

**Moderating Role of Accidental Entry of Erroneous Data on the Relationship  
between Computerized Accounting Systems and Audit Risk Management:  
Evidence from Kenyan Public Sector**

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**Abstract:**

*The objective of the study was to analyze the influence of accidental entry of erroneous data on the relationships between computerized accounting systems and audit risk management in the public sector institutions. The rapid change in information technology, the wide spread of user-friendly systems and the great desire of organizations to acquire and implement up-to-date computerized accounting systems and software's. However, this advanced technology has created significant risks related to ensuring the security and integrity of computerized accounting and audit risk management in organizations. The efforts made by accountants to reduce the vulnerability of computerized accounting systems vary. Further, previous studies produce mixed results on the relationship between accounting security threats and the accounting security controls. The study is anchored on the following theory: Positive Accounting Theory (PAT). This study was guided by quantitative positivism paradigm, since it is an inquiry based on testing of a theory, is composed of variables measured with numbers, and to be analyzed with statistical procedures, in order to determine whether the predictive generalizations of the theory held are true. The study adopted a correlational survey research design. The target of the study population constituted all state owned enterprise in all the ministries and agencies which were fifty three (53) accounting officers in the 53 public institutions operating in Kisumu County. The sample size was equal to target population; implying the adoption of census (saturated) sampling technique. Both Primary and secondary data was used in the study. The data collected was analyzed using descriptive and inferential statistics. Hierarchical multiple regression analyses were used to assess the relationship between the variables in this study. The finding of the study show that the change in coefficient of determination of accidental entry of erroneous data was significant and positive ( $R^2$  change = 0.079,  $p < 0.01$ ). Implying that accidental entry of erroneous data, indeed moderate the relationship between computerized accounting systems and audit risk management. The study recommends that accidental entry erroneous data should be emphasized by the public firms as it amplifies the prediction of computerized accounting systems.*

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**Key Words:**

- Accidental Entry of Erreonus Data, Quality and Quantitiy
- Computerized accounting systems
- Audit risk management

**Introduction:**

The computerized accounting techniques are important in enterprise risk management (Kunkel, 2004). Lorenzo (2011) focused on enterprise risk management audit and control while Peterson *et al.* (2010) assessed the role of ICT on accounting practice as opposed to computerized accounting techniques. On the contrary, Byenkya (2011) and Hunton, (2011) explored the automated accounting information system and organizational effectiveness. The study of Diamond and Khemani (2005) dwelt on public expenditure management systems in developing countries; whereas Otieno and Oima (2013) focused on computerized accounting systems risk factors and auditing risk in public enterprises. Therefore, computerized accounting techniques and audit risk management has not been assessed.

Loch *et al.* (2005) conducted a survey study to explore the perception of Management Information Systems Executives regarding the security threats in microcomputer, mainframe computer, and network environments. The study developed a list of twelve security threats; the results indicated that natural disaster; employee accidental actions (entry of bad data and destruction of data); inadequate control over media; and unauthorized access to CAIS by hackers was ranked among the top security threats. These results confirmed the experts' claims that the greatest threats come from inside organizations. Davis (2013), study revealed that accounting information system security has become one of the major concerns for information system auditor, the study tried to discover the current status of the security issue in practice. The study "Threats to Accounting Information Systems Security Survey" were adapted from Loch *et al.* (2005), in replication of their work. The results of Davis' survey (1996) indicated that information systems auditors recognized that different computing environments have different relative levels of security risks. The employees' accidental entry of "bad" data and the accidental destruction of data, as well as the introduction of computer viruses, were considered to be the three top threats in a microcomputer environment. However, unauthorized access to data or system by employees, accidental entry of "bad" data by employees and poor segregation of information system duties were rated as the major threats to the minicomputer environment.

Ryan and Bordoloi (2007) explored how companies moving from a mainframe to a client and server environment evaluated and took security measures to protect against potential security threats. The study revealed that the most significant security threats were: accidental destruction of data by employees; accidental entry of erroneous data by employees; intentional destruction of data by employees; intentional entry of erroneous data by employees; loss due to inadequate backups or log files; natural disaster: fire, flood, loss of power, and single point of failure. Further, Henry (2003) conducted a survey to determine the nature of the accounting systems and security in use. The results of the study indicated that 80.3 percent of the companies backed-up their accounting systems. 74.4 percent of the companies secured their accounting system with passwords, but only 42.7 percent utilized protection from viruses. Physical security and authorization for changes to the system were employed by less than 40 percent of the respondents. The survey results showed that only 15 companies used encryption for their accounting data, which was a surprising result, considering the number of companies utilizing some form of communication hardware.

