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COMPUTER BASED ACCOUNTING INFORMATION SYSTEMS AND ITS EFFECT ON SELECTED NGOS IN ETHIOPIA

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Abstract
This study sought to describe the benefits and challenges of adopting computerized accounting information systems emphasizing internal control aspects. In line with this objective of research, 10 NGOs were selected using purposive sampling. The study followed a parallel convergent mixed-method design with a descriptive research approach. 112 informants comprising auditors, finance heads, and IT officers participated in the study with a response rate of 90%. Structured interviews were conducted with 10 experienced professionals. The study extensively reviewed works of literature and empirical studies to support the finding. The finding of the study indicated improvements in internal control are achieved through the use of extra protection provided by the systems such as password and data authentication. Accountability and compliance are also reported to have improved due to use of CAIS. Human related data control challenges were identified. Data input, storage and access challenges were reported to be the major challenge areas. IT governance and IT knowledge are indicated to contribute towards computer fraud detection and strengthening of internal control of organizations. It is hence recommended that managers as designers and implementers of internal control systems should work on the application of IT governance and update employees' IT knowledge on a regular basis. The result of the study is believed to provide insights to accountants, managers, auditors, IT auditors, information system professionals, academicians, government, and regulatory bodies.

Keywords: Computerized accounting Information Systems (CAIS), AIS, information technology (IT), internal control, computer fraud, IT governance (ITG), IT knowledge, NGO, Ethiopia.

1. Introduction

For many modern organizations, technology guides the financial reporting processes. The quality of financial reports relies on the quality of a computerized accounting information system (Sugut, 2012). The reliability of financial reports is one of the key qualities for making an efficient economic decision (Rockart & Scott Morton, 1984; Wallman, 1997). The information systems as well as the environment over which the business process is taking place need to be adequately controlled taking into consideration the fusion of the technology with the field of accounting and management. Organizations, therefore, need to implement IT governance along with the implementation of computerized accounting systems. IT governance as a tool enables to harmonize the choice of technological investments with the strategy of the organization (Lindros, 2017). IT knowledge and skills are considered vital to an accountant‘s career and effective and efficient use of the systems. Accountants, as users, are the basic part or component of any information system. Interacting with CAIS is one of the most important tasks that accountants perform (Romney & Steinbart, 2015).

1.1 Background of the Study

Challenges surrounding computer-based accounting information systems studies address the issue of the high cost involved in the adoption of the systems, also the regular need for the update of the systems that

adds to the cost issue, and also the need for regular provision of training to users (staff) following updates on the system. This research paper mainly attempted to identify internal control benefits and challenges of adopting computer-based accounting information systems in the context of developing countries. To the best of the researchers' knowledge, the area of internal control benefits and challenges surrounding the use of computer-based accounting information systems is under-research.

1.2 Statement of the Problem

The research problems that are addressed in this study include internal control benefits and challenges are faced by NGOs in Ethiopia, along with IT governance, IT knowledge, and computer fraud. The questions that answered in the study are as follows:

1. What are the internal control benefits of adopting computerized accounting information systems?
2. What are the practical internal control challenges of adopting computerized accounting information systems in terms of input, process, storage, output, and personnel controls?
3. What is the relevance of user's IT knowledge and internal control under computerized accounting information systems?
4. What is the relevance of IT Governance for internal control in computerized accounting information systems?
5. What is the use of computerized accounting information systems in computer fraud detection?

1.3 Objectives of the Study

The general objective of this research was to study the internal control benefits and challenges of using Computer-based Accounting Information Systems in selected NGOs in Ethiopia.

Specific objectives of the study include the following:

1. To identify the internal control benefits of using computerized accounting information systems
2. To assess the internal control challenges of using computerized accounting information systems with regard to control over input, process, storage, output, and personnel controls
3. To make out the relevance of user's IT knowledge and the use of computerized accounting information systems
4. To sort out the relevance of IT governance for use of computerized accounting information systems
5. To discover the use of computerized accounting information systems in computer fraud detection

2. Literature Review

The following related literature review is based on thematic approach. Hu and Wang (2011) indicated that the use of CAISs improved internal control. On the other hand, studies by Trinandha et al. (2018) indicated that the use of CAISs has an effect of unlocking opportunities to commit computer accounting frauds. Based on the empirical review, previous researches have discussed CAIS concerning its impact on performance (Naranjo-Gil, 2004; Al-Dmour, 2018; Fekade, 2017; & Soudani, 2012), profitability (Rahman et al., 2015), the impact of CAIS on financial performance with the role of internal control (Al-waeli et al., 2020), AIS, and ethics researches (Guragai et al., 2017; Dillard & Youthas, 2001; Alles, 2020; & Smith, 2016). Some studies discussed the topic of CAIS with improved decision-making (Gordon et al., 1978; Beke, 2010; & Hla & Teru, 2015). Studies such as the one conducted by Al-waeli et al. (2020) addressed the role of internal control concerning the computer-based accounting system, But the study considered internal control in a mediating role between financial performance and use of CAIS and not as a topic of interest on its own. Kereta (2018) outlined in his study why there is low IT governance in Ethiopian Banks. Lutui & 'Ahokovi (2018) studied the relevance of the control embedded

within the computerized accounting information systems. CAIS is also discussed in relation to SMEs (Rahman et al., 2015 & Ardiansah & Indah, 2021).

