

**EFFECT OF E-PROCUREMENT SYSTEM ON THE
PERFORMANCE OF TENDERING PROCESS IN
RWANDA: A CASE S OF RUTSIRO DISTRICT (2017- 2020)**

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Abstract

The general objective of this study was to assess the effect of the e-procurement system on the performance of the tendering process in Rwanda, especially in Rutsiro District. The specific objectives were to find out how the use of a single online portal for stakeholders has increased the competition level of the tendering process in Rutsiro District, to examine the effect of electronic access on information related to the tendering process of Rutsiro District, to assess the impact of access of tenders published and submission of bids on the Cost and Time management of the tendering process in Rutsiro District and to determine the extent to which easy communication between Procuring Entity and Bidders enhance the transparency of Tendering process in Rutsiro District. The target population of the study was the procurement officer in Rutsiro District, the tender committee in Rutsiro District, and bidders of Rutsiro District whose total number amounts to 238. All these categories were given questionnaire copies to assess the effect of e-procurement and the performance e of the Tender process in Rutsiro District. The sample size was 149 and is taken based on the formula developed by Yamane. In conducting this study, stratified random sampling was used for the quantitative approach to select the respondents. This technique allowed the researcher to achieve research objectives. To get there, the researcher distributed questionnaire copies to officials of Rutsiro area in procurement, Finance, tender committee, and bidders of Rutsiro region. After that, data were entered into SPSS 20 to get frequency tables and their related percentages of correlation. A single online portal for stakeholders has a 64.4 percent of effect on the performance of the tendering process in Rutsiro District. The correlation coefficient of 0.803 indicates a high positive relationship between the independent and dependent variables. Electronic access to information has an influence of 37.9 percent on the performance of the tendering process in Rutsiro District. The connection ratio(coefficient) of 0.615 implies that the independent and dependent variables have a medium positive relation. Access of tenders published and submission of bids) has an influence of 59.1 percent on the performance of the tendering process in Rutsiro District. The relationship coefficient of 0.636 implies that the independent and dependent variables have a medium positive connection. Tendering process performance in the same district is significantly influenced by easy communication of e-procurement at 68.2%, according to the R Squared analysis. The government should provide subsidies to encourage bidders, all institutions both Private and Public to join and use E-procurement. For example, they could provide free training on the use of e-procurement systems that is affordable to most people working in private institutions. As a result, more people will be able to attend the training and thus be empowered with knowledge

Keywords: E-Procurement System; Performance; Tendering Process

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Governments around the world are constantly buying goods and services from the private sector, from small everyday expenses to large infrastructure projects. Promoting the procurement way simple and cost-efficient is a major challenge that every government faces. Regardless of the energies, the public procurement manner is often long, compound, and cost much. To report the problem, many régimes around the world have implemented digitized processes to make procurement easier, faster, and more transparent, and to reduce opportunities for bribery (World Bank Global report, July 2017).

Electronic procurement systems have helped governments across the world to reduce prices then increase transparency in the procurement process. From 2014, Rwanda started the process of becoming the first country in Africa to realize those benefits, by associating with a South Korean firm to develop its e-procurement scheme. The government launched a pilot system in mid-2016 and rolled out e-procurement nationwide in mid-2017 (World Bank Global report, July 2017).

The manual procurement system has been in use not only in the private sector but also in the government state corporations. Public procurement is an important function of government (Thai, 2001). In its place of sufficient requirements for goods, works, systems, and services in an appropriate method (Vaidya, Sajeev, and Callender, 2006), the Kenya procurement system had proved to be long, cumbersome, and time-consuming.

Universally, e-procurement has obtained many people, particularly with the arrival of technology. The United States of America for instance had rapid development of e-procurement (Reddick, 2004).

