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Original Article

Relationship between bid preparation audit and service delivery in the education sector of Central Equatoria State, South Sudan. A cross-sectional study.

David Garang Gongich*, Fred Kisule, kateregga salongo
School of Postgraduate Studies and Research, Team University.

Abstract

Background:
Bid preparation, audit, and service delivery in the education sector are closely linked through ensuring transparency, accountability, and efficiency in procurement processes. This study aims to determine the relationship between bid preparation audit and service delivery in the education sector of Central Equatoria State, South Sudan.

Methodology:
A descriptive cross-sectional design. A stratified random sampling technique was used to select a sample size of 103 from a population of 140 employees. Data was collected using questionnaires, interviews, and documentary review. Descriptive statistics were used to describe the various demographic variables. Correlation and Linear regression analysis techniques were used to determine the relationship between bid preparation and service delivery.

Results:
This study included 103 respondents**,** 3(3.5%) of the respondents who had a diploma as their highest level of education, 19(18.6) had a degree, 69(67.4) had a postgraduate degree, and 11(10.5) had other qualifications. 2 (2.9%) who had worked for 1-4 years, the respondents had adequate experience with procurement audit and service delivery in the entity, since about 98% had worked for more than 5 years with the central Equatoria state. Most of the respondents agreed that there was a significant correlation, r=0.339, p = 0.000. Linear regression analysis showed that 11.1% of the variability in service delivery (R^2 = .111) was explained by the bid preparatory process audit.

Conclusion:
The bid preparation process audit significantly affects service delivery, especially when the audit recommendations cover procurement planning, bid management, bid opening, and bid document implementation by management.

Recommendation:
The accounting officer should conduct a market price survey to guide the development of the procurement budget.

***Keywords**: Bid Preparation Audit, Service Delivery, Central Equatoria State, South Sudan.*
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***Corresponding Author:** David Garang Gongich*
***Email:** garangdavidg@gmail.com*
School of Postgraduate Studies and Research, Team University.

Background of the study

The relationship between bid preparation, audit, and service delivery in the education sector of Central Equatoria State, South Sudan, is rooted in the broader framework of public procurement auditing, which seeks to promote transparency, accountability, and value for money in the use of public resources. Section 7 (j) of the PPDA Act (2013) mandates the Authority to institute procurement or disposal audits during the bid preparatory process, contract execution, and after completion of the contract, as may be required, to ensure compliance with procurement laws and regulations. Similarly, the State PPDA Regulation (2016) section 28 requires the head of internal audit departments in procuring and disposing entities to audit procurement procedures and payments to ensure that all goods, services, and works are properly ordered, received, examined, and paid for in accordance with the regulations and the Internal Audit Manual, and that value for money has been achieved. The essence of bid preparation audit, therefore, lies in evaluating whether public procurement entities, including those in the education sector, adhere to the established guidelines and standards aimed at ensuring transparency, competitiveness, and efficiency in procurement processes (Thai, 2004; Hunja, 2003). However, despite the presence of such regulatory provisions, compliance remains a challenge. The PPDA audit report on Central Equatoria State (2021) noted irregularities in the procurement process, such as the irregular extension of the bidding period without approval from the Contracts Committee, failure to send Best Evaluated Bidder Notices to bidders, and deliberate elimination of bidders so that only one bidder is eventually evaluated and selected. Such non-compliance practices during bid preparation undermine fair competition, accountability, and transparency, leading to inefficiencies

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that ultimately affect service delivery. According to Hui et al. (2011), technocrats' engagement in non-compliance with procurement policies and procedures negatively impacts organizational performance and the quality of public services delivered. Therefore, ensuring adherence to bid preparation audit requirements enhances responsiveness, reliability, and cost-effectiveness, which are critical elements of service delivery (Parasuraman et al., 1985; Walker & Keniger, 2002). Strengthening bid preparation audits in the education sector of Central Equatoria State is thus essential for improving efficiency, promoting value for money, and ensuring better service delivery outcomes. This study aims to determine the relationship between bid preparation audit and service delivery in the education sector of Central Equatoria State, South Sudan.