Studies about the impact of information technology on internal control are attempted in papers such as by (Wang et al., 2011 & Ramadhan et al., 2011). Kasssa (2021), studied the effect of ERP systems on internal control and the result indicated that the quality of the information systems comprised in the bigger ERP systems has a positive and significant impact on internal control.

Factors influencing the adoption of CAIS are discussed by (Ayele, 2020; Edison et al., 2012; & Tilahun, 2018;), the impact of the adoption of CAIS on the effectiveness of manufacturing firms is studied by (Rotich, 2017). The study by Yenni (2017) focused on knowledge of AIS users, quality of the AIS, and its output. The same researcher also studied the implication of information systems and user satisfaction. Effects of information system quality on internal control have been studied by Kassa (2021) in ERP systems used by Banks. Computer-based accounting information systems users' knowledge gap was identified in a study conducted by Fikadu et al. (2014). Likewise, the discussion presented in the empirical review shows the benefits and challenges of adopting computer-based accounting information systems concerning efficiency and effectiveness in doing the accounting task and getting real-time reports.

3. Research Methodology

3.1 Research Design and Sample Method

The study followed a mixed-methods design to achieve the objectives of the study in a rich and detailed manner through methods triangulation. Under the mixed-method approach, this study followed the convergent design in which data coming from the qualitative and quantitative arms are analyzed separately and the results of the analysis are compared and discussed. As stated by Creswell (2014, p. 219), Creswell and Creswell (2018a), and Creswell and Clark (2018, p. 112) convergent mixed design is a method that allows the researchers to collect both qualitative and quantitative data, analyze them separately and compare results coming with the core aim of reaching at complete understand and a way to check responses are in harmony that in a way checks validity on both sides.

Purposive sampling was used to select 10 NGOs. The selected 10 NGOs have been using fully automated AIS for the past 5 and 5+ years and this was taken as a criterion that backed the judgment used by the researcher while conducting the selection. Based on expert sampling which is a subgroup of purposive sampling, a total of 112 informants from the 10 NGOs were selected to participate in the study. As indicated in the analysis part a total of 101questionnaires were fully completed and returned to the researcher which made a response rate of about 90%.

3.2 Data Collection and Analysis

The study used qualitative and quantitative data giving equal weight to each data category. 112 questionnaires were distributed to participants of the study and 101 of them were successfully secured. The interview was made with 10 experienced managers who are in the profession of Accounting, Auditing, and IT. To test the validity of the data collection instrument, a pilot study was made before data collection. 12 individuals from the 10 NGOs participated in the pilot study. Following the pilot test, content and format modifications were made to the data collection instruments.

Quantitative data involved descriptive statistical methods of data analysis. Data from the questionnaire were entered into the computer using Statistical Package for Social Science (SPSS) version 26. Among the various qualitative data analysis methods, phenomenology (heuristic) analysis was undertaken along

with narrative analysis. The data integration followed a side-by-side comparison after separate analysis of the two databases has been made using the convergent mixed-method design.

3.3 Validity and Reliability of Survey Instrument

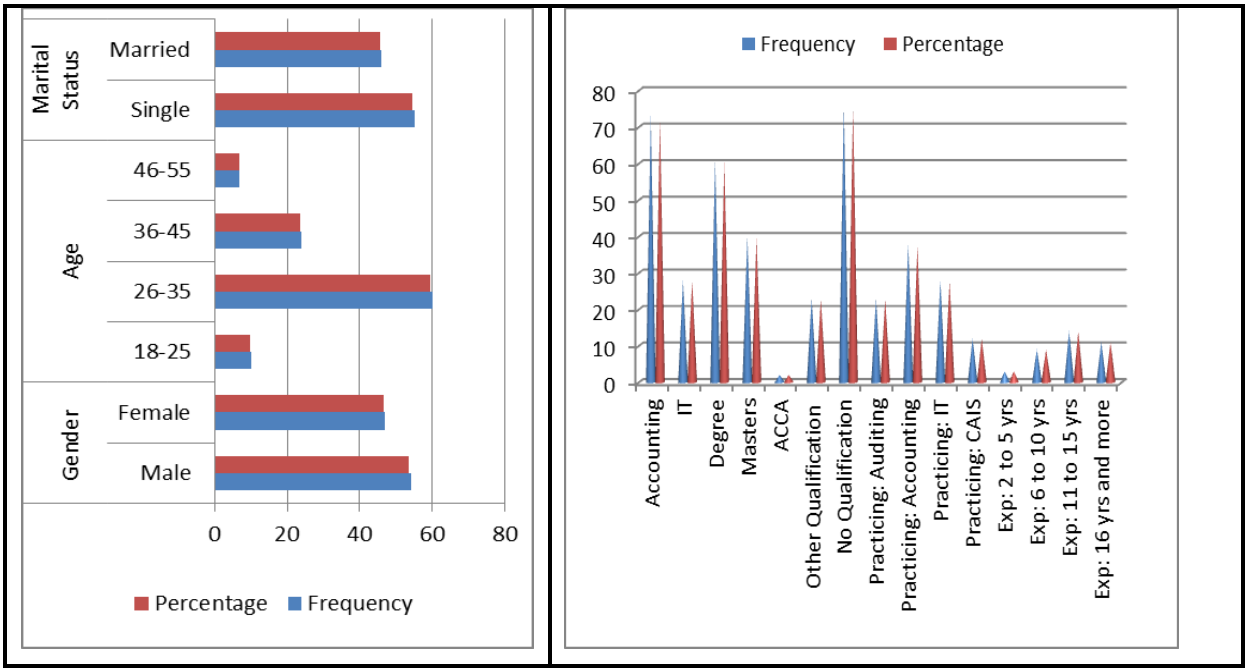
Apart from running a preliminary pilot test on part of the minority of the study sample before administering data collection instruments, the validity and reliability of the instruments are ascertained by a Cronbach's alpha value of 0.829 and 0.902 for the internal control benefits and challenges of using computer-based accounting information systems respectively. Based on the recommendation of (Cronbach, 1951; Sekaran, 2003), Alpha values are used to test the reliability of data collection instruments used in this study.

