# CONTEXTUAL FACTORS AND PUBLIC VALUE OF E-GOVERNMENT SERVICES IN KENYA

Gabriel KAMAU , Agnes WAUSI,  James NJIHIA

*Gabriel Kamau : PhD candidate at University of Nairobi: kamau.gabriel@gmail.com*
*Dr. Agnes Wausi: Deputy Director, ICT, University of Nairobi: agnes.wausi@gmail.com*
*Dr. James Njihia: Dean, School of Business, University of Nairobi: muranga.njihia@gmail.com*

**ABSTRACT**

E-government research has been skewed towards technological deterministic perspective mainly centering on technological issues. This provides no explicit guidance to the design and practice of e-government programs that result to increased uptake of e-government services. Theoretical discourse reveals undisputed consensus among e-government researchers that e-government uptake may be influenced by others contextual factors such as administrative and political consequences and should not be overlooked as they are valued. This study filled this gap by conducting an empirical investigated of the influence of contextual factors: ICT infrastructure, human capital and governance and the public value of e-government services. The study employed a mixed method exploratory, descriptive cross-sectional approach to realize the research objectives. Structural Equation Modeling was used to conduct statistical analysis of data collected. The study findings demonstrated that ICT infrastructure insignificantly contributed to public value of e-government services. However, the study revealed significantly contribution of human capital as well as governance to public value of e-government services.

**Keywords:** Contextual factors, Governance, Human capital, ICT Infrastructure, Public Value

## 1. INTRODUCTION

Investment in electronic government (e-government) has become an increasingly worldwide phenomenon due to presumed inherent benefits. With diverse meaning, e-government can be defined as the deployment of information and communication technologies (ICTs) in government organizations to advance interaction amongst diverse actors including government itself, businesses and citizens in socio-economic value chains (Verdegem, Stragier, & Verleye, 2011). Investing in e-government aim at enhancing efficient public service delivery, abating corruption, promoting participatory decision making and social inclusiveness  (United Nations, 2014).  However, in spite of the idealized and grand aspirations of  e-government programs to fix various problems in the public sector (Al-Jaghoub, Al-Yaseen, & Al-Hourani, 2010), research shows that numerous e-government initiatives have failed to deliver the desired outcomes (OECD, 2009). Further,  many people are not currently using e-government services as witnessed in nearly all developing countries (United Nations, 2014).

Various research has been carried out to assess the uptake and level of usage of  e-government services especially in developed nations (Al-Hujran, Al-Debei, Chatfield, & Migdadi, 2015; Moatshe, 2014; Rokhman, 2011). The majority of these studied have been grounded on technological deterministic perspective (Heeks & Bailur, 2007) and theories such as diffusion of Innovation theory, Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology. Innumerable researchers have acknowledged that findings regarding the common factors in these models (e.g. perceived usefulness, perceived ease of use) provide no explicit guidance to the design and practice of e-government programs that result to increased uptake of e-government services (Hong, Chan, Thong, Chasalow, & Dhillon, 2013; Venkatesh, Thong, Chan, & Hu, 2016).  Given that e-government remains a social and political process (Rose, Persson, & Heeager, 2015), these approaches and theories underplay that e-government uptake may be influenced by others contextual factors such as administrative and political consequences. The question of how contextual factors such as human, social and political factors affect the value e-government services is largely unanswered and further research is required in this area (Suhardi et al., 2015; Witesman & Walters, 2014).

Additionally, literature exposes that a good number of prior studies examined e-government services employ approaches derived from the private sector contexts (Bannister & Connolly, 2014; Castelnovo & Riccio, 2013; Stockdale, Standing, Love, & Irani, 2008). These approaches focus on economic and technical measurement terms  (Karkin & Janssen, 2014; Karunasena, 2012). The approaches correspond to public administration paradigm of New Public Management (NPM) (Rutgers, 2015).Undoubtedly, the objectives of e-government investments deviate from the private sector ones as they encompass goals that are strategic and realization of public value (Sundberg, 2016). Citizens' are the user of e-government services with diverse needs and the drive of why they use public services are distinct from those of the private sector (Cordella & Bonina, 2012). There goals surpass economy, efficiency and effectiveness to take account of social and political objectives for instance

trust in government, sustainability and social inclusion (Bryson, Crosby, & Bloomberg, 2014). Among others, Cordella and Bonina (2012), propose public value paradigm to evaluate public services since assessment based on the principles of NPM is inadequate.

## 2. Study Objectives

This study sought to achieve the following specific objectives:

 i). To determine the relationship between ICT infrastructure on the public value of e-government services.

 ii). To determine the relationship between human capital on the public value of e-government services.

 iii). To determine the relationship between governance on the public value of e-government services.

## 3. LITERATURE REVIEW

### 3.1 Theories Underpinning the Study

Towards aiding the selection process of the criteria of antecedents of the public value of e-government services, three theories underpin this study; Public Value Theory (PVT), Technology, Organization, Environment (TOE) theory and Structuration theory (ST). the PVT proposed by Moore in 1994 centers on three facets; the government role as a producer of value, public officers' role as caretaker of public assets who have to maximize them for public value and the systems essential to these officers to guarantee services reliability and consistency (Try & Radnor, 2007). The TOE theory is a multi-perspective framework that was proposed by Tornatzky, Fleischer, and Chakrabarti (1990). The theory embodies one fragment of innovation process that postulates three interrelated contexts namely; technology, organization, and environment. The interrelated context affects the adoption and achievement of innovations in technology (Baker, 2012). Structuration theory was conceptualized in 1984 by Anthony Giddens, a British sociologist to understand the duality of structure (Giddens, 1984). The duality of structure refers to the notion that the social systems structure or institutional properties are created by human action, and subsequently serves to form auxiliary human action (Jones & Karsten, 2008). Structuration theory philosophical frames stand on social phenomenon formed by both structure and human agents.

