The Impact of using Computerized Accounting Information Systems in detecting Fraud; An analytical study for the construction sector in KRG

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Abstract

This academic paper investigates whether accounting fraud has been detected with the use of computerized accounting information systems (CAIS) and what can be done to protect a company's fear resources from theft or misuse. Even though organizations in the current era are confronted with technological advancements, but still no previous study in the construction sector has investigated these subject matters through the lens of CAIS.

To obtain the objectives of the study, self-administrated questionnaires were designed on a five-point Likert scale to collect data, judgment sampling was applied, and the sample size was 140. Independent variables of the study represent features of CAIS, while dependent variables represent detecting fraud. Empirically the statistical SPSS software has been used to analyse the identified data and concluded results indicate features of CAIS through internal control, audit procedures and good governance as construct moderating variables enable organizations to detect fraud.

Keywords: CAIS, Fraud, Internal Control, Audit Procedures and Good Governance.

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1. Introduction

Accounting is one of the information systems considered a unique tool that provides detailed financial and non-financial information for external and internal users. Lately, dependence on information technology has crucially increased, thus relying on computer and electronic systems to provide statements and flow information increased as well. Computer technologies enable computerized accounting systems to capture and process firms' financial data (Laudon & Laudon, 2011). Accounting events and transforming data into measurable information, the biggest consequences of information technology have resulted in the development of computerized accounting information systems.

On the other hand, Construction infrastructure assets can be identified as important facilities that evolve the economic improvement of any country or region. The sector of construction in recent years found to be one of the industries more likely to suffer from corruption in distinctive types (Sohail & Cavill 2008; Bowen, et al 2012; Ameh and Odusami 2010 and Le, et al. 2014b), reports of transparency confirm construction sectors more prone to misuse (1999, 2002, 2008 and 2011). Globally cost of corruption in infrastructure accounts for over $340 trillion each year (American Society of Civil Engineering, 2004) and the Institutes of Civil Engineering (UK) claims that corruption affects 5% of infrastructure resources.

Generally, Fraud whether it is fraudulent in financial reporting or physical theft such as employee fraud costs millions of dollars to businesses each year (Best, et al 2004), and detection of them has become an important issue for academicians and businesses. Currently, in the era of using technology and numerous data management, the leading role of computerized systems have brought much attention and circulation in the mind and plan of responsible individuals and organized agencies. Thus, responsible individuals and regulator bodies look for CAIS techniques that might aid in detecting fraud, the exploration of published literature has highlighted those procedures and techniques of computerized systems work well in the area of fraud detection (Omer, 2016, Ameen and Ahmad 2017, Smith 2016, Jan 2016 and Islam, et al 2011). This paper explains the impact of CAIS use as a commitment measure to detect fraud or intentional accounting errors.

1.1 Problem Statement

Common belief shows accounting fraud and accounting irregularities are expected to increase (Modugu, et al 2005), and are difficult to detect (Higson, 2012). On the other hand, fraud has increased rapidly worldwide, and it is expensive as well. For instance, a study by Mitchell (1997) explained that over the previous ten years, the total amount of US $ 15 billion was the cost of fraud in 2608 report cases, which was studied by the Association of Certified Fraud Examiners. Regarding the construction sector, the current situation is a bad situation and pushes KRG to

make great reforms, particularly other related public service projects, the most prominent relevant reform includes public procurement regulation NO (2). On the other hand

1- The cost of fraud in the construction sector is a global problem and found to be high worldwide (Chan & Owusu 2017 and Bowen, et al 2012), evaluated to be $ 340 billion each year (American Society of Civil Engineers 2004). Additionally, it performs in several forms (Doree, 2004; Brown and Loosemore 2015; Bowen, et al 2012; Olken, 2004). Transparency International Bribe Payer Index (1999, 2002, 2006, 2008 and 2011) explains bribery in the construction sector is greater than in any sector of the economy, according to the Organization of Economic Co-operation and Development (2014), corruption within the construction sector claims accounts over $2.6 trillion each year and $1 trillion in forms of bribery.

   As a result of these expectations high rate of expected to occur particularly in the complex construction sector, recognizing valuable ways to overcome problems of fraud represents answers to the problems of the study. In other words, it is necessary for organizations to look for operative techniques especially identifying effective approaches for detecting potential fraud.

2- The nature of fraud in the construction sector is quite distinctive and this uniqueness makes them less likely to be detected by chance or by whistleblowers and even other detective factors (Stanbury, 2005). According to the World Bank (2013) before practical work on the construction on the project side, there are forms of irregularities, and fraud and are less likely to be reported even by bribe givers in order to secure the reward of the tender offer. Lack of transparency, and the difficulty of preventing and specification of the infrastructures make the conditions left untreated.

3- In addition, the problem of corruption with respect to the construction industry has proliferated a few years ago (Alutu 2007, Ameh and Odusami 2010). Moreover, recent publications by Transparency International (1999, 2002, 2006, 2008, and 2011) based on the bribe payer's index state public infrastructure projects in particular the major spoiled sector for bribe payers.

1.2 Significance of the Study

The study certainly contributes to constructing a body of knowledge within infrastructural projects in KRG of fraud detection, Based on the findings;

1- Fraud detects commitments have been explained to practitioners in the field of accounting, with a high standard of techniques employed by CAIS of organizations or responsible agencies providing or maintaining unique use of their resources.

2- The paper examines whether developments of information technology work to enhance infrastructure performance and structurally address the opinion of the respondents about technology procedures.
3- Applications of study findings by enterprises and government bodies that deliver and rehabilitate projects acceptably develop potential abilities to conduct projects effectively with the minimum misuse of existing resources.
4- The construction sector needs a great portion of funds, so the findings revealed in this article maintain favourable use of project budgets in favour of project sponsors, stakeholders, beneficiaries and project owners.
5- Identify techniques of CAIS in detecting fraud cases assist in measuring corruption items and actively serve projects in terms of quality, schedule and original cost of construction. Therefore, the methodology developed in this paper assists in measuring the cost of corruption and provides anti-fraud policies in many instances.

