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Original Article

Factors Influencing the Effectiveness Of Internal Auditing In Public Sector Bureaus: A Study In Sidama Region, Ethiopia.

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Abstract

Background: In developing countries like Ethiopia, effective internal audit systems are vital for ensuring accountability and efficient use of public resources. Internal audit functions provide independent evaluations of internal controls, risk management, and governance processes — key elements for sound public financial management. Despite ongoing reforms by the Ethiopian government to strengthen these systems, challenges remain in implementation and effectiveness. In the newly established Sidama Region, rapid administrative restructuring, rising demand for services, and limited financial resources have intensified the need for robust internal audit practices. Understanding how internal audit contributes to accountability and resource management in this context is, therefore, essential to improving public sector performance.

Methods: The study investigated the influence of six independent variables independence of internal audit, objectivity of audit, internal audit quality, auditor competence, management support, and adherence to internal audit standards on the dependent variable, internal audit effectiveness. A quantitative research approach was adopted to ensure objectivity and enable statistical analysis of the relationships among these variables. The study utilized a structured questionnaire with items measured on a five-point Likert scale, allowing respondents to rate their level of agreement. A stratified random sampling technique was applied to ensure proportional representation of different public sector institutions. In total, 167 questionnaires were distributed, and 141 valid responses were returned, yielding an 84% response rate. Given that the dependent variable (internal audit effectiveness) was measured using an ordinal Likert scale, ordered logistic regression was employed as the primary analytical technique. This method is appropriate because it accounts for the ordinal nature of the dependent variable and estimates the likelihood of higher levels of audit effectiveness based on changes in the independent variables.

Results: The results of the regression analysis revealed that the independence of the internal audit function, audit quality, staff competency, management support, adherence to professional standards, and the use of information communication technology all have a positive and significant effect on internal audit effectiveness in the Sidama Region. These findings highlight that strengthening these factors enhances the ability of internal audit units to improve risk management, internal controls, and governance processes within the Ethiopian public sector. The regression results further demonstrated that there is a statistically significant and positive relationship between the examination process and internal audit effectiveness, as evidenced by the significance of the unstandardized regression coefficients. This indicates that internal audit quality makes a substantial contribution to strengthening internal audit effectiveness in the Sidama Region. The regression coefficient was found to be positive and statistically significant [$\beta = 0.605$, $p = 0.000 < 0.05$]. This result provides strong evidence that professional competency is a key determinant of internal audit effectiveness.

Conclusion: The study concludes that a combination of independence, audit quality, staff competency, management support, professional standards, and technological integration best explains internal audit effectiveness in the Sidama Region. Internal audit will be more valuable as a tool for encouraging accountability, openness, and good governance in Ethiopia's public sector if these elements are strengthened. The results suggest that in order to guarantee long-term gains in audit efficacy, policymakers and public sector executives should give top priority to the creation of explicit audit independence frameworks, make investments in ongoing professional training, and allot sufficient financial and technological resources.

Keywords: Internal Audit Effectiveness, Public Sector, Sidama region, Ethiopia

Introduction

Weak governance in the public sectors frequently leads to mis-management of resources and loss of public trust. Effective internal auditing is widely recognized as central to addressing these risks by providing oversight, enhancing accountability, and ensuring efficient use of public resources. Empirical research — largely focused on private-sector settings — underscores determinants such as management support, internal auditor competence, independence, and the formal mandate of the internal audit function (1-5).

In Ethiopia's Sidama Region, however, audit reports covering 2019–2020 indicate that numerous recommendations issued by the Office of the Auditor General remain unimplemented, particularly within regional public bureaus. Anecdotal evidence from regional executives and auditors further suggests minimal improvement in internal audit practices: internal audit units lack sufficient capacity to enforce recommendations, and compliance continues to lag (6-13).

