

Determinants of Internal Audit Effectiveness: Case of Sudan Public Sectors

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Abstract

Determinants of internal audit effectiveness activities in the Sudan public sectors are the main purpose of this paper. The stimulation for the study is taken from the increased interest in the internal audits of local government units. For this study, five hypotheses using a survey way were developed and tested. The source of the required data to the researcher was the Internal Audit staff and managers across the public sector. The data collected using a Likert-Scale type questionnaire were distributed on a sample of the population of the study and filled out by 41 internal auditors and 27 managers. Descriptive analysis, correlation analysis, and multivariate regression model through Excel and SPSS evaluates the relevance between the effectiveness of internal audit department and its five main determinants: (management support, management's perception of internal audit values, organizational independence of internal auditors, placement of adequate and competent internal audit staff, and the presence of approved internal audit charter). The results display that there was a significant positive relationship among the factors analysed in this study such as management's support and placement of adequate and competent internal audit staff to the internal audit effectiveness.

Keywords: Internal audit, Internal audit effectiveness, Sudan public sector; Determinants of internal audit effectiveness

1. Introduction

Use of public money and supplying effective, efficient and economical (3e's) service delivery is the crucial responsibility of every country that is administered in a democratic policy. Applying internal audit function is the major mechanism for controlling and using all scarce resources available in the corporate organization to reach those government goals. Internal audit has had to become ever more professional in large and complex systems that need greater competitiveness (Cecilia Nordin Van Gansberghe, 2003).

Furthermore, the development of internal audit profession leads to modification in the setting and functions of internal audit customers. Formerly internal auditors were seen even as a supporter of accountant's and an external auditor but latterly an independent profession of internal audit is absolutely playing an important role in the management of organizations. In addition, independent of internal auditors have always been a critical matter while he/she is the employees of the organization, above all, not clearly organized structure or reporting system make the problem more difficult in such offices (Rolandas Rupsys, 2005).

Public sector offices are part of the public body which is partly or wholly financed by government budget and pertained with supplying basic government services to the whole society (Ministry of Finance and Economic Development (MoFED), 2004) such as banking service, financing, education, communication service, healthcare, police, transportation, electric services, security and so on which benefit all of the society and encourage equal opportunity to benefit from those services provided (Mihret and Yismaw, 2007). The compositions of the public sectors are varied by their function and purposes, but in most cases, they are prepared in order to enable the public sectors to fulfil their goals.

However, the process of accountability is not complete without auditing, which presently remains one of the most neglected and misunderstood area of the financial management cycle, especially in the public sector (Maru, 2002). Therefore, for an audit to be meaningful the audit unit must be seen to be truly independent and the report produced by internal auditor will assist in providing information for planning, decision making, and performance evaluation as well as control of activities especially if such information has certain attributes such as relevance, completeness, timeliness, understand ability, and comparability.

Millichamp (2000) defined internal auditing as "An independent appraisal function within an organization for the view of a system of control and the quality of performance as a service to the organization. The objective of auditing is to review and evaluate the activities of the organization with a view to express an opinion on the efficiency and effectiveness of management, as well as the adequacy of internal control within an organization. In this status, it is significant to explain the concept of IA effectiveness and identify critical factors that contribute to the creation of "added value" of IA. Therefore, this study designs to study factors that may affect IA effectiveness within Sudan organizations.

2. Literature Review

In the recent years, internal auditing (IA) has faced considerable changes that have extended its area of

involvement in a way that allows it to add more value to a company. Traditionally, the role of IA has concentrated on compliance assurance, financial control, and assets safeguarding. After the corporate financial scandals of the 2000's, many improvements (Sarbanes-Oxley Act 2002; Combined Code 2003; OECD 2004; IFAC 2006) have increased the responsibilities of IA in improving corporate governance mechanisms. Therefore, the effectiveness of risk management, control, and governance systems is enhancing when the IA has become a value maker (Bou-Raad 2000; Roth 2003; Hass *et al.* 2006; Cohen *et al.* 2010).

The internal auditors are trained professionals that have the expertise to assess risks and their potential impact on the business and evaluate controls that a company might have implemented to mitigate those risks (Ravi, 2014). Internal audit is very important in an organization, where it conducted to improve internal controls and audit. Internal audit department provides management with information, appraisals, recommendations, and counsel regarding activities or issues in organizations. It helps the company to do their work properly with a guide from internal auditors. The internal auditor is able to listen actively to others in order to understand the idea.

