EFFECTS OF PUBLIC PROCUREMENT PROCESS COMPLIANCE ON PROCUREMENT PERFORMANCE IN RWANDA: A CASE OF DISTRICTS OF SOUTHERN PROVINCE OF RWANDA.

Authors: [1] UWARUREMA Tharcille*;

[2] Dr. AKUMUNTU Joseph, PhD

[1] Master of Science in Procurement and Supply Chain Management

[2] School of Graduate Studies, University of Kigali, Rwanda

ABSTRACT :

The study assessed the relationship between procurement process compliance and procurement performance of public procuring entities in Rwanda; with case of southern province Districts in Rwanda. The specific objectives were to assess the effects of procurement planning on procurement performance of public procuring entities in Rwanda; to analyze the effects of procurement procedures compliance on procurement performance of public procuring entities in Rwanda and to assess the effects of procurement transparency on procurement performance of public procuring entities in Rwanda. Target sample size comprised 94 persons selected purposively from the departments of procurement, finance and customer services. The questionnaires and documentation research techniques were used during data collection. The findings revealed that procurement performance in public procuring entities was explained by probability of 0.0124 for procurement planning; by probability of 0.007 for procurement procedures compliance; by probability of 0.0139 for procurement transparency and that respectively expected to 1.24% & 0.7% & 1.39% and of probabilities, which are less than 5%. Basing on simple regression theories each factor of procurement process compliance is presenting the good fitness variability by each probability that is less than 5%. The R^2 =0.9904 and Adjusted R2 =0.9901, show the goodness of fit of the estimated model. Up to 99.04% of long run appreciation in procurement performance is influenced by changes in procurement planning; procurement process compliance; procurement ethics as implemented by public procuring entities. This leads to confirm that there is significant relationship between procurement process compliance with their observed indicators (factors) and procurement performance in public procuring entities in Rwanda.

1. INTRODUCTION

The Government of Rwanda for the financial year 2018-2019 has lost funds due to non-compliance to public procurement process. Inefficient planning of procurement, long process of procurement process led to lack of funds for some projects from donors where it was identified 18 cases of projects worth 112,552,600,100 Frw; inefficient planning in identifying unnecessary items which led to idle assets worth Frw 17,210,605,457; Poor sourcing of contractors where it was incurred a loss 2,297,606,521Frw that resulted from the failure of contractors to execute the contracted works; poor contract management where it was paid invoices amounting to 14,391,086,018 Frw with delays ranging between 2 and 725 days.

These delays proliferate the risk of delaying and abandoning the contracts; poor contract management and monitoring which led to a total of 65 contracts valued at Frw 107,939,885,720 reported as either delayed or abandoned; Poor contract management and control where most entities did not recover amount of advance payment and performance securities worth 3,534,806,068 Frw (OAG, 2019). For Rwanda, ethics in public procurement is guided by the following major principles: transparency, competition, economy, efficiency, fairness and accountability. Unsuccessful bidders, after being notified of the evaluation results, have the rights to appeal to those results.

Procurement ethics, like many other aspects of management, are top-down. This means that behaviors of top leaders or corporate staffs, and their ability to take decisions is influencing the staffs at lower levels. It was therefore better that those higher-ranking staffs in an entity show good behaviors, fairness and be accountable in order to ensure that the procurement is

well conducted (RPPA, 2016). Unethical behaviors in currently existing in Rwandan procurement system. For the RPPA audit conducted in the last year of 2018-2019, it was identified many entities which awarded tenders at a price higher than the cost budgeted in procurement plan and the incremental cost varied between 23% and 865% of the planned cost attributable to the failure to conduct market research on price before awarding these tenders. Many of the tender documents published were having discriminatory criteria which led to some bidders be rejected from competition; Many of the tenders were evaluated without fairness or without respecting the requirements set in the tender documents or lack of transparency in evaluation; many cases of incompetent bidders awarded the tenders; Almost public procurement officials are not held accountable for their misconduct and this favors their irresponsibility which lead to unnecessary wastage of the public resources. This study assessed the effects of compliance government's procurement regulations on procurement performance in Rwanda specifically in the districts.

2. Objectives of the study
The main objective was to assess effects of public procurement process compliance on procurement performance in Rwanda.
The special objectives of this study were:
i) To assess the effect of procurement planning on procurement performance.
ii) To evaluate the effect of procurement procedures compliance on procurement performance.
iii) To examine the effect of procurement transparency to performance in procurement.