Like Africa reported, the perception of electronic procurement is just acquiring popularity in the public section. To solve the problems of accountability weakness and transparency in procurement activities in the civic segment, Most African countries have resorted to legal reforms and adoption of procurement. In Tanzania to put in practice, soft procurement systems have allowed soft-sharing, soft-advertisement, electronic-submission, e-evaluation, e-contacting, e-payment, e-communication, and e-checking and monitoring to ensure all public procurement activities are conducted online (Gabbard, 2010).

In Kenya, The Kenyan government made it mandatory for procurement of all public goods, works and services to be procured through online platforms. For County governments in particular, there is a directive for all procurement and finance operations to be conducted online. For instance, the government introduced integrated financial management information system (IFMIS) that is mandatory for all 47 counties. IFMIS was brought to recover governance by giving a good time financial evidence and successfully agendas, express budgets. It also develops accuracy and answerability and works as a warning to dishonesty and deception (USAID, 2008).

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E-procurement has many returns (Nawi et.al, 2016) for example charge investments and augmented efficacy. Faster government procurement processes and greater transparency in comparison with traditional procurement methods are also advantages for the application of the e-procurement system. Moreover, (Nawi et.al, 2016) state that, applying an e-procurement system provides higher transparency compared to traditional tendering.

Rendering to Rankin (2006) in his research agreed that e-procurement decreases paperwork, contributing to lower administration costs. He added that costs such as intra-company mail, phone charges, postage, photocopying, and storage which organizations used to deal with do no longer exist. He added that sot-procurement controls the whole tendering-to-payment progression, growing efficiency and removing needless costs. The Rwandan regime has put in place some creativities to modernize its government tendering structure to convey it into line with the essential ethics of transparency, competition, economy, efficiency, fairness, and accountability (Tashobya,2015) Rwanda Public Tendering Leaders state that electronic procurement can support the GoR to influence the above-mentioned ethics.

The electronic tendering was thrown in August 2016. It was called “Umucyo” which signifies “transparency” in English. the pilot program of the new e-procurement system commenced in 8 government institutions (“Rwanda public procurement authority; Rwanda development board; MINECOFIN; Ministry of Justice, Rwanda revenue authority; Rwanda social security board, banks and insurance companies”) Umucyo is the only one system for all public procurement process in the country, it is utilized by public and individual societies.

According to Matunga, Denish Ateto (2013), It was evident that lack of accountability, maximized economy, and efficiency, reduced time used to source commodities, and lower administration costs as the major traditional procurement problems which had been reduced by e-procurement

A survey is conducted by Eei et al. (2012) explored the benefits of e-procurement in Malaysian SMEs. Matunga et al. (2013), assessed the effect of e-procurement on efficient procurement in public hospitals a case study of Kenya hospital in Kisi; Uddin (2015), identified the benefits of using e-procurement over traditional procurement in the case of Bangladesh. Furthermore, studying e-procurement benefits stayed a popular topic for researchers continually. Another study was conducted by Diane. G (2020), identified the Adoption of e-procurement in Rwandan Public institutions; a case study of the Ministry of Finance and Economic Planning.

However, there is no study related to the effect of e-procurement adoption in Rwanda; a case study of Rutsiro District on the performance of the tendering process. Therefore, the author believes that analyzing the effects of using e-procurement in Rwanda, especially in Rutsiro District is significant.

Moreover, given that Public Institutions in Rwanda have been using traditional procurement for a quite long time until mid-2017 when the e-procurement system was introduced in 131 Public Institutions including all districts where Rutsiro District started using Umucyo system, it can be expected that the adoption of e-procurement can face some challenges linked with its usage.

Therefore, there was a need to fill this gap by assessing how e-procurement use in Rwanda can affect the performance of the tendering process in Rutsiro District. Further, the findings of this research added significant empirical information and findings to previous studies on the effect of e-procurement on the performance of tendering process and challenges associated with its implementation in Rwanda. It is for that reason this research was conducted to shed light regarding the effect of the e-procurement system on the performance of the tendering process in Rwanda, especially in Rutsiro District from 2017 to 2020.