4. Quantitative Analysis of Findings

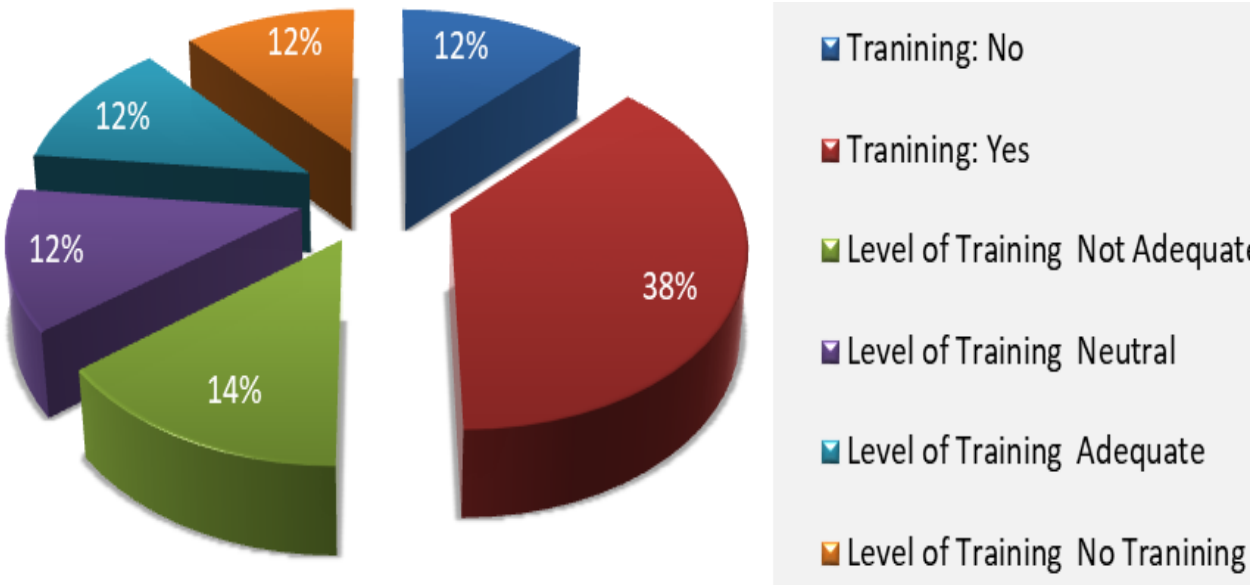
To be able to answer the research questions that were listed in the statement of the problem, a total of 112 questionnaires were distributed as a means of data collection instrument to 10 NGOs according to the number of respondents in the specific organizations. A total of 101 questionnaires were returned fully completed while 3 were dully answered and 8 were not returned at all. This made the response rate to be around 90%. The following charts show respondents' background in terms of Gender, Age, Marital Status, Education, and work-related background.

