

E-Government Procurement and Compliance to Fundamental Principles in Local Government Entities in Rwanda: A Case Study of Burera District

¹UWABYAYE Alphonsine, ^{2*}Dr. MBONIMANA Gamariel

¹Student at University of Kigali, ²Supervisor

Abstract: - In the modern competitive business environment, government institutions need to embrace information communications technology to remain competitive. Procurement has been recognized as a priority government agenda by many public sector agencies worldwide. The government of Rwanda decided to adopt an e-procurement system in its public institutions and the e-procurement system was launched in Rwanda in July 2016. The study aim was to analyze the relationship between E-Government procurement and compliance to fundamental principles governing public procurement in local government entities in Rwanda; with case study of Burera district, located in the Northern Province. The specific objective of the study was to assess the relationship between E-Bidding model, E-Catalogue model and E-Contract model and compliance to fundamental principles in local government entities. The study considered 3 theories namely: Disruptive Innovation Theory, Innovation Diffusion Theory and Technology Acceptance Theory.

The regression model used was $\text{Log}Y = \beta_0 + \beta_1 \text{Log}X_{it1} + \beta_2 \text{Log}X_{it2} + \beta_3 \text{Log}X_{it3} + \varepsilon_t$. And multiple R (correlation) value obtained was 0.876. The model summary depicted from regression analysis with R (correlation) value of 0.876 (87.6%) indicated a highly positive relationship between the dependent and independent variables and, the overall contribution of the independent variables: E-Bidding, E-Catalogue and E-Contract to the effective and increase of level of compliance to fundamental principles in local government entities which accounted for 76.7% ($R^2 = 0.767$) of the variation in compliance of fundamental principles.

Therefore, the researcher concluded that E-bidding, E-catalogue and E-contract had the significance influence on the compliance of fundamental principles which led to confirm the relationship between E-government procurement and compliance to fundamental principles in local government entities in Rwanda. The study recommended that Local government entities should mainly focused on development of professional career of staff involved in public procurement and continue to increase their level of compliance in fundamental principles governing public procurement to ensure their sustainability and compliance in the future. And finally, the study proposed different major areas of fundamental principles compliance in public procurement and different scenarios that indicated the necessity of further research in this area.

Keywords: - E-Bidding, E-Catalogue, E-Contracted and compliance to fundamental principles in local government entities.

General Introduction

Background of the study

Government agencies around the world have been using information technology (IT) and the internet to deliver government services and to access information electronically for several years, practices which are commonly referred as e-

Government initiatives. For many governments, one of the more successful and applicable initiatives is the delivery of electronic procurement to enhance transparency, establish an open market place for procurement needs, and support the introduction of procurement reforms to better manage and monitor

public procurement activities. The development of electronic procurement systems has created a number of new options and methods for supporting the procurement processes of governments and for embracing the efficiencies and savings that can be realized. These electronic systems are commonly known as electronic government procurement (e-GP).

In Africa, the e-procurement is being used to reduce, to maximum problems of lack of accountability and to increase the transparency in public sector. For example, Tanzania has introduced an e-procurement system that allows all procurement activities to be monitored using the information technology systems (Leo, Sun 2009).

Rwanda as country with high ambitious development in ICT, through its 7 years' government program, has planned to Strengthen Capacity, Service delivery and Accountability of public Institutions by ensuring that 100% of government services are delivered online by 2024 (Rwanda NST1, 2017-2024)

The aforementioned ambition was in line of promoting and enhancing good governance in all public institutions, which matters for development of a country. When government enforce the rule of law, ensure security, and promote transparency and accountability, citizen's well-being is assured, the environment is conducive for businesses to flourish and there is equal distribution of the gains of economic growth.

In the framework of strengthening the public procurement system, Rwanda has made many reforms concerning the management of the public expenditure, and the law & regulations governing public procurement were enacted. Therefore, all public procuring entities are encouraged to comply with their provisions.

E-Government procurement was conceived as the independent variable while compliance to fundamental principles governing public procurement is conceived as the dependent variable. E-Government procurement was measured in terms of key modules of Umucyo e-Procurement system in Rwanda. Compliance to fundamental principles

governing public procurement was measured in terms of key measurable benefits of e-Government procurement to ensure transparency, competition, effectiveness and efficiency, economy and accountability in public process (Article 6 of the law No 62/2018).