### 3.2 Public Value of E-government Services

Recent studies have emerged that highlights the significance of public value paradigm to comprehend the broader outcomes of e-government services (Chatfield & AlHujran, 2007; Hui & Hayllar, 2010; Karunasena & Deng, 2012; Sivaji et al., 2014). Public value refers to the value that citizens and their representatives seek with strategic outcomes and experiences of public services (Kelly, Mulgan, & Muers, 2002; Moore, 1995). In contrast with the concepts behind New Public Management (NPM) movement of 1980s, which give dominance to quantitative measures, public value takes the view that what matters is what works, without diminishing the value of performance measures (Benington, 2011). Recently, public value theory have been used as diagnostic tool to interrogate the present environment, by addressing question of what public value is presently being produced, how present authorizing environment stands and the existing capacity to deliver public value (Alford &

O'Flynn, 2009). Cordella and Bonina (2012) posit that analysis of the effects of ICT on public sector should not solely focus on their impact on the direct economic exchange relationship and individual choices, but rather on the collective preferences as indicated by the public value paradigm.

Evaluation of the public value of e-government services concerns three critical areas; services, outcomes and trust (Grimsley & Meehan, 2007; Kelly et al., 2002). Services value can be achieved through cost effective and provision of high quality services (Kelly et al., 2002). Kearns (2004) highlighted five underlying factors that influence the perception of high quality services. These are service availability, satisfaction of services, importance of services offered, fairness of service provision and cost. Moreover, Kelly et al. (2002) observed that user satisfaction is an important determinant of creating value in services. User satisfaction is formed by implying factors that include; customer service, information, choice and use of services. Outcomes from e-government services includes areas such as poverty reduction, high employment, low crime rates, clean streets and improved environment (Osmani, 2014). According to Grimsley and Meehan, (2007) outcomes refer to achievement of desirable end results.  Finally, public value is enshrined on citizens' trust of e-government services.  Trust referred to the public expectation from the achievement of positive response relative to their needs from public services  (Teo, Srivastava, & Jiang, 2008). In the micro environment approach, public trust or trust in government is due to the quality of public services or citizens' attitude toward public services. Trust can be determined in three main ways; the way politicians and public organizations behave, the way government manages its economy and deliver services, and the general level of confidence in public organizations (Grimsley & Meehan, 2007).

### 3.3 Contextual Factors

 Contextual factors refer to "the set of circumstances in which phenomena (e.g. events, processes or entities) are situated and afforded with opportunities and limitations" (Griffin, 2007). Heeks (2006) argues in e-government development,  context matters significantly. According to his perspective, "there is never simple technology transfer". In other words, imitating how to implement information technology (from other governments) cannot guarantee the success of e-government (Forouzandeh Dehkordi, Ali Sarlak, Asghar Pourezzat, & Ghorbani, 2012).   In this study, ICT infrastructure, human capital and governance derived from the TOE theory (Tornatzky et al., 1990) are considered as the contextual elements that may have an effect on public value of e-government services.

Saunders and Pearlson (2009) define ICT infrastructure as "everything that supports the flow and processing of information in an organization, including hardware, liveware, software, data and network components".  Ndou (2004) asserts ICT reliable infrastructure as a critical factor that determines triumph of e-government projects. Deficiency of a sound, reliable, and cheap technological infrastructure, e-government uptake in many countries remain an unrealized dream (United Nations, 2014). The availability of a well-developed national ICT infrastructure is critical for the advancement of e-government (Srivastava & Teo, 2010). ICT Infrastructure variables include internet access points' availability, the physical coverage of

the internet and different access methods. Karunasena (2012) also averred poor ICT infrastructure lead to reduced public value of e-government services.

Human capital refers to as the abilities, knowledge and skills incarnated in people (Srivastava & Teo, 2010). Das, Singh, and Joseph (2011) postulate that human capital reflects the degree to which the general public is well-informed and has achieved sufficient level of education. Normally, citizens who can read, comprehend and navigate through e-government services value them (Krishnan, Teo, & Lim, 2012). A positive link between education level and use of e-government services have been exposed by various empirical studies (e.g. Al-Hujran et al., 2015; Komba-Mlay, 2013). Therefore, to enhance e-government usage and public value, government stakeholders must influence knowledge management initiatives, skills, strengthen and equip citizens with long life learning and education initiatives necessary to grow and sustain citizen-users of e-government services (Moatshe, 2014).

Governance refers to as those actions and systems that facilitate the exercise of authority and power by the different actors of society (Suhardi, Sofia, & Andriyanto, 2015). Governance covers the regulatory and public policy environments, political setups, economic empowerment of governments and individuals to afford acquisition and usage of e-government services (Girish, Yates, Williams, & others, 2012). Governance also deals with data protection, access to sensitive data, cyber laws and security and accountability and transparency of incumbent government (Kustec-Lipicer & Kovač, 2008). Governance provides a domain through which new structures, systems methods, and processes are delved into for supporting delivery of e-government services. Therefore, in pursuit of exploiting e-government inherent benefits, it is imperative for governments to create essential governance structures that support the aspirations of e-government services (Suhardi et al., 2015).

