LWE → SI	LWE → AT
Model 1 (intention to use new ICT systems)							
Coefficient	-0.226	0.281	-0.365	-0.176	-0.074	-0.155	-0.331
Effect size f²	0.054	0.086	0.153	0.032	0.006	0.024	0.142
P value	ns	ns	ns	ns	ns	ns	ns
Hypothesis supported?	No	No	No	No	No	No	No
Model 2 (intention to adopt process redesign)							
Coefficient	-0.252	0.369	-0.267	-0.142	-0.245	-0.188	-0.322
Effect size f²	0.068	0.158	0.077	0.021	0.064	0.037	0.115
P value	ns	ns	ns	ns	ns	ns	ns
Hypothesis supported?	No	No	No	No	No	No	No
Model 3 (intention to adopt organizational structuring)							
Coefficient	-0.374	0.312	-0.267	-0.274	-0.348	-0.284	-0.354
Effect size f²	0.163	0.108	0.077	0.081	0.138	0.087	0.144
P value	ns	ns	ns	ns	*	ns	*
Hypothesis supported?	No	No	No	No	Yes (-)	No	Yes (-)
Model 4 (intention to adopt cultural and behavioral change)							
Coefficient	-0.380	0.322	-0.316	-0.379	-0.389	-0.386	-0.363
Effect size f²	0.169	0.116	0.111	0.168	0.178	0.175	0.152
P value	ns	ns	ns	*	*	ns	*
Hypothesis supported?	No	No	No	Yes (-)	Yes (-)	No	Yes (-)

Legend: $*p<0.05$, $**p<0.01$, $***p<0.001$, ns (not significant)

Results show that age had no moderating effect on any predictor in all models, based on the coefficient and f² values. In the same way, length of work experience did not influence in any way the select variables in models 1 and 2. However, this variable negatively influenced on a moderate level the association between effort expectancy, attitude and intention to adopt organizational structuring (model 3). This indicates that employees with longer work experience in the city government tend to view the adoption of organizational structuring as something requiring more effort. Also, they exhibited negative attitudes towards this behavioral intention more than employees with shorter work experience in the city government. Similarly, length of work experience negatively influenced, again on a moderate level, the association between performance expectancy, effort expectancy, attitude and intention to adopt cultural and behavioral change (model 4). This means that employees who have been in the city government service longer tend to believe that adopting cultural and behavioral change in the organization does not have a positive impact on the organization's performance. In addition, such employees are inclined to suppose that adopting cultural and behavioral change entails extra effort. Besides, they exhibited negative attitudes towards such behavioral intention. Figure 2 below presents the validated correlations between the variables.
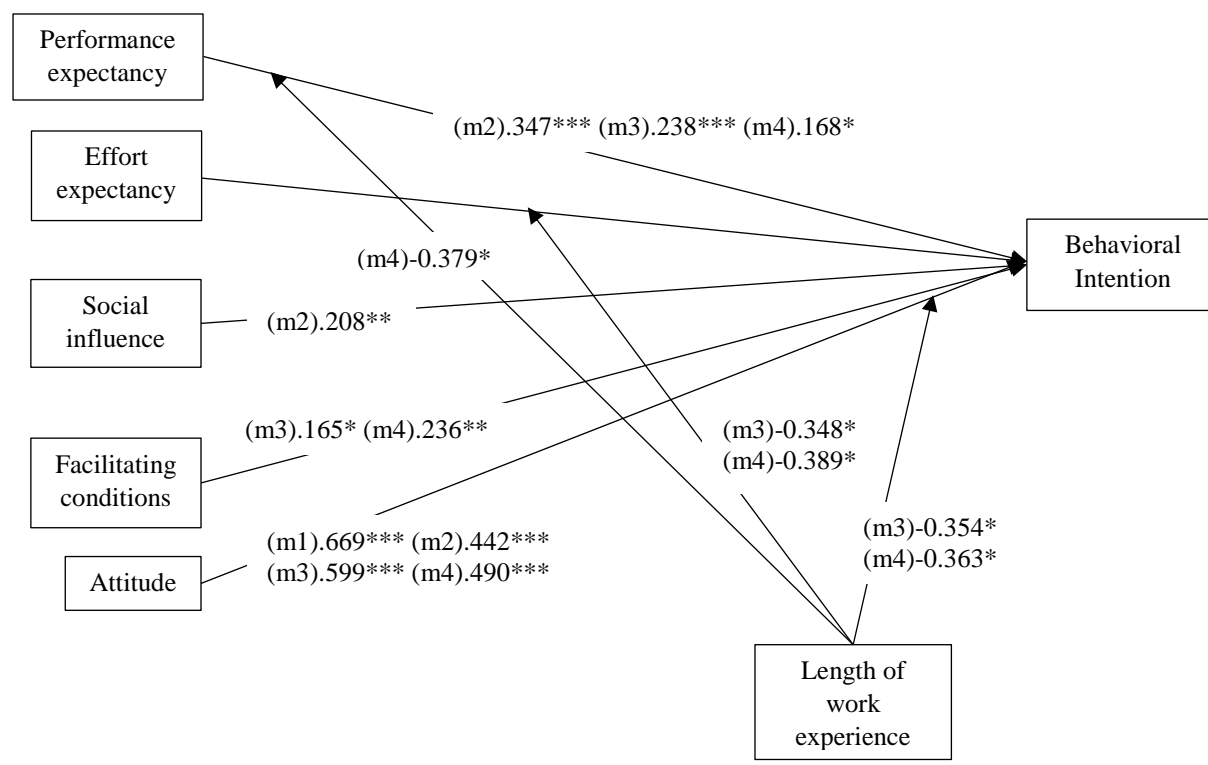
Legend: m1 intention to use new ICT systems
m2 intention to adopt process redesign
m3 intention to adopt organizational structuring
m4 intention to adopt cultural and behavioral change
*p<0.05, **p<0.01, ***p<0.001, ns (not significant)