3. Research hypothesis
H_0: The procurement process compliance does not have relationship with procurement performance.

H_1: The procurement process compliance has relationship with procurement performance.

4. Theoretical review
Introduction
This study considers the agency theory that is having relation with procurement system including the procurement planning, the neoclassic theory that is related to procurement transparency and the theory of regulatory compliance where procurement performance was based on.

Agency theory
In this area of procurement, the theory, will be used by stakeholders involved in procurement to better understand their usefulness in taking procurement related decisions in their cooperatives. This research project was based on Jensen's and Mackling's Agency theory that states that, an agency relationship is a contract under which one or more persons (principals) engages another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent. When executing the tasks within the principal-agent relationship, the agent must choose actions that have consequences for both the principal and the agent. Since these outcomes can be either negative or positive for all actors, the chosen action of the agent affects the welfare of both. This relationship called principal- agent, is needed because the later called agent is having more needed skills and ability to undertake procurement tasks in an organization (Cane, 2004).

However, a very serious challenge to the principal, is the better choice to select an agent. Consistent with the tenets of agency theory, the view adopted here assumes that agents, purchasing officials, are rational, self-interested utility maximizes (Alchian, 1972). However, it is not assumed that these agents behave selfishly and do so with guile. In other words, slightly contrary to transaction cost economics framework, although it is assumed that people are opportunistic in the sense that they may avoid in a self-interested manner by trying to minimize effort if it fulfils their needs, it is not assumed that they willingly misrepresent or lie about that effort (Arrowsmith S,2010).

Neoclassic theory
In neoclassic theory of consumer and firm behavior an assumption is made that both consumers and firms have perfect information. This leads to markets with prices at equilibrium and optimal welfare levels. (Jehle & Reny, 2011) But in reality, consumers and suppliers don't have perfect information always, hence we cannot develop a similar equilibrium theory for situations where the agents have imperfect information unless we take account of the strategic opportunities available to the agents involved (Jehle & Reny, 2011). Asymmetric information can be present in public procurement situations. According to Perloff (2008) a situation of asymmetric information can be present whenever one party of a transaction knows something that the other party doesn't. In the procurement process this can be at several stages and

the information asymmetry can be present between different actors. One example where asymmetric information may be present is when the procuring authority is to write the specification for the contract documents.

5. Empirical Review
This section dealt with studies conducted and done by others in the field of procurement compliance and procurement ethics. The empirical shall look at the main objectives which covered the independent variables of the study which are procurement planning, sourcing or procurement system, contract management, transparency, and procurement performance.

Procurement planning
Procurement planning is one of the primary functions of procurement with a potential to contribute to the success of local government operations and improved service delivery. They can define it as a function that sets in motion the entire acquisition/procurement process of local governments (Basheka, 2010). Planning expressed as a concept and function is probably among the extensively talked about concepts in the management literature. It is a function that forms the foundation for the rest of management functions. When planning is properly conceived and implemented, it can serve as an important mechanism for extracting, distributing and allocating resources (James, 2004).

Procurement transparency
The term procurement transparency implies openness in procurement processes, procedures and adherence to lay down rules. Transparent procurement and corruption go hand in hand (Coppier and Piga, 2006).

Procurement Performance
Mukopi (2015) alluded that to ensure effective performance measurement, the measurement goals must represent the functional goals and metrics chosen must reflect a balance between the financial and non-financial measures that can help in decision making. In reference to Wittig (1999) ameliorations in procurement is having beneficial impacts of the country's overall economic situation. For many

6. Conceptual framework
Conceptual framework shows and presents the main roles and factors of literature variables. This study consists two research variables, which are procurement process compliance as independent