Although a 2022 study investigated internal audit effectiveness in Sidama Region sub-city offices, no published research has yet assessed the determinants of internal audit effectiveness specifically

within the regional public bureaus of Hawassa, with an empirical focus on the implementation of audit recommendations. This represents a critical gap: without understanding which factors hamper internal audit effectiveness in this context, governance failures and accountability deficits are likely to persist (14). The study's conceptual framework, developed from empirical literature, illustrates the relationship between the key factors (variables) and internal audit effectiveness. The model posits that independence, audit quality, auditor competency, management support, audit standards, and information and communication technology act as independent variables influencing the effectiveness of internal audits in public sector bureaus (Figure 1). The objective of this study, therefore, is to investigate the determinants of internal audit effectiveness in Sidama Region's public bureaus in Hawassa. By doing so, the research contributes to theory (expanding the public-sector internal audit literature in developing-country contexts) and practice (identifying actionable levers for improving audit effectiveness, enhancing oversight and resource management).

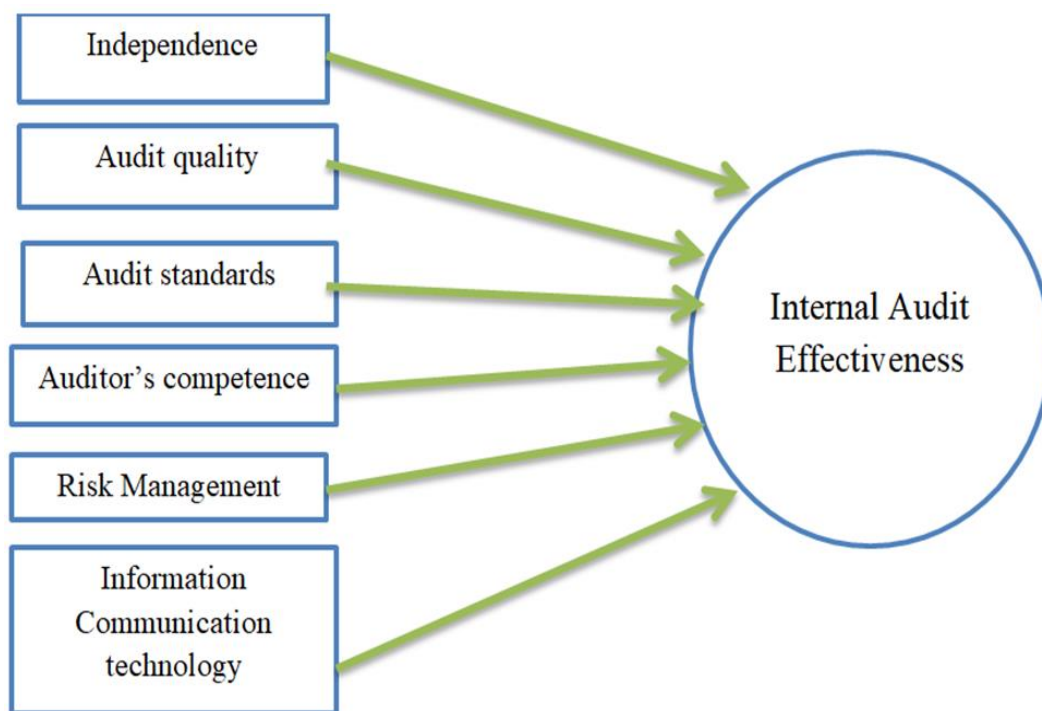


Figure 1: The conceptual framework of the study (8).

Methods and Materials

Research design and approach

This study examines the factors affecting internal inspection effectiveness in all sector divisions within the Sidama Region, Ethiopia. To achieve this, the experimenter employed an explicatory exploration design, which allows for assaying cause- and- effect connections between six independent variables - independence of internal adjudicators, inspection quality, adjudicator capability, operation support, internal inspection norms, and information communication technology - and the dependent variable, public internal inspection effectiveness. A quantitative exploration approach was

espoused due to the nature of the data employed.

Data sources, method of data collection and analysis

The report is grounded on primary data collected through a structured questionnaire developed on a five- point Likert scale (15). The questionnaire was precisely designed grounded on an expansive review of applicable literature and preliminarily validated instruments to insure content validity and clarity. Before the main data collection, a airman test was conducted with a small group of internal adjudicators to assess the trust ability and thickness of the particulars. The results of the airman test indicated satisfactory trust ability, with a Cronbachs nascence measure exceeding the

respectable threshold of 0.70 (16). The primary data sources comported of internal adjudicators, while secondary data were also incorporated to support the study's background, statement of the problem, and literature review. Following data collection, both descriptive and deducible statistical analyses were performed using SPSS interpretation 20.