Research Objectives

To find out how the use of a single online portal for stakeholders has increased the competition level of the tendering process in Rutsiro District; To examine the effect of electronic access on information related to the tendering process of Rutsiro District; To assess the impact of access of tenders published and submission of bids on the Cost and Time management of the tendering process in Rutsiro District; To determine the extent to which easy communication between Procuring Entity and Bidders enhances the transparency of tendering process in Rutsiro District.

Research design

The study used the descriptive research design with two mixed methods (Quantitative and qualitative). The descriptive research seeks to describe the event as it exists in electronic procurement in Rwanda. This research design provides the structure of data collection. The analytical method and the synthetic method were also used respectively to analyze, interpret the doctrine and case law about the subject to draw some recommendations. The quantitative component involved the administration of questionnaires to the bidders while the qualitative components covered interview which was addressed to the Chief Budget Manager, Corporate Division Manager, Finance staff, Procurement Officer, and tender committee members of this District who participated in the tendering process from 2017-2020.

Target population

The target population of the study was the procurement officer in Rutsiro District, the tender committee in Rutsiro District, and bidders of Rutsiro District. All these categories were given questionnaire copies to assess the effect of e-procurement and the performance of the Tender process in Rutsiro District. The total population was 238.

Findings

Single Online portal for stakeholders and competition level of the tendering process in Rutsiro area: The first objective of the study was to find out how

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the use of a single online portal for stakeholders has increased the competition level of the tendering process in Rutsiro Quarter. This section discusses findings presentation, analysis, and interpretation. The scale went from Strongly Disagree to Disagree, Neutral, Agree, and Strongly Agree. Questionnaire responses were given as frequencies/percentages. In this regard, correlation and regression tests were used.

Table 1: Single online portal for stakeholders and competition of bidders

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total
Electronic access enhances transparency in the submission of bids.	63 42.3%	68 45.6%	3 2.0%	10 6.7%	5 3.4%	149 100%
The electronic system does not increase competition because it is not accessible to everyone.	47 31.5%	81 54.4%	6 4.0%	7 4.7%	8 5.4%	149 100%
Electronic access to tenders reduces the level of tendering as only those with internet can apply.	67 45.0%	58 38.9%	9 6.0%	3 2.0%	12 8.1%	149 100%
Electronic access reduces the number of bidders because it requires some level of expertise to use the platform.	63 42.3%	74 49.7%	2 1.3%	7 4.7%	3 2.0%	149 100%
Electronic access enhances my competitiveness by providing constant access to a new list of tenders in my domain.	91 61.1%	38 25.5%	7 4.7%	11 7.4%	2 1.3%	149 100%

Source: Field data, September 2021

The results in Table 1 show the respondents' views on how the use of a single online portal for stakeholders has increased the competition level of the tendering process in the same District. The outcome shows that 42.3% strongly agree, 45.6% agree, 2.0% were neutral, 6.7% disagree and 3.4% strongly disagree that electronic access enhances transparency in the submission of bids. Also, the results show that 31.5% strongly agree, 54.4% agree, 4.0% were neutral, 4.7% disagree and 5.4% strongly disagree that electronic system does not increase competition which explained that not accessible to everyone. Besides, the results show that 45.0% strongly agree, 38.9% agree, 6.0% were neutral, 2.0% disagree and 8.1% strongly disagree that electronic access to tenders reduces the frequency of tendering as only those with internet can apply. In the same vein, the findings show that 42.3% strongly agree, 49.7% agree, 1.3% were neutral, 4.7% disagree and 2.0% strongly disagree that electronic access reduces the number of bidders because it requires some level of expertise to use the platform. Additionally, the findings show that 61.1% strongly agree, 25.5% agree, 4.7% were neutral, 7.4% disagree and 1.3% strongly disagree that electronic access enhances my competitiveness by providing constant access to the new list of tenders in my domain.

