The Moderating Effect of Top Management Support on Key Attributes to E-government Implementation Success in Developing Countries: A study of Ugandan Ministries

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Abstract

This paper examined the role of top management support as a moderator on the model involving the relationships between user participation attributes, information system attributes and e-government implementation success. The data was collected through a survey of 277 employees from three Ministries (ICT, Finance and Works) in Uganda and was analysed using PLS-SEM aided by Smart PLS3. Using Stakeholder, UTAUT, and Information success theories, findings revealed that user participation attributes and information system attributes directly and positively affects e-government implementation success in Uganda. Furthermore, the moderation effect results signpost that top management support latent variable positively moderates the relationship between user participation attributes and e-government implementation success in Uganda. These findings contribute to literature related to the key attributes of e-government implementation success by incorporating the moderating role of top management support hence acting as a foundation for future researchers. Furthermore, the study has implications and recommendations to e-government policy maker, e-government practitioners, government Ministries of Uganda in particular and other developing countries with similar characteristics in general.

Keywords: Top Management Support, Key Attributes, E-government Implementation, Ugandan Ministries

Introduction

Despite the fact that preceding literature accentuated and some acclaimed factors for e-government implementation (Reddick *et al.*, 2020; Kagoya & Gilbert, 2020; Muthoni & Mkhonto, 2019), very few studies (Hsu *et al.*, 2018; Butt *et al.*, 2018; Wang & Song, 2017; Olumoye & Govender, 2017; Kagoya *et al.*, 2019), have mentioned about top management support moderating user attributes, which motivates this study. For instance, Kagoya *et al.*, 2019 under took a study on e-readiness assessment framework for Uganda and recommended that citizen participation in e-government project should be supported by the government to improve the level of e-readiness among the Ugandan citizens. More so, these few which dealt with top management support as a moderator, were more of qualitative research and focused on different variables other than those studied in this study. For instance, Hsu *et al.* (2019), Wijayanto *et al*. (2019) and Rajput *et al.* (2018) focused on TMS with monitoring, Butt *et al.* (2018) was in employees' motivation and performance, García-Sánchez *et al.* (2019) and Faber and Budding (2017) looked at TMS in terms of funding. Additionally, Zhang *et al.* (2018) focused on technological support from top management, Iqbal, Long, Fei and Bukhari (2015) and Vrchota *et al*. (2021), emphasized the experience and competence of a project manager, and the success of the project, while Wang and Song (2017)

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embarked on human resource support from top management plus suggestions of employees (Hsu *et al.,* 2018).

Therefore, despite the good work performed by the various prior researchers on the need for top management support, there are significant differences with the current study in terms of context, conceptual, and some methodological approaches used. This justifies the assertion that there is limited literature on the moderating effects of top management support on the relationship between user attributes and e- government implementation success. The assertion has continued to pose challenges to ascertain the real contextual base and this motivates this paper. This current study has the following objectives. i) Top Management support moderates User participation Attributes (UA) and e-government implementation in Ugandan Ministries. ii) Top Management support does not moderates Information System Attributes (ISA) and e-government implementation in Ugandan Ministries, and iii) Top Management support does not moderates Information and Communication Technology Infrastructure Attributes (ICTIA) and e-government implementation in Ugandan Ministries. ICT infrastructure attributes are vital for e-government implementation success and they involve application servers, websites, internet, hardware resources and operating systems utilized by experts and users/ citizens to create, access, disseminate and use digital information (Sichone & Mbamba, 2017). Prior researchers identified crucial ICT infrastructure issues that have a positive influence on implementation of e-government like collaborating systems power supply, and data possession (Reddick, 2020; Glypis *et al.,* 2020). Conversely, this study takes a holistic study by suggesting that for e-government implementation success in Ugandan Ministries, top management support may moderate the relationship between key attributes (UA, ISA, and ICTIA) and e-government implementation. This implies that both the demand side (users participation approach) and supply side (technology usage) are catered for which is a holistic approach relevant for Uganda and other mushrooming countries with same physiognomies.

Uganda is one of the nations facing e-government implementation related challenges (Kagoya & Gilbert, 2020; Nabafu & Maiga, 2012). Furthermore, e-government baseline study shows that there is low level of applying e-government services in Uganda public sectors. Several websites have been developed for citizens to participate in governance (Rost, 2021). However, even with such developments, e-government implementation initiatives have not been successful (United Nations, 2019) conceivably due to paying less attention to top management support (TMS) as a moderator between user participation attributes (USA) and e-government implementation success (Kagoya & Mbamba, 2019). Therefore, this study is intended to bridge this knowledge gap by using TMS to moderate the relationship between USA and TMS, which is a significant contribution to the scanty empirical literature in the Ugandan context, hence feeling in the knowledge vacuum. This study used three suitable theories to obtain the objectives, each supplementing the other. Stakeholder was the primary theory, supplemented by IS success theory and UTAUT, whose variables enabled the conceptual framework and hypotheses formulation.