4.1 Analysis of data collected about Benefits of CAIS

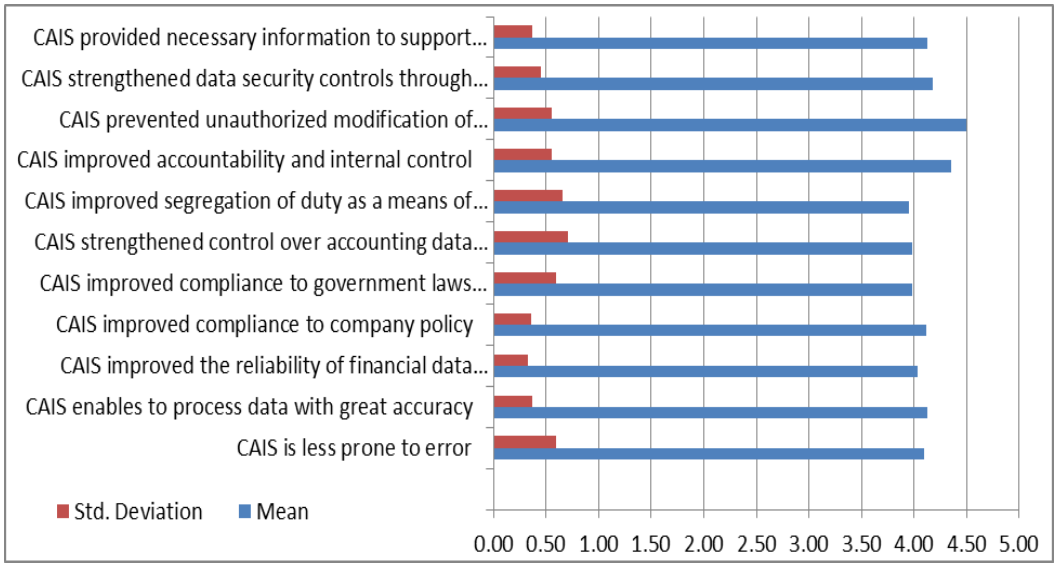
The finding of the study indicated that in general, the respondents agreed that there are internal control benefits of adopting computer-based accounting information systems. The systems are said to be less prone to an error relating to the system itself, and that the systems are mostly accurate in processing data. The internal control is improved and the reliability of financial statements has improved. Further, the system has provided extra control over financial data through the use of authorized access procedures. The audit log provided strengthened data and information security. It has also improved accountability.



The following pie chart shows the training background of respondents



The following bar chart shows the mean and standard deviation values for benefits of CAIS

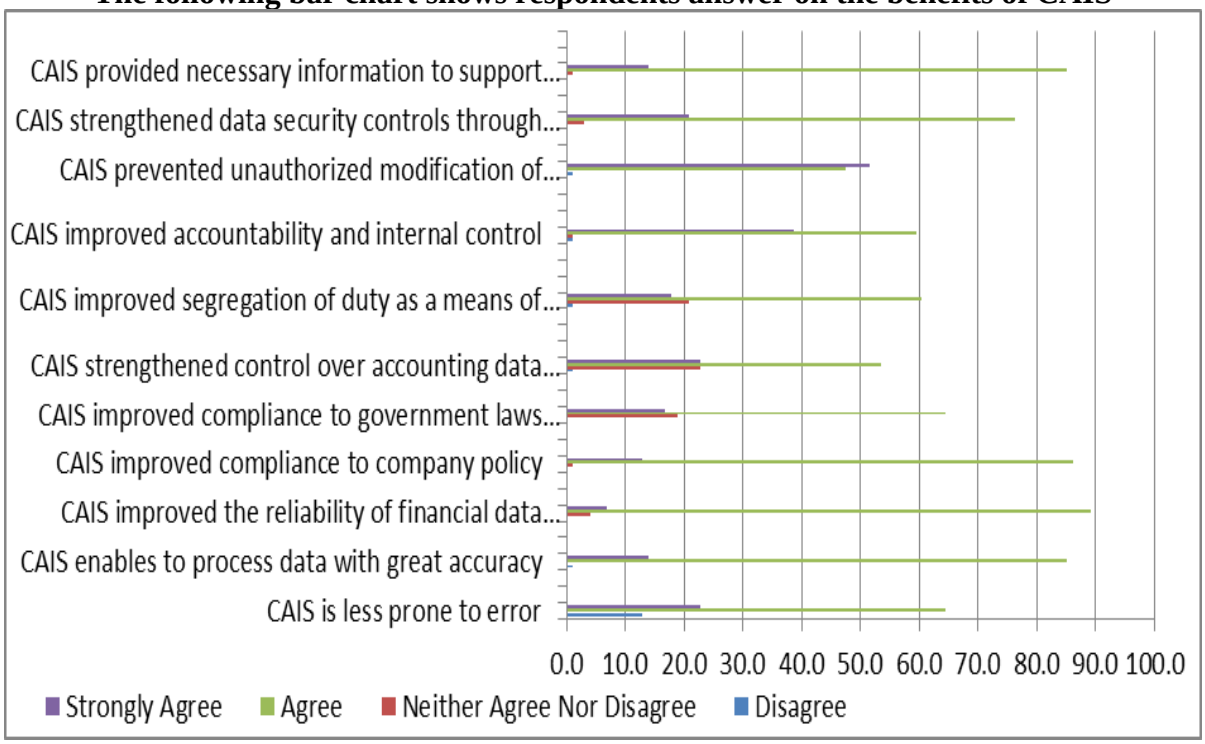


Statements with high mean were: CAIS prevented unauthorized modification of accounting data and CAIS improved accountability and internal control. This means the respondents strongly agree to these statements as the interval for strongly agree is (4.21, 5.00). This finding relates to the study by Liew (2019), Mndzebele (2019), Corsi et al. (2017), and Lutui and ‘Ahokovi (2018) which indicated that technology has an important role in internal control and it can ensure the achievement of internal control objectives. Lutui and ‘Ahokovi (2018) further stated that computers or technology can lead to bigger control problems unless there exist proactive measures that can identify potential risks and threats posed by the technology itself. Having a well-designed and developed CAIS is the key to having an effective control system within organizations (Yehualashet, 2020).