Planning for procurements plays the role of setting the all the steps that was involved. In other words, it is the main engine of the procurement cycle. Measuring from accountability and the participation, an error in planning would totally implicate local administration of the country.
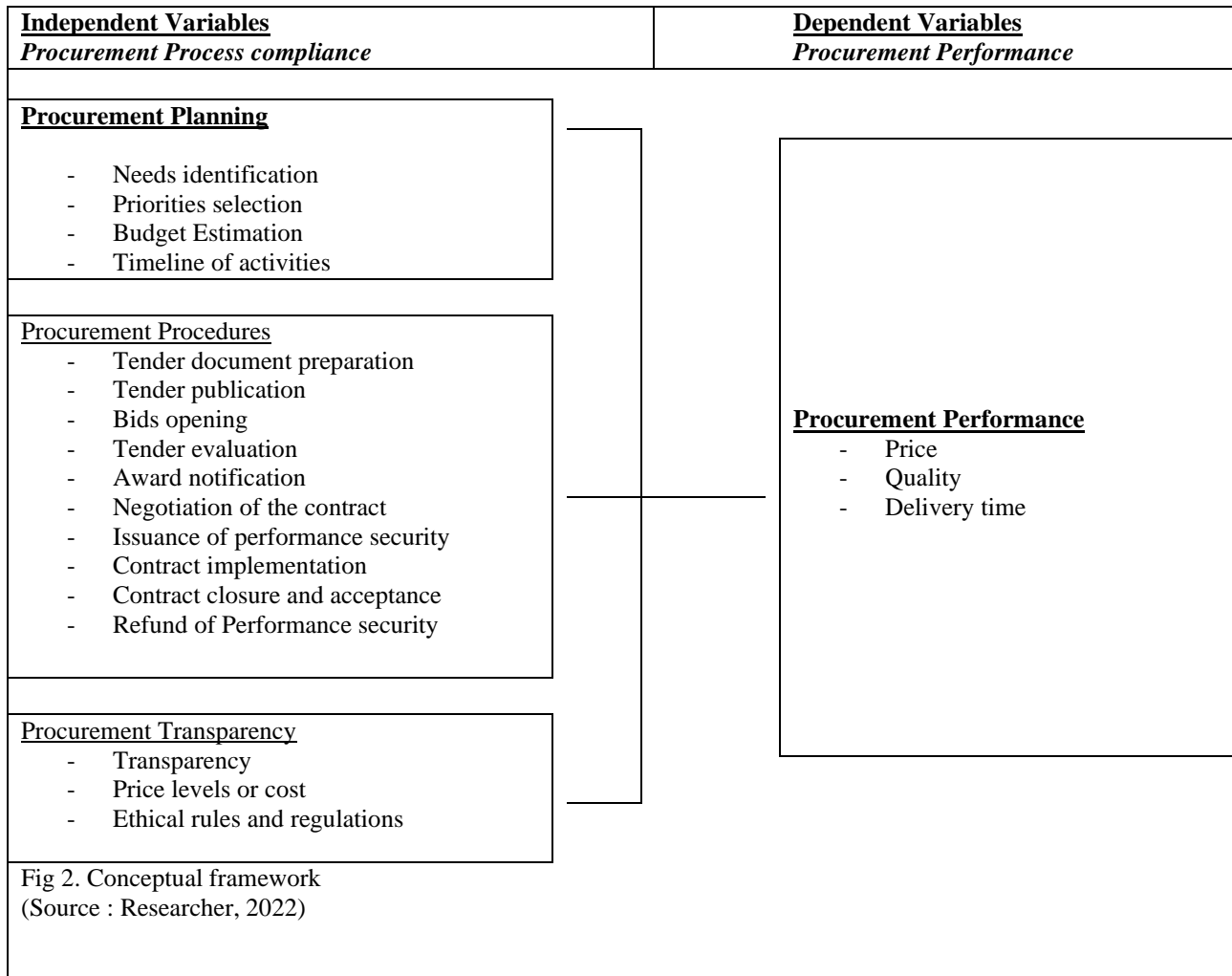
The complete procurement cycles
The complete procurement cycle begins to planning of procurement, a step closely linked with the budget process, then followed by initiation of procurement, bidder selection, notification of contract award, procurement commitment (contract signing) contract administration, receipt and acceptance and the storage and inventory management of supplies received. The law regulating the procurement is directly involved in procurement. The cycle of procurement is defined by its starting from identification of needs and its end of recording the procured supplies. The role and function of the head of procuring entity is to ensure close coordination with the budget process, commitment control, finance and expenditure management and audit (European Journal of Logistics, 2018).

countries, government resources are used in procurement of goods, services or work infrastructures (Basheka, 2010).