Target population and sample size

The study's target population consists of 288 internal adjudicators drawn from four indigenous divisions Health, Agriculture, Education, and Finance. To determine the applicable sample size from this population, the experimenter applied a simple arbitrary slice fashion to insure that every adjudicator

had an equal chance of being named. The sample size was determined using Yamane's (1967) formula (17) at a 95% confidence position and a 5 periphery of error, expressed as

$$n = \frac{N}{1 + N(e^2)}$$

Where,

n = Sample size, N = Desired population number, e = Level of precession that assume and e = 0.05

Substituting the values, to the formula, results sample size was roughly to be 167 internal adjudicators. The variable used and measurement scale used in the study are summarized below (Table1).

Table 1. Summary of variables and measurement scales used in the study

Variables	Symbol	Unit of Measurement	Expected Sign
Dependent Variable			
Internal Audit Effectiveness: Extent to which an internal inspection office meets its objects	IAE	Likert Scale	+
Independent Variables			
Independence: Freedom of internal adjudicators to carry out work objectively	I	Likert Scale	+
Audit Quality: Inspection Quality Capability to fete and report misstatements in government accounts	AQ	Likert Scale	+
Competency: Faculty Professional qualifications and moxie of inspection staff	PC	Likert Scale	+
Management Support: Operation Support licit support for inspection conditioning from tagged officers	MS	Likert Scale	+
Audit Standards: Inspection norms International professional practices frame supporting methodical check-ups	AS	Likert Scale	+
Information Communication Technology: IT installations easing internal inspection conditioning	ICT	Likert Scale	+

Econometric model

The dependent variable of the study is Internal inspection Effectiveness (IAE), which was measured using a five- point Likert scale ranging from 1 = veritably Low to 5 = veritably High (15). Because the dependent variable is ordinal in nature, an

$$[IAE = \beta_0 + (\beta_1 \times I) + (\beta_2 \times AQ) + (\beta_3 \times C) + (\beta_4 \times MS) + (\beta_5 \times AS) + (\beta_6 \times ICT) + \epsilon]$$

Where

- (IAE) = Internal inspection Effectiveness
- (, 0) = Constant term
- (, 1,, 2,, 3,, 4,, 5,, 6) = Portions of independent variables
- (I) = Independence
- (AQ) = Inspection Quality
- (C) = Faculty of Inspection Staff
- (MS) = Operation Support
- (AS) = Inspection Norms
- (ICT) = Information Communication Technology
- (€) = Error term

Trust ability

The trust ability of the questionnaire was assessed through a airman test conducted before the main data collection. Trust ability was estimated using Cronbach's nascence to insure internal thickness of the Likert-scale particulars (15). The airman test involved (state number, e.g., 26) repliers who were not part of the final

Ordered Logistic Retrogression (Ordered Logit Model) was employed (18). The model estimates the liability that IAE falls into a particular order given changes in the explicatory variables.

The model is expressed as

sample. The results showed respectable trust ability situations, with Cronbach's nascence portions for each construct as follows independence ($\alpha = 0.82$), inspection quality($\alpha = 0.79$), professional capability ($\alpha = 0.85$), operation support($\alpha = 0.88$), inspection norms ($\alpha = 0.81$), ICT integration ($\alpha = 0.80$), and overall internal inspection effectiveness ($\alpha = 0.87$). Since all portions exceeded the generally accepted threshold of 0.70, the instrument was considered dependable for farther analysis. The questionnaire was distributed to 167 targeted respondents, and 141 completed responses were returned, yielding a response rate of 84%. This high response rate indicates strong participation and enhances the representativeness and reliability of the study's findings.