Methodology

Research design

The study used a cross-sectional study design where both quantitative and qualitative approaches were adopted to determine the extent to which procurement auditing has influenced service delivery in Central Equatoria State, South Sudan. The quantitative approach was used to quantify findings on the study variables using mainly the correlation and regression techniques, while the qualitative approach was used to draw an explanation of bid preparation and service delivery in Central Equatoria State, South Sudan.

Population of study

The study was carried out on an accessible total population of 140 respondents as per the Central Equatoria State, South Sudan data database of June 2024. This comprised 111 user department staff, 1 Accounting Officer, 3 procurement and Disposal Unit staff members and 5 contracts committee members, and 20 contractors in the Department of Education in Central Equatoria State, South Sudan.

Sample size and selection technique

The study selected 103 respondents based on Krejcie and Morgan's (1970) sampling guidelines.

Table 1: Sample size of the respondents

Population category	Total population	Sample size	Techniques
Accounting Officer	1	1	Purposive
Contract Committee	5	5	Purposive
User Department staff	111	79	Simple random
Procurement and Disposal Unit	3	3	Purposive
Contractors	20	15	Simple random
Total	**140**	**103**	

Source: Primary data (2025)

The study employed simple random sampling and purposive sampling. In using simple random sampling, the study employed the lottery approach, where names are written on a tag and put in a basket, from which one tag is picked until the required number is reached (Amin, 2005). Purposive sampling was used to select the Accounting Officer, Contract Committee members, and PDU staff who are most knowledgeable and experienced in procurement audits and service delivery in the Education department of Central Equatoria

Data collection methods

The researcher ensured that both qualitative and quantitative data were collected using s survey method. There are different survey approaches, but this study used the questionnaire, interviews, and Documentary review.

Questionnaire survey

The questionnaire was used based on the fact that the variables could not be observed, such as views, opinions, perceptions, and feelings of the respondents on bid preparation and service delivery. The questionnaire was also used because respondents can read and write the questions, and it is likely to be less expensive for data collection.

Interviewing method

The Accounting Officer and Head of the PDU in the Central Equatoria State were interviewed to obtain in-depth information on procurement methods and attainment of value for money. The interviews were structured and comprised a set of issues on bid preparation and service delivery to draw data, and the same questions were posed to the respondents using a guide to conduct the interview.

Data collection instruments

The study used a questionnaire, interview schedule, and Documentary review checklist for data collection.

Self-administered questionnaire

A total of 102 self-administered closed-ended questionnaires encompassing background information, bid preparation, and service delivery were employed. The study questionnaire was scored on a 5-point Likert scale ranging from 5= strongly agree, 4= agree, 3 = not sure, 2= disagree, and 1= strongly disagree. The questionnaire was used for all categories of respondents.

Interview schedule

The interview consisted of a set of questions on bid preparatory auditing, contract performance, and contract completion auditing, and their influence on service delivery in the Education Department of Central Equatoria State.

Documentary review checklist

The study used a documentary checklist developed for this study, focusing on procurement audit reports on the Education Department of CES by PPDA to obtain secondary data on procurement process compliance, audit recommendations, and several audit recommendations.

Pretesting of data collection instruments

The study questionnaire was pilot tested on a sample of 15 respondents, and adjustments were made to enhance its reliability to establish the reliability and validity of the study instrument.

Validity of the study instrument

The validity of the instrument was tested using the Content Validity Index (CVI) using expert judgment, taking only variable scoring above 0.70 accepted for Social Sciences (Amin, 2005). The CVI will be measured using the formula:

CVI = Number of items declared valid
Total number of items

Reliability of the study instrument

The internal consistency or reliability of the instrument was measured using Cronbach's alpha coefficient, taking only variables with an alpha coefficient value of more than 0.70 accepted for social research (Amin, 2005).

Table 2: validity and reliability results

Variable	CVI	Cronbach's Alpha	Items
Procurement audit	.775	.726	20
Service delivery	.750	.746	15

Source: Primary data, 2025

Data analysis

Quantitative analysis

Quantitative data were presented in the form of descriptive statistics using means and standard deviations for each of the variables used in the study. Pearson's coefficient r and significance p tested at the 95% and 99% confidence limits were used to test if there was any significant relationship between the independent and dependent variables. A positive correlation coefficient r indicates a direct positive relationship between the variables, while a negative correlation coefficient indicates an inverse, negative relationship between the two variables.