Literature Review

Key terms

E-government

E-government is a new interesting term with no permanent and clear definition but it simply refers to the utilization of ICTs by the government to deliver services to the citizens, business and government departments (United Nations, 2018). Similarly, United Nations (termed it as a

government) defined e-government as a government that make use of ICT to alter its internal and external business relationship (UNDESA, 2016). In this study, e-government refers to the ability of the nation to incorporate ICTs in its daily operational activities without interruptions throughout the year while dealing with citizens, businesses and government itself so as to reap the overwhelming benefits. In this case, e-government is synonymously used with terms like open government, smart government, and at times e-governance (Kagoya & Mbamba, 2020).

E-government implementation success in this study refers to the voluminous achievements obtained by user (employees from the Ugandan Ministries) from active participation in e-government implementation projects, moderated by top management support. For instance, increased efficiency and effectiveness, increased trust in government, enhanced transparency in government the support to the users increased accountability by the government, end users (employees) feel a sense of ownership of the e-government projects, and increased empowerment of end users (employees). Key attributes in this study include User Attributes (UA), ISA (Information System Attributes) and, ICTIA (Information and Communication Technology Infrastructure Attributes). User attributes in this study entail those unique aspects, which end users require to be able to participate in e-government implementation. For example, user experience, willingness to participate, attitude towards e-government, user e-readiness, and peer influence.

Information System Attributes (ISA) in this study refers to the unique information system features required for e-government implementation success. In this study, ISA was measured using seven (7) indicators in order of strength namely; ISA5 (The guidance and instructions of the website is clear, easy to understand and operate), and ISA7 (The information displayed in government electronic service government website is appropriately detailed). More so, ISA4 (Images, videos and hyperlinks of the government websites are displayed properly), ISA6 (ICT experts give prompt replies to users' inquiries), ISA3 (The information displayed in government electronic service sites is accurate). Lastly, ISA8 (The information displayed in government electronic service site is up to date) and ISA1 (The use of e-government website services rarely fail/ Availability of e-government website services).

Information and Communication Technology Infrastructure Attributes (ICTIA) in this study, these are those unique indicators of ICTIA, necessary for e-government implementation success in the Ugandan context. Four (4) indicators, in their order of strength and priority, measured this. These included; ICT9 (I actively participate in the work of human-ware like website/system developers, system admin), ICT10 (Information System service providers ask for my input and suggestions always), ICT7 (ICT training provided when new technologies established), ICT8 (There are sufficient ICT infrastructure facilities (computer, hardware, software, among others).

Top management support

Top management refers to the degree to which senior management understands the importance of the IS function and the extent to which it is involved in IS activities and is translates the policy (formulated by the board-of-directors) into goals, objectives, and strategies, and projects a shared-vision of the future (Chad, 2015). In this study, top management support means the facilitating conditions by top managers to the end users (employees) in the government selected ministries need to be able to participate actively in e-government implementation.

User participation

This is a term used synonymously with user involvement in information systems. It refers to the behaviors and activities that users (active participation) or their representatives (passive participation) perform in the system development process (Barki & Hartwick,1994; Doll & Torkzadeh, 2004). Quite a number of authors reveal that user participation attributes like education, ICT skills, ease of use, experience, attitude; are vital in emerging issues like e-government implementation (Kagoya & Mbamba., 2019; Al-Athmay, 2013 & Ifinedo & Singh, 2011). In this study, user participation in successful e-government implementation refers to users/citizens at the lower level having a maximum degree of power (or control) which guarantees them to directly and actively participate in e-government implementation, be in full charge of e-government implementation policy and managerial aspects, and be able to negotiate the conditions under which the government may change them, all, with aim of achieving successful implementation of e- government in Uganda.

Theoretical Background

This study is anchored on three theories (stakeholder, UTAUT and IS success theories) and each complements the other since no single theory could support all the variables in this study (Kagoya & Mbamba, 2020). The primary theory is the stakeholder theory as it supports two variables with stakeholders in this study (users/ employees in the Ugandan Ministries and the top managers who avail the support to the users of e-government). The three theories are discussed in details as shown below.