Procurement performance is an outcome of purchasing effectiveness and purchasing efficiency (Venkatesh et. al., 2003). Performance delivers the way for assessing how the institutions perform in order to achieve their goals. It also provides a guide on the improvement needed in the procurement (Gelderman, et. al., 2005). Gauging the functioning of the procurement function results into cost minimization, quality of supplied products, profits, lead time and competitive advantage as noted by (Basheka, 2010).

variables and the performance to procurement as dependent variable:

Independent Variables	Dependent Variables
Procurement Process compliance	*Procurement Performance*

Procurement Planning

- Needs identification
- Priorities selection
- Budget Estimation
- Timeline of activities

Procurement Procedures
- Tender document preparation
- Tender publication
- Bids opening
- Tender evaluation
- Award notification
- Negotiation of the contract
- Issuance of performance security
- Contract implementation
- Contract closure and acceptance
- Refund of Performance security

Procurement Performance
- Price
- Quality
- Delivery time

Procurement Transparency
- Transparency
- Price levels or cost
- Ethical rules and regulations

Fig 2. Conceptual framework
(Source : Researcher, 2022)

7. Research Design And Methodology

This study was conducted through a descriptive survey research design. Descriptive survey is to collect data from a population for the purpose to determine the current status of that population vis a vis of different variables. This study employed a stratified purposive sampling in selecting the respondents from the population of this study which comprises the departments of procurement, finance and customer service department in 8 Districts from Southern Province in Rwanda. The study employed the model and formula of Cochran (1963:75). The sample size (n) was adjusted using the following Equation:

$n = \frac{N}{1+(N \times \epsilon^2)}$ (Eq 3.1) where:

N: is the total population

ϵ : is the accepted sampling error

n: is the sample size

The sampling error is determined based on the sampling confidence level. In this study, the confident level to be considered was 95% and hence the sampling error is 5% or 0.05.

The sample size: n= $\frac{N}{1+(N \times \epsilon^2)} = \frac{120}{1+(120 \times 0.05^2)} = \frac{120}{1.3} =$ **94**

Both random and purposive sampling technique were used in this study. This study employed a stratified purposive sampling in selecting the respondents from the department of finance, procurement department and the customer service department and the selected respondents surely represented the entire population. Therefore, data collection techniques of the study were questionnaire and documentation research techniques. In order to make effective measurement of variables; it is required to present the regression analysis model that the researcher used by calculating; analyzing and interpreting the relationship among variables through the collected data, as follows:

- The procurement plan (or **P1**), Procurement procedures(**P2**), the procurement transparency (or **P3**) as independent variables;
- The procurement performance (or **P4**) which is lead time, quality products, cost minimization as dependent variables;
- **βo** is constant and **β1; β2;** and **β3** are parameters of equation model;
- **εt** is the error term of equation model

These are specifically stated as simple regression model that is evaluated and is represented as follows:

Y(P4)= βo + β1(P1) + β2(P2)+ β3(P3)+ εt

Log (P4)=β₀+β₁Log(P1)ₜ₁+β₂Log(P2)ₜ₂+β₃Log(P2)ₜ₃ +εₜ;

$$Log (P4)=\beta_0+\beta_1 Log(P1)_{t1}+\beta_2 Log(P2)_{t2}+\beta_3 Log(P2)_{t3}+\varepsilon_t;$$

Then the above equation is constructed from generated model set as:

$Y= \beta_0 + \beta_1 X_{it1} + \beta_2 X_{iit2} ++ \beta_3 X_{iit3} + \varepsilon_t$ And/ or

$LogY= \beta_0 + \beta_1 LogX_{it1} + \beta_2 LogX_{iit2} + \beta_3 LogX_{iit3} + \varepsilon_t$.

Therefore, the above equation model provides the findings in figures as statistical results to be interpreted by basing on the regression analysis, with these following important coefficients:

- **Sig(P-Value)** is significance probability value;
- **R^2** is Regression squared;
- **AR^2** is Regression squared Adjusted;
- **ANOVA** is Analysis of Variance.