Based on the definition of internal auditing that has been defined by IIA (2013), internal audit is involved in the internal control of the company. Functions of internal control are to provide reasonable assurance that financial information is accurate and reliable. The internal auditor should participate in the design of the data processing system to ensure that the system provides a proper audit trail and included adequate controls (Nnenna, 2012). It means internal auditing focuses on the evaluation of the system of internal control. Despite, it minimizes employees' frauds that has intentionally to theft the assets or does the manipulation in the financial statement to meet their own interest. The auditor can use audit test to make sure the system is working properly.

Internal auditor through the extensive role of IA has become major control mechanism in corporate governance along with the external auditor, audit committee, and executive management (Gramling *et al.* 2004). Assisting an organization to achieve its goals is the purpose of IA (Roth 2003; Hass *et al.* 2006). For this purpose, IA can perform a wide variety of activities in the form of assurance or consulting services. First, it can give assurance that the organization's systems of control are prepared correctly and operate effectively. Second, it can appear as a management consultant to improve risk management (Spira & Page 2003). Third, it can assist the audit committee and external auditors in oversight the internal control system (Goodwin 2003). Fourth, it can decrease fraud, misappropriation of assets and misreport financial information (Coram *et al.* 2008).

Briefly, the basis of the corporate governance is the internal audit function (IAF), which engaged in improving the productivity, efficiency and performance of the company in both private and public sector (Mihret *et al.* 2010; Gros *et al.* 2016).

In the light of the development of internal audit, a new concept began to have a particular attention in the audit literature; it is the effectiveness of IA. Actually, being effective is the challenge that IAF should successfully overcome to be the key component of good governance.

3. Theoretical Framework

Based on the preceding discussions of the previous research and related theory, this study hypothesizes the following theoretical framework as shown in figure 1 below:



Figure 1: Framework of Factors influencing internal audit effectiveness
 Source: Adopted from Mihret and Yismaw (2007)

4. Hypotheses Development

4.1 Management Support for the Roles of IA

To ensure that the IA is functioning effectively, it's the support and responsibility of the management. The power of management's support for the auditing process leads to the success of IA function. They are restricted to understand that the IA process is a serious and essential activity as any other process within the organization. Some studies show that the IA processes are likely to face failure and standards decrease – time and money wasted, without management approval, support, and encouragement. A. Md Ali, A. Ahmi and MH. Shahdan on their study on IA in the state and local government of Malaysia found that the effectiveness of the IA function in

State and Local Government seems to be directly related to the management manner of organization heads and their links, relationships, and position in the social contract. Some IA function appears to be doing well, the determining factors appear to be the procedure and guidance qualities of the head of an organization and audit reports that are neglected by employers. (Mihret and Yismaw, 2007) in their study also found that IA recommendations are not given enough awareness. Though the audit reports are generally well intended, they do not separately high point the status of past audit results and they could be displayed in a more proper way. In addition, the audit-proof is attached to the reports. This gives a great appearance of the audit reports and reduces readability. The distribution of the audit reports is enclosed where copies are not given to other senior management officers to which related to an audit report. Their study also derived that management supports to internal audit as a determinant of internal audit effectiveness. Against this background, we can create the first research hypothesis:

H1: The management supports are positively related to the internal audit effectiveness in the public-sector offices.

4.2 Management's Perception of IA's Value

Perception is the process of attaining awareness or understanding of sensory information or it is the mental image or natural realization of experience when aware of the elements of the environment (Woodard C.A, 2002). Internal auditors and the customers of audit services should own the same perception of what makes internal auditing a significant activity. Failure to reach this understanding could result in the perception that internal audit is simply a barrier to attaining production goals. This can hinder the effective and efficient use of the audit services and recommendation provided which adversely influence the effectiveness of IA (Arena and Azzone, 2009). When the fact that the top management gives importance to the function of IA is recognized by employees at all levels, they will collaborate and support these processes (Cohen and Sayag, 2010). This shows that internal audit staffs are more motivated and encouraged to perform audit activities given good management's awareness of IA values. Against this background, we can create the second research hypothesis:

H2: The greater the management's perceptions of internal audit values, the higher internal auditors' ability in identifying noncompliance activities and the more added contributions.