Results

The collected data were analyzed using SPSS version 23. The analysis was structured into following major sections:

- Respondent demographic information
- Descriptive statistics and correlation analysis
- Linear regression model assumptions
- Regression analysis

This approach would help to construct a systematic flow — from describing who the respondents are, to exploring relationships, verifying assumptions, testing hypotheses, and finally interpreting results — ensuring the analysis is both rigorous and meaningful.

Descriptive Statistics

Likert scale values ranged from a minimum of 1 to a maximum of 5 for all variables. The Internal Audit Effectiveness (IAE) variable recorded a mean value of 2.7801 and a standard deviation of 1.19578, indicating variability in responses (Table 2).

Regarding the independent variables:

- Independence of internal audit staff had a mean of 2.7092 with SD = 1.16213
- Audit quality had a mean of 3.1200 with SD = 1.31257.

- Internal audit staff competency recorded a mean of 2.9645 with SD = 1.11167
- Management support had a mean of 3.0005 with SD = 0.75765
- Internal audit standards had a mean of 2.8582 with SD = 1.26819
- Information communication technology recorded a mean of 2.9007 with SD = 1.31698

Generally, all independent variables scored around the midpoint (Mean $\approx$ 3), indicating moderate implementation and perception of internal audit practices across the organizations studied. The relatively high standard deviations for most variables highlight inconsistency among respondents' experiences or organizational practices. These findings suggest potential areas for improvement, particularly in strengthening audit independence, adherence to standards, and effective use of ICT to enhance internal audit effectiveness.

Table 2. The summary of descriptive statistics of the data analyses

Particulars	N	Minimum	Maximum	Mean	Std. Deviation
Internal Audit effectiveness	141	1.00	5.00	2.7801	1.19578
Independence	141	1.00	5.00	2.7092	1.16213
Examination process	141	1.00	5.00	2.9645	1.31698
Staff competence	141	1.00	5.00	2.9645	1.11167
Management Support	141	1.00	5.00	2.7092	1.21031
Audit standard	141	1.00	5.00	2.8582	1.26819
ICT	141	1.00	5.00	2.9007	1.31698

Pearson correlation matrix

Correlation analysis measures the relationship between two variables, recording the degree to which they're associated or related. The correlation matrix for this study was reckoned as follows. The Table below (Table 3) presents the relationship between the dependent variable, Internal Audit Effectiveness (IAE), and the independent variables. A correlation measure of 1 indicates perfect positive correlation between variables. The results show that Independence of Internal Audit

Staff, Examination Process, faculty of Internal Audit Staff, Internal Audit norms, and Information Communication Technology (ICT) are appreciatively identified with Internal Audit Effectiveness at a 1 significance position ($P < 0.01$). The findings also confirm the respectable trust ability of the exploration variables, as the correlations among predictors don't exceed 0.80, indicating the absence of multicollinearity issues. This ensures the felicity of the data for analysis in this study (19)

Table 3: The Pearson correlation matrix results

Variable	IAE	IN	EXP	SC	MS	AS	ICT
IAE	1	.555**	.435**	.546**	.627**	.304**	.251**
IN	.555**	1	.511**	.455**	.391**	.035	-.139
EXP	.435**	.511**	1	.399**	.298**	-.238**	-.036
SC	.546**	.455**	.399**	1	.396**	.093	.070
MS	.627**	.391**	.298**	.396**	1	.210*	.157
AS	.304**	.035	-.238**	.093	.210*	1	.324**
ICT	.251**	-.139	-.036	.070	.157	.324**	1

Notes: Correlation is significant at the 0.01 position (2- tagged); Correlation is significant at the 0.05 position (2- tagged).