The regression analysis was used to test the extent to which the independent variables predicted the variance in the dependent variable using ANOVA statistics of adjusted R^2 values, beta, t values, and significance values (Amin, 2005). Specifically, the adjusted R^2 value gave a statistical indicator of the percentage to which the independent variable predicted the variance in the dependent variable.

Qualitative analysis

Qualitative data analysis involved the identification and transcription of the qualitative findings into themes. The themes on each of the variables were then sorted and aligned to the research objectives, from which lessons learnt on bid preparation and service delivery were deduced for reporting in a narrative form.

Results

Response rate

A total of 103 respondents were targeted for both the questionnaire and interview guide. However, 103 questionnaire responses and two interviews were obtained, giving it a response rate of 100%. Amin (2005) avers that a response rate of 50% and above is a good representation of the study population from which the sample was selected.

Background information about the respondents

This subsection presents the characteristics of the respondents accessed and used in the study in relation to position in the Education department of Central Equatoria state, education level, and time worked with Central Equatoria state, as these determine their experiences with procurement audit and service delivery in Central Equatoria state.

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Table 3: Position the respondents in relation to the procurement function

Position in PDE	Frequency	Percent
Contracts Committee	32	31.4%
User Department	56	54.7%
PDU	15	14%
Total	**103**	**100.0**

Source: Primary data, 2025.

The finding in Table 3 shows that although the majority of 54.7% of the respondents were users, the responses were solicited from the Contracts committees and PDU representatives at Central Equatoria state. The views are therefore of users who are audited and procurement function coordinators at the level of PDU and the contracts committee.

Table 4: Level of education of the respondent

Level of education	Frequency	Percent
Diploma	4	3.5
Degree	19	18.6
Post Graduate	69	67.4
Others	11	10.5
Total	**103**	**100.0**

Source: Primary data, 2025.

Table 4 shows that other than the 3(3.5%) of the respondents who had a diploma as their highest level of education, the respondents had adequate education to understand the questionnaire items on procurement audits and service delivery since 96% had attained a degree or above.

Table 5: Time worked with Central Equatoria State

Time worked with the Central Equatoria state	Frequency	Percent
1-4 Years	3	2.9
5-9Years	26	25.2
10-14 Years	26	25.2
15+	48	46.7
Total	**103**	**100.0**

Source: Primary data

The findings in Table 5 show that other than the 2 (2.9%) who had worked for 1-4 years, the respondents had adequate experience with procurement audit and service delivery in the entity, since about 98% had worked for more than 5 years with the central Equatoria state.

Bid preparatory process audit, and service delivery in the education department of CES.

The first objective of the study was to establish the relationship between the Bid preparatory process audit and service delivery in the Education department of CES. Bid preparatory process audit was measured using 15 items scored on a 5-point Likert scale ranging from 5= strongly agree to 1 = strongly disagree. This subsection presents the study findings on the Bid preparatory process, Audit, and service delivery from the questionnaire, interview, and document review.

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Table 6: Descriptive results for the bid preparatory process audit

Requirements	SDA	DA	NS	A	SA	MEAN	S.D
1. Procurement audits are prepared in your state for bid preparations.	2.3	4.7	5.8	54.7	32.6	4.10	.882
2. Procurement Audits are prepared in accordance with alternative specifications standards.	5.8	5.8	8.1	50	30.2	3.93	1.071
3. Procurement audits are prepared to examine the specification of requirements.	1.2	3.5	4.7	58.1	32.6	4.17	.770
4. Procurement audits are prepared to examine the adequacy of the budgeting process	4.7	7	7	62.8	18.6	3.84	.968
5. Central Equatoria state develops adequate functional specifications as a result of the procurement audits	2.3	11.6	4.7	55.8	25.6	3.91	.990
6 Central Equatoria State develops adequate technical specifications as a result of the procurement audits	4.7	7	7	53.5	27.9	3.93	1.027
7. Central Equatoria state examines compliance with legal provisions in bid planning.	7	9.3	9.3	55.8	18.6	3.70	1.096
8. Central Equatoria State audits appropriateness of bid documents.	4.7	7	2.3	62.8	23.3	3.93	.980
9. Procurement Audits are carried out on the compliance with the bid period requirement.	20.9	65.1	7	4.7	2.3	2.02	.826
10. Procurement Audits are carried out on receipt of the bid process.	39.5	27.9	9.3	20.9	2.3	2.19	1.232
11. Audit is carried out on bid opening	4.7	7	2.3	60.5	25.6	3.95	.993
12. Audits are conducted on the provision of bid security.	2.3	11.6	9.3	55.8	20.9	3.81	.976
13. Procurement audits are conducted on post-qualification and negotiations.	2.3	11.6	19.8	47.7	18.6	3.69	.985
14. Procurement audits have ensured that issued standard bidding documents have no omissions.	2.3	2.3	4.7	74.4	16.3	3.97	1.089
15. Procurement audits have ensured that rules for drafting individual solicitation documents, using standard solicitation documents	20.9	32.6	14	30.2	2.3	2.60	1.191