1.2 Statement of the Problem

The government of Rwanda has been engaged in some initiatives aimed at streamlining its public procurement system in order to align it with the fundamental principles such as transparency, competition, economy, effective and efficient, fairness and accountability. Public procurement process in Rwanda has a very crucial functions because the Government spend a lot of money to procure goods, works and services required in all public institutions.

Before the adoption of e-procurement system, all public procurement activities were made traditionally; this way of conducting public procurement process by paperwork, has been criticized for having many deficits, which contributed to huge losses in public funds, and lacks transparency, accountability and fair competition (Gihozo 2020). Keeping the procurement process simple and cost efficient was a major challenge that faces the government as the paperwork process was not providing the expected transparency, equity, efficiency in public tendering process and it was not in line with the current worldwide development speed.

As per the Auditor General's Report ending June 30, 2018, there were persistent cases of delayed and abandoned contracts. This may be caused by different factors such as use of unfair selection criteria in the tender document when selecting suppliers, unfair evaluation for the bidders and awarding the tender to the incompetent contractor. All these practices hinder the principle of competition, principle of transparency and the principle of economy and fairness which should have been increased by adoption of e-procurement.

The problem of lack of advanced infrastructures as internet connection is not available in all area of

country and lack of enough trainings for the users of the system, is another issue which hinder the principle of effectiveness, efficiency and fast work, while the system should promote them.

It is from the above research problems where the researcher is prompted to find out the relationship between e-government procurement and the compliance to the fundamental principles governing public procurement in Rwanda.

Specific Objectives

In Rwanda, e-Government procurement is built on three program functions namely: E-Bidding, E-catalogue and E-Contract. Thus, the research study was based on the following key specific objectives:

1. To assess the relationship between E-Bidding model and compliance to procurement principles in Burera district;
2. To assess the relationship between E-Catalogue model and compliance to procurement principles in Burera district;
3. To assess the relationship between E-Contract model and compliance to procurement principles in Burera district;

Literature Review

Concept of E-government procurement

The introduction of information technology constitutes a main driving force for growth, excelling in organisations businesses, its competition increases and its sustainability, Ruzindana (2016). Therefore, with those advantages, the information technology in the public procurement process helps procuring entities to comply with principles governing public procurement law.

The term e-government procurement (e-GP) broadly refers to the use of electronic systems to handle any or all steps of the public procurement process. Many governments across all regions of the world have embarked on implementation of e-GP and worldwide adoption is increasing; public organizations are leaving traditional ways of providing services and they are adopting modern techniques to streamline their operations for sustainability of their mission through using internet-based tools in automation of

public procurement of services and goods (Noraizah, 2016).

Umucyo E-procurement system for Rwanda.

The E-Procurement System automates the public procurement process and enables the interactions of Government to business services (G2B). By using the online system, the Government purchases goods, works, services and non-consultancy services to help the Government to ensure efficiency of public procurement with the standardization of electronic documents, supplier registration, goods and services information and to streamline public procurement transactions for efficient government service delivery (Umucyo e.-procurement for Rwanda).

UMUCYO is a single channel, portal and point of access for Rwanda procuring entities allowing to negotiate better contract terms and to realize savings and achieve value for money. It provides suppliers with increased access to markets without additional marketing efforts and a faster and more efficient method for quoting and increased order accuracy through receipt of electronic orders (Halerimana 2018).

Concept of e-bidding

E bidding is one of the functions of e-procurement, which helps the access to all information related to the tenders published. It allows the suppliers to consult the tenders published by procuring entities, to prepare and submit their bids accordingly. One of the most technically demanding elements of e-bidding functionality is the security of online bid submission, specifically as it relates to storing commercial quotes submitted by bidders in a safe and secure manner. E-Bidding systems have to be implemented in line with existing procurement laws and regulations (Umucyo e-procurement, e-bidding module).

Concept of e-catalogue

E-catalogue is a module/function of Umucyo e - procurement system of Rwanda where the procuring entities via procurement officer found the identification and classifications codes of the items or goods to be purchased from suppliers. It provides

codes which differentiate items by others items and from that the procuring entity have to choose the goods needed according to the specifications set.