8. RESEARCH FINDINGS

This study concerned 94 respondents who were supposed to respond on the effects of procurement process compliance on procurement performance. The demographic profile of the respondents covers their gender, age, marital status, education level. The following table discusses the distribution of respondents by gender, where the table indicates how different Districts have respected and made in action the government policy related to the gender policy implementation:

Table 1 : Distribution of respondents by gender

Gender of respondents	Number of respondents	Percentages
Male	56	59.6%
Female	38	40.4%
Total	**94**	**100**

Source: Researcher; Field Data, 2022

According to table 1 that was generated from respondents according to their gender (sex) where in different Districts, the male gender is represented by 56 respondents corresponding to 59.6% of all respondents and then female gender is represented by 38 corresponding to 40.4% of all respondents.The following table analyzes the education level of respondents, where this table shows how in the districts, the respondents present the good understandings of what they work daily according to their education levels as follows:

Table 2: Distribution of respondents by education level

Education of respondents	Number of respondents	Percentages
Bachelor's degree	67	71.2
Master's degree	27	28.8
Total	**94**	**100**

Source: Researcher; Field Data, 2022

According to table number 2, that shows the education level of respondents, the masters' level is presented by 27 respondents of all participants which corresponds to 28.8%, and the bachelor's degree holders in different domains of study was represented by 67 which corresponds to 71.2% of all respondents. Since the majority of the respondents have the bachelor's level, it implies that the respondents are significantly educational qualified in implementation of procurement rules and regulations and their responses were relied. The following table summarizes the marital status of respondents as follows:

Table 3: Distribution of respondents by marital status

Marital status of respondents	Number of respondents	Percentages
Single	32	34
Married	55	58.5
Divorced	0	0
Widowers	7	7.5
Total	**94**	**100**

Source: Researcher; Field Data, 2022

The requested respondents classed according to their marital status, 32 were single representing 34% of all respondents, 55 were married representing 58.5% of all respondents, 7 were widowers representing 7.5% of all respondents. There was no divorced among the respondents. Considering that the married respondents dominate others, this means that they work carefully in their respective domains of activities and hence their response are viable. The following table shows the age of respondents, where this table shows the maturity of respondents thus, they provide the specific and positive harvest:

Table 4 : Distribution of respondents by age

Age of respondents	Number of respondents	Percentages
21-30	24	25.6
31-40	48	51
41-50	18	19.2
51-65	4	4.2
Total	**94**	**100**

Source: Researcher; Field Data, 2022

The majority of the respondent's range between 31-40 years which means that they are matured enough and they are able to give the meaningful information required in this research.

Findings on the effects of procurement planning to procurement performance

The following table 5 represents the perceptions of respondents related to the first research objective by showing the factors that determine the effects of procurement planning on procurement performance in Rwanda.

Table 5: The effects of procurement planning on procurement performance

Statement	SA	A	N	D	SD	Mean	Standard deviation	Standard error
1. The needed items are well identified so that it will be delivered items of good quality which meet client's satisfaction.	48	29	6	9	2	4.191489362	1.060296122	0.109361195
2. The selection of priority items is done appropriately so that there will be no idle items.	32	50	0	7	5	4.031914894	1.062074736	0.109544645
3. The estimation of the budget of the tender is well done and tender awarded when the budget is available and secure; to avoid any future lack of funds during contract execution.	70	15	2	2	5	4.521276596	1.034134862	0.106662867
4. Timeline of procurement activities is well planned and dates are realistic to avoid any eventual delay to deliver the procured items.	54	36	0	4	0	4.489361702	0.714589601	0.07370429

Source: Researcher, field data 2022

The table 5 shows the results about 4 items that were assessed about effects of procurement planning on procurement performance of public procuring entities in Rwanda. The results showed an overall very strong mean of 4.309 meaning that the respondents, strongly agree that the procurement planning has strong effect on the procurement performance of public procuring entities with positive and very high correlational standard deviation of 0.96777383. With a very small standard error of 0.099818249, it shows that the sample mean is a more accurate reflection of the actual population mean. The first item has shown that, the procurement planning helps PEs to well identify items so that it will be delivered items of good quality which meet client's satisfaction. It proves that respondents strongly agreed with strong mean of 4.191489362 and with positive and very high correlational standard deviation of 1.060296122. The second item has shown that, the procurement planning helps PEs in selection of priority items so that there will be no idle items. It proves that respondents strongly agreed with strong mean of 4.031914894 and with positive and very high correlational standard deviation of 1.062074736. The third item has shown that, the procurement planning helps PEs in estimation of the budget of the tender and tender awarded when the budget is available and secure to avoid any future lack of funds during contract execution. It proves that respondents strongly agreed with strong mean of 4.521276596 and with positive and very high correlational standard deviation of 1.034134862. The fourth item has shown that, the procurement planning helps PEs to set timelines of

procurement activities to avoid any eventual delay to deliver the procured items. It proves that respondents strongly agreed with strong mean of 4.489361702 and with positive and high correlational standard deviation of 0.714589601.