### 3.4 ICT infrastructure and Public Value of E-government Services

ICT infrastructure has been acknowledged to be one of the determinant of e-government outcomes (Hanseth, Monteiro, & Hatling, 1996; Sinjeri, Vrcek, & Bubas, 2010). According to Ndou (2004), sufficient provision of ICT infrastructure is imperative to encourage usage of electronic services. Due to lack of a stable, reliable, and cheap ICT infrastructure, e-government usage will remain a pipe dream (Srivastava & Teo, 2010). From citizen-centric perspective, ICT infrastructure comprises availability of fast reliable and ICT networks to facilitate voice, data and media communication (Karunasena, 2012). ICT infrastructure also entails access to diverse access methods, such as, remote access by cellular phones, kiosks and satellite receivers which should be provided by governments so that all citizens can be served irrespective of their financial or physical capabilities (Reddick & Turner, 2012). Hence, we can posit that the better the ICT infrastructure in a country the greater public value of e-government services.

### 3.5 Human Capital and Public Value of E-government Services

Similarly, human capital has been acknowledged as another critical factor to the successful uptake of e-government (Sigwejo, 2015). Building human capital capacity contributes to opportunities that change public management into a mechanism of collaborative governance

which directly supports sustainable development outcomes (United Nations, 2014). Citizens who are educated and trained are likely to accept and use e-government services (Srivastava & Teo, 2010). Literature puts a strong argument that spending in human capital creation pays dividend in terms of citizens' public value in a public services context. Nevertheless, more studies need to be carried out to expose how investment in individual human capital relates to e-government uptake. Thus, this study looks at the relationships between human capital in terms of education, skills, experience and attitude and e-government services public value.

### 3.6. Governance and Public Value of E-government Services

Past literature has as well demonstrated strong reasons to believe that governance in a country as a factor affecting usage and public value e-government services (Krishnan et al., 2012). According to Meso, Musa, Straub, and Mbarika, (2009) the construct of governance is gaining increasing focus as it is critical to producing and sustaining an environment rapid e-government development. Welch et al. (2005) disclosed that to efficiently and effectively implement public sector reforms into e-government context, effective governance is paramount. In an empirical study, Madon, Sahay, and Sudan (2007) found that governance issues such as policy and regulatory framework impact on effective e-government implementation and provision of public services. While good governance can be a result of e-government, the doctrines of good governance that include, state administration efficiency and effectiveness, law enforcement, formulation of sound public policies, equity and public participation determine the progress and success of e-government (Suhardi et al., 2015). Arguably, citizen's trust towards her government originates from such elements (Girish et al., 2012). Subsequently, creating trust towards electronic services and resulting to a lever of increased e-government value. Thus, taking a proxy view of governance impact, we posit a positive relationship between governance and the public value of e-government services.

### 4. METHODOLOGY

### 4.1 Research Design and Population

This research adopted a mixed-method of exploratory, descriptive and cross-sectional research design. The research design adopted facilitated in realizing the objectives of the study. The target population was Kenyan citizen who had previously used e-government services. The United Nations Survey of 2014, estimated that 42.5 % of Kenyan to use e-government services (United Nations, 2014). Drawing from Kenya population 2009 Census, the total population of Kenya was 38.6 million (KNBS, 2009). Therefore, the target population of this study was 16.4 million. This research employed structured equation modeling (SEM) to evaluate the proposed structural model and testing of hypotheses. SEM literature proposes a sample size of greater than 200 (Markus, 2012). Bentler and Chou (1987) suggested a minimum of 5 cases per parameter estimate (path coefficients and error terms included). The model for this research consisted of 51 parameters for estimation. Therefore, a minimum of 255 sample size was desirable. The research collected data from 315 Kenyan citizens.

## 4.2 Data Collection

A survey questionnaire was adopted to collect primary data from the respondents. A Likert-type scale of five points was employed to prepare the items of the questionnaire. The Likert-type scale was considered dependable for its useful in obtaining people's values, perceptions and attitudes. Self administered survey was used targeting respondents in cyber café, town centres, shopping malls, bus stops and learning institutions in various counties in Kenya.

## 4.3 Data Analysis

The study employed structural equation modeling (SEM) to analyze data. SEM offers the researcher with the ability to model the dealings among manifest and latent constructs, and the associations between a bigger numbers of latent constructs (Bagozzi & Yi, 2012). Also, SEM procedure provides all the information regard path analysis, including measures of explained variance, path coefficient and total effects (Byrne, 2013). Specifically, the covariance based SEM (CB-SEM) was used for estimation of measurement and structural models, hypotheses testing and the overall model test. Analysis of Moment Structure (AMOS) CB-SEM software tool was used (Urbach & Ahlemann, 2010). AMOS software was preferred to other CB-SEM such as LISREL for it encompass a user-friendly graphic user interface comprising a sophisticated computing capability (Arbuckle, 2013).

## 4.4 Research Hypotheses

Three null hypotheses were formulated corresponding to the three research objectives.

i.) $H_{01}$: There is no relationship between ICT infrastructure and the public value of e-government services.

ii.) $H_{02}$: There is no relationship between human capital and the public value of e-government services.

iii.) $H_{03}$: There is no relationship between governance and the public value of e-government services.