Figure 2. Validated research model

9. Discussion

The ensuing discussions report the general tendencies observed of the variables in all four models and their implications on theory and practice.

9.1 Implications to theory

In the context of this study and from the city government employees' perspective, attitude is the pivotal variable in the intention to use new ICT systems for e-government transformation (model 1). This supports the argument that individuals perform behaviors towards which they have a positive affect (Ajzen and Fishbein 1980; Ajzen 1991; Davis 1989), especially in the use of new ICT systems in government (Nam 2012; Hung et al. 2013; Rana et al. 2015b). Performance expectancy, effort expectancy, social influence, facilitating conditions, and social influence do not emerge as predictors of this particular behavioral intention, thus not advancing support to the prevailing notions of many studies. This finding implies that city government employees already believe that using new ICT systems can or have already met their expectations in terms of performance and effort. Facilitating conditions are already present. External social factors and individual factors, such as anxiety, do not really matter much. Anxiety also does not come

out as a predictor for intention of new ICT systems use, in a way undermining the claim of some studies (Meuter et al. 2003; Olatubosun and Rao 2012).

Performance expectancy, social influence, and attitude are pivotal predictors of the intention to adopt process redesign for e-government transformation (model 2). For this particular dimension, city government employees view positive impacts on performance and external factors as important reasons to adopt it. An interesting finding in this aspect is that effort expectancy negatively influences the behavioral intention. In other words, some city government employees believe that doing it would require more effort.

Performance expectancy, facilitating conditions and attitude come out as the pivotal predictors of the intention to adopt organizational structuring (model 3), and to adopt cultural and behavioral change for e-government transformation (model 4). Adopting both aspects of transformational government is reckoned by city government employees as valuable for improved performance. Facilitating conditions, i.e. financial, technical, structural, and political, must be present.

The findings support the generally validated models which report that performance expectancy, facilitating conditions, social influence (Lin and Liang, 2011; Carter, et al., 2012; Weerakkody, et al., 2013) and attitude (Rana, et al., 2016; Dwivedi, et al., 2017) are predictor variables of e-government adoption. Moreover, the findings actually extend the predicting power of such variables from the technological aspect of e-government to the process, organizational, cultural and behavioral dimensions of e-government.