The system is also said to have improved compliance with the law. Respondent explained the auditor's attestation on the test of internal control indicated that there existed only non-material and insignificant noncompliance issues. The cost of compliance with internal control policies and regulation is considered high in terms of having the control system and the skilled human power for its administration. In addition to the IT officers, there is a need for IT security and compliance officers that work independently. The result of a study conducted by Wang et al. (2011) resonates with the opinion that the presence of computer systems increases compliance to internal control policies and procedures.

Accountability is better addressed in the computer systems through the audit log which contains information such as who initiated a specific task in the system. This supports authorization and authentication. Accountability enables to track who committed the violation to the computer systems and to help the individual responsible for the act of violation.

The following bar chart shows respondents answer on the benefits of CAIS



The analysis of the qualitative data collected through interviews shows that all in all respondents agree that the use of the systems has improved their efficiency and effectiveness in terms of internal control. Respondents said that internal control has improved in terms of strengthened security through extra measures such as the use of passwords, input controls, processing control, access, output, and storage controls. The input controls provide controls of data validation and completeness of data that are recorded on the system. The processes control makes sure that no overwriting or deleting of data happens while processing and also avoids errors that can happen when more than one user updates the data in the system.

4.2 Analysis of data collected about Challenges of CAIS

Table showing statistical results of data collected from respondents about CAIS Challenges

	Strongly Disagree		Disagree		Neither Agree Nor Disagree		Agree		Strongly Agree	
	%	F	%	F	%	F	%	F	%	F
CA1	10.9	11	60.4	60	24.8	25	4.0	4	-	-
CA2	18.8	19	64.4	65	15.8	16	1.0	1	-	-
CA3	21.8	22	66.3	67	11.9	12	-	-	-	-
CA4	-	-	-	-	22.8	23	63.4	64	13.9	14
CB1	-	-	10.9	11	20.8	20	56.4	57	11.9	12
CB2	-	-	17.8	18	74.3	75	-	-	7.9	8
CB3	16.8	17	78.2	79	4.0	4	-	-	1.0	1
CB4	17.8	18	68.3	69	13.9	14	-	-	-	-
CB5	-	-	1.0	1	24.8	25	62.4	63	11.9	12
CC1	3.0	3	4.0	4	7.9	8	63.4	64	21.8	22
CC2	-	-	-	-	15.8	16	60.4	61	23.8	24
CC3	27.8	28	64.4	65	7.9	8	-	-	-	-
CC4	-	-	-	-	19.8	20	57.4	58	22.8	23
CC5	23.8	24	32.7	33	15.8	16	24.8	25	3.0	3
CC6	24.8	25	36.6	37	8.9	9	28.7	29	1.0	1
CD1	17.8	18	34.7	35	23.8	24	23.8	24	-	-
CD2	20.8	21	31.7	32	16.8	17	26.7	27	4.0	4
CD3	22.8	23	31.7	32	15.8	16	25.7	26	4.0	4
CD4	-	-	5.0	5	30.7	31	45.5	46	18.8	19
CD5	-	-	1.0	1	3.0	3	70.3	71	25.7	26
CE1	-	-	2.0	2	8.9	9	68.3	69	20.8	21
CE2	25.7	26	37.6	38	5.9	6	23.8	24	6.9	7
CE3	21.8	22	39.6	40	12.9	13	23.8	24	2.0	2
CF1	1.0	1	78.2	79	16.8	17	4.0	4	-	-
CF2	25.7	26	48.5	49	18.8	19	5.9	6	1.0	1
CF3	2.0	2	59.4	60	7.9	8	14.9	15	15.8	16
CF4	-	-	12.9	13	9.9	10	49.5	50	27.7	28

CA1=Problems of initiating unauthorized transaction, **CA2**=There is problem of accidental entry of bad data, **CA3**=Entering incomplete data to the CAIS, **CA4**=Entry of invisible data that lacks source document, **CB1**=Lack of clear audit trail or activity log in CAIS, **CB2**=Computers lack judgment when things go wrong, **CB3**=Potential errors in the application program, **CB4**=There is no effective adequate separation of duty in CAIS (because of centralization of data), **CB5**=Effect of error spread rapidly through files because of CAIS fast processing, **CC1**=Invisibility of audit trail (activity log), **CC2**=Information can be altered without physical trace, **CC3**=Accidental destruction of data by CAIS users, **CC4**= Intentional destruction of data by employee, **CC5**=Data is easy to steal in CAIS, **CC6**=Loss of data or information, **CD1**=Reports get distributed to unauthenticated users in CAIS, **CD2**=Unauthorized access to information through sharing of password, **CD3**=Fictitious or incorrect output (intentional), **CD4**=Output may fail to reflect the real-world situation because of sophisticated processing of CAIS, **CD5**=Output from CAIS is assumed to be accurate and usually not checked, **CE1**=Not running a background check while hiring causes computer fraud, **CE2**=Inadequate training and lack of monitoring of staff working on CAIS can be a reason for accidental breach of control, **CE3**=Unauthorized access to data is possible under CAIS because if centralization of data, **CF1**=Unauthorized access to CAIS by hackers, **CF2**=Natural disasters (fire, loss of power, etc.), **CF3**=Introduction (entry) of computer virus to the CAIS, **CF4**=Risk of loss of data during system failure under CAIS

The majority of participants stated that there are input control problems that are mostly related to humans or staff. Entering incomplete data when recording transactions, at times entering invisible data that have no supporting documents and not entering a transaction were the major issues raised. Getting complete and detailed information was said to be difficult either because of issues on input control or process control. All in all, challenges regarding errors control at the initial input stage were identified.