4.3 Independence /Objectivity of Internal Auditors

During the last years, the importance of independence and objectivity of internal auditors for the internal audit quality despite their employment status in the organization have assured by professional bodies and standard-setters. Independence and objectivity are the key elements of the effectiveness of IA (Mutchler 2003; Ahmad *et al.* 2009; Al-Akra *et al.* 2016). ISPPIA (Standard 1100) state that to add value to the organization the internal audit department must be independent and internal auditors must be up-to-date in achieving their work. In order to ensure the appropriate level of independence and objectivity of the internal audit, professional standards and directions of ISPPIA suggest that the CAE reports administratively to the senior management and functionally to the board. He has free access to records, personnel, and departments, keep away from any dispute of interests, must not perform non-audit work, and be joined with the IIA (Goodwin & Yeo 2001; Christopher *et al.* 2009). The few researchers that have studied this issue have found that the independence and objectivity of internal audit department are directly proportional to the internal auditor's effectiveness. Alizadeh (2011) conducted a study which shows that the organizational independence of the IAF is among the five important factors of the effectiveness of IA in Iranian companies. Furthermore, (Cohen & Sayag 2010) found that organizational independence was positively related to the auditing quality and the auditees' evaluations, which were the two dimensions of the effectiveness of IA in the Israeli context. These results which were confirmed by other studies show that there is an affirmative relationship between the effectiveness of IA and the organizational status of CAE (Hung & Han 1998; Soh & Bennie 2011; Alzeban & Gwilliam 2014). Moreover, Radzi & Islam (2011) believed that organizational independence of internal audit may reduce earnings management in Malaysian listed companies. Harrell *et al.* (1989), Abdol Mohammadi (2009) and Arena & Azzone (2009) revealed that IA effectiveness increases when the CAE is related to the IIA. In fact, internal auditors' members of the IIA are objective and they can manage conflicts between the loyalty of the profession and the organization's requirements. These arguments lead to the following hypotheses:

H3: Internal auditing effectiveness is positively related to the independence/Objectivity of the internal audit.

4.4 Auditors Competency

Staff competence is a significant key to the effectiveness of the internal audit activities (Al-Twaijry *et al.* 2003; Alzeban&Gwilliam 2014). The importance of internal audit team who owns the knowledge, skills, and other competencies necessary to perform their responsibilities highlights by The International Standards for the Professional Practice of Internal Auditing (ISPPIA, Standard 1210). In fact, internal auditors must wholly have the needful education, professional qualifications, experience and training to be capable to raise and upgrade the

organization's operations (Mihret&Woldeyohannis 2008; Ali & Owais 2013).

Also, internal auditors to effectively attain their duties, need good interpersonal skills in communication, convincing, collaboration, and critical thinking (Smith 2005; Fanning & Piercey 2014). Furthermore, external auditors use competencies as a critical standard to evaluate IA performance (Al-Twajiry *et al.* 2004; Abbass & Aleqab 2013).

Previous studies propose that competence of internal auditors is a critical determinant of IA effectiveness (Albrecht *et al.* 1988; Van Gansberghe 2005; Al-Matarneh 2011). In the Saudi environment, Al- Twajiry *et al.* (2003) considered that the adequate level of competencies of internal audit staff in terms of training, experience, knowledge, and professional qualifications have a positive effect on the effectiveness of IA.

Comparable results were gained in other studies performed in Malaysia (Ahmad *et al.* 2009), Iran (Alizadeh 2011) and South Africa (Staden & Steyn 2009). Furthermore, Ziegenfuss (2000) grouped the auditor education levels, the staff experience, the percent of certified staff and the training hours per internal auditor among the most important inputs of the internal audit performance. The progress of annual auditing plan is positively and significantly affected by the training and professional competency of internal auditors as found in Taiwan, Hung & Han (1998).

Moreover, Abdolmohammadi (2009) has shown that certified internal auditors improve the compliance with the ISPPIA in Anglo-Saxon countries. Lack of competence of internal auditors recommends by other studies as a barrier to the effectiveness of IA in a number of African countries as Ethiopia, Ghana, and Kenya (Mihret & Yismaw 2007; Onumah & Yao Krah 2012; Walter & Guandaru 2012). Against this background, we can create the fourth research hypothesis:

H4: Internal auditing effectiveness is positively related to the competence of the internal audit staff.