Stakeholder Theory: researchers have defined the concept of stakeholder differently with their own perspectives depending on different views of their roles. For instance, stakeholders have been defined as groups of constituents who have a legitimate claim on the firm (Hill & Jones, 1992), participants in corporate affairs (Ackoff, 1974), those that will be directly impacted by the decisions (Todella *et al.*, 2018), and those who hold a stake about the decisions made by the organization (Eden & van der Heijden, 1993; Wagner, 1993; Mkude & Wimmer, 2013). The stakeholder theory is the primary theory supporting top management attributes and user attributes as stakeholders in successful e-government implementation. It is in line with Mumford and Henshall (1979), one of the early researchers in supporting the active involvement of end-users as a component of effective Information Systems development and implementation, using essentially the stakeholder concept in this domain. It has been suggested that end users (citizens) in addition to managers are very crucial towards successful system implementation like e-government, hence, the reason to why this study used stakeholder theory which will help in establishing the role of user participation in successful e-government implementation in Tanzania.

UTAUT

UTAUT is remarked as a reflection of an individual's internal schema of beliefs (Brown *et al.*, 2010; Williams *et al.*, 2015). It has been cited in scientific papers and is considered as one of the powerful theories in contemporary IS research. It was developed by Venkatesh, Morris, Davis and Davis (2003) who examined eight competing models of technology acceptance to formulate a unified model that mixes elements from the models. The models are: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), motivation model, Theory of Planned Behaviour (TPB), TAM/TPB combined PC utilization model, innovation diffusion theory and social cognitive theory. This theory (UTAUT) was developed to modify TAM model and to provoke

some of the limitations of using multiple models posed by researchers. UTAUT theorizes that an individual's behavioural intention to use technology, is influenced by performance expectancy, effort expectancy, social influence, and facilitating conditions (Kagoya & Mkwizu, 2020; Carter & Weerakkody, 2008; Venkatesh *et al.,* 2003). AlAwadhi and Moris (2008) used UTAUT to explore factors that determine the adoption of e-government services in Kuwait as one of the developing countries. ICT adoption form basis on user participation of e-government activities and UTAUT informed this study via its facilitating condition variable which was adopted in the moderating variable of top management support in conceptual model.

IS Success Models

The IS success models (such as those of DeLone & McLean, 1992; 2003) seek to provide a deeper understanding of IS success by identifying the relationship among the six critical dimensions of success along which IS are commonly assessed. The IS success dimensions cover information quality, system quality, service quality, system usage intentions, user satisfaction, and net system benefits (Delone & McLean, 2016). Researchers, such as Peter *et al.* (2008) use the model to understand these model's dimensions. The model for IS success is interpreted as follows; a system can be evaluated in terms of system, information and service quality; these features affect the subsequent use or intention to use and user satisfaction. By using the systems, users derive certain benefits. The net benefit will then influence user satisfaction and the further use (user participation) of the IS. Dash, Zhang and Zhou (2021) used the theory to study consumer product feature online preferences; Yel, Sfenrianto and Anugrah (2020) evaluated e-commerce website, Lee *et al.* (2021) evaluated e-commerce collaborative services and Goundar *et al*. (2021) and A Hammood *et al.* (2021) used the theory.

Empirical Literature

Top management support

A number of studies have shown that top management support is one the factors used in achieving implementation of e-government in every nation (Kim & Kim, 2021; Gerger, 2021; Kagoya & Mbamba, 2020). For instance, Kagoya *et al.* (2019) argue that support from the top leaders in any country is vital for any e-project to be implemented well. This can in terms of funds, donations, budget allocations for e-services, and ICT infrastructures. Similarly, Al- Rashid (2010) assert that e-government projects necessitate, proper resource mobilization, appropriate financial management, efficient budget allocation, efficient record management, all of which, cannot be obtained without top management support. Iyanda *et al.* (2016) put it that project success depends on the abilities of the top managers to support all activities embroiled in the project management office. For e-government projects which are large, complex, multi-phases and expensive, their implementation success and sustenance need support from not only smart but effective top leadership and management. To achieve this, top managers give credit, nurture creativity and support team members in taking calculative risks (Erin, 2018).

It is argued that top management support has moderating effects in facilitating conditions required for users to participate in e-government projects, thus aiding them to gain familiarize with e-services, make them aware of the e-government available services, cyber laws via government websites (Kagoya & Mbamba, 2019). Müller and Skau (2015) study on success factors influencing e-government at different stages of maturity, and found a significant positive moderating role of

senior officers in determining the success of IS for e-government operations hence making it a vital moderating variable in this study and supported by Mitchell (2021).

This is commented by Wirtz *et al.* (2014) who wanted to know e-government success factors for portal management on the local level in Germany. Basing on the findings, the study endorsed that top managers play a moderating role in e-government implementation. In this study, the variable obtained is top management support, is to moderate user participation attributes in e-government implementation. Therefore, this current study suggests that top management support as a moderator in the relationship between the key attributes mention above and e-government implementation success, to handle the contextual specific aspects that suits developing nations like Uganda.