1.3 Objective of the Study

The prime objective of this study is to address the usefulness of CAIS and its roles relating to detecting fraud, specifically within financial statements. Also, the study explores accounting software's ability to discover financial misstatements and intentional misrepresentation.

2. Theoretical framework and Literature Review

2.1 Literature Review

Abu-Musa (2008) in Saudi explores the implication of information technology on the quality work of internal auditors under the title of **"**Information Technology and Its Implications for Internal Auditing: An Empirical Study on Saudi Organizations". The core objective of the study includes empirical investigation to show the role of emerging information technology in internal auditor's performance. Results of the study revealed internal auditors to improve their planning, directing, supervision and reviewing of their work need to improve their understanding and knowledge of computerized information systems. Also, the finding implies that internal auditors emphasise IT data integrity, privacy, security, asset protection and application process. Despite that, the performance IT of internal auditor’s work is connected with audit objective, sector type, audit specialities on IT and new computerized information systems.

Oni (2015), from Nigeria, explained the role of computers and CAIS on audit quality under the entitled research **"**Computer-assisted Audit Techniques and Audit Quality in Developing Countries Evidence from Nigeria**"**. The core objective of the study is to find the answer to the question is there any positive relationship between the use of CAATs and audit quality? Due to the uncertain benefits of auditing computerized accounts in the literature from developing countries.

Results found that audit techniques are improved by employing computer systems as a result enhances the quality of audit reports. Also, the finding of the study shows due to less effective use of computer-assisted audit techniques local Nigerian firms are not able to produce high-quality audit reports. But, in turkey 106 internal auditors respond to a set of questions designed to ascertain whether sophisticated technology in accounting information systems brings a positive impact on internal auditors' work. The study undertaken by Tan, (2017) and the findings imply that employment of CAIS positively related work of internal auditors.

Smith (2016), in Georgia Southern University, Honors Program Theses carried out relevant research entitled **"**Accounting Information Systems: Ethics, Fraudulent Behavior, and Preventative Measures**"**, Problems of the studies include the incapability of most business organizations to improve efficiency and optimize the use of resources. The aim of the study is to explain the evolution of AIS and its controls for limiting fraud and misconduct in financial and accounting processes. Even though the author pretended that IT has related ethical issues and types of fraudulent behaviour. However investigation focuses on the role of such systems to restrict fraud and forms of fraudulent financial reporting. Computerized accounting systems via many benefits help to limit fraud and improve the quality of accounting information, specifically, real-time reporting serves as a preventive measure or improves control, and automatic reporting leads to minimizing human error and certain interference. Second, real-time monitoring on the other hand provides management with quick identification of those responsible for the transaction and alters AIS data. On-time monitoring automatically detects potential risks to the systems and company. Finally, continuous auditing available in the technology–driven process offers business enterprises to find attempts to commit fraud on time and continuous compliance with legislation and regulations.

Anggraeni (2016) carried out an investigation entitled "Correlation between information technology and management information systems quality" The research explains, that CAIS have distinctive features that enable organizations to integrate processes and perform several processes simultaneously by possessing integrated components with interrelated functionalities. Internal control characteristics of computerized systems according to the COSO framework ensure operations, reporting and compliance functions. Thus, computerized systems improve operations effectiveness, good quality of reporting and better compliance with policies, regulations and laws

Ameen and Ahmed (2017) from Malaysia in a somewhat related investigation entitled **"**Information systems strategies to reduce financial corruption" noticed the importance of investigating corrupt systems to understand the issue and cost of fraud and corrupt practices than corrupt individuals. Also, there are serious system issues after extreme application worldwide as a necessary source of corrupt practices and opportunities for corrupt practices. The study explains organizations depend on various information systems to run their operation and accordingly

different information strategies are employed to collect and process data based on the needs of analysts, managers or enterprise owners. Among information strategies the financial information system is viewed to enhance transparency, also has a good role in fighting corruption in public finance systems and contributes to anticorruption attempts.

llic & Andelic (2017), in Russia the Role of CAIS has been explained in connection with our research topic, under the title of **"**The role of CAIS in detecting accounting errors and accounting fraud**"**. Each of the accounting fraud and accounting errors represents the study's problem. The prime aim of the study is to explain whether computerized systems assist businesses to solve the issue of accounting fraud and accounting errors, concluded result explains that CAIS have a good role in making it easy to detect unintentional accounting errors and deliberate attempts are more visible at accounting scam documents. Despite that, parts of CAIS, such as software, hardware and telecommunication crucially have an important role in the detecting of errors and attempts of fundamental acts in accounting play human resources. Although, study show employees' accounting knowledge is crucial, and the ethnicity of people which makes an element of the accounting information system and the ethnicity of users of obtained information.

Related to the role of computerized accounting systems on internal control many investigations explain how developed accounting systems work by information technology used to build internal control features and support evolving the integrity and effectiveness of the accounting process and ultimate performance of accounting systems (Fradinal, 2013, Hurt, 2013; Steckel 2011 and Itang 2020). CAIS have inherent internal control functionalities that include input, process, storage and output processes of the accounting system; Fardinal, (2013); Qatanani and Hezabr, (2015) and Steckel, (2011).

In Nigeria’s banking sector a study by **Amahalu, et al (2017)** entitled "Comparative Analysis of Computerized Accounting System and Manual Accounting System of Quoted Microfinance Banks (MFBs) in Nigeria" carried out with the objective of assessing the difference between manual and computerized AIS. The problem of the study represents challenges of manual accounting systems in the processing of customer information, higher labour cost and errors of commission and omission, despite several problems such as transaction dull, cumbersome, unpleasant, and manual maintenance of accounts.

