Macrothink Institute™

**Case Studies in Business and Management**
ISSN 2333-3324
2015, Vol. 2, No. 2

# An Analysis of Revenue Cycle Internal Controls in Ghanaian Universities

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Received: March 26, 2015 Accepted: May 9, 2015 Published: August 7, 2015

doi:10.5296/csbm.v2i2.7320 URL: http://dx.doi.org/10.5296/csbm.v2i2.7320

**Abstract**

While corporate organisations in recent years have experienced increasing demands for more effective and efficient internal controls aimed at strengthening and enhancing the reliability of financial statement there exist very little empirical studies focusing on the application of the five components of the COSO control framework in Revenue Cycle Internal Controls in Ghanaian University. The study is relevant in increasing the understanding and evaluating internal control effectiveness of Ghanaian Universities. The purpose of this research paper is to assess the level of effectiveness of the Revenue Cycle Internal Control Systems of Universities in Ghana using the Committee of Sponsoring Organisation of the Treadway commission (COSO) control framework in order to provide the basis for streamlining and improving controls in the Universities in Ghana. The study uses primary data collected through a survey instrument from respondents sampled from Universities and University Colleges. The results indicate that all five components of the COSO framework were in place and functioning effectively. The sampled population consist of Ghanaian Universities only, consequently the research outcome may not necessarily represent all Universities in the world. Only selected Universities and University Colleges in Ghana were included in the research, therefore the findings of this study cannot be attributable to all Higher Educational Institutions in Ghana.

**Keywords:** Ghana, revenue cycle, internal controls, universities, Accounting Information Systems, financial reporting, auditing, Information Systems Auditing, Risk Assessment, computerised information systems

## 1. Introduction

The unprecedented corporate scandals that saw the collapse of corporate organisations such as Enron, Arthur Anderson, Tyco, Adelphia, Worldcom and a host of others has been receiving significant attention by academic scholars and practitioners aimed at exploring strategies to improving organisational corporate reporting and instil some confidence in investors. Most of the audit failures could have been avoided had senior management focused

more on critical issues relating to corporate governance, ethical standards and internal controls. In an attempt to streamline these control deficiencies, the U.S Sarbanes-Oxley Act of 2002 was passed requiring public corporations to annually assess and report on the effectiveness of internal controls over financial reporting. The Act adopted by the Committee for Sponsoring Organisations of the Treadway Commission (COSO) as a blueprint for establishing internal controls that promote efficiency, minimise risk, and help ensure the reliability of financial statements, and comply with laws and regulations. Many organisations throughout the world have embraced the COSO framework and praised it for its comprehensiveness, effectiveness, and universal principle of strong internal control. Since the COSO model was advanced as a superior alternative to other internal control frameworks, practitioners have sought to explore through case studies to determine the effectiveness of organisational internal controls based on the COSO model, the effectiveness or otherwise of internal controls based on other models and criticism and limitations of the model. On the other hand, there appear to be limited research in the literature on the effectiveness of internal controls and the adoption of the COSO framework in organisations in Ghana. This paper is an attempt to address this gap in literature. For the purpose of this paper, these institutions are categorised into two: public universities and private university colleges. We define public universities as those institutions that are state owned whereas; private universities are those institutions that are privately owned and mostly run by religious institutions in Ghana.

## 2. Literature Review

Business failures in which deficiencies of financial reporting and corporate disclosure featured prominently are not new phenomena. In the 1980s and 1990s names generally associated with governance and business failures included companies from the UK, France, Germany, Australia, Canada, Japan and the US (IFAC, 2003). However, recent high-profile cases such as the collapse of Enron, Worldcom, Adelphia Communications and Tyco has prompted organisations around the world to critically review and evaluate their internal control strategies. The effect of these scandals on businesses and corporations has assumed an international dimension due to the global business environment. Indeed, IFAC (2003) opined that changes in accounting standards in countries other than the European Union (EU) countries moving in the direction of greater convergence with international standards with the view to conforming to global financial reporting requirement and compliance. The ripple effect of the recent financial scandals resulted in the loss of credibility in corporate financial information. These businesses apparently failed to enact and enforce sound internal controls throughout their organisations as a result, employees deliberately violated ethical codes, business rules, regulatory requirements which resulted in massive fraud (Gelinas et al., 2005). In an attempt to protect the citizens from such abuse, the Sarbanes-Oxley Act (SOA) was passed by the US congress in 2002. The Act “created a new Accountancy Oversight board, strengthened auditor independence rules, increased accountability of company officers and directors, mandated upper management to take responsibility for company’s internal control structure, enhanced the quality of financial reporting, and put teeth into while-collar crime penalties” (Gelinas et al., 2005). As Jefferson Wells International (2005) have noted, the SOA failed to assign a role for the internal auditor in ensuring independent evaluation of

internal controls. The multiple effects of the SOA on corporate organisations, noted in the following categories by Miller (2002) and Yakhou (2004) to include:

(1) External: Registration of public companies and associated persons with the Public Company Accounting Oversight Board (PCAOB); the vested authority of PCAOB to discipline public companies that violates the Act including suspension of registration; rotation of auditors serving a maximum of five years for lead time, review auditors, not an audit firm itself; retention of documents related to the audit for time period of seven years, and elimination of discharge of obligations as relief under the Bankruptcy Reform Act, (2) Internal: The establishment of audit committee, with all members independent officers to appoint the external audit firm with assurance of auditor independent, by principally limiting non-audit services, and certification of financial statement, by CEO and CFO including assessment of internal control system, and reconciliation to Generally Accepted Accounting Principles (GAAP) in financial statements on financial condition and results of operations.