Key attributes

User attributes are vital in e-government implementation as users can be able to participate in, intensify control of e-project systems via some actors, thus concentrating power and ownership among the users (Kagoya, Mbamba & Sichone, 2019). This study suggests that for e-government implementation success in the Ugandan context, user attributes should be moderated by top management support. Karlsson *et al.* (2012) explored user participation in the state electronic service development in EU and USA, their findings exposed that participation of users in the public authorities is vital in order to establish electronic services. The study revealed that there was limited literature in the area of user participation approaches, especially in the public electronic service development, which makes this study vital, to fill this knowledge gap. More so, e-government implementation can succeed where users directly participate or intensify control of e-project systems via some actors, thus concentrating power and ownership among the end users (McDonald & Altman, 2018; Kagoya & Mbamba, 2019). This study suggests that, to attain e-government implementation success in the Ugandan context, top management support must moderate the relationship between user attributes and e-government implementation.

ICT Infrastructure Attributes

Information Communication Technology (ICT) is a diverse set of technological tools and resources used to communicate, and to create, store, manage and disseminate information (Manenji & Marufu, 2016; Patwary *et al.,* 2020). ICTs are responsible for glimmering innovative solutions and enables business processes in various business sectors that gives a competitive age; enhance growth plus development within the business (Franco & Garcia, 2017). On the other hand, Azeez *et al.* (2012) jotted that e-Government implementation is not only affected by ICT infrastructure related barriers like inadequate ICT professionals, inadequate power supply, but also illiteracy and ICT infrastructure need in e-government implementation success is also supported by Mensah (2017). However, the current study suggest that ICT Infrastructure related attributes, moderated by top management support, do influence e-government implementation success in the Ugandan context, and this is in line with Angelopoulos *et al.* (2010).

Information System Attributes

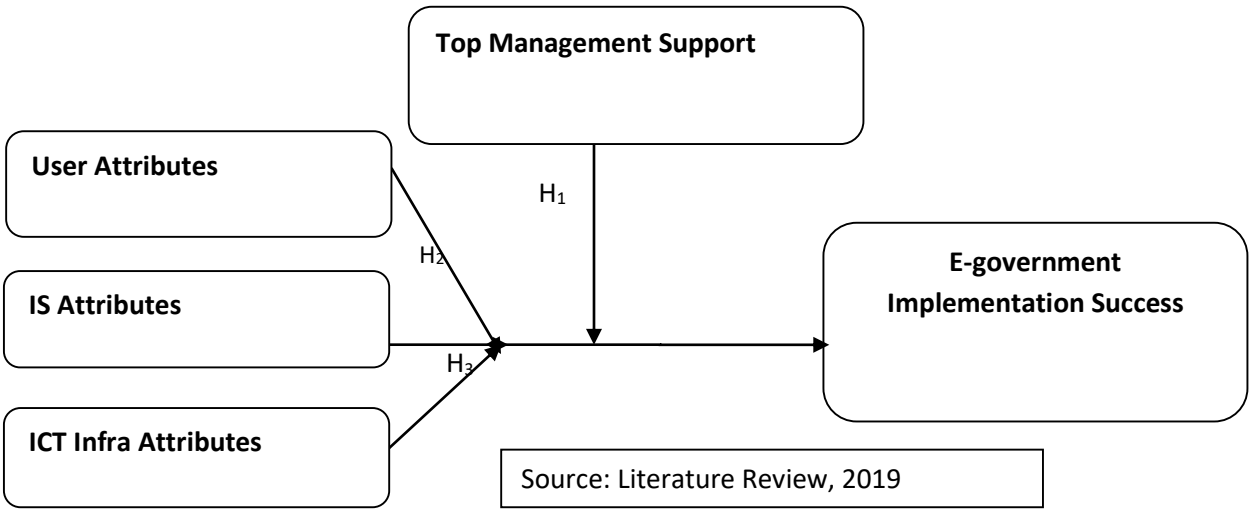
Information System Attributes are crucial predictors of e-government implementation success according to prior studies (Alzahrani *et al.,* 2019; Freeze *et al.,* 2019; Jagannathan *et al.,* 2019; Aldholay *et al.,* 2018; Wirtz & Kurtz, 2018). For instance, Wirtz *et al*. (2014) who were curious about knowing at the local level, the e-government success factors for portal management in

Germany, used the DeLone and McLean IS success model. Similarly, Wirtz and Kurtz (2017) argued that, many studies focused on using IS success model of DeLone and McLeane used discussed more on information system quality intension to use e-government. This current study advocates that information system attributes which are supported by IS success model of DeLone and McLeane (1992, 2003), have a significant positive impact on the e-government implementation success in Uganda. This study suggests that ISA though useful exogenous variables, they should be moderated by top management support for e-government implementation success in the Ugandan context.