Findings on the effects of procurement procedures compliance to procurement performance

The following table 6 represents the perceptions of respondents related to the second research objective by showing the factors that determine the effects of procurement process compliance to procurement performance in Rwanda.

Table 6: The effects of procurement procedures compliance to procurement performance

Statement	SA	A	N	D	SD	Mean	Standard deviation	Standard error
. The tendering documents are well prepared with all items well specified and evaluation criteria well elaborated in order to ensure that requested items will be delivered.	44	39	8	3	0	4.31915	0.764997237	0.07890344
. The bidders are given enough time to prepare their bids to ensure that all potential bidders respond to the tender invitation.	60	23	0	4	7	4.32979	1.176730461	0.12137048
. The submission and opening of bids is done fairly and in transparency to ensure that there is no change to the bid's prices and all bidders who submitted bids are evaluated.	58	27	3	3	3	4.42553	0.944586861	0.097426696
. The evaluation is well done following the requirements of evaluation which are set in the tender document to ensure that qualified bidders are awarded the tender.	65	20	0	9	0	4.5	0.912870929	0.094155447
. All the bidders are notified of the outcomes from evaluation with a summary on the motives why he/she has been not successful bidder.	30	48	10	0	6	4.02128	1.005134383	0.103671696
. Contract is well negotiated following the prices at the market to ensure that the contract is signed at the cost which is not high.	75	10	2	4	3	4.59574	0.965191484	0.0995519
. The performance security is submitted before contract execution to ensure that the contract will be executed and safely complete as planned.	10	80	0	4	0	4.02128	0.528310828	0.054491101
. Contract is well managed and monitored efficiently to ensure that there are no delays.	52	38	0	0	4	4.42553	0.8736201	0.090107033
. The reception of goods/ services/ works is done with all necessary inspections on the quality to ensure that the supplied items/services meet the technical specifications in the contract.	80	10	4	0	0	4.80851	0.49245044	0.050792385
The performance security is refunded when the contractor has performed well during execution of contract or it is seized in case of poor contract execution to ensure that the provisions of the law governing public procurement are respected	29	58	0	0	7	4.08511	0.990921961	0.102205796

Source: Researcher, field data, 2022

The table 6 shows the results from about 10 items that were assessed about effects of procurement process compliance on procurement performance of public procuring entities in Rwanda. The results showed an

overall very strong mean of 4.353191489 meaning that the respondents, strongly agree that the procurement process has strong effect on the procurement performance of public procuring entities with positive and very high correlational standard deviation of 0.865481468. With a very small standard error of 0.089267597, it shows that the sample mean is a more accurate reflection of the actual population mean. The first item has shown that, the procurement process helps PEs to prepare well the tendering documents with all items well specified and evaluation criteria well elaborated in order to ensure that items of requested quality will be delivered. It proves that respondents strongly agreed with very strong mean of 4.31915 and with positive and very high correlational standard deviation of 0.764997237. The second item has shown that, the procurement process helps PEs to ensure that the bidders are given enough time to prepare their bids and that all potential bidders (financially and technically) respond to the tender invitation. It proves that respondents strongly agreed with very strong mean of 4.32979 with positive and very high correlational standard deviation of 1.176730461. The third item has shown that, the procurement process helps PEs to ensure that submission and opening of bids is done fairly and in transparency to ensure that there is no change to the bid's prices and all bidders who submitted bids are evaluated. It proves that respondents strongly agreed with very strong mean of 4.42553 and with positive and very high correlational standard deviation of 0.944586861. The fourth item has shown that, the procurement process helps PEs to ensure that the evaluation is well done following the requirements of evaluation which are set in the tender document to and that qualified bidders are awarded the tender. It proves that respondents strongly agreed with very strong mean of 4.5 and with positive and very high correlational standard deviation of 0.912870929. The fifth item has shown that, the procurement process helps PEs to ensure that all the bidders are notified of the outcomes from evaluation with a summary on the