4.5 Approved Internal Audit Charter

Internal audit charter is known by the IIA as "a formal written document that defines the activity's purpose, authority and responsibility. The charter should be (a) structure the internal audit activity's position within the organization; (b) permit access to records, personnel and physical properties relevant to the performance of management; and (c) defined the framework of internal audit activities" (IIA, 2001). Additionally, an internal audit charter exemplary includes the liabilities of the IA in wide terms, the standards followed by the IA; and the relationship between the IA and the audit committee. It may also define access to the information (documents, records, systems, and personnel) necessary to accomplish and reach conclusions on the work, and it is a vehicle for declaring that there are no unreasonable restrictions on the scope of the auditor work. The charter should clearly identify and record any restrictions and alter to actual or potential changes in internal and external conditions that affect its ability to provide internal control assurance from a forward-looking perspective. Against this background, we can create the fifth research hypothesis:

H5: The availability of approved IA charter in the public-sector offices have a positive and significant impact on the internal audit effectiveness in the public-sector offices.

5. Research Methodology

In this paper, a survey is our methodology, in which the data is collected via handing out of questionnaires to two different populations, including managers, and internal auditors from 4 public sectors.

The data released from questionnaires were examined and analyzed. Both questionnaires had similar shapes, with a list of answers arranged on Likert's 5-point scale. Our questions were in the shape of closed-answers, in which a number of possible answers were given to respondents to choose from. In other words, our answers were based on the 5-point Likert scale, in which number 5 represented absolutely agreed with an opinion and absolutely disagreed was shown by number 1.

Managers' questionnaire included 15 questions. Total of numbers specified in these 15 questions represents our evaluation of overall effectiveness (dependent variable). Accordingly, questions are used to evaluate each of independent variables. Internal audit questionnaire included factors of interest considering the relationship between internal audit effectiveness and independent variables.

We test the impact of five independent variables on one dependent variable the internal audit effectiveness. Obtaining quantitative information of how many people hold a certain opinion from questionnaires is more convenient because our study is a qualitative one (Kitzinger, 1995).

From a representative sample of different sectors and different positions (employees and senior managers), a stratified random sample is found appropriate to be adopted in the study.

Our sample includes 26 IA and 26 managers out of 41 and 27 in population respectively. This analysis enables the study to capture the continuous effects of independent variables on internal audit effectiveness under five hypotheses.

Multiple regression was carried out to value the magnitude of the effect of the five factors specified above (the independent variables) on internal audit effectiveness (the dependent variable), with responses from internal

auditors on 4 selected public-sector offices. The basic model of multiple regressions was:

$$IAE = \alpha + \beta_1 MS + \beta_2 MP + \beta_3 OIN + \beta_4 ACIAS + \beta_5 AIAC + ei$$

Where:

IAE: The effectiveness of internal auditors' in identifying non-compliance activities and the added contributions of IA to the public-sector offices.

MS: The management Support.

MP: The management's perception of IA's value.

OIN: The organizational independence.

ACIAS: The adequate and competent internal audit staff.

AIAC: The existence of approved internal audit charter.

α : Is a constant, represents the effectiveness of IA when every independent variable is zero.

β_1 to β_5 : Is the coefficient, in which every marginal change in variables on internal auditor's effectiveness affects correspondingly.

ei: The error term.

6. Population and Sample

The federal public-sector offices in Khartoum capital city of the Sudan federal government were the target populations for this research. Due to the difficulty of covering all the total existing public sector, the researcher obliged to minimize its study area by focusing only on 4 purposively selected public-sector offices that are expected to be used as a representative of other sectors and their frequencies and percentages are summarized in as follow:

The descriptive statistics for the survey respondents shows the majority of the ages of respondents of the managers are falling under the age of 40-49 (11, 42.3%), 50-59 (11, 42.3%), and the rest falls in the age interval of 30 to 39 (3, 11.5%) and above 60 (1, 3.8%); and in the internal auditors category the majority are fall in the age of 50-59 (10, 38.5%) and 40-49 (9, 34.6%) and the rest falls in the age of 30 to 39 (2, 7.7%) and above 60 (5, 19.2%) respondents.

In terms of the level of educational background, most managers and internal auditors have bachelor's degree (14, 53.8%) and (12, 46.2%) respectively followed by master's degree (9, 34.6%) for managers and (8, 30.8%) for internal auditors. followed by diploma (1, 3.8%) for managers and (2, 7.7%) internal auditors. followed by Ph.D. (1, 3.8%) for managers and (2, 7.7%) internal auditors. From internal auditors' categories, there were (3, 11.5%) who had other levels of educations. These shows the majorities of the respondents were educated/or professional and can contribute more to the effectiveness of their intended work.