One interviewed bidder stated, "*Single online portal for stakeholders seems to be considerably faster than previous supply chain management. I'm now ready to share reusable bids because my data are kept digital form saves me enough time, which increases my ability to compete compared to the chain traditionally.*"

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E-procurement adoption has to be managed well to reach the firm's performance goals. There are several key success factors related to both the competence of the e-procurement service provided by an online auction intermediary and the organization's internal capabilities. One vibrant success factor relating to e-procurement is the technical capability of the system (Johnston, 2005).

Findings of electronic access to information and tendering process in Rutsiro District.

The second objective of the study was to examine the effect of electronic access on information related to the tendering process of Rutsiro District. This section discusses findings presentation, analysis, and interpretation. The scale went from Strongly Disagree to Disagree, Neutral, Agree, and Strongly Agree. Questionnaire responses are given as frequencies/percentages. In this case, correlation and regression tests were used.

Table 2 : Electronic access to information and tendering process in Rutsiro District

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Total
E-procurement leads to access to information in Rutsiro District	94 63.1%	46 30.9%	2 1.3%	3 2.0%	4 2.7%	149 100%
Staff members of Rutsiro District provide bidder's response to tenders clarification requested in e-procurement to enhance easy communication.	75 50.3%	50 33.6%	16 10.7%	3 2.0%	5 3.4%	149 100%
Rutsiro District encourages fairness in electronic procurement to reduce fraud in tendering.	58 38.9%	63 42.3%	14 9.4%	8 5.4%	6 4.0%	149 100%
With e-procurement there is no direct contact between the staff of the procuring entity and the bidders, corruption is reduced.	107 71.8%	33 22.1%	2 1.3%	3 2.0%	4 2.7%	149 100%
E-procurement allows bidders to clarify any errors they find and fix them before the deadline.	113 75.8%	25 16.8%	2 1.3%	3 2.0%	6 4.0%	149 100%

Source: Field data, September 2021

The results in Table 2 show the respondents' views on electronic access to information related to the tendering process of Rutsiro District. The findings show that 63.1% strongly agree, 30.9% agree, 1.3% were neutral, 2.0% disagree and 2.7% strongly disagree that E-procurement leads to access to information in Rutsiro District. Besides, the findings show that 50.3% strongly agree, 33.6% agree, 10.7% were neutral, 2.0% disagree and 3.4% strongly disagree that staff members of Rutsiro District provide bidder's response to tenders clarification requested in e-procurement to enhance easy communication. Also, the findings show that 38.9% strongly agree, 42.3% agree, 9.4% were neutral, 5.4% disagree and 4.0% strongly disagree that Rutsiro District encourages fairness in electronic procurement to reduce frauds in tendering. In the same perspective, the findings show that 71.8% strongly agree, 22.1% agree, 1.3% were neutral, 2.0% disagree and 2.7% strongly disagree that with e-procurement there is no direct

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contact between the staff of the procuring entity and the bidders, corruption is reduced. Additionally, the findings show that 75.8% strongly agree, 16.8% agree, 1.3% were neutral, 2.0% disagree and 4.0% strongly disagree that E-procurement allows bidders to clarify any errors they find and fix them before the deadline.

The above was corroborated by one bidder who said, "E-procurement helps in saving duration whilst being reliable. Transaction frequency is improved as a result of digital task ability to handle, which enables and facilitates the procurement, Umucyo eliminates time-consuming everyday jobs, allowing me to focus on more important activities."

The World Bank report (2016) elucidates that E-procurement systems have several advantages compared to traditional paper-based procurement procedures. First, an e-procurement system creates a single online portal for stakeholders to access information on procurement opportunities, learn about the procurement process, and obtain documents including technical specifications, user-friendly templates, and the terms and conditions for all types of public contracts.

Findings on the access of tenders published and submission of bids to the Cost and Time management of the tendering process in Rutsiro District

The third objective of the study was to assess the impact of access of tenders published and submission of bids on the Cost and Time management of the tendering process in Rutsiro District. This section discusses findings presentation, analysis, and interpretation. The scale went from Strongly Disagree to Disagree, Neutral, Agree, and Strongly Agree. Questionnaire responses are given as frequencies/percentages. In this case, correlation and regression tests were used.