Mainly, from fact books, annual reports and account of the quoted micro-finance banks from 2006-2015 the sample of the study was formulated, conclusion demonstrated that CAIS bring more positive consequences than manual accounting systems related to the level of profitability of the banks. Finally, they recommend that micro-finance banks should rely on CAIS rather than manual systems due to the more positive points, particularly in profitability level.

Al-Bataineh & Bataineh, (2018) from Jordan in government entitled "The Relationship between Computerized Accounting Information Systems and Rationalizing the Government Expenditures

at the General Budget of Jordan" for the objective of measuring the relationship between CAIS and rationalizing the government expenditures at a general budget carried out. Mainly by employing a designed questionnaire the intended data was collected from employees of the finance ministry in Jordan and then analyzed by the use of a descriptive-analytical approach and multiple correlation tests. Optimal distribution of the government and attaining better control over general budgets as a unique tool for financial policy, a problem which makes computerized systems as an information provider related to the preparation of the general budget and correct flow of information.

The findings of the study showed the existence of a moral relationship between components of the CAIS and rationalizing of the government expenditures at the general budget, and CAIS contribute to enhancing the quality of services provided, rationalizing the government expenditures and limiting waste and abuse of the scare resources by minimizing the random spending, make recognize the cons in the flows and outflows to the country General Treasury and on-time provision of the accurate information.

Munthali, et al (2020), carried out an investigation with the aim of showing the adequacy of CAIS security controls to prevent, detect, and correct security breaches in listed companies in Zambia. The problem of the paper represents the rapid development of IT and increased competition among competitive businesses to adapt CAIS in the current dynamic business environment.

Through using a qualitative approach, the study attained its objectives and the explained result illustrates security control services of CAIS are great to remain any corporation. In addition, they highlight distinctive between selected companies connecting to the effectiveness of implemented CAIS security controls.

Almasria et al. (2021) from Jordan carried out an empirical investigation with the aim of finding the concrete answer to the proposed question of whether AIS are assumed to improve audited accounting information and external audit procedures by using computers and technology. Under the title **"**The Role of Accounting Information Systems in Enhancing the Quality of External Audit Procedures**"**, a hence concerned matter of the study was about measuring the role of computer-based accounting systems in improving the quality of external auditing in the modern era.

The result shows CAIS in many distinctive perspectives improves audit procedures, for instance, using computers and technology in auditing professions by external auditors to a great extent improves the quality of their work and plays a good role in planning, testing, risk assessment and implementation of the audit.

2.2Theoretical Framework

2.2.1 Accounting Information System

Accounting Information System is regarded to be a system when it is viewed independently and is called a subsystem if it is viewed in relation to the larger system of which it is a part (Alsaqa, 2011 Romney, et al. 2021), accounting information system consists of many subsystems to handle financial and non-financial transactions (Hall, 2012). (Grande, et al 2011), defined accounting information systems as a "system to collect, record, store and process the data for providing the information for decision making". According to (Turner, et al 2017), AIS "comprises the process, procedures, and systems that capture accounting data from business processes".

From the perspective of Simkin, et al (2012), AIS is a system of "collection of data and processing procedures that creates needed information for its users". In addition, according to Romney and Steinbart (2009), the AIS represent a "collection of data and processing procedures that creates needed information for interested internal and external users". In conclusion, from our perspective, AIS is a "system that includes specific procedures that convert collected data to needed information for interested users". Mainly by putting data into AIS, it becomes classified, summarized totally consolidated and added into the storage, thereafter assisting to generate different outputs.

accounting systems are divided into many subsystems and each system performs many functions and participates to obtain the overall goal of the higher–level system, in accounting literature great research mentions major components of AIS, such as (Azhar & Susanto, 2008; O Brien, 2004 and Turban, et al 2003). Each AIS has been formulated by integrating 6 main components including; human, procedure and instruction, data, software, information technology infrastructure and internal control (Amy Fontinelle 2017, Romeny, et al. 2021).

Humans represent those professions whether they are accountants or IT specialists that employ the system, it should be clear even totally automated AIS is unable to replace the role and contribution of human function in the running of the systems. Procedures are used as instructions to deal with data in terms of collection, processing and storing of them. Data is about the organization and its business activities, and Software represents soft programs used to operate procedures automatically. While, infrastructure information technology includes computers, other portable tablets and devices, finally internal control are procedure used as a security discipline to safeguard AIS data.

2.2.2 Computerized Accounting Information Systems

Developments in technology make great evolution in the way corporations conduct business activities. Recently there have been great changes in AS and businesses’ moves from manual

systems to computerized systems (Qatanani & Hezabr 2015), over the last few years the average application of computerized systems by SMEs has crucially accelerated (Ismail & King 2006). And scholars at the global level support the accelerated adaption of CAIS (Amidu, et al 2011; Elbarrad, 2012; el-Dalabeeh & Alshbiel, 2012).

Practically in the current period, there are many types of computerized systems in several distinctive forms, such as closed or open AIS, integrated or non-integrated and total or sub-accounting information systems (Alsaqah 2011). Additionally, as a result of many issues faced and found within already constructed computerized systems like improper internal control features (Itang, 2018), the vendors have invented much other software to respond to the needs and wants of the businesses, and this makes having found in several types in the commercial markets.

Also, there are "cloud" accounting systems; cloud computing system usually doesn't need to host any software or storage in the offices and basically works on the base of web infrastructure (Wystocka & Jelonek 2015). Practically, there isn’t a unified form of computerized system that has been implemented in distinctive enterprises across different sectors, so in the markets, many accounting software are available with various averages, and some are used mostly while others are least used.

According to Itang, (2018), CAS include "the application of computers and related technologies in the collection, recording, storing and processing of financial data, interpreting and reporting financial information to stakeholders".