The result of the analysis of the data collected indicates that there are some challenges of using computerized accounting information systems. The problems include the existence of invisible data that lacks source documents and incomplete data entry about a transaction. Problems of initiating unauthorized transactions, entering bad data by accident were low.

Lack of a clear audit trail, computers lacking judgment when things go wrong, and computer's fast processing which contributes to the fast spread of error was mentioned as a challenge. Problems in the application or system and problems of segregation of duty in terms of the centralized system were reported as low challenge areas.

The analysis shows in general there is a storage control issue. The challenges include modification or alteration of data, the invisibility of audit trail, and also loss of data without a physical trace was among the challenges. The analysis showed that the computer outputs of the system are accurate while intentional alteration and modification of information by users still existed. Problems of distribution of information only to authorized workstations and there is also a problem with the output of not being able to reflect reality.

Regarding personnel control challenges, the analysis shows that not running background checks presented some challenges while unauthorized access due to centralization and inadequate training, and

lack of monitoring which can cause accidental information or data breach are considered not a challenge. The risk of data loss because of system failure is considered a problem while information breaches by hackers, data loss due to natural disasters, and loss of data due to virus attacks are considered not a problem.

Having adequate and updated IT knowledge of the users of the system is strongly believed to contribute towards better use of the system and it agreed that it can help in achieving organizational goals effectively. The use of a computer-based accounting system is believed to protect against fraud and internal control issues. Respondents agree that the systems can detect fraud and thereby provide protection.

4.3 Analysis of data collected about use of CAIS and IT knowledge, IT governance and Computer Fraud

As shown in the table below respondents said that professional accountants must have the skill to use computer systems as the accounting systems are now computerized. The study by Ghasemi et al, (2011) supports this view. Management's knowledge of information security, information system design, and awareness of the level of risk that is present in their organization is considered to take a significant role in the prevention and detection of data breaches within the organization. The study by Ayereby (2018) indicated the same result.

The following table shows statistical results of data collected from respondents about the use of CAIS, IT knowledge, IT governance and Computer Fraud

	Strongly Disagree		Disagree		Neither Agree Nor Disagree		Agree		Strongly Agre	
	%	F	%	F	%	F	%	F	%	F
D1	-	-	-	-	5.9	6	64.4	65	29.7	30
D2	-	-	-	-	2.0	2	69.3	70	28.7	29
D3	2.0	2	5.9	6	5.0	5	54.5	56	32.7	33
D4	1.0	1	1.0	1	17.8	18	73.3	74	6.9	7
D5	-	-	-	-	10.9	11	72.3	73	16.8	17
D6	-	-	-	-	4.0	4	39.6	40	56.4	57
D7	-	-	-	-	7.9	8	72.3	73	19.8	20
D8	-	-	-	-	5.9	6	76.2	77	17.8	18

D1=IT knowledge of staff plays an important role in achieving benefits of adopting CAIS, **D2**=Existence of IT governance is important achieving internal control goals through the use of CAIS, **D3**=CAIS provides protection against fraud and internal control breaches, **D4**=C contributes towards detection of frauds, **D5**=Staff working on CAIS have a full picture of security threats that comes with the computer-ba system, **D6**= Accounting staffs need to have adequate IT knowledge to minimize accidental entry of bad data, **D7**=Management's knowledge have a role in identifying risks to internal control under CAIS, **D8**= Accountants need to have adequate IT knowledge so as

As shown in the table respondents said that professional accountants must have the skill to use computer systems as the accounting systems are now computerized. The study by Ghasemi et al, (2011) supports this view. Management's knowledge of information security, information system design, and awareness of the level of risk that is present in their organization is considered to take a significant role in the prevention and detection of data breaches within the organization. The study by Ayereby (2018) indicated the same result.

IT governance is stated as a means of implementing internal control which will oversight the information system security and thereby reduce computer frauds. Whereas, establishment and

implementation of IT governance require organizations a great deal of effort. IT knowledge is considered an important asset among professional accountants, auditors, and top management as it enables efficient and effective use of the system. Updating knowledge based on current issues surrounding the information technology sector is considered crucial for successfully achieving organizational objectives, improving performance, and thereby strengthening internal control.

IT governance together with IT knowledge of system users is indicated to improve computer fraud detection and minimization. With the oversight function of IT governance policies coupled with an awareness of computer fraud by users of the system, an organization can improve their internal control benefits of adopting accounting information systems.

5. Qualitative Analysis of findings

5.1 Analysis on Internal Control Benefits of adopting CAIS

As indicated in the Table below, respondents have agreed that the adoption of computer-based accounting systems has contributed towards better internal control in terms of various ways such as input control, process control, access control, accountability, and compliance. The answers to the interview question are summarized in a table using an open coding method where shortly sequenced words are used to give the main idea of what has been said.