Table 3 : Access to tenders published and submission of bids to the Cost and Time management of the tendering process in Rutsiro District

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
Bidders save time and can conduct quick, accurate bid analyses thanks to e-procurement.	70 47.0%	67 45.0%	8 5.4%	1 0.7%	3 2.0%	149 100%
The procuring entity can evaluate its options and choose the bidder who not only offers the best price, but also the best terms.	84 56.4%	44 29.5%	17 11.4%	2 1.3%	2 1.3%	149 100%
The company was able to quickly narrow down its options by utilizing an e-procurement system.	71 47.7%	61 40.9%	11 7.4%	5 3.4%	1 0.7%	149 100%
Bidder doesn't want to waste time traveling to the procuring entity to bid, which could result in being late and being rejected.	94 63.1%	48 32.2%	4 2.7%	1 0.7%	2 1.3%	149 100%
Bidders are no longer paying transportation fees to reach the procuring entity and place their bids; all of these expenses will be saved.	112 75.2%	22 14.8%	11 7.4%	1 0.7%	3 2.0%	149 100%

Source: Field data, September 2021

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The results in Table 3 show the respondents' views on the impact of access of tenders published and submission of bids to the cost and Time management of the tendering process in Rutsiro District. The findings show that 47.0% strongly agree, 45.0% agree, 5.4% were neutral, 0.7% disagree and 2.0% strongly disagree that Bidders save time and can conduct quick, accurate bid analyses thanks to e-procurement. Moreover, the findings show that 56.4% strongly agree, 29.5% agree, 11.4% were neutral, 1.3%disagree and 1.3%strongly disagree that the procuring entity can evaluate their options and choose the bidder who not only offers the best price but also the best terms. Additionally, the findings show that 47.7% strongly agree, 40.9% agree, 7.4% were neutral, 3.4% disagree and 0.7% strongly disagree that the company was able to quickly narrow down its options by utilizing an e-procurement system. Furthermore, the findings show that 63.1% strongly agree, 32.2% agree, 2.7% were neutral, 0.7% disagree and 1.3% strongly disagree that Bidder doesn't want to waste time traveling to the procuring entity to bid, which could result in being late and being rejected. Besides, the findings show that 75.2% strongly agree, 14.8% agree, 7.4% were neutral, 0.7% disagree and 2.0% strongly disagree that Bidders are no longer paying transportation fees to reach the procuring entity and place their bids; all of these expenses will be saved.

One bidder said, "*Access of tenders published and submission of bids save a significant amount of time and money when compared to the situation before its implementation as a result of the use of e-procurement in the procuring process. It becomes easier and more efficient compared with the situation before its adoption*".

Another interviewee said, "*When I used e-procurement, I realized that I had been unnecessarily buying items, utilizing volume purchasing, and incurring the associated paper-based system costs*".

According to Eadie et al (2007), an organization that uses E-procurement benefits from Price reduction in tendering. Empirical studies carried out in the United States of America indicated that the two most important measures for the success of procurement processes are cost and time.

Findings on easy communication and transparency of tendering process in Rutsiro district

The fourth objective of the study was to determine the extent to which easy communication between Procuring Entity and Bidders enhances the transparency of Tendering process in Rutsiro District. This section discusses findings presentation, analysis, and interpretation. The scale went from Strongly Disagree to Disagree, Neutral, Agree, and Strongly Agree. Questionnaire responses are given as frequencies/percentages. In this case, correlation and regression tests were used.