7. Analysis and Results

Table 1: Internal Auditors Response

		Frequency	Valid Percent
Audit Committee	Valid	YES	20
		NO	6
		Total	26
Professional Certification	Valid	Certified Internal Auditor (CIA)	21
		Certified Public Accountant (CPA)	1
		OTHER	4
		Total	26
Experience	Valid	Less than 5	13
		5 to 9	9
		10 to 14	4
		Total	26

Table 2: Activities Carried out by IA

Valid		Frequency		Valid Percent	
		NO	YES	NO	YES
	Compliance Audit	7	19	26.9	73.1
	Financial Audit	19	7	73.1	26.9
	Operational/Performance Audit	9	17	34.6	65.4
	Internal Control System Evaluation	13	13	50	50
	Risk Assessment (Analysis) Audit	14	12	53.8	46.2
	Total	62	68		

7.1 Reliability Analysis

Cronbach's alpha is the most common measure of internal consistency reliability. It is considered to be a measure of scale reliability where it can be correlation efficient when the range is between 0 and 1. In terms of reliability, if the alpha value is less than 0.6, it is considered not acceptable, while if the alpha value is over 0.6, the result (questionnaire) is acceptable (Hair et al, 2003). Table 3 shows the Cronbach's alpha for this study.

Table 3: Reliability Test Result

No.	Variable	Reliability
1	Internal Audit Effectiveness - IAE	0.799
2	The Management Supports - MS	0.698
3	Management's Perceptions - MP	0.722
4	The Organizational Independence for Internal Auditors - OI	0.758
5	The Presence of Adequate and Competent IA - ACIA	0.756
6	Availability of Approved IA Charter - AIAC	0.727
Total		0.884

The result displayed that the values of all variables in the questionnaire items are more than 0.6. It mentions that the data used in this research are constant and has no problem with the reliability.

7.2 Assessment of Normality

A normality test is a statistical process used to determine if a sample is normally distributed or not. In this study, Kolmogorov-Smirnov (KS) statistic was used to test the normality of data. The data categorized as normal if the p-value of Kolmogorof-Smirnov is more than 0,05. From table 4 below, we knew that the p-value is more than 0,05 which indicates that the data used in this research are normally distributed.

Table 4: Normality Test One-Sample Kolmogorov-Smirnov Test

N		IAE	MS	MP	OI	ACIA	AIAC
		26	26	26	26	26	26
Normal Parameters	Mean	58.04	21.35	20.81	20.38	18.92	15.12
	Std. Deviation	9.489	2.607	2.593	3.287	3.752	3.963
Most Extreme Differences	Absolute	0.194	0.16	0.145	0.15	0.179	0.165
	Positive	0.104	0.093	0.13	0.097	0.139	0.118
	Negative	-0.194	-0.16	-0.145	-0.15	-0.179	-0.165
Kolmogorov-Smirnov Z		0.99	0.817	0.739	0.765	0.91	0.843
Asymp. Sig. (2-tailed)		0.281	0.517	0.646	0.602	0.378	0.477

7.3 Assessment of multicollinearity

Multicollinearity exists when there are strong correlations among the predictors and the existence of r value greater than 0.80, tolerance value below 0.10 and Variance Inflation Factor (VIF) greater than 10 in the correlation matrix are the causes for the multicollinearity existence (Field, 2009; Myers, 1990; Pallant, 2007). Tolerance is a statistics used to indicate the variability of the specified independent variable that is not explained by the other independent variables in the model.

Table 5: Collinearity Statistics

Variables	Collinearity Statistics	
	Tolerance	VIF
Management Support	0.861	1.162
Management Perceptions	0.283	3.537
Organizational independence	0.587	1.704
Adequate and Competent IA Staff	0.435	2.297
Approved IA Charter	0.546	1.832

As shown in the Collinearity Table 5 above, the tolerance levels for all variables are greater than 0.10 and the VIF values are less than 10, and also, the correlation matrix of all the variables have the paired values among the predictors are less than 0.80 as shown in Table 6 below indicates that there were no multicollinearity problems that alter the analysis of the findings, rather it leads to the acceptance of r value, tolerance and VIF values.