Conceptual Framework

For this study, the conceptual framework shows the key concepts in form of exogenous variables (UA, ISA, ICTIA), moderating variable (TMS), and endogenous variable (EGS), and how they interrelate with one another, together with the hypotheses which support them. This can be diagrammatically represented as shown in Figure 1.

Figure 1: AUPEGI Conceptual Framework



The AUPEGI conceptual framework above envisages the initial framework obtained from review of related literature on e-government implementation and the derived hypotheses, which were tested in the field. It shows that top management support moderate User attributes, Information system attributes and ICT Infrastructure attributes and were tested in the field to get the revised AUPEGI framework or model in line with the Ugandan context.

Research Hypotheses

H1: Top Management support **moderates** User participation Attributes and e-government implementation success, H2: Top Management support moderates ISA Attributes and e-government implementation success and H3: Top Management support moderates ICT Infrastructure Attributes and e-government implementation success

Research Methodology

The current study is supported by positivism research philosophy since it is a quantitative study, which is based on scientific manner to obtain the truth (Zeng *et al.*, 2020; Gorecka, 2020); where

the researchers were detached, neutral and independent while researching on user participation approach, and e-government implementation in Uganda. The choice of the research paradigm was based on the study objectives, and existing theories that anchored it to form the hypotheses and the nature of study (Quantitative research). Positivism research aided the researchers in data gathering and interpretation in an objective manner coupled with observational and quantifiable research study findings, derived from PLS-SEM statistical analysis which catered for causal explanations with a high predictive power of the AUPEGI model developed in the study (Alharahsheh & Pius, 2020; Danks *et al.*, 2020; Shmueli *et al.*, 2019).

The study used a cross-sectional questionnaire survey in a five point Likert scale to gather data from users of electronic services (staff) from e-government departments in the Ministry of Finance who were conveniently and purposively sampled. The cross-sectional survey has been found to be robust for effects of relationship studies in previous information systems studies such as Teo *et al.* (2003) and Liang *et al*. (2007). A cross-sectional study is appropriate when the overall objective is to establish whether significant relations exist among variables understudy. The choice of the previously mentioned Ministries is that, their respondents are exercising government electronic operations (NITA, 2018). Prior information to the Kampala city where the Ministries are located was obtained to know respondents who were using the systems for their inclusion in the study. To ensure construct validity, the study employed questions used in previous research, though modified to fit the context of the current study. Variable items in the questionnaire were adapted from Fan and Yan (2015).

Adopting the questions ensures more efficiency for validity and reliability (Kessy & Temu, 2010) than developing new questions, provided that the researcher can still collect the data needed to answer research questions and meet the objectives (Saunders *et al.*, 2020). Reason being that the questionnaire is already tested for validity. The variables used were drawn from theories and empirical studies related to the study's problem. The study was able to gather 277 questionnaires which were distributed to the staff in the three selected Ministries. Data analysis involved descriptive, discriminant validity, convergent validity and composite reliability tests (Lin *et al.*, 2020). After being satisfied with preliminary tests, confirmatory composite analysis (CCA) was employed in phases to confirm the reflective measurement model as the newly established option for confirmatory tests in PLS-SEM than the old confirmatory factor analysis (Hair, Howard & Nitzl, 2020). PLS-SEM is a single systematic statistical technique for testing and estimating causal relationships amongst latent variables (Sarstedt *et al.*, 2018) and Khan *et al.* (2019) argues that PLS-SEM has been attested to be an improved version in the methodological research when compared to its original method.

PLS- SEM was preferred for this study since it is more suitable for explanatory research and shares the modest distributional and sample size requirements of ordinary least squares regression (Busu & Busu, 2021). Further, PLS-SEM has been extensively applied in information systems research, utilized in analyzing data for most articles in various field including Management information systems where electronic government follows (Hair *et al.*, 2020). It is suggested that out of the 109 SEM based articles published from 1999 through to 2011, 65 (60 percent) of the articles applied PLS-SEM (Ringle, Sarstedt, & Straub, 2012). Also, PLS-SEM was preferred to because of its optimal prediction accuracy (Chin *et al.*, 2020) and relaxation in the assumptions made unlike the covariate based method. More so, PLS-SEM deals with complex models (Rather, 2021) and is

robust against multicollinearity problems (Schamberger *et al.*, 2020) Finally, Ringle *et al.* (2020) assert that, PLS-SEM is advantageous since it approximates the indicators of a given number of equations within a structural assessment model via amalgamating the principal component analysis and the regression- centred path analysis.