## 5. FINDINGS

## 5.1 Reliability of Measurement Scales

Cronbach alpha which is the mostly known and used measure of scale reliability was utilized to inspect internal consistency reliability of the measures. The lower limit of Cronbach alpha was 0.60 (Bryman & Bell, 2015). Inter-total correlation (ITC) was performed to purify and eliminate unnecessary production of more items than could be conceptually defined. The process of item deletion was carried out so as to raise the value of alpha. Deletion of items was based on ITCs of less than 0.30. Variables with a value below 0.30 indicate that the variable is determining something different from the construct as a whole (Pallant, 2013). Table 5.1 presents results of Coefficient alpha and Inter- total correlation for the various variables.

**Table 5.1  Results of Reliability of Measurement Scales**

| Indicator | Statement | Inter- total correlation | Coefficient alpha |
|---|---|---|---|
| | **ICT infrastructure** | | 0.805 |
| RE1 | E-government sites performs services successfully upon the first request | 0.744 | |
| RE2 | E-government sites provide services in time | 0.721 | |
| AV2 | Adequate resources are available e.g,  huduma centres, internet connections to access e-government services. | 0.544 | |
| AC1 | E-government services are accessible  using different devices such as cellphone, personal computer, ipads | 0.479 | |
| | **Human Capital** | | 0.881 |
| SK1 | I have the essential training on how to use computers. | 0.758 | |
| SK2 | I have adequate ICT skills on how to use  Internet services | 0.708 | |
| SK3 | I have  training on the Internet services use | 0.734 | |
| SK4 | I can access e-government services with no assistance | 0.761 | |
| | **Governance** | | 0.807 |
| PR1 |  Online information held by different public organization systems  is safe/secure | 0.424 | |
| PR2 | Confidentiality of e-government services is ensured. | 0.440 | |
| PR3 | Privacy statement available on  e-government websites | 0.410 | |
| PR4 | The security policy is evidently affirmed on  government websites | 0.550 | |
| TO1 | Government organizations adhere to their citizens online charter | 0.578 | |
| TO2 | Public organizations display their contact information online | 0.550 | |
| TO3 | Online case tracking for e-government services is present (e.g. condition of an application presented to government organization) | 0.497 | |
| PD1 | Citizens are involved in formulating policies and laws relating to e-government services | 0.349 | |
| PD2 | E-government services offer public opportunity to participate in  decision making | 0.474 | |
| PD3 | Citizens can  make complaints online | 0.514 | |
| PD4 | Government official responds to online submissions and emails on time | 0.354 | |

## 5.2 Item Parceling

Prior to conducting the confirmatory factor analysis, item parceling was implemented.  Item parceling was implemented to maintain the ratio of observed indicators to latent constructs equal with the original conceptual framework, strength the results and increase the chances of sufficient model fit (Rocha & Chelladurai, 2012). The EFA method was used to determine the parcel numbers as well as items per parcels based on empirical properties (Rocha & Chelladurai, 2012). Table 5.2  presents the results of latent constructs and the items/parcels used in the Analysis

**Table 5.2  Results of Latent Constructs and the Items/Parcels used in the Analysis**

| Latent Construct | Number of Items | Code Name/Parcel |
|---|---|---|
| ICT infrastructure (ICTF) | 5 | RE1,RE2,AV1,AV2,AC1 |
| Human Capital (HC) | 4 | SK1,SK2,SK3,SK4 |
| Governance (GOV) | 3 | GPR,GTO,GPD |

### 5.3 Goodness of Fit Indices

The goodness of fit (GOF) indices was employed to establish how well the manifest variables were connected to constructs or latent variables.  Hair *et al*. (2010) recommend a minimum of four tests from the three types of fit of measure indices of model fit to test CFA and Structural model. This study used six measures to assess the measurement model and structural model. that is; X²/df, SRMR, RMSEA, TLI, CFI, and PGFI (Kline, 2011; Markus, 2012). The full measurement model was decomposed into a number of measurement models in form of single-factor congeneric models (Webster & Fisher, 2001).  Several diagnostic measures were performed to purify the congeneric models. The diagnostic measures performed were standardized factor loading (SFL), standardized residuals (SR)  and modification indices (MI) (Byrne, 2013; Kline, 2011).  The results of re-specification ICT infrastructure (ICTF) exemplified indicator variables RE1, AV1, AV2 and AC1 that met the threshold of GOF indices and diagnostic tests. Human capital (HC) indicator variables SK1, SK2, SK3, and SK4 all met recommended cut-off point and the model data fit.  Governance (GOV) indicator variables GPR, GTO and GPD parcels met the minimum GOF indices as well as data fit.

### 5.4 Validity Assessment of the Measurement Models

After measurement models fit, it is recommended CFA results be validated by examining construct validity (Markus, 2012). In SEM the common broadly established forms of validity for CFA findings are convergent and discriminant validity.

### Convergent Validity

Convergent validity was assessed by average variance extracted (AVE), factor loadings of the construct and construct reliability (CR) estimation (Byrne, 2013). Tolerable AVE was 0.50 for every latent construct (Hair et al., 2010).  The cut-off point for factor loadings of the construct  was 0.4 or greater while construct reliability for all the constructs was above 0.50 (Byrne, 2013; Urbach & Ahlemann, 2010). Table 5.3 present the convergent validity of the measurement models.