Table 6: Pearson Correlation Matrix

Correlations		IAE	MS	MP	OI	ACIA	AIAC
IAE	Pearson Correlation	1	0.630**	-0.044	0.071	0.410*	-0.169
	Sig. (2-tailed)	—	0.0005	0.833	0.729	0.037	0.408
	N	26	26	26	26	26	26
MS	Pearson Correlation	0.63	1	0.206	0.0212	0.314	0.224
	Sig. (2-tailed)	0.0005	—	0.314	0.918	0.119	0.27
	N	26	26	26	26	26	26
MP	Pearson Correlation	-0.044	0.206	1	0.352	0.566**	0.575**
	Sig. (2-tailed)	0.833	0.314	—	0.0781	0.003	0.002
	N	26	26	26	26	26	26
OI	Pearson Correlation	0.071	0.0212	0.352	1	0.061	-0.182
	Sig. (2-tailed)	0.729	0.918	0.0781	—	0.768	0.375
	N	26	26	26	26	26	26
ACIA	Pearson Correlation	0.410*	0.314	0.566**	0.061	1	0.21
	Sig. (2-tailed)	0.037	0.119	0.003	0.768	—	0.302
	N	26	26	26	26	26	26
AIAC	Pearson Correlation	-0.169	0.224	0.575**	-0.182	0.21	1
	Sig. (2-tailed)	0.408	0.27	0.002	0.375	0.302	—
	N	26	26	26	26	26	26

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

7.4 The Regression Results for IAE

The next table displays regression results. Table 7 shows that p-value for the factors that affect the effectiveness of internal audit are statistically significant at ($p < 0.05$) which support internal auditors' ability in identifying non-compliance activities and the added contribution by internal audit to the sector.

Table 7: Regression Result

		Coefficients(a)						
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	16.541	14.68		1.127	0.273		
	MS	2.162	0.541	0.594	3.999	0.001	0.861	1.162
	MP	-1.461	0.949	-0.399	-1.541	0.139	0.283	3.537
	OI	0.415	0.519	0.144	0.8	0.433	0.587	1.704
	AIAC	-0.35	0.5	-0.146	-0.701	0.491	0.435	2.297
	ACIA	1.194	0.472	0.472	2.531	0.02	0.546	1.832

a: Dependent Variable: IAE

Table 8 below shows that R2 value is 0.62. It means that the ability of independent variables to clarify the dependent variable is 62,0 %. While 38,0 % is affected by other factors beyond this research.

Table 8: Coefficient Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.788a	0.62	0.525	6.537

a. Predictors: (Constant), MP, OI, MS, ACIA, AIAC

8. Discussion

H1: The management supports are positively related to the internal audit effectiveness in the public-sector offices.

The first hypothesis of this research posted that the effectiveness of the internal audit is directly related to the extent of the management support it receives. Proving the strongly correlated relationship between the IAE and the management support, the positive beta sign and a statistically significant result of management support related with the internal audit effectiveness ($\beta = 2.162$, $t = 3.999$, $P < 0.05$) support the proposed hypothesis acceptable. The management support in terms of providing resources, giving training, introducing with new technologies, providing enough facilities and encourages the internal audit process with commitments to promote and communicate their added value for the effectiveness of internal audit work in their office contributes for the IAE.

The results were consistent with the previous auditing research works of (Mihret and Yismaw, 2007; Cohen and Sayag, 2010) they find that the top management support was the critical determinants of internal audit effectiveness in audit finding and the commitment to strength internal audit through hiring proficient internal audit staff, developing career channels for internal audit staff, and supplying internal audit work independence. Similarly, in this research finding the management support in terms of training, resources and through other necessary facilities to the internal auditors the top management can contribute to the effectiveness of internal audit works for their office.

Therefore, the management support can contribute for the effective result of the internal auditors through their support in terms of continuous training for their IA staff, fulfilling the necessary materials and facilities that the IA staff needs; and this in turn strongly supports the first proposed hypothesis (H1).

H2: The better the management perceptions of internal audit values, the higher internal auditors' ability in identifying noncompliance activities and the more added contributions.

The second hypothesis of this research revealed that there was no direct relationship between management's perception and the effectiveness of IA in the way of identifying noncompliance activities and the ability of IA to add value to the IAE.

This hypothesis was not supported by the regression result. As shown in table 4.7 above the coefficient of MP ($\beta = -1.461$) were negatively related and statistically ($t = -1.541$, $p > 0.05$) not significantly related with the internal auditor's effectiveness by identifying noncompliance activities and in adding more values to the IA works of the public-sector offices.