The law N0 62/2018 of 25/8/2018 governing public procurement in Rwanda defines E-catalogue as central database of products and services that public entities need to purchase. (Art.3, law No 62/2018 of 25/8/2018).

Concept of e-contract

E-Contract System enables users to make contract on goods, works, consultancy and non-consultancy services through internet without physical contact between supplier/contractor/consultant and procuring entities officials as all documents may be submitted via internet. It provides convenience to users with various functions, such as contract statistics for each procuring entity and supplier in real time and automatic creation of legal reports.

Empirical Review

Having reviewed different papers from other researcher in the field, we noticed the following findings about the e-procurement system:

The study conducted by Almadani (2016) on e-procurement implementation for projects found that, the use of e-procurement system enhance compliance to the principal of economy as it helps the achieving of value for money in term of quality timely delivery and cost reduction.

Halerimana (2018) conducted a study on impact of E-procurement on performance of public Institutions in Rwanda and found that e-bidding provides efficient and effective in all procurement process and minimize cost reduction. As result, the study shown that e-bidding has important aspect on each stage of procurement cycles and if the system is used effectively, it increases level of competition and transparence, from that the organization achieved its objectives.

Vaidya, Sajeev and Callender (2006) conducted a study on Critical Factors that Influence E-procurement Implementation Success in the Public Sector. They found out that despite the efforts put by

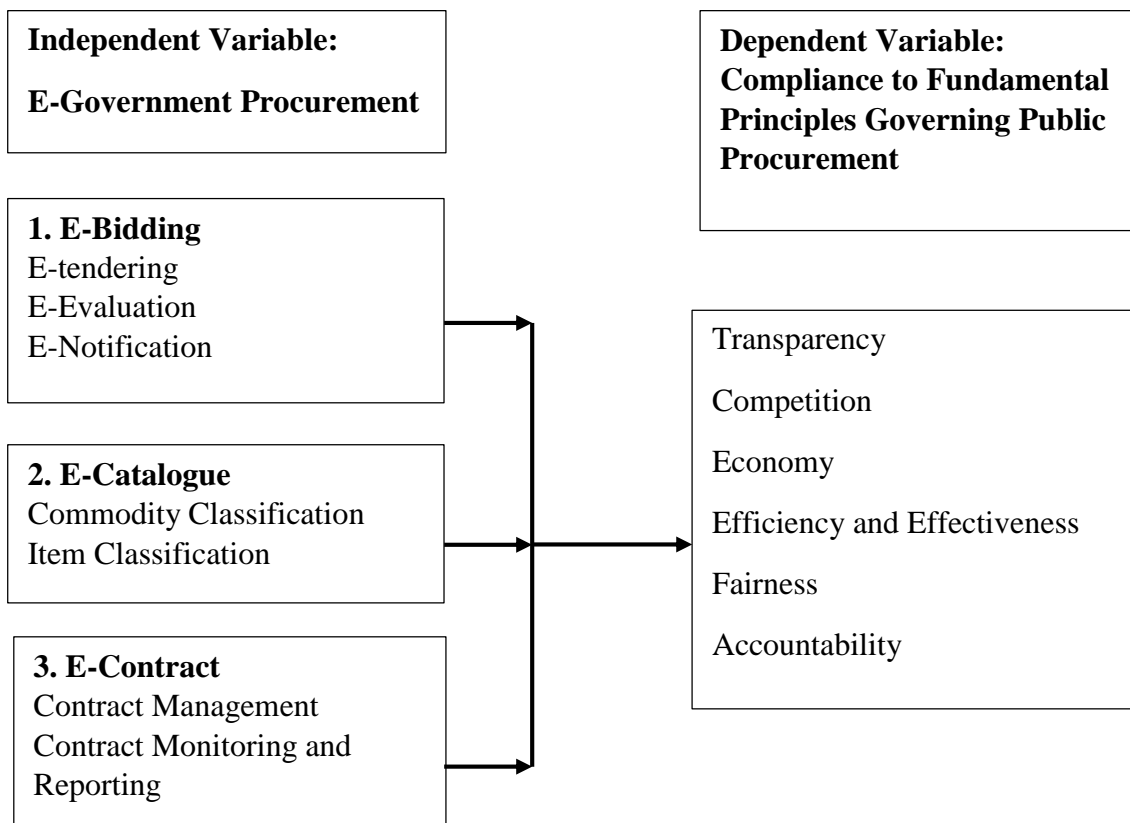
the governments through reforms towards adoption of e-procurement, adoption of e-procurement remains a major challenge for many procurement functions.