Findings and Discussion

Demographic characteristics

Demographic or sample characteristics were included and finally the tested hypotheses used to obtain the results are indicated that the majority of the respondents were male (193) marking a percentage of 69.7% and 84 were female with 30.3%. 99.3% of the respondents were Ugandans and less than one percent were none Ugandan. Out of 277 respondents, 11(4%) were managers, 64(23.1%) were supervisors and the rest (202) were the majority perhaps due to the fact that managers are usually few and too busy most of the time, therefore tend to delegated their juniors to answer questionnaires on their behalf where need be. For the age characteristic, those below 21 years were 15 (5.4%), the majority of the respondents were in the age group of 21-30 years (85 or 30.7%), followed by those between 31-40 years (88 or 31.8%). Business activities are characterized and categorized into Finance and Accounts (92 or 33.2%), Human Resources were the minority (25 or 9%) and the majority were others in 157 (56.7%). Education Level First Degree were the majority 106 (38.3%), followed by postgraduate (66 or 23.8%), secondary level with ordinary having the least number of (4 or 1.4%) and advanced level with (13 or 4.7%). On the issue of work Experience, the majority were between 6-15 years were 130 (46.9%), followed by those below 6 years (92 or 33.1%), then 16-25 years were 26 (9.4) and the minority (12 or 4.3%) were above 35 years.

Assessment Measurement model

It should be noted that a moderator effect, this situation occurs when the moderator (an independent variable or construct) changes the strength or even the direction of a relationship between two constructs in the model (Hair *et al.*, 2017). Table 2 demonstrates the assessment model for moderating effects of top management support on three latent variables (constructs) and the different items that measure each variable. The same information on moderating analysis results is represented in a tabular form as shown in Table 2.

Table 2: Moderation Analysis Results

Hypotheses	Relationships	Sample Mean	Standard Error	T Statistics	P Values	f Square	Decision
H1	UA*TMS -> EGS	0.141	0.060	2.331	0.020	0.027	*
H2	ISA*TMS -> EGS	0.096	0.075	1.356	0.175	0.010	ns
H3	ICT*TMS -> EGS	-0.064	0.079	0.811	0.417	0.004	ns

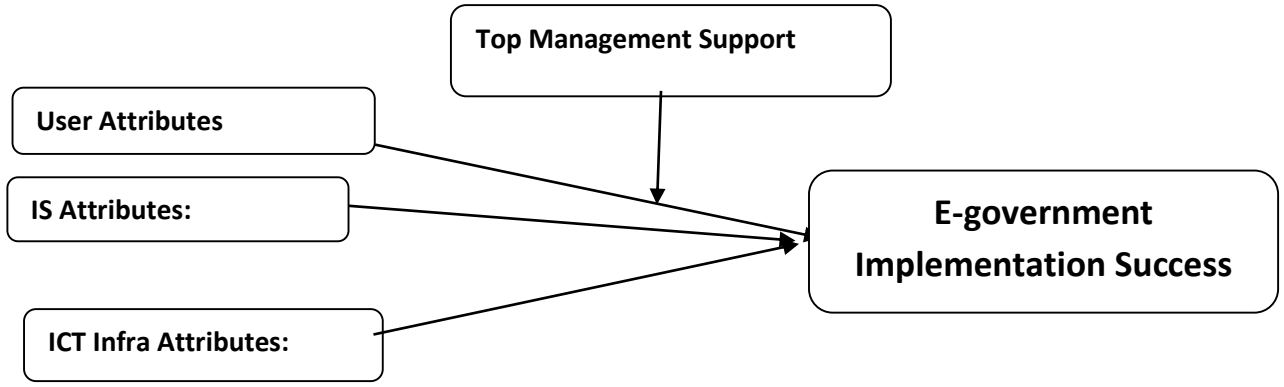
Notes: * implies significant at 5% level of significance; ns = non significance
Source: Field data 2019 attained using SmartPLS3.0

Hypotheses testing for moderation effects

From the above Table 2, the results indicate that only one hypothesis out of three was significant, (PV= 0.020, α=0.05) hence implying that TMS has a moderating role on the relationship between user attributes and E-government implementation (UA*TMS -> EGS) , thus in compliance with H_1: Top management support positively moderates the relationship between user attributes and e-government implementation in Uganda thus implying that in this study, the higher the TMS, the stronger the relationship between User Attributes and E-government implementation and vice versa for the lower. Conversely, the results indicate that TMS does not have a moderating effect on the relationship between Information and Communication Technology Infrastructure attributes and E-government implementation (ICTI*TMS -> EGS), thus H_5 was insignificant (PV= 0.417). Additionally, the results indicate that TMS does not have a moderating role on the relationship between Information System Attributes and E-government implementation (ISA*TMS -> EGS), thus H_6 was insignificant (PV= 0.175).