Source: Primary data

Table 6 findings reveal the respondents agreed that bid preparatory process audits affect service delivery, with Procurement audits being prepared in your state in bid preparations - works (mean = 4.10), bid opening (mean = 3.95), and specification of requirements (mean = 4.17), and bidding documents have no omission (mean 3.97). The findings suggest that the Central Equatoria State staff credit bid preparation process has an effect on service delivery in Central Equatoria State of South Sudan. However, a document review of the latest audit reports reveals that the audit reports did not address matters of requirements identification in the entity (compliance audit report on Central Equatoria 2021), an omission that affects the comprehensiveness of the procurement audit report.

In an interview, when asked to comment on the contributions of the bid preparatory process on service delivery, interviewee I noted:

"Post qualification and negotiation are not taken seriously by user departments, resulting in omissions of critical items on the procurement bidding documents despite several audits. Secondly, users generally continue to find it difficult to accurately specify requirements and instead resort to using commonly used brand names".

Interviewee II had this to say:

"The audits have helped management understand that if items are not put in the plans during bidding, then it becomes a query to implement them. Furthermore, management has now appreciated the role of better specifications and now enforces that users develop specifications".

From the quantitative, interview, and document review findings, it can be deduced that there are still some constraints with the identification and specification of requirements, leading to omissions of key requirements in the procurement bidding process.

Table 6 further shows that whereas the respondents agreed that procurement Audits ensured that only an Audit is carried out on bid opening in the financial year (mean = 3.95), they disagreed that Procurement Audits are carried out on the compliance of bid period requirements. (mean = 2.02) and Procurement Audits are carried out on receipt of the bid process (mean = 2.19). In an interview, when asked whether the audits have improved service delivery in Central Equatoria state, Interviewee II noted:

"Most procurements now do not comply with the appropriate bid period requirement as a condition of government funding, and in view of impending audits, but not limited to that. Bid period requirement has greatly reduced as a result of the audits".

Interviewee I, however, opines to the contrary and notes that:

"Despite the audits, major gaps remain in the preparation of procurement bids, and as users don't rely on any formal schedule to ascertain the average time of delivery". The interview and quantitative findings point to an inconclusive position on the influence of the bid preparatory process, audit, and service delivery in Central Equatoria, as one interviewee credits the bid audits for fostering compliance and service delivery, while the other disassociates bid audits from improvements in the procurement process.

A document review on procurement bidding "found that five (5) procurements had been planned for; however, they were they did not flow a schedule for delivery after the contract had been awarded (Central Equatoria compliance audit report on, 2021).

In an interview, when asked to comment on procurement bid audits and service delivery, interviewee I rejoined:

"Most procurements now comply with the appropriate procurement methods in view of impending audits".

"The rules of drafting bidding documents are most of the time adhered to because they will be examined during the audits. However, in rare circumstances when procurements are done in a hurry gaps in the bidding documents are evident". A document review however reveals that "compliance on bidding documents was assessed to be 71%, a rating which was satisfactory except for failure to state bid validity periods/ stating bid validity period in days in the solicitation documents in the thirteen (13) procurements carried out in central Equatoria state.

The inferences from the quantitative, interview, and document review findings suggest significant and positive progress on compliance with bidding documents as a result of the audits. However, some critical omissions still constrain compliance with bid document considerations, especially on the bid validity period, and require bid securing declaration forms from bidders.

Correlation between the bid preparatory process, audit, and service delivery.