Codes are given to the interview responses. Accordingly, the codes run from R0 to R9 representing the 10 respondents from the 10 NGOs participating in the study. The responses are also presented in the table corresponding to the codes.

Summary of major internal control benefit of adopting CAIS

	Responses to interview Question #1	**Emergent Theme**
R0	*".....apart from physical control that had been in place the use of CAIS includes additional features to the control system in terms of the use of passwords....."*	Internal Control
R1	*".....errors during processing have decreased and hence quality and accuracy of reports increased...."*	Process Control
R2	*".....data and information security have increased because access by an unauthorized individual is minimized...."*	Access Control
R3	*".....the system helped to increase compliance with various laws...."*	Compliance
R4	*"....CAIS has improved and strengthened internal control....."*	Internal Control
R5	*"....errors while recording or inputting data has greatly reduced which enhanced the quality and accuracy of published reports...."*	Input Control
R6	*".....internal control has improved and the efforts made by staff to check if internal control procedures are followed or not has reduced ...."*	Internal Control
R7	*".....accuracy of report increased due to use of CASI....."*	Process Control

R8	*"……the audit log improved internal control and also accountability…."*	Internal Control & Accountability
R9	*".....CAIS improved accountability and compliance to policy and internal control procedure……"*	Accountability & Compliance

Source: Interview

5.2 Analysis on Internal Control Challenges of adopting CAIS

As indicated in the Table below, respondents have raised internal control challenges in terms of input, process, completeness, access, authorization, storage, and knowledge challenges. Here also the answers are presented using the open coding approach in a short and summarized way reflecting the main idea of the answers given to the interview questions.

Summary of internal control challenge of using CAIS

	Responses to interview questions #2 - #7	**Emergent Theme**
R0	*"……entering incomplete data about the economic event and entering invisible data without proper source document to support the transaction……"*	Input control challenge
R1	*"....setting the policies and procedures that work behind the system which processes every transaction accordingly....."*	Process control challenge
R2	*"....getting assurance about the inclusion of every transaction into the system was the major challenge....."*	Completeness of input data
R3	*".....unauthorized data access by users of the system....."*	Access control
R4	*".....getting complete information out of the system which reflects the reality was a major challenge....."*	Input, process challenges
R5	*"....controlling errors while recording and initiating a transaction in the system...."*	Input challenges
R6	*"...making sure that every recorded and processed data is authorized was a challenge at first...."*	Authorization
R7	*".....stored data can easily get into the wrong hand due to the nature of the technology. This is because data can easily be transferred to external storage and using the internet. In the manual system, it takes time to copy data and to get access to it....."*	Storage challenge
R8	*"....security for backup data was a challenge as it needs to be kept away from the system and making sure it is accessed only by authorized personnel……"*	Storage challenge
R9	*"....employees does not have a clear picture of the internal control environment when using CAIS....."*	Knowledge

Source: Interview

4.3.3 Analysis on the use of CAIS and IT Knowledge, IT Governance and Fraud

The Table below presents the summary of interview responses about the use of CAIS and ITG, IT knowledge, and computer fraud.

Summary of the use of CAIS and ITG, IT knowledge and Fraud

	Responses to interview questions #8
R0	*"….users of the system should have the skill and knowledge to control the system…"*
R1	*".....The existence of a strong ITG helps reduce the occurrence of computer-related frauds in organizations....."*
R2	*".....IT knowledge is a must for users of the systems such as managers and accountants. When the users have updated knowledge of IT, they can effectively and efficiently make use of the system in all aspects and not just achieve strong internal control....."*
R3	*"……when the users are aware of the specific types of threats that are particularly present in the systems they use, they are better able to proactively act on preventing and minimizing them……"*
R4	*".....only adopting the systems will not contribute towards establishing a strong control environment, the presence of ITG coupled user's knowledge can lead to good internal control system....."*
R5	*"….the system (CAIS) by itself gives better control than the manual AIS in terms of reports such as audit log and history on how transactions are recorded, processed and reported....."*
R6	*"….it is not only accountants that are expected to have IT knowledge, but management also as a user of the information coming from the CAIS must equip themselves with IT skill and knowledge so as to successfully control their environment....."*
R7	*"….users of the system needs to update themself in accordance to the ITG current regulation and laws…."*
R8	*".....IT auditors can play greater roles in identifying computer-related frauds and the internal control of the systems.....*
R9	*"…as a user's of the system, accountants, in addition to the skills and knowledge of IT, they need to possess professional ethics…."*

Source: Interview

6. Major Findings

The data collected indicated that the use of a computer-based accounting system improves internal control through the provision of extra control activities which comes as part of the systems. The improvements are in terms of the use of a password, input controls such as access control, checking of data types, running verification when inputting or recording transactions output and storage control. This study aimed to point out the challenges that are present in the Ethiopian context. Identifying the challenges is halfway through the solution and the paper includes recommendations based on literature and considering experiences of other studies conducted in different countries.

Major internal control challenges associated with the use of computer-based accounting information systems were identified from data collected which includes input control challenges that are related to

human factors in terms of incomplete data and invisible data that are lacking source documents to support the transaction. Data storage control was also a challenging area as there were issues relating to access control, data integration, proper handling of backup data for future use, and risks of data loss as a result of factors such as human error, hard disk failure, system failure and corruption, and power outage and so on.