The AUPEGI Model

Figure 3 Illustrating the Conceptual model for Active User participation in E-government Implementation (AUPEGI)



Source: Authors' contribution, 2019

The AUPEGI model in Figure 3 illustrates the authors' contribution to the field of e-government implementation, obtained after testing the hypotheses in the field. It shows that top management support only moderated user participation attributes which was initially intended to moderate all the three constructs in the original model/framework. It also shows that the key attributes to e-government implementation success in the Ugandan context are User Attributes Information system attributes and ICT Infrastructure attributes. Their order of priority as discussed further according to the weight as indicated in the PLS SEM analysis, which used Smart PLS3 software.
It should be recalled that Nevertheless, this study found the importance of top management support in e-government activities, such as leadership, processes undertaken as well as support in facilities (measured by TMS2, TMS3, TMS4, TMS5, TMS6, TMS7, TMS8 and TMS9. The arguments found on top management support are aligned with those of UTAUT especially the variable - facilitating conditions. For this aspect, the explanation of UTAUT best fits the results of this study (Venkatesh *et al.,* 2016). Moreover, the measured items are valid and reliable for usage in future

similar studies. More so, the e-government project managers in Uganda in general and her Ministries in particular can improve user participation levels in e-government implementation by understanding the relationships among User attributes (UA=0.000*), on one hand and Information System Attributes (ISA=0.024*) and ICT Infrastructure Attributes (ICTI=0.031*) on the other which were all statistically significant. Through a survey of the employees in the three selected Ministries of ICT and national guidance, Finance planning plus economic development, Works and transport and the subsequent structural equation modelling in SmartPLS 3, the important predictor factors that lead to successful e-government implementation are identified. In this current research, the leading attributes with key success factors to e-government implementation are found to be user attributes moderated by top management support, followed by ICT attributes and lastly ISA attributes and therefore the Ugandan government should not overlook them.

The endogenous variable (Outcome variable) was e-government implementation and findings of this current study obtained from field data analysed by PLS SEM as indicated in the model developed clearly shows that it was measure by six indicators in their order of priority. (EGS2 = There is increased efficiency and effectiveness if actively participate in e-services, EGS3 = Active user participation ensures trust in government, if I actively participate in e-services, EGS1 = Transparency in government is enhanced if I actively participate in e-government implementation, EGS4 = My government becomes accountable if i actively participate in its e-services implementation, EGS5 = I feel a sense of ownership if I actively participate in e-government implementation (EGS6= I am empowered if I actively participate in e-government implementation

Conclusion

The paper aimed at studying the role of top management support as a moderator on the model involving the relationships between user participation attributes, information system attributes and e-government implementation success. This study used quantitative method; other studies may use qualitative or mixed methods to see whether there are similarities or differences and suggest possible solutions for the differences. This study was conducted in Uganda; a similar study can be applied in other contexts with similar settings like Tanzania with top management as a moderator between user participation and successful e-government implementation to compare and contrast results which can be applied in other LDCs or emerging economies. In addition, this study used PLS SEM for data analysis given the small sample size and being one of the latest quantitative tool good in prediction of accuracy causal relationships (Sarstedt *et al.*, 2018; Hair *et al.*, 2019). Findings from the Smart PLS assessment model predicted that top management support latent variable positively moderates the relationship between user participation attributes and e-government implementation (EGI) success in Uganda. However, top management support does not moderate ICT Infrastructure attributes and EGI. Additionally, TMS does not moderate the relationship between Information System and EGI. The current findings are supported by the stakeholders theory (for top management support and end users/employees), Information system success theory (IS success attributes) and UTAUT theory (ICTI attributes). Future studies may employ other data analysis methods and can identify other variables (such as social influence left by this study from informed theories like UTAUT) relevant for e-government and consider some mediating variables for e-government implementation success plus conducting a comparative study to ascertain differences and similarities.

Study Implications

Theoretically, findings reveal that in developing countries like Uganda, Information system attributes and ICT Infrastructure attributes are not moderated by top management support as portrayed by the western world. Rather TMS moderates positively the relationship between User attributes and e-government implementation success. Therefore, e-government developers and implementers have to take contextual specific and right attributes fitting their nations. This study connotes that top managers are key in decision making concerning e-government implementation aspects and have to support all the staff/employees of government Ministries who are the users of these e- government projects. These must provide the necessary conducive environment for the end users to participate actively in the implementation exercises. The indicators which the top managers should focus on majorly include eight items (TMS2, TMS3, TMS4, TMS5, TMS6, TMS7, TMS8 and TMS9). TMS2 (promote the use of the Internet for electronic services), TMS3 (Adequate budgets are set for ICT operations (such as ICT training), TMS4 (Allocation of sufficient funds to support electronic services' projects), TMS5 (Ensure IT processes are well defined to support government activities) TMS6 (Top management solicit for donations to aid e-projects). Others are TMS7 (Top leadership provide free e-service awareness campaigns via free internet usage training to citizens), TMS8 (Ensure that there is free Wi-Fi in my city provided by top management), and TMS9 (Top management provides free laptops, modems to users).