2.2.3 Fraud and Issue of Detection

Fraud means obtaining money or some other benefit by deliverable deception, in auditing fraud occurs when a misstatement is made and there is both the knowledge of its falsity and intent to deceive. Usually, fraud activities are accomplished by irregular and illegal acts (Vanasco, 1998). As proposed by Alleyne and Howard (2005) fraud includes the intention to deceive, cheat and steal. And, fraud is defined as the "theft, concealment and conversion to the personal gain of another’s money, physical assets or information" (Romney, et al 2021).

On the other hand, according to the Statement of auditing standards (SAS), article 240 fraud is defined as "an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception that results in a misstatement in financial statements that are the subject of an audit". Then, according to the public procurement regulation N (2) of 2016 KRG council of ministries (Article -1-) describes Fraudulent practice as "Any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation, or to influence a procurement process or the execution of a contract".

In this paper two common types of fraud are discussed which are misappropriation of assets and management fraud, misappropriations are commonly carried out by an employee at a lower level of management staff and assets are stolen from the firm (Albrecht and Romney, 1986; Holtfreter, 2005), while management fraud is representing false report in financial statements or bad application of accounting principles and standards.

2.2.3.1 Assets Misappropriation

Asset misappropriation is another type of fraudulent activity, in which to steal organization resources perpetrators may use tricky acts, mainly these trikes are not taken by pressure or force; instead, perpetrators (employees of an organization, customers or unrelated organization individuals) for their direct benefits committed the fraud.

Asset misappropriation is regarded as the theft of any item of value, or it is referred to as a defalcation or internal theft, (Turner, et al 2017). Romney, et al. (2021), explained the misappropriation of assets as theft of company assets by employees and included a great number of examples, of the internal weaknesses considered to be the prime contributing factor of asset misappropriation. Usually, this sort of fraud is more common in organizations that resource more accessible to their employee or other close persons. For instance, retail stores due to being more susceptible to assets involve more physical asset theft.

As explained by Rivest & Lanoue (2015) asset misappropriation is a common type of fraud commitment, but relatively has smaller losses than the other fraud form (fraudulent financial reporting), out of the total investigated cases only asset misappropriation represents 90% of cases. Even though, fraudulent financial reporting causes larger losses but incurred less frequently and represents just 11.1 per cent of all investigated cases.

Asset misappropriation may include both tangible and intangible assets of the company; intangible assets may occur in several terms, like sharing organization plans, strategies, pricing models and other relevant expertise with the competitors. perpetrators usually use many techniques to terminate the physical theft, there are various types of this fraud like skimming amounts in the books of an organization, misuse of inventory, cash, equipment and payroll schemes. Lately, it is displayed that about %85 of all asset, misappropriation contains cash misuse (ACFE, 2008).

2.2.3.2 Fraudulent Financial Reporting

Misstatement of financial records is another common type of fraud that includes the falsification of accounting reports, this is mostly referred to as fraudulent financial reporting (Turner, et al 2017). Such kind of fraud type most likely perpetrated by top-level management, as explained by

Rezaee (2005) falsifying financial reporting is usually committed by management staff and impacts the Company's performance. Also expected to rise continuously (Modugu, et al 2012) National Commission on Fraudulent Financial Reporting defined fraudulent financial reporting as "intentional or reckless conduct, whether by act or omission, that results in materially misleading financial statements". On the other hand, SAS section 240 (Par.03) shows, "fraudulent financial reporting involves intentional misstatements, including omission of amounts or disclosures in financial statements to deceive financial statement users".

In the case of top management involvement, the probability of detecting fraudulent financial reporting impossible, mainly this is due to the concealment ability of high-ranking staff. Fraudulent financial reporting or management fraud has its own specifications that are clearly and easily different from asset misappropriation, these specifications make fraudulent financial reporting much more harmful and insidious. For instance, as mentioned previously escapes from detection are higher compared to employee fraud, in this condition direct theft of assets does not occur, instead, perpetrators of fraudulent financial reporting are above internal control structures.

According to Turner, et al (2017), management is more enrolled than other employees, several reasons for this include their role and initiation frauds, first employees don’t have the ability to access assets or source documents, specifically in well-developed systems. Second, authorization control doesn't allow employees to initiate fraudulent acts. Usually, top management has specific and required authorization.

based on the analysis of the ACFE reports by Bales & Fox, (2011) there was a percentage increase of owners committing fraud "between" 1996 to 2008, moreover, they mentioned only 12% per cent of fraudsters were owners while this rate reached 23 per cent in 2008, but non-managers committing fraud reportedly continue to decrease. However, the issue of cost in fraud cases was related by ACFE and explained the cost of fraud by non-managers lower than managers for the period "between" 1996 to 2008.

Despite the great damages of Fraudulent financial reporting to the enterprise earnings this practice also affects integrity, transparency and quality of accounting information and thereby investor's choice, and others in the capital markets. For many other reasons management staff for specific intentions such as showing great performance, higher stock price hiding enterprise losses, etc. involved in fraudulent financial reporting.

3. Research Methodology

A major part of any research represents the precision and certainty of its data collection, inaccurate data collection would make the result invalid, the aim of this paper was obtained after

the collection required data via a questionnaire source approach, and the 5-point scale design of the data instrument was developed and considered to be unique. Data were collected through the personal distribution of questionnaires and electronic questionnaire distribution to the selected sample in order to ascertain their perception of the effectiveness of accounting computerized systems on fraud detection.

3.1 Research Instrumentation

The employed questionnaire was constructed based on a review of prior published literature and the personal experience of the researcher, also, the employed questionnaire before its distribution has been reviewed by several doctorate academic staff from different universities, and comments and their suggestions were carefully considered before usage of final copy. Thus, the final version of the distributed questionnaire was approved after restricting changes to several questions.