**Table 5.3  Convergent Validity of Measurement Models**

| Construct | Item | Factor Loading | AVE | CR |
|---|---|---|---|---|
| ICT infrastructure (ICTF) | RE1 | 0.871 | 0.527 | 0.812 |
| | RE2 | 0.629 | | |
| | AV2 | 0.554 | | |
| | AC1 | 0.808 | | |
| Human Capital (HC) | SK1 | 0.803 | 0.677 | 0.893 |
| | SK2 | 0.821 | | |
| | SK3 | 0.871 | | |
| | SK4 | 0.793 | | |
| Governance (GOV) | GPR | 0.887 | 0.522 | 0.760 |
| | GTO | 0.683 | | |
| | GPD | 0.559 | | |
| | POV | 0.783 | | |
| | PTV | 0.757 | | |

## Discriminant Validity

Discriminant validity was examined applying a method recommended by Fornell and Larcker (1981). The method is considered more thorough and conservative. The method compares AVE for each construct with the association approximation between constructs (Byrne, 2013). Evidence of discriminant validity is when AVE square root for a construct is larger than the correlation approximation between that construct and the entire constructs  (Byrne, 2013; Kline, 2011).  Table 5.4 presents results of AVE square root and correlation approximation between constructs.

**Table 5.4  Square Root of AVE and Inter-Construct Correlations of Constructs**

| | ICTF | HC | GOV | PVES |
|---|---|---|---|---|
| **ICTF** | **0.726** | | | |
| **HC** | 0.133 | **0.823** | | |
| **GOV** | 0.358 | 0.101 | **0.722** | |
| **PVES** | 0.270 | 0.023 | 0.576 | **0.792** |

## 5.5 Structural Model Evaluation

The structural model in SEM represents the associations among the latent constructs (Kline, 2011).  In the present research, the contemplated structural model consisted of four latent constructs, of which three are exogenous namely; ICT infrastructure (ICTF), human capital (HC), and governance (GOV) and one endogenous latent construct namely public value of e-government services (PVES).  Before presenting and discussing outcomes of the research hypotheses, assessment of the structural model overall fit was conducted (Kline, 2011). Six GOF indices were utilized to examine the structural model. From the outcomes, the structural model fit indices demonstrated a moderately good fit with the data ($\chi2/df$ = 2.298, RMSEA =

0.064, SRMR = 0.814, CFI = 0.928, TLI = 0.918, PNFI =0.758), hence supporting the basic theoretical model of this study.

### 5.5.1 Hypothesis Testing

In hypothesis testing, the critical ratio (CR) is the most important test (Markus, 2012). The critical ratio is computed by taking the weight of un-standardised regression and divides it by standard error (SE). If the critical ratio is over $\pm 1.96$ and a p-value of ($\leq .05$) as the association is considered significant (Byrne, 2013).

Null hypothesis $H0_{1a}$ stated that  was no positive association between ICT infrastructure and the public value of e-government services. The results demonstrated a positive and no significant path from ICT infrastructure to the public value of e-government services ($\beta$ = 0.029, $p$ >0.05). Thus, the study failed to reject the null hypothesis. Null hypothesis $H0_{1b}$ stated that there was no association between human capital and the public value of e-government services. The results demonstrated a negative and significant path from human capital to the public value of e-government services ($\beta$ = -0.075, $p$ <0.05). Thus the null hypothesis was rejected.  Human capital was therefore confirmed to be an antecedent to the public value of e-government services.  Null hypothesis $H0_{1c}$ stated there was no effect of governance on the public value of e-government services. The outcomes demonstrated statistically significant positive path from governance to public value of e-government services ($\beta$ = 0.362, $p$ <0.05). Hence, the null hypothesis was rejected. Governance was therefore confirmed to be an antecedent to the public value of e-government services.   Table 5.5 presents the structural model hypotheses test results.

**Table 5.5  Structural Model Hypotheses Test Results**

| Null Hypothesis | Hypothesis relationship | Standardized Estimate | Standard Error | Critical Ratio | P-value |
|---|---|---|---|---|---|
| $H0_{1a}$ | ICTF$\rightarrow$PVES | 0.028 | 0.057 | 0.491 | 0.624 |
| $H0_{1b}$ | HC$\rightarrow$ PVES | -0.079 | 0.035 | -2.782 | 0.005 |
| $H0_{1c}$ | GOV$\rightarrow$ PVES | 0.356 | 0.066 | 5.381 | 0.000 |

*$p < 0.05$*

## 6.   DISCUSSION OF FINDINGS

Different researchers study the impact of contextual factors on e-government development mainly focusing on adoption, benefits, and success of e-government (Alenezi et al., 2015; Krishnan et al., 2012). Nonetheless, this study evaluated how contextual factors relate to the public value e-government services.  Specifically, hypotheses tested the relationship between contextual factors; ICT infrastructure, human capital and governance and public value of e-government services. Effect of these variables to public value of e-government services was examined as sub-null hypotheses $H0_{1a}$, $H0_{1b}$ and $H0_{1c}$ respectively.