The findings further revealed that successful implementation of e-procurement established systems and feedback mechanism. They associated e-procurement with improved procurement performance. Findings of study done by Roma and McCue (2012) on e-procurement revealed that e-procurement facilitates documentation of the bidding process, which in turn enhances transparency and accountancy especially in public procurement. The research further revealed that e-procurement is associated with improved efficiency and enhanced procurement operations. Other benefits of e-procurement include increased customer satisfaction, improved professionalism in the procurement functions improving public perceptions the procurement function

Conceptual Framework

Colin Fisher (2010) defines a conceptual framework as a set of broad ideas and principles taken from relevant fields of inquiry and used to structure a subsequent presentation. It is formed of patterns of concepts and their interconnections. A conceptual framework, according to Chakra borty (2009), is a scheme of concepts (or variables) which the research operationalizes in order to achieve set objectives. Mugenda and Mugenda (2012) define a conceptual framework as the main structure that gives the research its form and shape and holds together all the elements in the logical configuration. In the conceptual framework depicted in figure below, e-government procurement is considered to have positive relationship compliance to fundamental principles in local government entities in Rwanda. E-government procurement is contextually represented by e-bidding, e-catalogue and e-contract and compliance to fundamental principles in local government entities in Rwanda as Transparency, Competition, Economy, Efficiency and Effectiveness, Fairness, Accountability

Figure 2:1 below presents the conceptual framework of the study



Source: UWABYAYE Alphonsine; Conceptual Framework, October 2021

Research gap

The introduction of e-procurement system in Rwanda is very recent and the e-procurement system and the compliance of fundamental principles governing public procurement constitute main factor for Rwanda organization to reach its expectations. Through the review of literature, the researcher found that there is no study detailing the E-procurement system and the compliance of fundamental principles governing public procurement in Rwandan institutions. The most of existing studies on e-procurement system in Rwanda focus on impact of its adoption for some organizations performance or on factors, benefits and challenges related to its adoption. It is therefore necessary to fill that gap through making research to understand and explain the relationship between e-procurement system and the compliance to fundamental principles governing public procurement in local procuring entities.

Research Methodology

Research design

Research design is a specification of methods and procedures for gathering (acquiring) information needed (Churchhill, 2017). The research design is the conceptual structure within which the research is conducted; it constitutes the blueprint for the collection, measurement and analysis of data. Kothari (2004) describe a research design as a plan and a structure of investigation conceive to find answers to research questions. The study adopted a case study approach for data collection.

This research is descriptive in nature and was analyzed through the regression analysis of correlated data and information to obtain relationship between e-government procurement and compliance to the fundamental principles governing public procurement in Burera District during the period of last three years. Both quantitative and qualitative approaches were used to assess, e-government procurement and compliance to fundamental

principles governing public procurement. The design enabled the researcher to quickly collect data using the questionnaire from an extensive area and understand the entire population from a sample.

Study Population and Sample size

According to Cooper and Schindler (2003), a population is referred to the total collection of elements in which the researcher wishes to make inferences. As said by O’Leary (2004), the best way to research any population “is to gather from every element within it and he said that, doing this requires to conduct in-depth research on small, defined and accessible population.

Following the information available on Burera District website, the total employees of the latter based at District office are 84; therefore, the population of this research involves 84 staff from 10 departments. The researcher obtained information from Burera District staff who directly deals with; planning, monitoring, legal department, procurement department, internal auditors of district, Finance, Business Development and Employment Unity, Health unity, good governance unity, social unity, and infrastructures one stop center Department. The information was gathered also from members of district council and contractor’s representatives who signed the contracts during the period from 2017 to 2019. The researcher selected this category of respondents in this study because she believes that

Sample size

they possess the adequate and reliable information and experience on e-Government Procurement practiced in the organization, and its key measurable benefits for enhancing fundamental principles governing public procurement.