Although the Survey instrument was segmented into 2 major parts, the beginning part is about the participant's background information. While the second part contains measures of independent and dependent variables, a total of 35 items were selected and distributed over 3 main construct variables. The questions numbered from 1 to 12 were adapted to ask how CAIS evolved the firm internal control system. Those, questions related to audit procedures started from 13 to 25, and finally, questions numbered 26 to were 35 purposely designed to illustrate how CAIS improves corporate governance.

3.2 Population and Sample Source

Specific features of infrastructure projects make them more prone to responsible delivery parties, such as contractors (Shan, et al. 2017; Sohail & Cavill 2008) and government officials (Le, et al. 2014 Owusu, et al. 2017). However, exploring the benefits of CAIS is not the profession of all delivery parties such as clients, consultants, regulators, contractor's project owners and managers from government and private agencies in KRG. Thus, practical involvement and personal experience about the use of CAIS have been chosen to select target individuals to give their perception about research questions, and conclusively includes; auditors, accountants, public accountants (CPA) that have to perform audit services (auditors), financial and account managers from construction nature firms and certain ministries of KRG (municipalities and Governorate of Sulaymaniyah) to provide a template for all of Kurdistan region. Ultimately the focused population includes respondents' works within the Kurdistan Region and a total of 140 answers were collected to administrate the research data.

3.3 Hypothesis Development

Important measures of computerized accounting information systems have been identified to detect fraud, and the following interesting hypothesis in this regard is viewed to be appropriate.

H0; Hypothesis One successful application of CAIS wouldn't certainly have a positive and significant impact on detecting accounting fraud through better internal control measures.

H0; Hypothesis Two successful applications of CAIS wouldn't certainly have a positive and significant impact on detecting fraud through better audit procedures.

H0; Hypothesis Three successful applications of CAIS wouldn't certainly have a positive and significant impact on detecting fraud through better application of good governance measures.

3.4 Model of the Study

Obtaining objective of the study needs to develop models to identify the elements that lead to detect and prevent fraud. In this paper, those major elements widely improved by CAIS and assist corporates to detect and prevent fraud represent internal control, audit procedures and good governance.

To describe how the subject matters of the study (detecting fraud) are related to CAIS and error term the following joining is depicted among main group research variables and the model of the regression is as follows;

Model; Detect & Prevent fraud= $\beta 0+\beta 1$ IC+$\beta 2$ AP+$\beta 3$ GG+ E_{it}

Where;

IC= Internal Control; AP= Audit Procedures and GG= Good Governance

$\beta 0$ = constant; $\boldsymbol{B}$ = beta coefficient and E_{it} = error term

4. Results Interpretation

In this section, we present (1) the respondents' background; (2) Descriptive statistics of variables; (3) Pearson's correlation analysis; and (4) Multiple regression analysis.

4.1 Respondents Background

Table (1) Descriptive of Respondents

	Frequency	Percentage
Characteristics of the Respondent Organization		
Public Sector	79	56.4
Private Sector	58	41.4
Employer	3	2.1
Level of Education		
Diploma	9	6.4
Bachelor	76	54.3
Master	48	34.3
PHD	7	5.0
Characteristic of Respondents		
Accountant or Auditor	65	46.6
public Accountant (CPA)	12	8.6
Finance & Accounting manager	43	30.7
Accounts Organizer	20	14.3
Year of Experience		
1-5	8	5.7
6-10	40	28.6
11-15	47	33.6
16-20	31	22.1
More than 20 years	14	10.0

More than half of the respondents work in the public sector which represents 56.4%. Then, those individuals who participated in the survey and belonged to the private sector represent 41.4% of total respondents, and finally, just 2.1% are employers. And more than half of the respondents with a rate of 54.3% have a bachelor's certificate, and a master's certificate with a rate of 34.3% participated in the survey. Each of the participants with the diploma and PhD degree represents 6.4% and 5% respectively.

However, approximately half of the participants are an accountant and an auditor of 46.4%. While those respondents who participated in the survey as finance and accountant manager was 30.7 per cent. Accounts organizers and public accountants represent just; 14.3% and 8.6% of total respondents, respectively. The majority of respondents have 11 to 15 years of experience with a rate of 33.6%. After that, 28.6% of respondents have practical experience "between" 6 to 10 years. On the other hand, those participants' experience falls between 16 to 20 years equal to 22.1 per cent of total numbers, and just 10 per cent of participants were above 20 years of experience. Finally, the lowest rate of experience belongs to the group of 1 to 5 years of experience.

4.2 Descriptive Analysis

The first main objective of the paper was to identify the importance of CAIS in detecting and reducing fraud. Hence, data collected on questionnaire items 1 to 35 was analyzed and used to answer the related research questions on the first main objective. the mean value of the respondent's opinion toward each statement is fairly positive and greater than 3 without any exception, this concludes features of CAIS to a great extent assist in promoting internal control, audit procedures and good governance and thereby enable organizations to combat and detect fraud. Despite that, the average mean of the main group category has been presented as well, the result of mean ratings observed that CAIS in KRG viewed by respondents to place more effect on internal control procedures, with the value of mean at 0.68, and considered as top construct factor with this regard. After that, audit procedures were thought to be the main category that has been effective with a relative value of 0.57, and finally, analysis of answers from respondents explains good governance has the lowest mean value of 0.46.

4.2.1 Internal Control

In the descriptive analysis result, respondents ranked "CAIS make user access to the components of the system limited to particular staff based on job functions this certainly relevant to apply accountability within enterprises" as the most important and 1st in ranking features of CAIS, then providing unique password and username by CAIS for personal users ranked 2nd that maintain a system of internal control and properly safeguarded asset and reasonable financial reporting, 3rd in ranking among security controls of CAIS was segregation of duties with the mean value of 4.04, this conclusion confirmed within other findings such as Singleton, et al (2010) and Yuniarti & Ariandi (2017).