motives why he/she has been not successful bidder. It proves that respondents strongly agreed with strong mean of 4.02128 and with positive and very high correlational standard deviation of 1.005134383. The sixth item has shown that, the procurement process helps PEs to ensure that the contract is well negotiated following the prices at the market and that the contract it is signed at the cost which is not high. It proves that respondents strongly agreed with very strong mean of 4.59574 and with positive and very high correlational standard deviation of 0.965191484. The seventh item has shown that, the procurement process helps PEs to ensure that the performance security is submitted before contract execution so that the contract will be executed and complete safely as planned. It proves that respondents strongly agreed with strong mean of 4.02128 and with positive and high correlational standard deviation of 0.528310828. The eighth item has shown that, the procurement process helps PEs to ensure that the contract is well managed and monitored efficiently so that there are no delays. It proves that respondents strongly agreed with very strong mean of 4.42553 and with positive and high correlational standard deviation of 0.8736201. The ninth item has shown that, the procurement process helps PEs to ensure that the reception of goods/ services/ works is done with all necessary inspections on the quality to ensure that the supplied items/services meet the technical specifications in the contract. It proves that respondents strongly agreed with very strong mean of 4.80851 and with positive and low correlational standard deviation of 0.49245044. The tenth item has shown that, the procurement process helps PEs to ensure that the performance security is refunded when the contractor has performed well during execution of contract or it is seized in case of poor contract execution to ensure that the provisions of the law governing public procurement are respected. It proves that respondents strongly agreed with strong mean of 4.08511 and with positive and high correlational standard deviation of 0.990921961.

Findings on the effects of procurement transparency on procurement performance

The following table 7 represents the perceptions of respondents related to the first third research objective by showing the factors that determine the effects of procurement transparency to procurement performance in Rwanda.

Table 7: The effects of procurement transparency to procurement performance

Statement	SA	A	N	D	SD	Mean	Standard deviation	Standard error
. There is transparency process for selection and evaluation of bidders to ensure that selected bidders are competent and qualified.	40	52	0	2	0	4.382978723	0.606530464	0.062558841

Item						Mean	Std Dev	Std Error
. All stakeholders are involved in planning for procurement and preparation to ensure that procured items are those really needed by users.	33	42	5	7	7	3.925531915	1.175368729	0.121230028
. Procuring entity advertises tenders in newspapers of wide circulation and websites to ensure that all bidders are invited to bid.	64	27	0	2	1	4.606382979	0.706621298	0.072882422
. Procurement guidelines and rules are known to all bidders to ensure equity to all bidders.	37	47	4	2	4	4.180851064	0.938573225	0.096806437
. There are specific and clear requirements relating to goods and services to be procured to allow fair and open competition among competitors	45	35	2	6	6	4.138297872	1.150979609	0.118714482
. There are standard bidding documents that incorporate technical specifications	42	32	0	20	0	4.021276596	1.145150818	0.118113288

Source: Researcher, field data, 2022

The table 7 shows the results from about 6 items that were assessed about effects of procurement transparency on procurement performance of public procuring entities in Rwanda. The results showed an overall strong mean of 4.209219858 meaning that the respondents, strongly agree that the procurement transparency has strong effect on the procurement performance of public procuring entities with positive and very high correlational standard deviation of 0.95387069. With a very small standard error of 0.09838425, it shows that the sample mean is a more accurate reflection of the actual population mean. The first item has shown that, the procurement transparency helps PEs to ensure the transparency process for selection and evaluation of bidders and that selected bidders are competent and qualified to fulfil the contractual obligations. It proves that respondents strongly agreed with very strong mean of 4.382978723 and with positive and high correlational standard deviation of 0.606530464. The second item has shown that, the procurement transparency helps PEs to ensure that all stakeholders are involved in planning for procurement and preparation and that the procured items are those really needed by users. It proves that respondents had tendency to agree with strong mean of 3.925531915 and with positive and very high correlational standard deviation of 1.175368729. The third item has shown that, the procurement transparency helps PEs to ensure that tenders are advertised in newspapers of wide circulation and websites so that all bidders are invited to bid and hence tenders awarded to potential bidders. It proves that respondents agreed with very strong mean of 4.606382979 and with positive and high correlational standard deviation of 0.706621298. The fourth item has shown that, the procurement transparency helps PEs to set procurement guidelines and rules known to all bidders so that equity to all bidders is ensured. It proves that respondents agreed with strong mean of 4.138297872 and with positive and high correlational standard deviation of 0.938573225. The fifth item has shown that, the procurement transparency helps PEs to ensure that there are specific and clear requirements relating to goods and services to be procured to allow fair and open competition among competitors. It proves that respondents agreed with very strong mean of 4.606382979 and with positive and high correlational standard deviation of 1.150979609. The sixth item has shown that, the procurement transparency helps PEs to ensure there are standard bidding documents that incorporate technical specifications. It proves that respondents agreed with strong mean of 4.021276596 and with positive and high correlational standard deviation of 1.145150818.