Age as a moderating variable is not relevant in all four models, invalidating the claims of some studies (Venkatesh and Morris, 2000; Venkatesh, et al., 2003; AbuShanab and Pearson, 2007; Hamner and Al-Qahtani, 2009; Yu, 2012). An interesting find by this study is that length of work experience has significant relevance as a moderating variable. It has substantial negative effects on the relationships between effort expectancy, attitude and intention to adopt organizational structuring. It similarly affects the relationships between performance expectancy, effort expectancy, attitude and intention to adopt cultural and behavioral change. These negative moderating effects are more salient among employees who have longer work experience in the city government.

As seen in the validated research model (Figure 2), this study has shown that such constructs' roles as predictors (attitude, performance expectancy, facilitating conditions, social influence) and moderator (length of work experience) of behavioral intention can be extended to other dimensions of e-government. This is the evident contribution of this research to the progression of e-government adoption literature: the examination and validation of those constructs' roles in the process, organizational, cultural and behavioral aspects of e-government.

9.2 Implications to practice

Attitude stand out as the pivotal factor for the four dimensions of e-government transformation. Thus, maintaining and sustaining the positive attitude about it among city government employees is very important for its incremental realization. Transforming so as to improve the city government's performance, hence become more effective and efficient, should always be instilled among the employees. The employees should be made to understand that doing so requires additional effort on their part being members of the organization. Moreover, they should also be made to realize that while technology is rapidly improving, at the same time citizens' expectations of government service

delivery are also rising and therefore adjustments have to be done. In practice, these could be achieved through regular orientations and workshop-trainings, and exposures to agencies or organizations with e-government best practices. This study's findings also suggest that for e-government transformation to be adoptable and efficacious, supporting and facilitating conditions are necessary. City government officials and decision-makers therefore should see to it that financial, technical, and structural support are present, which necessitates sound political leadership and committed political will. This requires legislative and executive actions to ensure that the transformative efforts have legal bases. The positive attitude towards the idea and practice of transformational government should be maintained and sustained among city government employees and officials.

9.3 Limitations and future research recommendations

Appropriate provisions have been carried out by the researchers in the conduct of this study, but certain limitations need to be considered with regard to the interpretation of its findings. First, the determination of the sample size was done through purposive sampling, so the application of results should be done with prudence. Future researchers must take note of the city government employee population size, so that if it is just a small and manageable size, then complete enumeration would be ideal. The result could then be safely generalized to the whole population. Second, the constructs used for the research model were chosen due to their prominence in the literature. Future researchers may consider investigating other variables or developing constructs which are appropriate in the government organization context. Third, except for the constructs attitude and behavioral intention measures, which were derived from Davis et al. (1989), Fishbein and Ajzen (1975), and Venkatesh et al. (2003) respectively, the measures for all other constructs (please see Appendix 1) have been adapted or re-conceptualized by the researchers and should be considered as initial undertakings. Future researchers could frame other measures deemed to be appropriate for the constructs. Fourth, this study made use of a simple linear regression model in hypothesizing the relationships of the constructs and therefore future research may develop research models that would explore some other nuances in the constructs' relationships. Future research may consider including other variables, e.g. training, gender, ICT usage incidence (nature, duration), which may be observed from government employees. Finally, this study's results are open to further validation in the context of other government organizations, local and national.

10. Conclusion

This study has examined the associations of technology adoption constructs in the context of e-government transformation characterized by dimensions other than technological: process, organizational, cultural and behavioral. Constructs from the TRA (attitude) and UTAUT (performance expectancy, facilitating conditions, and to a limited extent, social influence) emerge as determinant variables in the adoption of e-government transformation by city government employees. Hence, in the adoption of local e-government transformation practices and activities, the need for having the right attitude, facilitating conditions and performance expectations are paramount.

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Appendix 1. Measurement of constructs

On a Likert scale of [1-5] where [1] = Strongly Disagree and [5] = Strongly Disagree, the respondents were asked the questions enumerated below. Studies from where items for constructs have been sourced are cited.

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