4th in the ranking was Just specific users in CAIS can perform editing, deleting, and reporting functions in the accounting system; this provides additional disciplines for individuals, and then The organizations identify risks more easily through the application of CAIS to the achievement

of its objectives and analysis risks as a basis how the risks should be managed, considered to be as a fifth technique which assists corporates by putting in practice CAIS to encounter and detect accounting fraud.

Table (2) Descriptive of Internal Control Variable

Construct variable	Mean	Cronbach Alpha	NO	Mean	Std.Error	Rank
Internal Control	0.68	0.922	Item 1	4.09	.100	2
			Item 2	4.12	.101	1
			Item 3	3.99	.102	4
			Item 4	3.76	.113	9
			Item 5	3.83	.097	6
			Item 6	3.71	.098	11
			Item 7	4.04	.099	3
			Item 8	3.69	.107	12
			Item 9	3.84	.094	5
			Item 10	3.79	.106	8
			Item 11	3.74	.093	10
			Item 12	3.82	.093	7

4.2.2 Audit Procedures

A descriptive analysis of this construct variable in Table (3) shows; "CAIS through providing accurate data providing guidance on planning and facilitating the audit process" has the highest rank value at a mean of 2.24.

Then, 2nd in ranking among other identified features of CAIS was "better application of audit standards through better planning, supervision, risk assessment and unique disclosure, this may be relevant to apply audit procedure". Hence, respondents ordered 3rd in their responses with the mean value of 4.08 that "specific characteristics of CAIS practically make changes from manual detection to technology-based prevention, as a result, limits misuse of firm resources for personal or specific use". On the other hand, item 19 as specific features of CAIS has the same mean of 4.08, this item or statement states "CAIS through security control in applications of approval, acceptance and verification by external and internal auditors or high-ranking employees improve preventive or the synchronous audit, this may contribute the shortcomings of deficiencies related to the subsequent audit".

Nevertheless, item or statement 13, which states "CAIS assist auditors done their jobs quickly, increased speed and accuracy…etc"; was viewed by respondents as a positive implication of CAIS with a mean of 4.06 and ranked 4th among other individual features. Finally, 5th in the ranking was "CAIA provide continuous and on-time monitoring that enables quick identification of those responsible for the transaction".

Table (3) Descriptive of Audit Procedure Variable

Construct variable	Mean	Cronbach Alpha	No	Mean	Std.Error	Rank
Audit procedures	0.57	0.861	Item 13	4.06	.089	4
			Item 14	3.86	.094	8
			Item 15	3.91	.093	6
			Item 16	4.04	.095	5
			Item 17	3.74	.106	11
			Item 18	3.83	.102	10
			Item 19	4.08	.069	3
			Item 20	4.24	.063	1
			Item 21	4.08	.069	3
			Item 23	3.89	.089	7
			Item 24	4.14	.069	2
			Item 25	3.84	.087	9

4.2.3 Good Governance

The descriptive analysis result shows a different level of ranking among proposed statements related to the effect of CAIS on good governance construct measures and its final implications on preventing and detecting fraud. 1st in the ranking of identified statements was "real-time updating of information on the website to the shareholders or stakeholders which finally safeguards their rights" with a mean of 4.24. Then, respondents ranked accountability measures by CAIS which protect assets and minimize misappropriation with an average value of 4.19, as the 2nd statement that assists organizations in detecting fraud. Improving transparency through disclosing the information is considered to be 3rd among other related good governance techniques, and its mean value is equal to 4.18.

4th in the ranking was item 34 which states Under the application of CAIS Employee job description, rights or duties and responsibilities or authorization are written and shared within the internal corporate level, which makes them more responsible and accountable toward corporate

objectives, with a mean value of 4.14. While, item 30 states "CAIS Support governance functions through better security control measures of oversight, compliance, managerial, and monitoring procedures" and item 31 states " CAIS assists best practices of international level corporate governance principles, particularly through information support" identified as fifth in ranking by respondents with the same average mean of 4.06.

Table (4) Descriptive of Good Governance Variable

Construct variable	Mean	Cronbachs Alpha	NO	Mean	Std.Error	Rank
Good Governance	0.46	0.821	Item 26	4.24	.064	1
			Item 27	4.19	.066	2
			Item 28	4.18	.070	3
			Item 29	3.91	.089	8
			Item 30	4.06	.082	5
			Item 31	4.06	.080	5
			Item 32	4.04	.072	6
			Item 33	3.89	.083	9
			Item 34	4.14	.079	4
			Item 35	4.01	.088	7

4.3 Multiple Regression Analysis

For detecting fraud, the first developed internal control group variable from table (5) shows a coefficient determination of 0.80, which means one point increase in internal control measures by employing CAIS the potential ability of corporates to detect fraud will begin to rise by 0.80, with the assumption that other factors remained unchanged. Also, the R square of this group variable has a value of 0.711, which means 71.1% of the variation in the potential ability to detect fraud is explained by the variation in the internal control measures of CAIS, the remaining 28.9% is unexplained due to error. The ANOVA test is significant, lower than 0.05 and equal to 0.000 this calls for the rejection of hypothesis one and leads to the conclusion, that the successful application of CAIS would certainly have a positive and significant impact on detecting accounting fraud through better internal control measures.

Nevertheless, the Results of the second construct variable show a coefficient determination of 0.90, which means one one-point increase in audit procedure measures by employing CAIS the potential ability of corporates to detect fraud will begin to rise by 0.90, with the assumption that other factors remained unchanged. R square of this group variable has a value of 0.895 as can be

noticed in Table (14), this means 89.5% of the variation in the potential ability to detect fraud is explained by the variation in the audit procedure measures of CAIS, and the remaining 10.5% is unexplained due to error. For this group variable ANOVA test is also significant, lower than 0.05 and equal to 0.000 this calls for the rejection of hypothesis two and leads to the conclusion, that the successful application of CAIS would certainly have a positive and significant impact on detecting accounting fraud through better audit procedures.