The Pearson correlation analysis data showed the connections between Internal Audit Effectiveness (IAE) and the independent variables. The correlation measure values range from – 1 to 1, where a positive value indicates a direct relationship and a negative value indicates an inverse

relationship between the variables (Table 3). The results reveal that Independence of Internal Audit Staff ($r = 0.555$, $p < 0.01$), Examination Process ($r = 0.435$, $p < 0.01$), Staff Competency ($r = 0.546$, $p < 0.01$), operation Support ($r = 0.627$, $p < 0.01$), Audit norms ($r = 0.304$, $p < 0.01$), and Information and Communication

Technology ($r = 0.251$, $p < 0.01$) all have positive and statistically significant connections with Internal Audit Effectiveness. This implies that as these factors ameliorate, the overall effectiveness of internal inspection functions also increases. Among these variables, Management Support shows the strongest positive correlation ($r = 0.627$) with Internal Audit Effectiveness, suggesting that when operation provides sufficient coffers, authority, and backing, internal checkups are more effective. Independence of inspection Staff and Staff faculty also parade fairly strong associations with Internal Audit Effectiveness, pressing the significance of neutrality and professional capability in icing inspection quality.

Some variables show weak or negative inter-correlations among the independent variables. For instance, Examination Process and inspection norms ($r = -0.238$) and Independence and ICT ($r = -0.139$) are some the factor that show no or negative correlations. This indicates that minimum or

IAE = 7.662 + 0.754*IND + 0.448*EXP + 0.605*SC + 0.942*MS + 0.529*AS + 0.556*ICT (1)

All the variables have a positive and significant impact on how effective internal audit is. The strongest influence comes from management support, followed by independence, staff skills, use of information and communication technology

inverse connections that are not of major concerns. Overall, there's no substantiation of severe multicollinearity, as none of the correlation portions among the independent variables exceed the threshold of 0.80 (Table 3).

The regression analyses of the collected data were based on the assumption of The Ordinary Least Squares (OLS) method. The following **Fitted Model equation** (Eqn.1) was also used for the analysis. In this fit model equation, each of the variable's coefficients shows how much the IAE increases with a 1% change in that variable. The coefficient for Independence of Internal Audit Staff (IND) is 0.754. The coefficient for Examination Process (EXP) is 0.448 (Table 4). The coefficient for Staff Competency (SC) is 0.605. The coefficient for Management Support (MS) is 0.942. The coefficient for Audit Standards (AS) is 0.529. The coefficient for Information Communication Technology (ICT) is 0.556 (Table 4).

(ICT), audit standards, and the audit process. This means that improving support from management, making sure auditors are skilled, ensuring they are independent, and using technology together can greatly improve the overall effectiveness of internal

audit. These numbers show that a 1% increase in any of these factors leads to a rise in Internal Audit Effectiveness (IAE).

To check how well the ordered logistic regression model fits, pseudo R^2 values were used instead of the usual R^2 because it's not used with logistic models. McFadden's pseudo R^2 was the main measure, and it came out to 0.498 (20). This means the model explains about 49.8% of

the variation in the outcome, which is a good fit for this kind of model. For comparison, Nagelkerke's pseudo R^2 was 0.679, which is higher because it scales the value to a 0 - 1 range (21). These are two different measures and shouldn't be used the same way. Based on McFadden's R^2 (20) and other checks, the model is considered to fit well.

Table 4: The Regression analyses results of the study.

Estimate	Std. Error	Wald	Df	Sig.(P-value)	95% CI
Threshold					
[IAE = 1.00]	7.622	1.068	50.892	1	.000 5.528 – 9.716
[IAE = 2.00]	10.462	1.250	70.066	1	.000 8.012 – 12.912
[IAE = 3.00]	12.230	1.345	82.724	1	.000 9.594 – 14.865
[IAE = 4.00]	15.820	1.630	94.252	1	.000 12.626 – 19.014
Location Variables					
IND	0.754	0.196	14.817	1	.000** 0.370 – 1.138
EXP	0.448	0.167	7.175	1	.007** 0.120 – 0.775
SC	0.605	0.186	10.570	1	.001** 0.240 – 0.970
MS	0.942	0.177	28.382	1	.000** 0.595 – 1.288
AS	0.529	0.163	10.587	1	.001** 0.210 – 0.848
ICT	0.556	0.201	7.617	1	.006** 0.161 – 0.951

SC: Staff Competency; MS: Management Support; AS: Audit Standards; ICT: Information Communication Technology; IND: Independence

Note:

- **Link function:** Logit.
 - **Significance Levels:**
 - **Regression is significant** at the 0.01 level (2-tailed).
 - **Regression is significant** at the 0.05 level (2-tailed).
- Source: Survey Data, 2023.