Dhillon (1999) argued that many of the security losses resulting from computer related fraud could be avoided if organizations adopted a more pragmatic approach in dealing with such incidents as well as adopting a balanced approach of security controls which place equal emphasis on technical, formal and informal interventions to their computerized systems. The implementation of controls in a security policy may deter computer misuses. Committing computer of fraud by insiders is considered difficult to prevent especially when it blends with legitimate transactions. Siponen (2008) introduced a conceptual foundation for organizational information security awareness program to minimize the end-user errors and to enhance the effectiveness of implemented security controls. The study revealed that information security techniques or procedures would lose their real usefulness if they were misused; misinterpreted; not used or not properly implemented by end-users. Hermanson *et al* (2000) carried out an exploratory survey on how organizations address their IT risks and evaluations of IT risks performed by internal auditors. The results of the study revealed that internal auditors focus primarily on traditional IT risks and controls, such as IT asset safeguarding, application processing, and data integrity, privacy, and security.

Empirical literature shows that computerized accounting systems are important in enterprise risk management (Kunkel, 2014). Some studies (Lorenzo, 2011) focused on enterprise risk management

and audit control while others (UPA Forex and ICT, 2012; Peterson *et al.*, 2010) assessed the role of ICT on accounting practice as opposed to computerized accounting systems. Byenkya (2011) and Hunton (2012) explored the automated accounting information system and organizational effectiveness. Further, Diamond and Khemani (2005) focused on public expenditure management systems in developing countries. Otieno and Oima (2013) focused on computerized accounting systems risk factors and auditing risk in public enterprises. Despite this vast empirical works on computerized accounting systems little information is known in relation to the moderating influence of accidental entry of data on the relationship between computerized accounting systems and audit risk management in the public enterprises.

### **Objective of the Study**

The overall objective of the study was to:

Specifically, the study sought to:

Analyze the influence of accidental entry of erroneous data on the relationship between computerized accounting systems and audit risk management in the public sector institutions.

### **Research Hypothesis**

The study was guided by the following research hypothesis:

H<sub>0</sub>: There is no significant influence of accidental entry of erroneous data on the relationship between computerized accounting systems and audit risk management in the public sector institutions.