$H0_{1a}$ hypothesized a no positive correlation between ICT infrastructure and the public value of e-government services. The findings of this study indicated a positive and no significant effect of ICT infrastructure on the public value of e-government services. The results agreed with recent empirical findings by (Mimbi & Bankole, 2016) who found that ICT infrastructure has no significant effect on public value creation in African countries. However, the findings were inconsistent with empirical findings of prior study in Sri Lanka by Karunasena (2012) found that ICT infrastructure positively influences the public value of e-government services. A theoretical argument is that the inconsistency may be ascribed to the reality that the technologies may bias towards the administrative and satisfactions targets and less focus on democratic values (Rose et al., 2015). $H0_{1b}$ hypothesized a no positive link between human capital and the public value of e-government services. The research findings of this research demonstrated a negative and significant relationship of human capital and the public value of e-government services. These findings were supported by the results of the qualitative aspect of this study which found that as people gain more education, they become more cognizant of the benefits and danger of using e-government services. In addition, if the dangers outweigh the benefits people may incline to use e-government services while utility or value of the online services reduces (Bannister & Connolly, 2014). $H0_{1c}$ hypothesized a no positive association between governance and the public value of e-government services. The quantitative findings of this study established a positive statistically significant relationship of governance and the public value of e-government services. The outcomes concurred with the findings of (Girish et al., 2012) who found that countries that have sound governance evidence result to extensive usage of e-government services.

## 7. CONCLUSIONS

The thrust of this study was to investigate the association between contextual factors and public value of e-government services in Kenya. Through literature review, a gap in the evaluation of e-government services had been identified that had not been empirically addressed in the previous studies. To achieve the study objective, contextual factors were identified based on TOE theory, structuration theory and extensive literature review. The study was guided by three specific objectives which provided the direction of the research in general and specifically aided in the formulation of research hypotheses. Based on findings it was demonstrated that human capital and governance factors have a significance influence on e-government the public value of e-government services while no effect of the relationship between ICT infrastructure and the public value of e-government services. Drawing from the study findings, human capital related factors; ICT knowledge and skills, creating awareness of benefits and existence of e-government services, digital inclusion and provision of incentives and reward systems to e-government services users and governance related factors; policy and regulatory framework, citizens' involvement in government initiatives and developing citizen-centric systems were identified as key factors that had an effect on the usage and public value of e-government services. Therefore, the government and its agencies need to focus on these factors to increase the level of usage of e-government services as they are valued by the public.

## 8.   CONTRIBUTIONS OF THE STUDY

This study contributes to the e-government theoretical realms through relating the concepts of public value theory with the contextual factors drawn upon using TOE theory, structuration theory, and comprehensive literature review.  The study is a point of departure in that public value of public services ought not to be considered as end objectives. The study came up with a framework for evaluating e-government services by incorporating contextual factors; ICT infrastructure, human capital and governance. These factors were associated with e-government usage and the public value of e-government services. Therefore, the current study advanced knowledge in the field of e-government by revealing the roles of abovementioned contextual factors and its effect on usage of e-government services and public value in developing nations.  To the superlative of researcher's knowledge, at present, there is no study that has tested and employing a robust SEM technique in the analysis of quantitative data.

Practically, this study offer practitioners, government officials and other decision makers in less economically endowed nations with a strategic instrument to aids them in the understanding of main issues that put off the public from using e-government services as they are valued. For instance, to upscale e-government services usage in Kenya, The government entails involving e-government users in the formulation of policies and legislations relating to e-government services. Moreover, the government needs to build citizens' capacity through training, creating awareness and providing incentive and reward systems to increase use of use of e-government services by citizens.

## 9.   STUDY'S LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

While this research yielded valuable insights pertaining public value of e-government services over and above the factors that affect the public value of e-government services nonetheless it has certain limitations.  The first limitation regarded to generalizability of the findings to represent other developing nations. The sample of this study was drawn from e-government users within Kenya context. Cultural assumptions of a sample are arguably different from one country to another and thus, the study results may be limited to Kenya cultures.  Replication of the current study might yield different findings. Therefore, future research could be undertaken to replicate this study in other developing countries.

The second limitation was that the analysis of this research was based on cross-sectional data. While the cross-sectional study is commonly used in e-government research due to inherent time and cost advantages, the cross-sectional study lacks the ability to explore certain aspects of citizens' value of e-government services as would be provided through data collected at different points over time. To glean more insights into contextual factors and the public value of e-government services over time with the interactions between these factors. It would also be beneficial for future research adopt a longitudinal study.

**REFERENCES**

Al-Hujran, O., Al-Debei, M. M., Chatfield, A., & Migdadi, M. (2015). The imperative of influencing citizen attitude toward e-government adoption and use. *Computers in Human Behavior*, *53*, 189–203.

Al-Jaghoub, S., Al-Yaseen, H., & Al-Hourani, M. (2010). Evaluation of awareness and acceptability of using e-government services in developing countries: The case of Jordan. *Electronic Journal Information Systems Evaluation Volume*, *13*(1), 1–8.

Alenezi, H., Tarhini, A., & Masa'deh, R. (2015). Investigating the strategic relationship between information quality and e-government benefits: A literature review.

Alford, J., & O'Flynn, J. (2009). Making sense of public value: Concepts, critiques and emergent meanings. *Intl Journal of Public Administration*, *32*(3–4), 171–191.

Baker, J. (2012). The technology--organization--environment framework. In *Information systems theory* (pp. 231–245). Springer.

Bannister, F., & Connolly, R. (2014). ICT, public values and transformative government: A framework and programme for research. *Government Information Quarterly*, *31*(1), 119–128.

Benington, J. (2011). From private choice to public value. *Public Value: Theory and Practice*, 31–49.

Bentler, P. M., & Chou, C.-P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, *16*(1), 78–117.