The study confirmed that IT governance contributes towards the implementation of internal control when using computer-based accounting information systems and it is also indicated that IT governance provides oversight into matters of information system security issues. However, developing and setting policies that govern the use of the information system within the organization was a major challenge indicated by the finding of an analysis of both qualitative and quantitative data. Both IT governance and IT knowledge contribute towards computer fraud detection and strengthening of internal control of organizations.

7. Conclusion and Recommendations

As more and more organizations are becoming heavily computerized, the need to study the technological impact on different areas and aspects became inevitable. Computer-based information systems have huge importance to every organization and hence the internal control issue needs to be given attention to effectively and efficiently use the systems in achieving organizational goals.

Based on the collected data, the informants of this study have shown appreciation of the system interns of its benefits in particular from the aspect of improving internal control and thereby minimizing fraud. However, some challenges come with the systems which are part of the bigger issues and challenges of the current information technology-dominated environment.

IT governance for the management of information systems within the organization was considered an important component that can assist the realization of an improved internal control environment where the fraud level is kept to the minimum. On the other hand, the provision of continuous training to employees is important. Employees who are interacting with the system needs to possess the current knowledge to address and react to current issues in the IT world are pointed out to be equally important.

Based on the findings of the study, the following practical recommendations are forwarded concerning internal control challenges of using CAIS and IT Governance, IT knowledge, and computer fraud:

I. **Management has a major responsibility** in designing and implementing internal control. Management also has to set the tone for the internal control culture within the organization as the saying goes on “the tone at the top”. The design of the internal control has to begin with the understanding of the information systems that are being used in the organization. This is because the internal control system should be able to proactively prevent risks to minimize internal control issues instead of solving the problems after the problems have occurred (detection and minimization of damage).

II. **Organizations should develop ways to protect and secure their computer systems** so as to be able to rely on the information they get out of these systems. Usually, computer frauds that happen because of weakness in the control environment are not detected easily. This is because of the nature of the fraud. Frauds that involve the use of computers go unnoticed because detection requires special knowledge. Even though the systems are tampered with; they still keep

working without causing any problem that users can easily identify. Therefore organizations need to improve their detection capacity through checking the audit log regularly, planning and conducting a frequent audit, hiring IT specialists, testing or checking the system regularly to make sure it is working properly, and providing continuous training to employees working on the systems to update their knowledge to the current state of the art and to make sure that they know the security threats involving the technology they are using.

III. **In today's world IT governance has become the major part of company governance** since the application of IT is a basic element in every company's strategy. To use information systems efficiently and effectively, organizations need to establish and follow IT governance and also develop a good control environment (ISACA, 2019).

IV. **Emphasis should be given to human resources** for the successful implementation of internal control and use of computer-based accounting information systems as evidenced by recent studies (Hla & Teru, 2015 as cited in Luna-Arocas & Camps,2012)

8. Significance of the Study

Bringing the issues of internal control to the study of computer-based accounting information systems is believed to be the vital contribution and significance of this study. There are quite a few papers in this aspect. The study will hopefully contributes to NGOs that are using CAIS in identifying internal control issues and taking actions that will reduce the challenge and increase the benefit of using the systems. NGOs that are planning to automate their system may learn and proactively take measures from this study. This study may contribute towards developing IT governance and curriculum that is in line with the Ethiopian context and a more practical approach for developing nations.

9. Scope and Limitations of the Study

The study focused on internal control under the modern computerized accounting information system in selected NGOs in Ethiopia. The study is delimited geographically to NGOs that are located in Addis Ababa. This study focused on part of NGOs that are charity organizations. This represents just the slight portion of non-government organizations in Ethiopia. The study doesn't cover the wide spectrum of NGOs which includes professional associations, labor unions, trade unions, cultural associations, clubs, and others that are considered to be under the NGO umbrella. Hence generalization is limited to NGOs working in the charity sector and to the organizations that are intensively using CAIS.

Second, the internal control benefit and challenge of using CAIS have a broad spectrum and it varies to some extent from organization to organization depending upon the specific CAIS and whether the CAIS is a stand-alone system or part of a bigger ERP system. Apart from the difference in the type of computer systems or software used, there are other components to internal control such as the control environment, the rules, and procedures, the attitude of the management and board towards control activities (the culture of the organization), availability of information and effective communication of that information is a paramount effect on internal control. Therefore, generalization is limited to the basic functionality of the CAISs as a means of control mechanism.

10. Recommendation for Further Research

Further study should be made on different sectors and industries for comparison purposes. Sector and industry-wise comparisons help to investigate what is best for each of the various sectors. Secondly,

further research should be done on areas of accounting information systems under the ERP environment and also on the integration of accounting information systems and management information systems.

Lastly, Accounting Information System audit in Ethiopia, concerning forensic accounting and computer fraud and theft should be studied for purpose of developing a curriculum that can address the current issues in the information technology world. This can go further deep into the study of big data analytics from the accounting information systems, including data science for audit investigation of patterns on data sets, data warehousing and how to handle data properly, compliance with privacy policies, security issues, and readjusting the curriculum to this level.

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