Finally, For detecting fraud third developed good governance group variable shows a coefficient determination of 0.544, which means a point increase in good governance measures by employing CAIS the potential ability of corporates to detect fraud will begin to rise by 0.544, with the assumption that other factors remained unchanged. Also, the R square of this group variable has a value of 0.358 which means 35.8% of the variation in the potential ability to detect fraud is explained by the variation in the good governance measures of CAIS; the remaining 64.2% is unexplained due to error. 3rd hypothesis test is significant, lower than 0.05 and equal to 0.000 this calls for rejection. Thus, CAIS and the potential ability of fraud detection are significantly related, this significant relationship is certainly found to be confident to predict fraud by putting computerized accounting systems in practice.

Table (5) Summary of Regression Analysis

Independent Variables	Beta Coefficient	R square	Adjusted(R)	Sig
CAIS (Internal control)	0.805	0.711	0.709	0.000
CAIS (Audit procedures)	0.946	0.895	0.895	0.000
CAIS (Good governance)	0.598	0.358	0.353	0.000

5. Conclusion

The results of this paper are considered to be one of the greatest attempts to address the CAIS implementation in the KRG construction sector. Even though, the condition of information technology in the KRG is not up to the highest international standards. This finally assists corporates to acquire CAIS and implement it willingly with the highest awareness of its relevant consequences. Additionally, provided result rank asked statements as unique techniques to the corporates which certainly looks fit to the need of decision makers. Therefore, the justification revealed in this study helps to minimize the risk of failure and maximize the potential ability to operate effectively and more efficiently.

The accounting information system is a component of every business process, and accounting is an important aspect of business process integration. In the current period due to the nature of the business transaction, it is important to implement a computerized system that enhances the efficiency of corporate activity and daily tremendous economic transactions.

The finding of this study confirms the positive effects of CAIS on the selected subject matter which includes (detecting fraud).

The results show a positive association at a statistical level between CAIS and detecting fraud, the proposed hypothesis which hypothesized that the successful application of CAIS wouldn't certainly have a positive and significant impact on detecting fraud has been rejected. Thus, the hypothesis of this subject matter (H1, H2, and H3) prove to be rejected, in another word the positive or research hypothesis certainly be approved and shows there is a positive and significant association between CAIS and the ability to detect fraud

However, CAIS can detect fraudulent activities through internal control, audit procedures and good governance. Hence computerized systems provide distinctive controls that may be sufficient to detect fraud such as; users' access to the system being limited to particular staff based on job functions and systems defining personal users by providing unique passwords and usernames. Also, the segregation of duties through security controls is considered to be one of the other control measures that assist organizations in detecting fraud.

Even though respondents show positive opinions about statements related to the audit procedure group variable, the most common among respondents include providing accurate accounting information by CAIS and providing guidance on planning to facilitate the audit procedures.

For good governance construct independently available, also respondents show positive opinions about all identified statements but the most common one represents real-time updating of information on the website so that the shareholders and stockholders can clearly understand plans and goals of the organization which safeguards their rights.

In conclusion, it can be said there is no doubt about the benefits of CAIS whether it is a type of detecting fraud in the case compared with manual accounting information systems used in past. However, companies at the management level should understand the important role of computerized systems and employ them successfully with a high level of control over their components. Therefore, companies to reduce fraud they should employ computerized systems to apply effective internal control techniques, enhance audit procedures and implement principles of good governance.

کاریگەری بەکارهێنانی سیستەمی ژمێریاری ئەلیکترۆنی لەسەر دەست نیشانکردنی فیڵە ژمێرییەکان لە کەرتی پرۆژە سەرمایەگوزارییەکان

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پوختە:

ئەم توێژینەوەیە ئەنجامدراوە بە ئامانجی پاراستن و بایەخدان بە سەرچاوە دەگمەنەکانی کەرتی پرۆژە سەرمایەگوزارییەکان لە خراپ بەکارهێنان و دزین. هەرچەندە لە زەمەنی ئێستادا کۆمپانیاو دامەزراوەکان ئاشنایەتی باشیان هەیە بە بەکارهێنانی تەکنۆلۆژیای پێشکەوتوی الکترونی, بەڵام تاوەکو ئێستا ئەو ئاشنایەتییە لە کەرتی پرۆژە سەرمایەگوزارییەکان لێکۆڵینەوەی لەبارەوە نەکراوە لە هەرێمی کوردستاندا بە تایبەت ئەوەی پەیوەستە بە بەکارهێنانی سیستەمی ژمێریاری کترونی.
بۆ گەیشتن بە ئامانجی سەرەکی توێژینەوەکە و کۆکردنەوەی داتای پێویست بەشێوەیەکی کردارەکی کۆمەڵەی پرسیار ئامادەکراوە و بۆ ئەو مەبەستەش بەشێوەی ئەلیکترۆنی بەسەر نموونەی (sample) توێژینەوەکەدا دابەشکراوە و دەرئەنجام توانرا (140) وەڵامی دروست کۆبکرێتەوە. فاکتەری سەربەخۆی توێژینەوەکە پێک دێت لە خەسڵەت و تایبەتمەندی سیستەمە ژمێریارییە ئەلیکترۆنی, لە باریکدا فاکتەری ناسەربەخۆ خۆی دەبینێتەوە لە توانایی لە دەست نیشانکردنی فیڵە ژمێریارییەکان. بۆ مەبەستی شیکاری داتای کۆکراوەی توێژینەوەکە پاکێج و سۆفت وێری أحصائی (SPSS) بەکارهاتوەو بەهۆیەوە هەریەک لە فاکتەرە دیاریکراوە سەربەخۆکانی سیستەمە الکترونی ئەلیکترۆنییەکان کە پەیوەندیدار کراون بە 3 فاکتەری سەرەکییەوە ئەوانیش کۆنترۆڵی ناوخۆیی, ڕێکاری ووردبینی لەگەڵ بەڕێوەبردنێکی باش شیکارییان بۆ کراوە.
دەرئەنجامی توێژینەوەکە پشت ڕاستی ئەوە دەکاتەوە سیستەمی ژمێریاری ئەلیکترۆنی بەکارهاتوو بەشێوەیەکی سەرکەوتوو و گونجاو لەلایەن کۆمپانیاکانەوە و لەڕێگەی پەرەپێدانی تەکنیکی کۆنترۆڵی ناوخۆیی, ڕێکارەکانی ووردبینی کردن و بنەماکانی بەڕێوەبردنێکی باش ئەبێتە هۆی دەست نیشانکردنی فیڵە ژمێریارییەکان, و پێشنیاری توێژینەوەکە لەوەدا خۆی ئەبینێتەوە کۆمپانیاو دامەزراوەکان کە لە کەرتی پرۆژە سەرمایەگوزارییەکاندا کاردەکەن بۆ مەبەستی پاراستنی سەرچاوەکانیان لە خراپ پێشاندان و دزینیان پێویستە سیستەمی ژمێریاری ئەلیکترۆنی بەکاربهێنن.