Bryman, A., & Bell, E. (2015). *Business research methods*. Oxford University Press, USA.

Bryson, J. M., Crosby, B. C., & Bloomberg, L. (2014). Public value governance: Moving beyond traditional public administration and the new public management. *Public Administration Review*, *74*(4), 445–456.

Byrne, B. M. (2013). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. Routledge.

Castelnovo, W., & Riccio, E. L. (2013). E-Govern Evaluation Using the Whole-of-Systems Approach. In *10th International Conference on Information Systems and Technology Management – CONTECSI*.

Chatfield, A. T., & AlHujran, O. (2007). E-government evaluation: a user-centric perspective for public value proposition. *International Conference on E-Learning, E-Business, Enterprise Information Systems, and E-Government*, 53–59.

Cordella, A., & Bonina, C. M. (2012). A public value perspective for ICT enabled public sector reforms: A theoretical reflection. *Government Information Quarterly*, *29*(4), 512–520.

Criado, J. I., Criado, J. I., Rojas-Mart'\in, F., Rojas-Mart'\in, F., Gil-Garcia, J. R., & Gil-Garcia, J. R. (2017). Enacting social media success in local public administrations: An empirical analysis of organizational, institutional, and contextual factors. *International Journal of Public Sector Management*, *30*(1), 31–47.

Das, A., Singh, H., & Joseph, D. (2011). A longitudinal study of e-government maturity.

Forouzandeh Dehkordi, L., Ali Sarlak, M., Asghar Pourezzat, A., & Ghorbani, A. (2012). A Comprehensive Conceptual Framework for the E-Government Realization. *Australian Journal of Basic & Applied Sciences*, *6*(8).

Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Univ of California Press.

Gil-Garcia, J. (2006). Multi-method approaches to understanding the complexity of egovernment. *International Journal of Computers, Systems and Signals*, *7*(2).

Girish, J., Yates, D. J., Williams, C. B., & others. (2012). Understanding the impact of political structure, governance and public policy on e-government. In *System Science (HICSS), 2012 45th Hawaii International Conference on* (pp. 2541–2550).

Griffin, M. A. (2007). Specifying organizational contexts: Systematic links between contexts and processes in organizational behavior. *Journal of Organizational Behavior*, *28*(7), 859–863.

Grimsley, M., & Meehan, A. (2007). e-Government information systems: Evaluation-led design for public value and client trust. *European Journal of Information Systems*, *16*(2), 134–148.

Hanseth, O., Monteiro, E., & Hatling, M. (1996). Developing information infrastructure: The tension between standardization and flexibility. *Science, Technology & Human Values*, *21*(4), 407–426.

Heeks, R. (2006). Benchmarking eGovernment: Improving the National and International Measurement, Evaluation and Comparison of eGovernment. *Evaluating Information Systems*, 257.

Heeks, R., & Bailur, S. (2007). Analyzing e-government research: Perspectives, philosophies, theories, methods, and practice. *Government Information Quarterly*, *24*(2), 243–265.

Hong, W., Chan, F. K. Y., Thong, J. Y. L., Chasalow, L. C., & Dhillon, G. (2013). A framework and guidelines for context-specific theorizing in information systems research. *Information Systems Research*, *25*(1), 111–136.

Hui, G., & Hayllar, M. R. (2010). Creating Public Value in E-Government: A Public-Private-Citizen Collaboration Framework in Web 2.0. *Australian Journal of Public Administration*, *69*(s1), S120--S131.

Irani, Z., Love, P. E. D., Elliman, T., Jones, S., & Themistocleous, M. (2005). Evaluating e-government: learning from the experiences of two UK local authorities. *Information Systems Journal*, *15*(1), 61–82.

Jones, M. R., & Karsten, H. (2008). Giddens's structuration theory and information systems research. *MIS Quarterly*, *32*(1), 127–157.

Karkin, N., & Janssen, M. (2014). Evaluating websites from a public value perspective: A review of Turkish local government websites. *International Journal of Information Management*, *34*(3), 351–363.

Karunasena, K. (2012). *An Investigation of the Public Value of e-Government in Sri Lanka*. RMIT University Melbourne, Australia.

Karunasena, K., & Deng, H. (2012). Critical factors for evaluating the public value of e-government in Sri Lanka. *Government Information Quarterly*, *29*(1), 76–84.

Kearns, I. (2004). *Public value and e-government*. Institute for Public Policy Research.

Kelly, G., Mulgan, G., & Muers, S. (2002). Creating Public Value: An analytical framework for public service reform. *London: Strategy Unit, Cabinet Office*.

Kline, R. (2011). *Principles and Practice of Structural Equation Modeling*. New York: The Guilford Press.

KNBS. (2009). *The 2009 Kenya Population and Housing Census*.

Komba-Mlay, M. (2013). *Factors influencing access to electronic government information and e-government adoption in selected districts of Tanzania*.

Krishnan, S., Teo, T. S. H., & Lim, V. K. G. (2012). Contextual Factors, E-Participation, And E-Government Development: Testing A Multiple-Mediation Model. In *PACIS* (p. 113).

Kustec-Lipicer, S., & Kovač, P. (2008). Quality of governance through the lenses of administrative reform in the post-socialist circumstances. In *ECPR Workshop* (Vol. 11).

Madon, S., Sahay, S., & Sudan, R. (2007). E-government policy and health information systems implementation in Andhra Pradesh, India: need for articulation of linkages between the macro and the micro. *The Information Society*, *23*(5), 327–344.