Estimated research hypotheses

H_0: The procurement process compliance does not have relationship with procurement performance.

H_1: The procurement process compliance has relationship with procurement performance.

Confidence interval=95%

Table 8: Presentation of regression summary

	Coefficients B	Standard Error	t-Stat	P-value (significance)	Lower boundary 95%	Upper boundary 95%
Intercept	-0.02105967	0.040702209	-0.51741	0.60614	-0.101921716	0.05980237

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Procurement Planning	0.217891302	0.099818249	13.13249	0.0124	0.184928851	0.250853753
Procurement Procedures compliance	0.61666738	0.089267597	51.38419	0.007	0.592825076	0.640509683
Procurement Transparency	0.135143797	0.09838425	10.15027	0.0139	0.108692596	0.161594998

Source: Researcher, field data, 2022

Table 9: Model summary analysis

Regression Statistics	
Multiple R	0.995238359
R Square	0.990499392
Adjusted R Square	0.990182705
Standard Error	0.095823365
Observations	94

Source: Researcher, field data, 2022

Table 10. ANOVA table analysis

	df	Sum of squares (SS)	Mean square (MS)	F	Significance F
Regression	3	60.18630231	20.0621	3127.693	0000
Residual	90	0.577291069	0.006414		
Total	93	60.76359338			

Source: Researcher, field data, 2022

For testing whether variables are correlated or not, it is better to find the division and variation of Sum of Squares. Therefore, the variables significantly correlated at regressive level. Therefore, the equation model provides the findings in figures as statistical results, which was interpreted by basing on the regression analysis, with these following important coefficients: Then the following equation constructed from generated model set as well as the following:
$Y (P4) = \beta o + \beta 1 (P1) + \beta 2(P2) + \beta 3(P3) + \varepsilon t$
P1: Procurement planning

P2: Procurement procedures compliance
P3: Procurement transparency
$\beta o = -0.02105967$; $\beta 1 = 0.217891302$; $\beta 2 = 0.61666738$; $\beta 3 = 0.135143797$; $\varepsilon t = 0.095823365$
P1; P2; P3 stand for t-values in the table of regression summary.
P1= 13.13249; P2= 51.38419; P3= 10.15027.
Y=-0.02105967+0.217891302(13.13249) + 0.61666738(51.38419) + 0.135143797(10.15027) + 0.095823365= 35.995

Conclusions

The findings reveal that in long run, the procurement performance in public procuring entities is explained by probability of 0.0124 for procurement planning; by probability of 0.007 for procurement procedures compliance; by probability of 0.0139 for procurement transparency and that respectively expected to 1.24% & 0.7% & 1.39% and of probabilities, which are less than 5%. Basing on simple regression theories each factor of procurement process compliance is presenting the good fitness variability by each probability that is less than 5%. The R^2 =0.9904 and Adjusted R^2 =0.9901, show the goodness of fit of the estimated model. Up to 99.04% of long run appreciation in procurement performance is influenced by changes in procurement planning; procurement procedures compliance; procurement

ethics as implemented by public procuring entities. Therefore, the researcher can conclude by saying that the research hypotheses including: H1.1: Procurement planning has statistical effects towards procurement performance; H1.2: Procurement procedure compliance has statistical effects towards procurement performance; H1.3: Procurement transparency has statistical effects towards procurement performance" all were tested, verified and then they are confirmed referring to the statistical (regression analysis) findings. This leads to confirm that there is significant relationship between procurement process compliance with their observed indicators (factors) and procurement performance in public procuring entities in Rwanda.

Recommendations (suggestions)

The procurement planning helps to identify the needed items of good quality for meeting the client satisfaction, to select the priority items for avoiding to

purchase the idle items, to estimate the budget for keep away from any future lack of funds during contract execution and to set a timeline for meeting the

deadline, right time. The procurement process compliance with the law and regulations will help the public entities to ensure that requested items will be delivered because of the specifications and the evaluation criteria well prepared in tender document.

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