Additionally, the variables obtained from the three theories advances the theoretical understanding of the moderating role of top management support in the relationship between user participation attributes and e-government implementation success. In line with this, vast knowledge on future theoretical aspects in e-government implementation in developing countries which will be tapped by scholars. Furthermore, the proposed AUPEGI model constructed in this study has a theoretical contribution to the existing literature and to the best of the researchers knowledge, it is the first of its kind in the Ugandan context. The AUPEGI model validated model by e-government experts has a mega contribution based on its holistic nature, that covers both the demand part (users/employees in the Ugandan Ministries, and Supply side of technology (ISA, ICTIA), has a significant impact on the field of e-government in Uganda.

From a practical point of view, the current study findings inform practitioners on how the top managers are key in moderating the user attributes by offering facilitating conditions necessary to aid them to participate actively for e-government implementation success. In turn, employees reap benefits like, accountability, transparency, sense of ownership, e-readiness, 24/7 access to e-services and online information from the central government, among other benefits. This research contributes to the methodological literature by using quantitative approach and PLS SEM aided by Smart PLS 3 contrary to qualitative works done by previous studies as jotted in the problem statement as a methodological gap.

The current results have practical implications to developing countries with similar characteristics like that of Uganda, future academia, and top management officials, Information system service providers. These should consider active user e-participation levels in e-government implementation projects and make upright decisions based on the current findings. More so, the current study will enable e-government policy makers, IS developers, e-service providers, and e-government implementers to consider and implement the AUPEGI model with all these aspects regarding active user participation (Kagoya & Mbamba, 2019); and work towards curbing the

factors affecting users and hindering them from active participation in e-government implementation.

Also, the developed AUPEGI model informs practioners in the field of smart government about the moderating influence of top management support on the key attributes (UA, ISA, ICTIA) and e-government implementation success in Uganda. The top management support is in terms of facilitating conditions required , like funds, donations, budget allocations for e-services, ICT infrastructures, ICT training and awareness, plus others, for any e- project to succeed (Kagoya & Mbamba, 2020)

Recommendations

Top managers should offer maximum support to end users of e-services in the selected Ministries by embracing and envisaging optimal heights of e-readiness in their strategic operations. All that is needed must be put in place by the government, especially that, which is within their capacity. For instance, to ensure that all offices of the end users of e-government are equipped with functional up to date computers; employ highly skilled personnel in ICT, provision of continuous training of the end users and in this case are the staff/ employees of the selected government Ministries. This will enable them to become more knowledgeable about e-government implementation projects as they are engaged in active participation and keep them informed on how best to utilize e-governance in engendering effective service delivery among others.

Assertively, more attention should be given to user participation by ensuring awareness of e-services, motivation so that the operators and all involved actors apply willingly the developed electronic systems. Thus, government officials in e-government projects as well as policy makers should focus on these users' concerns for successful e-government implementation via active user participation. These concerns were assessed as; UA1, UA2, UA4, UA5 and UA6 that enjoyment and users' motivation for active participation should be coupled with appropriate top management support as users depend on the decisions made at the top management level in e-government projects and their support in all aspects related to e-government projects (whether facilities or proper processes), not only from design to implementation but also after these phases for monitoring and evaluation purposes. This is vital in improving e-government projects for proper functioning to ensure their continuity and sustainability (Kagoya & Mbamba, 2019).

The end users/ citizens should have the same rights to use e-Government services, and thus the Ugandan government should improve on the existing ICT infrastructure in the Ministries and Uganda at large, in order to enable services in rural areas. The absence of delivery of e-Government services and computer skills to users in the selected Ministries will create a critical barrier that prevents the successful adoption and implementation of e- projects national wide. The government of Uganda should adopt and implement the AUPEGI model proposed by this study for e-government implementation in Uganda. This model covered all the major attributes that are key to successful implementation and these are user attributes, Information system attributes ICT infrastructure attributes and the moderating role of top management to support users to participate actively in e-government implementation projects.

Top managers through the selected government Ministries and departments should set up e-government implementation committees that will work out modalities for effective

implementation, alongside the performance evaluation units to assess the successes and failures in its targets as well as feedback mechanism to report implementation effectiveness.

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