Markus, K. A. (2012). Principles and Practice of Structural Equation Modeling by Rex B. Kline. *Structural Equation Modeling: A Multidisciplinary Journal*, *19*(3), 509–512.

Meso, P., Musa, P., Straub, D., & Mbarika, V. (2009). Information infrastructure,

governance, and socio-economic development in developing countries. *European Journal of Information Systems*, *18*(1), 52–65.

Mimbi, L., & Bankole, F. O. (2016). ICT and public service value creation in Africa: Efficiency assessment using DEA approach. In *Proceedings of the 27th Australasian Conference on Information Systems*.

Moatshe, R. M. (2014). *E-government Implementation and adoption: the case study of Botswana Government*. University of Derby. Retrieved from http://hdl.handle.net/10545/337831

Moore, M. H. (1995). *Creating public value: Strategic management in government*. Harvard university press.

Ndou, V. (2004). E-government for developing countries: opportunities and challenges. *The Electronic Journal of Information Systems in Developing Countries*, *18*.

OECD. (2009). *Rethinking e-Government Services User-Centred Approaches*.

Osmani, M. (2014). *Examining the Antecedents of Public Value in E-Government Services A*.

Pallant, J. (2013). *SPSS survival manual*. McGraw-Hill Education (UK).

Reddick, C. G., & Turner, M. (2012). Channel choice and public service delivery in Canada: Comparing e-government to traditional service delivery. *Government Information Quarterly*, *29*(1), 1–11.

Rocha, C. M., & Chelladurai, P. (2012). Item parcels in structural equation modeling: An applied study in sport management. *International Journal of Psychology and Behavioral Sciences*, *2*(1), 46–53.

Rokhman, A. (2011). e-Government adoption in developing countries; the case of Indonesia. *Journal of Emerging Trends in Computing and Information Sciences*, *2*(5), 228–236.

Rose, J., Persson, J. S., & Heeager, L. T. (2015). How e-Government managers prioritise rival value positions: The efficiency imperative. *Information Polity*, *20*(1), 35–59.

Rutgers, M. R. (2015). As good as it gets? On the meaning of public value in the study of policy and management. *The American Review of Public Administration*, *45*(1), 29–45.

Saunders, & Pearlson, K. E. (2009). *Managing and Using Information Systems. NY: Wiley*.

Sigwejo, A. O. (2015). *Evaluating e-government services: a citizen-centric framework*. Cape Peninisula University of Technology.

Sinjeri, L., Vrcek, N., & Bubas, G. (2010). E-government development in Croatia: ICT infrastructure, management, and human capital at local level. In *MIPRO, 2010 Proceedings of the 33rd International Convention* (pp. 1148–1153).

Sivaji, A., Abdollah, N., Tzuaan, S. S., Khean, C. N., Nor, Z. M., Rasidi, S. H., & Wai, Y. S. (2014). Measuring public value UX-based on ISO/IEC 25010 quality attributes: Case study on e-Government website. In *User Science and Engineering (i-USEr), 2014 3rd International Conference on* (pp. 56–61).

Srivastava, & Teo, S. H. (2010). E-government, e-business, and national economic performance. *Communications of the Association for Information Systems*, *26*(1), 14.

Stockdale, R., Standing, C., Love, P. E. D., & Irani, Z. (2008). Revisiting the content, context and process of IS evaluation. *Evaluating Information Systems, Public and Private Sector. Butterworth-Heinemann, Oxford*, 35–45.

Suhardi, S., Sofia, A., & Andriyanto, A. (2015). Evaluating e-Government and Good Governance Correlation. *Journal of ICT Research and Applications*, *9*(3), 236–262.

Sundberg, L. (2016). Decision Making and Value Realization in Multi-Actor e-Government Contexts. In *Electronic Government and Electronic Participation: Joint Proceedings of Ongoing Research, PhD Papers, Posters and Workshops of IFIP EGOV and EPart 2016* (Vol. 23, p. 147).

Teo, T. S. H., Srivastava, S. C., & Jiang, L. (2008). Trust and electronic government success: an empirical study. *Journal of Management Information Systems*, *25*(3), 99–132.

Tornatzky, L. G., Fleischer, M., & Chakrabarti, A. K. (1990). Processes of technological innovation.

United Nations. (2014). *E-Government for the post-2015 era: the usage perspective*.

Urbach, N., & Ahlemann, F. (2010). Structural equation modeling in information systems research using partial least squares. *Journal of Information Technology Theory and Application*, *11*(2), 5–40.

Venkatesh, V., Thong, J. Y. L., Chan, F. K. Y., & Hu, P. J. H. (2016). Managing Citizens' Uncertainty in E-Government Services: The Mediating and Moderating Roles of Transparency and Trust. *Information Systems Research*, *27*(1), 87–111.

Verdegem, P., Stragier, J., & Verleye, G. (2011). Measuring for knowledge: a data-driven research approach for eGovernment. *Leading Issues in E-Government Research*, 83–100.

Webster, B. J., & Fisher, D. L. (2001). A two-step approach to modelling student performance: A methodology that accounts for measurement and structural error. In *annual conference of the Australian Association for Research in Education, Perth, Australia*.

Welch, E. W., Hinnant, C. C., & Moon, M. J. (2005). Linking citizen satisfaction with e-government and trust in government. *Journal of Public Administration Research and Theory*, *15*(3), 371–391.