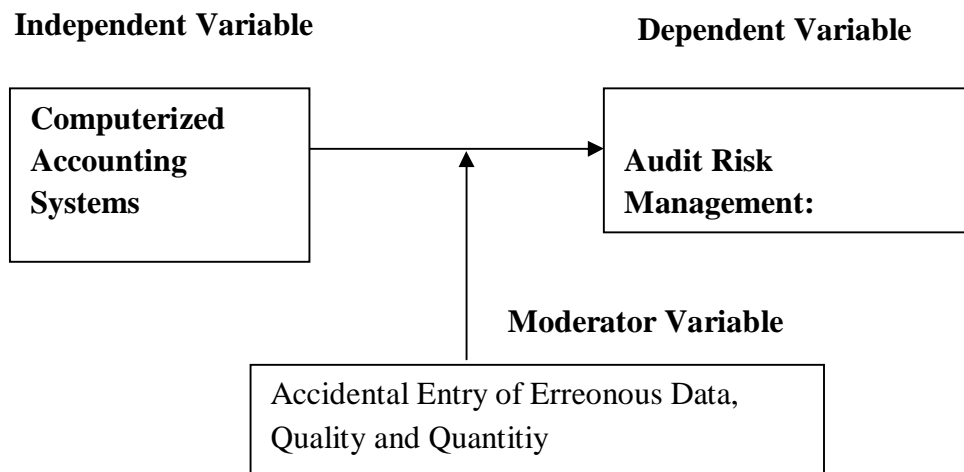
## LITERATURE REVIEW

### Theoretical Foundations

This study was anchored on positive accounting theory. In positive accounting theory, Watts and Zimmerman (1978, 1986) with a view of seeking to predict and explain why managers have a preference for given auditing methods (Sugut, 2014). The PAT explains why accounting is what it is, why accountants do what they do and what effect these phenomena have on people and resources utilization (Mutai, 2014). Abdulrazak (2013) argues that PAT is the reason for the choice of auditing methods, techniques and policy decisions. The organization is described by PAT in the form of collection of contracts that are necessary to help self-seeking individuals agree to cooperate such as employee contracts and supplier contracts (Mutai, 2014). These contracts have associated contract costs such as monitoring and evaluation costs, negotiation costs and agency costs. PAT holds that firms seek to minimize the contracting costs that in turn affect the accounting and auditing policies adopted. According to PAT, the information in the risk management performance can be distorted based on the management motive in several ways (Oluoch, 2014). The management has information advantage over the owners of the business and may seek to influence the reporting of earning and capital structure in financial reports due to conflict of interest between the managers (agents) and owners of firm (principals). The PAT thus seeks to explain the manager's choice of accounting and auditing methods in terms of self-interest and relationship between stakeholders. In doing this, PAT has advanced three theories that seek to explain these phenomena; bonus hypothesis, contractual motivation hypothesis and political motivation hypothesis (Abdulrazak, 2013; Mutai, 2014; Oluoch, 2014). The PAT theory is considered relevant to this study as it explains the incentives of use of computerized audit systems and its link to risk management performance.

Prior studies indicate that computerized accounting systems are important in enterprise risk management (Kunkel, 2014). Some studies (Lorenzo, 2011) focused on enterprise risk management and audit control while others (UPA Forex and ICT, 2012; Peterson *et al.*, 2010) assessed the role of ICT on accounting practice as opposed to computerized accounting systems. Byenkya (2011) and Hunton (2012) explored the automated accounting information system and organizational effectiveness. Further, Diamond and Khemani (2005) focused on public expenditure management systems in developing countries. Otieno and Oima (2013) focused on computerized accounting

systems risk factors and auditing risk in public enterprises. Despite this vast empirical works on computerized accounting systems little information is known in relation to the moderating influence of accidental entry of data on the relationship between computerized accounting systems and audit risk management in the public enterprises.



**Figure 1: Moderating Role of Accidental Entry of Erroneous Data on the Relationship between Computerized Accounting Systems and Audit Risk Management**

## RESEARCH METHODOLOGY

The study adopted a correlation survey research design. According to Nachmias and Nachmias (2008), a survey design is most suitable in a research aimed at establishing a problem and determining its extent. The study focused on all the 53 public enterprises operating in Kisumu County in relation to accidental entry of erroneous data, computerized accounting systems and audit risk management. These enterprises provide public goods and services.

The data collected was analyzed using descriptive and inferential statistics. Descriptive statistics was used to summarize and analyze the data, involving measures of dispersion and central tendency where means and averages and regression analysis. Regression analyses were used to assess the relationship between the variables in this study (Mugenda *et al.*, 2011). Content analysis was performed on qualitative data.

The regression model below was adopted;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 Z_i + \varepsilon_i \dots\dots\dots(3.1)$$

$$Y = \beta_0 + \beta_1 X_i + \beta_4 Z_i + \varepsilon_i \dots\dots\dots(3.2)$$

Where:

Y= Dependent Variable (Audit risk management).

X<sub>i</sub>= theoretically defined Independent Variable (computerized accounting system indicators; i= 1,2...n).

Z<sub>i</sub>= theoretically defined moderator variable (accidental entry of erroneous data: i = 1, 2...n).

β<sub>0</sub>, β<sub>1</sub>, β<sub>2</sub> and β<sub>3</sub> are regression equation coefficients.

ε = error term of the regression.

**RESULTS AND DISCUSSION**

**Table 4.1: Summary of Influence of Accidental Entry of Erroneous Data on the Relationship Between Computerized Accounting System and Audit Risk Management**

Model	R		Adjusted R Square	Std. Error of the Estimate	Change Statistics		F		Sig. F Change	Durbin-Watson
	R	Square			R <sup>2</sup> Change	Change	df1	df2		
Dimension	1	.356 <sup>a</sup>	.127	1.32594	.127	42.067	2	44	.000	
	2	.415 <sup>b</sup>	.206	1.29069	.079	20.902	1	43	.000	1.992

a. Predictors: (Constant), Accidental entry of data, Computerized Accounting Systems

b. Predictors: (Constant), Accidental entry of Data, Computerized Accounting Systems,