The researcher took the entire population because it is affordable. As the study population is small, the entire population is Burera district employees who are supposed to have knowledge/background on the public procurement matter and stakeholders such as contractor’s/supplier’s representatives who signed the contracts during the period from 2017 to 2019 was sampled.

Considering that the number of populations for this study is small (less than 200), the researcher used a census as a strategy to determine the sample size, the entire population of this study was used as sample (Glenn, 2003). The later says that, the census is attractive for a small population and eliminates sampling error in order to provide data in all individuals in the population.

According to Glenn (2003), when there is a small population, the entire population would have to be sampled in order to achieve a desirable level of precision. Owoolabi (2003), said that there is no fixed and inviolate rule on how large your sample should be; only the circumstances that can dictate what number or fraction of population you study.

NO	Names of Department	Number of Respondents
1	Contractors	23
2	District council	5
3	Chief Budget Manager	1
4	Internal auditors of district	2
5	Legal officer	1
6	Members of public tender committee including Procurement officers	7
7	Finance	5
8	Planning Unity	3
9	Business Development and Employment Unity	3
10	Good governance unity	4
9	One stop Center Unity	13
11	Social unity	5
12	Health unity	4
	Total	76

Source: Researcher, (2021)

Sampling procedures

A purposive sampling technique was used in selecting respondents for this study. The purposive sampling technique was appropriate for the study since the researcher selected the respondents who supposed to have knowledge and background on the public procurement matter. Thus, the universal sampling was applied.

Summary, Conclusions and Recommendations

E-Bidding model and compliance to fundamental principles

The analysis of E-bidding has been analyzed through the sub-variables (E-Tendering, E-Evaluation and E-Notification) to assess its relationship to the compliance to fundamental principles governing public procurement of local government entities in Rwanda. All responses provided highlighted a positive trend the first statistical range (strong agree) of 4.67 as a mean with a minimum standard deviation estimated at 0.71 in general.

And also, since its beta sign result obtained from multiple linear regression analysis is positive and statically significant ($\beta = 0.774$, $t = 12.188$, $P < 0.05$), this allowed us to confirm that there is a strong relationship between e-bidding and compliance to fundamental principles in local government entities in Rwanda.

E-Catalogue model and compliance to fundamental principles

In the study E-Catalogue has been analyzed through 2 components namely Commodity Classification and Item Classification to assess its correlated relationship with compliance to fundamental principles governing public procurement of local government entities in Rwanda.

And the results found that all responses provided, highlighted a weak trend of 3.75 as a mean,

With a standard deviation estimated at 1.19. The multiple linear regression analysis has proven that E-Catalogue has weakly correlated with compliance to fundamental principles with independence variable

coefficient of ($\beta = 0.116$, $t = 6.359$) and its statistical result ($P < 0.05$).

E-Contract model and the compliance to fundamental principles

The research study analyzed E-Contract through different components (Contract Management and Contract monitoring and reporting) to assess its correlated relationship with compliance to fundamental principles governing public procurement of local government entities in Rwanda.

All responses provided highlighted a positive trend the first statistical range (strong agree) of 4.22 as a mean with a minimum standard deviation estimated at 0.74 in general.

And also, since its beta sign result obtained from multiple linear regression analysis is positive and statically significant ($\beta = 0.271$, $t = 6.159$, $P < 0.05$), this allowed us to confirm that there is a relationship between e-contract and compliance to fundamental principles in local government entities in Rwanda.

Conclusions

The purpose of this study was to assess the relationship between e-government procurement and compliance to fundamental principles in local government entities in Rwanda using statistical analysis; both descriptive and inferential statistics. The study investigated Burera district to assess the relationship of e-government procurement to enhance the level of compliance to fundamental principles in local government entities in Rwanda

Based on the regression model consisted of three core functions of e-procurement: e-bidding, e-catalogue and e-contract, the study analyzed their relationship with compliance to fundamental principles using a model developed for the analysis. This was basically made to determine the linear combination of the constructs.