The relationship between the bid preparatory process, audit, and service delivery was tested using. Pearson's coefficient statistics are tabulated below.

Table 7: correlation matrix between the bid preparatory process, audit, and service delivery.

		Bid preparatory process Audit	Service delivery
Bid Preparatory Process Audit.	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	103	
Service delivery	Pearson Correlation	.339**	1
	Sig. (2-tailed)	.000	
	N	103	103
**. Correlation is significant at the 0.01 level (2-tailed).			

$P \leq 0.05$
Source: Primary data

According to Table 7, the bid preparatory process audit has a statistically weak positive relationship ($r = 0.339^{**}$, $p = 0.000$) with Service delivery. The finding infers that the bid preparatory process Audit affects Service delivery, especially when the audit recommendations cover areas of contract award and evaluation of bidders.

Model summary

Table 8 presents the model summary for the regression analysis of the bid preparatory process audit and service delivery. The findings of the model summary indicate that the bid preparatory process audit variable explained about 11.1% of the variability in the service delivery ($R^2 = .111$).

Table 8: Model summary for the linear relationship between the bid preparatory process audit and service delivery.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.334[a]	.111	.098	.57541

a. Predictor :(Constant), bid preparatory process Audit.

Discussion

Bid preparatory process audit, and service delivery in the education department of CES.

The study found that procurement audits were credited for enhancing service delivery in the Education department of CES, through specification of procurement planning, planning bid management, and bid opening. The findings lend support for the Jensen &Meckling (1976) Agency theory, which avers that the efforts to put in place mechanisms such as audits foster the attainment of the principal's objectives by controlling the opportunistic behavior of the technocrats in the Education department of CES entrusted with public resources (IIA, 2006). The bid preparatory process audit, therefore, serves to control the Education department of CES's opportunistic behaviors and compel them to comply with the identification of requirements, development of specifications, and budgets, use of appropriate methods and bidding documents, which guarantees the attainment of 3Es in public procurement.

The correlation results reveal that Bid preparatory process audits significantly affect service delivery in the Education department of CES, especially when the audit recommendations cover areas of procurement planning, planning bid offers, bid management, and bid opening. The relationship between the Bid preparatory process audit and service delivery in the Education department of CES echoes Ambe and Badenhorst-Weiss' (2012) view that efforts to assess procurement risk and provide for remedies from the professional consulting process of an audit nature significantly contribute to the attainment of value for money. In contrast, Zubcic and Sims (2011) note that frequent audits and increased penalties lead to greater levels of service delivery with procurement law, while Hui et al. (2011) noted that the possibility of audit review is also a strong incentive for procurement officials to abide by the procurement rules. Guided by the study findings and support from the literature, this study affirms that the audits on the Bid preparatory process audit significantly influence service delivery in public entities of South Sudan.

Conclusion

The study concludes that the Bid preparatory process audit significantly affects service delivery, especially when the audit recommendations cover procurement planning, bid management, bid opening, and bid document implementation by management.

Recommendation

1. The accounting officer should conduct a market price survey to guide the development of the procurement budget.
2. The PDU should state the bid validity period in the solicitation documents and in the required format to avoid administrative reviews.
3. The audit questions and criteria should review, rate, and recommend on the identification of works, supplies, and services as deemed appropriate.

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List of abbreviations

CES: Central Equatorial state
CTB; Central Tender Board
CVI: Content Validity Index
IGG: Inspector General of Government
MDAs: Ministries, Departments, and Agencies
MoLG: Ministry of Local Government
OAG: Office Of the Auditor General
OECD: Organization for Common Economic Development
PAC: Public Accounts Committee
PALMA: Procurement and Logistics Management Association
PDEs: Procurement and Disposal Entities
PDU: Procurement and Disposal Unit
PPDA: Public Procurement and Disposal of Public Assets
VFM: Value for Money

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Conflict of interest

The author did not declare any conflict of interest.

Author contributions

David Garang Gongich was the principal investigator.
Fred Kisule supervised the research.

Data availability
The data is available upon request.

Informed consent
The respondents who participated in the study consented.

Author biography
David Garang Gongich holds a Master's degree in Procurement and Logistics Management from Team University.
Fred Kisule is a lecturer at Team University.

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