Discussion

The findings of this study underscore the critical role of auditor independence, examination process quality, and staff competency in enhancing internal audit effectiveness within the public sector of the Sidama Region. Consistent with evidence from other developing countries, the results suggest that when internal auditors operate with sufficient autonomy, free from managerial interference, their ability to provide objective assurance and add value to organizational governance is significantly strengthened. This reinforces the argument that institutional arrangements that safeguard independence are fundamental for effective internal auditing in developing-country public sectors, where political and administrative pressures are often pronounced (10-13).

Similarly, the positive influence of the examination process highlights the importance of robust audit planning, systematic procedures, and adherence to professional audit methodologies. In line with prior studies conducted in comparable developing-country settings, this finding implies that improving audit quality through structured examination practices enhances the credibility and usefulness of audit outputs. For policymakers and public-sector managers, this indicates that investments in

audit tools, methodologies, and continuous process improvement can yield tangible gains in audit effectiveness (10-12).

The significant impact of internal audit staff competency further emphasizes that technical knowledge, professional skills, and practical experience are indispensable for effective internal auditing. This aligns with broader empirical evidence from developing economies, where capacity constraints often limit audit performance. The implication is that sustained training programs, professional certification, and experience-based learning are essential strategies for strengthening internal audit functions and ensuring their contribution to accountability and transparency (10-13).

In contrast, the statistically insignificant effects of management support and internal audit standards present notable departures from much of the existing literature. In the context of developing countries, this may suggest that formal support mechanisms and the mere existence of audit standards do not automatically translate into effective audit practice. Weak enforcement, symbolic compliance, or limited managerial commitment to implementing audit recommendations may dilute their practical impact. These findings imply that strengthening internal audit effectiveness requires not only formal

structures and standards but also genuine managerial engagement and an organizational culture that values accountability.

Overall, the study contributes to the growing body of literature on internal audit effectiveness in developing countries by demonstrating that human and structural factors particularly independence, competence, and audit processes play a more decisive role than formal support and regulatory frameworks alone. This highlights the need for reform efforts that move beyond policy adoption toward practical implementation and capacity development within public-sector audit institutions (10-12,14, 22-24).

Conclusion

This study examined the factors influencing internal audit effectiveness in the Sidama region, Ethiopia. Using primary data gathered through structured five-point Likert scale questionnaires and analyzed with SPSS version 23.0 employing both descriptive and inferential statistical techniques, the findings provide empirical evidence on the key determinants that shape the effectiveness of internal audit functions."

Based on the regression analysis, the study concludes that several factors significantly shape internal audit effectiveness in the Sidama Region.

Independence of internal audit staff plays a crucial role, as greater autonomy enables auditors to perform their duties more objectively and reliably. Similarly, a well-executed examination process enhances the quality of audit work, thereby strengthening accountability across public institutions. The findings also highlighted that competency of internal audit personnel including their skills, training, and professional qualifications substantially improve audit outcomes. In contrast, management support and the application of audit standards did not show a meaningful influence on audit effectiveness in this context, suggesting that these factors may not be consistently translated into practical support or operational improvements. Finally, the study highlights the significance of technology-based tools and systems in enhancing audit accuracy, efficiency, and timeliness by demonstrating how information communication technology (ICT) significantly affects audit effectiveness.

Direction for Future Research

Further exploration is recommended to broaden the compass of this study and strengthen substantiation- grounded policy opinions. Although the explicatory variables included account for 67.9 of the variation in internal inspection effectiveness, the remaining 32.1 is told by other unidentified

factors. unborn studies should incorporate fresh organizational, nonsupervisory, and capacity- related variables to ameliorate model delicacy and give policymakers with further comprehensive perceptivity for enhancing public- sector internal inspection systems.

Overall, the results emphasize that strengthening adjudicator independence, enhancing examination quality, perfecting staff faculty, and using ICT are essential for achieving further effective internal inspection practices in the Sidama Region. However, this study is limited to the Sidama Region and may not be generalizable across Ethiopia's other regions.

Competing interests

Not applicable

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