**INTERACTION**

c. Dependent Variable, Audit Risk Management

Source: *Survey Data (2018)*

The significant interaction indicates that the presumed moderator (accidental entry of data) does actually moderate the effect of the predictor (Computerized accounting systems) on the



outcome variable (public enterprises audit risk management). The hypothesis that accidental entry of data moderates the relationship between computerized accounting systems and audit risk management was therefore supported. The adjusted  $R^2$  of model (a) is 0.066 and its  $R^2$  is .356 for the main model with accidental entry of data while when the interaction of accidental entry of data with main predictor variable is also introduced in the model,  $R^2$  is .415 with adjusted  $R^2$  dropping to 0.145. The differences in the two cases of  $R^2$  for each model are less than a ceiling of 0.5 (Field, 2005). This small change implies the models are valid and are stable for prediction of dependent variable, audit risk management, at 35.6 % and 41.5 % variance respectively.

**Table 4.2: Influence of Accidental Entry of Data on the Relationship Between Computerized Accounting Systems and Audit Risk Management**

Model	Unstandardized		Standardized		Collinearity Statistics		
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1 (Constant)	.925	.231		4.0004	.000		
Computerized Accounting Systems	.712	.057	.610	12.491	.000	.942	1.132
Accidental entry of Data	.034	.075	.023	.453	.587	.962	1.128
2 (Constant)	.828	.204		4.058	.000		
Computerized Accounting Systems	.657	.064	.359	10.265	.000	.973	1.028
Accidental entry of data	.012	.052	.045	.231	.666	.991	1.009
INTERACTION	.105	.034	.247	3.0882	.000	.981	1.020

**a. Dependent Variable: Audit Risk Management**

According to Aikin and West (2003) power to detect interaction effects is often low because of the small effect sizes observed in social science. Fairchild and Mackinnon (2014) note that interaction effect; in this case 7.8% is normally very low but never the less confirm moderation. He argues that models that simultaneously examine mediation and moderation effects are at an even greater disadvantage as they involve several interaction terms as well as estimation of indirect effects. Their effect is often as low as 1%. This effect though small, confirms the moderation.

The significant interaction indicates that the presumed moderator (accidental destruction of data) does actually moderate the influence of the predictor (computerized accounting systems) on the outcome variable (public enterprise audit risk management). The hypothesis that accidental destruction of data moderates the relationship between computerized accounting systems and public enterprises audit risk management was therefore supported. As a result, the hypothesized moderation model was therefore confirmed to be;

$$Y = 0.828 + 0.59X + 0.045Z + 0.247XZ$$

The model implies that a unit change in standard deviation of the interaction will result in 0.247 standard deviations variance in audit risk management of public enterprises. This applies to accidental destruction of data and the interaction term. The study recognized earlier attempts to find out the reason for the mixed results as above and identified limited studies that advanced possible mediator influence (Peterson *et al.*, 2010; Henry, 2007) but which were inconclusive as they did not justify having hypothesized the mediators (ERP environment and audit control mechanisms) nor did they test for direct effects. The Based on the works of Coffin and Patilis, 2001; Wright, 2012 that report prediction of audit risk management by accidental destruction of data, this study hypothesized and confirmed moderation of accidental entry of data in the relationship between computerized accounting systems thereby adding new knowledge in the quest for the reason for the inconclusive results posted by this causal relationship. This study therefore provides insight into this elusive explanation. The finding regarding the moderating effect of accidental entry of data on the relationship between computerized accounting systems and audit risk management is a significant contribution of the current study to existing literature.

### **Conclusions of the Study**

From the findings, on the objective of the study, which sought to analyze the influence of accidental entry of erroneous data on the relationship between computerized accounting systems and audit risk management among public institutions in Kisumu County. The findings were that the change in coefficient of determination of accidental entry of erroneous data was significant and positive ( $R^2$  change = 0.079,  $p < 0.01$ ). From the finding it can be concluded that accidental destruction of data

indeed moderate the relationship between computerized accounting systems and audit risk management.

### **Recommendations of the Study**

Based on the conclusion, the study recommends that accidental entry of erroneous data moderates the relationship between computerized accounting systems and audit risk management, it is recommended that accidental entry of erroneous data should be emphasized by the public firms as it amplifies the prediction of computerized accounting systems on their audit risk management. It is observed that computerized accounting systems and accidental entry of erroneous data play a role in audit risk management of the public firms.

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