But this hypothesis needs a caution; in that insignificance of the management's perception in determining the IA effectiveness didn't mean that it doesn't completely contribute to the effectiveness of IA. This result may be happened due to the management's support and the availability of adequate and competent IA staff highly contributed to the IAE in the public-sector offices. This makes the contribution of the MP to the IAE insignificance.

Therefore, the spirit of good perception of the management to the effectiveness of internal audit function in identifying the noncompliance activities and their ability to add value to their office was nothing without the appropriate management support to the internal audit functions and without the existence of adequate and approved IA staffs in the office. Furthermore, the support from the management and the availability of the adequate and competent IA staff may overshadow in the determinants of the management's perception of the internal auditor's value.

The results were consistent with the previous auditing research works of (Flesher and Zanzig, 2000) they find that the effective performance will be reached if internal auditors and the customers of audit services hold a similar understanding of what makes internal auditing a value-added activity. Failure to reach this understanding could result in the perception that internal audit is simply a barrier to achieving production objectives. This can hinder the effective and efficient use of audit services and recommendations provided which adversely influence the effectiveness of IA (Arena and Azzone, 2009).

When the top management gives importance to the function of IA, employees at all levels will cooperate and support these processes (Cohen and Sayag, 2010). This implies that internal audit staffs are more motivated and encouraged to perform audit activities given good management's awareness of IA values. Five Belgian firms used by Sarens and Beelde (2006) as a case study approach to examine the expectations and perception of both senior management and internal auditors with respect to the relationship between these two parties. They find that there is a lack of perceived objectivity and the relationship with the audit committee is weak when internal audit operates mainly in a management support role. However, internal audit significantly influences by senior management's expectations and that the perception of senior management is critical to the acceptance and appreciation, to promote value-added and to the maturity of internal audit function with the organization.

H3: The organizational independence for internal auditors positively related to the internal audit effectiveness in the public offices.

The third hypothesis of this research which is assumed to be the determinants of IA effectiveness is the independence of the organization in which internal audit work was conducted.

As shown in the table above the coefficient of OIN ($\beta = 0.415$, $t = 0.8$) were positively related to the effectiveness of IA. But, because of its statistical result ($P > 0.05$), the regression output result hasn't a statistically significant relationship between the organizational independence and the IA effectiveness reveals not to support the third hypothesis.

Whereas, it is consistent with the previous studies run by (Cohen, and Sayag, 2010; Van Peurse, 2005) they find that, the organizational independence for the internal auditors plays the vital role in assurance of internal audit effectiveness by freely access of necessary documents, information and data about the organization for audit work, and can provide audit finding /report/ freely and directly to the responsible body, and this all supports the IA effectiveness in their sector.

Stewart and Subramaniam (2010) check under organizational status the IAF in the organization should be

given the proper situation to enable the function to practice organizational independence and individual internal auditors to act objectively since the position of internal auditors is well-defined as employees of an organization with responsibility to assess and monitor decisions made by management.

This, in turn, leads to an insignificant contribution of OIN for the IAE and not to support the proposed hypothesis (H3).

H4: The presence of adequate and competent IA staff in the public-sector offices are positively related to the internal audit effectiveness.

The fourth hypothesis of this research posted that the effectiveness of the internal audit is directly related to the presence of adequate and competent IA staff in the public-sector offices. Showing the strongly correlated relationship between the IAE and the ACIA, the positive beta sign and a statistically significant result of ACIA related with the internal audit effectiveness ($\beta = 1.194$, $t = 2.531$, $P < 0.05$) support the proposed hypothesis acceptable. But, some previous auditing researches were inconsistency with this result (Arena and Azzone, 2009; Cohen and Sayag, 2010). They argued that there was no correlation between professional proficiency and adequacy with the IA effectiveness. The previous research were carried out in terms of the number of internal auditors, professional certification and level of education, whereas this research was conducted the effects of IA by examining the overall skilfulness of the internal auditor staffs and the availability of adequate and certified internal auditors in terms of their performance to proceed the required auditing activities by matching with the audit standards and organizational objectives by using modern technologies when compared to those previous studies.

Therefore, the existence of adequate and competent IA staff in the public-sector office results with a positive relationship with IAE and with a high contribution for the IAE by carrying out their activities on time, comprise the planned scope of auditing activities by using the computerized data tools and specific IA software. This results in the overall contribution of internal audit effectiveness and its positive relationship with IAE leads to highly support the proposed hypothesis (H4).