The regression result explores the main determinant factors of the compliance of fundamental principles governing public procurement by using variables identified in the model

The study examined the factors of independent variables which influence the increase level of compliance of fundamental principles in local government entities in Rwanda. And that is, the value of R square used to identify how much of the variance in the dependent variables identify by the model. And the model summary depicted that the multiple R (correlation) value of 0.876 (87.6%) indicated a highly positive relationship between the dependent and independent variables and, the overall contribution of the independent variables: E-bidding, e-catalogue and e-contract to the effective compliance to fundamental principles which accounted for 76.7% ($R^2 = 0.767$) of the variation in the dependent variables

The result indicated a highly positive relationship between the dependent and independent variables, the value of R^2 is 0.767, revealing 76.7% variability in the effective compliance of fundamental principles in local government entities as a result of the independent variables. The value of adjusted $R^2 = 0.767$ means that 76.7% of the changes in Y is explained by the independent variables.

The final portion of this research aims to conclude the finding of the study focusing on the core determinants that have significant relation to the increase compliance of fundamental principles in local government entities in Rwanda. These conclusions and recommendations are drawn from the findings obtained from ANOVA Analysis to determine the general significance of the model. The results obtained have proven that the model is strongly significant since the value of p is less than 0.05 and values of (F-critical 2.405($p = 0.000$)) and ($F=15.585$).

The general conclusion based on the findings in the study is that, by using electronic procurement the district compliance is enhanced because through e – bidding, e-catalogue and e-contract, the district are able to process the tenders fast and efficiently and in effectiveness manner, it increases the level of transparency, competition and accountability in public procurement, hence this will boost their compliance.

Recommendation

In order to make effective compliance to fundamental principles in local government entities in Rwanda by using e-government procurement, recommendations below are made basing on general findings of the study:

1. Training to all the procurement staff and persons involved in the e-Government procurement is required in order to provide them with skills and knowledge of e-procurement functionality;
2. Local government entities should mainly focused on development of professional career of staff involved in public procurement and continue to increase their level of compliance in fundamental principles governing public procurement to ensure their sustainability and compliance in the future;
3. The reduction of number of players in approval process in public tender is required in order to reduce delays which can occurs due to the long process.
4. All local government procuring entities (districts) should adopt the entire use of e-Government procurement to enable them expand sourcing scope and hence attract more competent bidders to offer them effective, efficient and competitive services. Contrary, failure to adopt e-Government procurement could adversely impact on their compliance to fundamental principles governing public procurement.

Areas for further research

This thesis research focused on one local government entity, Burera district in specific. The study recommends further research can focus on multiple public or private institutions. Moreover, further research can focus on the seller side or both buyer and seller side, as this one focused on the buyer side only. All those recommended further researches will add significant results and contribution to previous research studies on the adoption of e-procurement in Rwanda.

References

1. Abardeen Group. (2007), Procurement outsourcing. Aberdeen Group Publication and development. Berlin New York: Springer.
2. Barahona, J. & Elizondo, E. A. (2012). The Disruptive Innovation Theory Applied to National Implementations of E-procurement. *Electronic Journal of e-Government* Volume 10 Issue 2 2012;
3. Blind Peer Reviewed International Research Journal Publisher: Global Journals Online ISSN: 2249-4588 & Print ISSN: 0975-5853
4. Brazel, J. & Dang, L. (2008). The Effect of ERP System Implementations on the Management of Earnings and Earnings Release Dates. *Journal of Information Systems*, 22(2)1-21;
5. Cooper and Schindler. (2003). *Research Methodologies*, 2nd edition. New York: Pinkwell publishers
6. Cruz, C. & Marques, R. (2013). Infrastructure public-private partnerships decision, management
7. Davis, F. D. (1986). A technology acceptance model for empirically testing new end – user information systems: theory and results, Ph. D. dissertation. Cambridge, MA: MIT Sloan School of Management;
8. *European Journal of Business and Management* ISSN 2222-1905 (paper) ISSN 2222-2839(online) vol.7, No5, 2015.
9. Gelderman, Ghijsen, P.W., and Brugman, M.J. (2006), Public procurement and EU tendering directives explaining non-compliance, *International Journal of Public Sector Management*, 19(7), 702–714.