کلیلە وشەکان: سیستەمی ژمێریاری ئەلیکترۆنی فیڵی ژمێریاری, کۆنترۆڵی ناوخۆیی, ڕێکاری وردبینی لەگەڵ بەڕێوەبردنێکی باش.

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Appendix

Internal Control Measures	
1	Corporation through Computerized accounting information systems defines and assigns personal users of the accounting system by providing unique password and username.
2	Specific features of Computerized accounting systems, make User access to the components of the system limited to particular staff based on job functions.
3	Just specific users in Computerized accounting information systems can perform editing, deleting, and reporting functions in the accounting system.
4	CAIS Provides a determined closing date for each accounting period, that makes a cutoff between transactions of the year to the previous years.
5	CAIS prevents and makes hard duplicated source document entries.
6	CAIS Maintain strategic control by not allowing wrong data entry and compliance control which determines how to respond to the probable material risks.
7	CAIS addresses the Segregation of duties through security controls in applications of authorization, recording, internal control, and custody and acceptance of information.
8	Specific features of CAIS only accept transactions on the day of occurrence and make it impossible to change the date of transaction perpetrators for specific intentions.
9	Organizations identify risks more easily through the application of CAIS to the achievement of its objectives and analysis of risks as a basis for how the risks should be managed.
10	CAIS uses properly designed documents and records to capture and process accounting transactions.
11	CAIS creates appropriate confirmation and supervision by the right of individual authentication before it loses its influence.
12	The organization by putting in practice CAIS identify and assess potential fraud more easily in assessing risks to the achievement of objectives.
Audit procedure measures	
13	Computerized accounting information systems assist auditors in doing their jobs quickly, and increase speed and accuracy, by putting statistical formulas in practice to check totals compared to circumstances that only rely on manual testing.
14	Computerized accounting information system allows the effective implementation of the audit plan and provides assurance that audit work is carried out according to international auditing standards.

15	CAIS enable auditors to produce additional trend analysis of transactions easily and reliably and record any variance, on a timely base for enhanced internal decision-making.
16	CAIS Provide continuous and on-time monitoring that enables quick identification of those responsible for the transaction.
17	Continuous auditing exercises by CAIS identify attempts to commit fraud on time and maintain compliance with legislation and relevant regulations.
18	CAIS assists auditors in disclosing and communicating detected fraudulent practices to more responsible and professional bodies, this may result in the mitigation of corporate risks.
19	CAIS through security controls in applications of approval, acceptance and verification by external and internal auditors or higher-ranking employees improves preventive or synchronous audit.
20	CAIS through providing accurate accounting data and providing guidance on planning facilitates the audit process.
21	Elements of CAIS enable auditors to obtain reliable and corrective evidence by providing the opportunity to Re-perform the account's work automatically in less time.
22	CAIS enable auditors technically to select appropriate audit sample, by putting into practice statistical equations or formula.
23	A specific characteristic of CAIS practically makes changes from manual detection to technology-based prevention, and as a result limits misuse of firm resources for personal or specific use.
24	CAIS promote the better application of audit standards through better planning, supervision, risk assessment and unique disclosures.
25	CAIS enable audit firms to limit the possibility of a dispute between the auditor and the client, by clarifying the necessary matters and responsibilities for starting the implementation of the audit plan,.
Good Governance measures	
26	CAIS supports real-time updating of information on the website so that the shareholders and stakeholders can clearly understand the plans and goals of the organization which safeguards their rights.
27	CAIS improves accountability by providing required reports related to the transactions This function can protect the company's assets and reduce the risk of misappropriation of assets by all related parties.
28	CAIS Improve transparency within or outside of the company, by disclosing information to more internal and external parties in a timely manner.

29	CAIS objectively evaluates performance and concluded results and communicates deficiencies to parties responsible for corrective action and to the board of directors.
30	CAIS supports governance functions through better security control measures of oversight, compliance, managerial, and monitoring procedures.
31	CAIS assists best practices of international-level corporate governance principles, particularly through information support.
32	CAIS assist in connecting businesses to foreign participants such as stakeholders and institution, which safeguard shareholders' rights.
33	CAIS assists enterprises in better implementation of anti-corruption measures, particularly related to fraudulent financial reporting.
34	Under the application of CAIS Employee job description, rights or duties and responsibilities or authorization are written and shared at the internal corporate level.
35	Employee performances are fairly evaluated without any intervention or pressure and material variances, which enforces accountability procedures.