H5: The availability of approved IA charter in the public-sector offices have a positive and significant effect on the internal audit effectiveness in the public-sector offices.

The last hypothesis which is proposed to support the effectiveness of internal audit is the existence of approved internal audit charter in the public-sector office. A well-drafted IA charter is a conclusive ingredient for the successful internal auditing functions.

This hypothesis was not supported by the regression result. As shown in table 4.7 above the coefficient of AIAC ($\beta = -0.35$) were negatively related and statistically ($t = -0.701$, $p > 0.05$) not significantly related with the internal auditor's effectiveness by identifying noncompliance activities and in adding more values to the IA works of the public-sector offices.

In addition, the result of this hypothesis was compatible with the prior audit researches conducted by (Van Peurse, 2005; O'Regan, 2002). According to the authors, a well-drafted IA charter supports the internal audit function to do its roles of management influence objectively and used as a way of getting access to the information (documents, records, systems, and personnel) that are necessary to perform and reach conclusions on the work. The MoFED (2004) also impose all the public sectors to have approved IA charters that are used as a working manual.

Therefore, the existence of approved internal audit charter in the public-sector office contributes for the effectiveness of internal audit works by facilitating the activities of internal auditors and to make their purpose and authority in line with the standards for the professional practices formulated by the institute of internal auditors in accordance to the rules and regulations of the organization. This strongly supports the proposed hypothesis of the positively related relationship between the availability of AIAC and its significant impact on the internal audit effectiveness (H5).

9. Conclusion

From this study, we can conclude that:

- 1- According to the regression output in table 7 above three predictors; the composite measure of management support, organizational independence of internal auditors and the existence of adequate and competent IA staff, were positively contributed for the effectiveness of internal audit functions in SUDAN public sector offices. Therefore, the public-sector office should give great emphasis to use these determinant variables to make their service delivery effective, efficient and economical throughout their offices. Moreover, the management support, the existence of adequate and competent internal auditor's staff were the major determinants of IAE in the public sector. However, the management's perceptions for IA value, the organizational independent of IA and the availability of approved internal audit charter were not significantly important for the IAE of public sectors as of the above three variables.
- 2- This study finds that the composite measure of the five factors accounts for 60.2% ($R^2 = 0.62$)

variance for the IA effectiveness in identifying noncompliance activities and added contributions to the public-sector offices. That means, the impact of these five independent variables contributed to the dependent variable IAE was 62.00%, and the remaining 38.00% were other variables that are not included in this study.

- 3- The proof from the study indicates that the internal auditors of the public sector are concentrated their activities on compliance with laws and regulations as shown in Table (2), but regarding the Financial audit, internal audit system evaluation and risk assessment little attention was paid. Now the modern direction of internal audit is risk management and if internal audit unit does not give more attention to it, it is difficult for the sector to improve organizational performance.
- 4- The internal auditors need experience and expertise to provide quality work as shown in Table (1).

10. Recommendations

After watching the research findings and achieved results with regard to the main purpose of this study to identify the major determinants of IAE in the public-sector offices and also to prove the hypotheses, the researcher provides the following recommendations to the public-sector offices and to the internal auditors.

- The public-sector office should aid more for the internal audit functions by facilitating the IA works, should recruited more adequate and competent IA staff and give adequate training and professional certification for the existing IA staffs, and should preserve the approved IA charter and workable manuals for their office because it directs the overall activities of the internal auditors in line with IIA standards and the office policies and guidelines.
- The internal audit staffs of the public-sector offices should be recommended to maintain and improve their effective contribution for the IAE in their office, by using the support from their offices management team appropriately, by improving their professional certification in line with the Institute of internal audit standards and organizational guidelines and by introducing themselves with modern technologies that improve their IA function for their office.
- The internal audit staffs of the public sector also recommended to work in accordance with the available internal audit charters, it assists the internal auditors to provide the appropriate reports and to know the extent of their relationships with the management, briefly describes their rights and duties IA and the employers.
- The researcher also recommends that internal auditors should have to follow the modern definition of internal audit which means, they have to concern about risk assessment and management.
- Further, the data are exclusive to the perceptions of internal auditors and are not as inclusive as they would have otherwise been if we had included other stakeholders, such as external auditors. For this cause, maybe, a future study could be handling to research the perception of other parties such as external auditors on the internal audit's effectiveness. Also, other independent variables could be modeled.

Finally, to extra explain factors affecting internal audit effectiveness further possible methods such as interviews may help.

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