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Table 4 : Easy communication and transparency of tendering process in Rutsiro district

	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree	Total
With the use of e-procurement, there is easy communication between Rutsiro District and Bidders.	114 76.5%	26 17.4%	5 3.4%	1 0.7%	3 2.0%	149 100%
Rutsiro District helps bidders to be aware of the flow of information to enhance transparency in tendering.	101 67.8%	42 28.2%	2 1.3%	2 1.3%	2 1.3%	149 100%
Rutsiro District encourages competitive bidding and sourcing to increase the performance of Tendering process.	78 78%	62 41.6%	8 5.4%	0 0.0%	1 0.7%	149 100%
E-procurement does not permit any form of communication between the procurement entity and bidders unless the requirement is specifically stated in the bid document.	101 67.8%	36 24.2%	8 5.4%	1 0.7%	3 2.0%	149 100%
Bidders are not permitted to contact the procurement entity under any circumstances. E-procurement (umucyo) is conducted in the public interest.	94 63.1%	45 30.2%	2 1.3%	1 0.7%	7 4.7%	149 100%

Source: Field data, September 2021

The results in Table 4 show the respondents' views on the extent to which easy communication between Procuring Entity and Bidders enhances the transparency of Tendering process in Rutsiro District. Also, the findings show that 76.5% strongly agree, 17.4% agree, 3.4% were neutral, 0.7% disagree and 2.0% strongly disagree that with the use of e-procurement, there is easy communication between Rutsiro District and Bidders. In addition to that, the findings show that 67.8% strongly agree, 28.2% agree, 1.3% were neutral, 1.3% disagree, and 1.3% strongly disagree that Rutsiro District helps bidders to be aware of the flow of information to enhance transparency in tendering. Besides, the findings show that 78% strongly agree, 41.6% agree, 5.4% were neutral and 0.7% strongly disagree that Rutsiro District encourages competitive bidding and sourcing to increase the performance of Tendering process. In the same vein, the findings show that 67.8% strongly agree, 24.2% agree, 5.4% were neutral, 0.7% disagree and 2.0% strongly disagree that E-procurement does not permit any form of communication between the procurement entity and bidders unless the requirement is specifically stated in the bid document. Moreover, the findings show that 63.1% strongly agree, 30.2% agree, 1.3% were neutral, 0.7% disagree and 4.7% strongly disagree that Bidders are not permitted to contact the procurement entity under any circumstances. E-procurement (umucyo) is conducted in the public interest.

According to one participant “*e-procurement has transparency, although all communication is centralized and can be made accessible to administration, stakeholders and members of the general public as needed*”. Another respondent agreed that there is “*high transparency and high visibility, most information is available and published in the system. There is equal access to information to all bidders everything is clearer and more accountable*”

Croom and Brandon-Jones (2007) found that governance structure is one key success factor of e-procurement implementation management. E-procurement makes the procurement process more transparent and helps organizations achieve good governance impacts

Conclusion

The general objective of this research was to assess the effect of the e-procurement system on the performance of the tendering process in Rwanda, especially in the Rutsiro District from 2017 to 2020. The specific objectives were to find out how the use of a single online portal for stakeholders has increased the competition level of the tendering process in Rutsiro District, to examine the effect of electronic access on information related to the tendering process of Rutsiro District, to assess the impact of access of tenders published and submission of bids on the Cost and Time management of the tendering process in Rutsiro District and to determine the extent to which easy communication between Procuring Entity and Bidders enhance the transparency of Tendering process in Rutsiro District. It was concluded that a single online portal for stakeholders does not increase the competition level of the tendering process in Rutsiro District, There is no effect of electronic access on information related to tendering process of Rutsiro District, Access of tenders published, and submission of bids do not affect Cost and Time management of the tendering process in Rutsiro District and easy communication between Procuring Entity and Bidders do not enhance the transparency of Tendering process in Rutsiro District. Finally, all hypotheses were rejected

Suggestions for further study

Regarding future researchers, the researcher wishes to suggest that they conduct studies on similar topics to involve the public in evaluating the same impact to obtain a more representative of the population. Besides, the researchers are also recommended to carry out studies on: Influence of e-procurement on bidders' satisfaction level in Rwanda; Effect of system user's perception on the performance of public institutions in Rwanda.

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