The Sarbanes-Oxley Act has affected multi-national corporations around the world that have business relations in the US. These organisations by Law had to comply with the Act in addition to meeting their financial reporting requirements of their home countries thus making it extremely costly for these companies to comply with the Act. Koehn and Delvecchio (2006) stated that "EU commission officials and the SEC worked out a 'roadmap 'outlining steps that will eliminate the requirement that European companies using International Financial Reporting Standards (IFRS) reconcile their financial reports to U.S GAAP". The situation is no different with the rest of the world as compliance with the Act continues to be a big issue with Multinational Corporations. With the gradual move towards reconciling IFRS with U.S. GAAP, there is likely to be a review of national accounting standards to comply with the global trend. Ghanaian institutions will eventually have to comply with the reporting requirements of the reviews.

In recent years, various professional groups have developed internal control frameworks and guidelines to assist auditors and management in developing internal control systems (Hunton et al., 2004). The authors further identified three control standard models namely: (i) Committee for Sponsoring Organisations of the Treadway Commission (COSO); (ii) the Cadbury model issued by the UK's Cadbury Commission; (iii) the Canadian Criteria of Control Committee (CoCo) as being the most widely used internal control models. Other framework such as the Information Systems Audit and Control Foundation's Control Objectives for Information and related Technology (CobiT). The Institute of Internal Auditors Research Foundation's Systems Auditability and Control (SAC), and the American Institute of Certified Public Accountants' Consideration of the internal control in a Financial Statement Audit (SAS 78) have used in different countries and different companies.

*2.1 What is the COSO framework?*

COSO defined internal control as "a process effected by an entity's Board of directors, management and other personnel designed to provide reasonable assurance regarding the achievement of objectives in the following categories: effectiveness and efficiency of operations; reliability of financial reporting and compliance with applicable laws and regulatory". The emphasis of COSO's definition is on internal controls being a process and that it is the responsibility of an organisation's management, employees, and Board of

directors and more importantly linking control to organisational objectives. Colbert and Bowen (2006) reiterated that the COSO framework "emphasises that internal control system is a tool of, but not a substitute for management and that controls should be built into rather than built onto operating activities". Colbert and Bowen (2006) recommend evaluating the effectiveness of internal control as of a point in time. Gelinas et al. (2005) identified five inter-related components within the COSO framework. The internal control components: the five internal control components outlined by the COSO model namely; control environment, control activities, risk assessment, information and communication, and monitoring has been closely adapted by most of the other control models. The models rather differ in the audience addressed, the purpose of the document, and level of details of guidance provided (Colbert and Bowen, 2006). A research study by Geiger (2004) revealed a significant positive correlation between the control components "the nature of these components may vary from organisation to organisation in terms of degree, formality, and structure" (Hunton et al., 2004).

### 2.1.1 The Control Environment

The control environment as described by COSO's internal control-integrated framework, set the tone of an organisation, influencing the control consciousness of its people and it's the foundation for all other components of internal controls providing discipline and structure. The institute of internal auditors' "Tone at the Top" journal (2005) emphasised the fact that because the control environment represents an organisations first line of defence to mitigate the risk of financial reporting errors, a strong of organisations reporting plays a pivotal role. It provides the basis for evaluating the adequacy and effectiveness of internal control systems and assesses an entity's ability to ensure responsible corporate governance and reliable financial reporting (Rezaee, 1995). Applegate and Wills (1999) simply described this component as "the foundation for the internal control system by providing fundamental discipline and structure".

### 2.1.2 Risk Assessment

Risk assessment involves "identification and analysis by management – not the internal auditor of relevant risk to achieving predetermined objectives" (Applegate and Wills, 1999). "A precondition to risk assessment is establishment of objectives, linked at different levels and internally consistent" (COSO, 2005). In 2001, COSO began a project to provide guidance to organisations on enterprise risk management in developing plans to identify measure, evaluate and respond to risk (Hunton et al., 2004). For COSO, the major principles related to the assessment of control objectives at the risk level are: the importance of financial reporting objectives; the identification and analysis of financial reporting risk; and the assessment of fraud risk (Harris, 2005). Risk assessment will assist management and internal auditors to be in control (Rezaee, 1995). As the COSO report put it "because economic, industry, regulatory and operating conditions will continue to change, mechanisms are needed to identify and deal with the special risks associated with change".

### 2.1.3 Control Activities

Control activities are the "policies and procedures that help ensure management directives are carried out" (COSO, 2005). According to Rezaee (1995) these overlapping control activities

are divided into three categories of operating controls, financial information controls and compliance controls. The process as Colbert and Bowen (2006) describe it; will usually include reviews of the control system, physical controls, segregation of duties and information system controls and application controls. The institute of internal auditors' 2005 "Tone at the Top" journal summarised the control methods by smaller companies as oversight controls applied by management, segregation of duties, and independent reconciliations. The COSO report also emphasises the desirability of integrating control activities with risk assessment.

#### 2.1.4 Information and Communication

The concept of information and communication requires that "pertinent information must be identified, captured and communicated in a form and time frame that enable people to carry out their responsibilities" (COSO, 2005). It is important that "all people in the entity should receive a clear message from top management that internal control responsibilities must be taken seriously" (Rezaee, 1995). Aldridge and Colbert (1994) emphasised the importance of open channel of communication that will facilitate information to flow throughout the entity and into the financial statement.

#### 2.1.5 Monitoring

The monitoring process involves "activities and procedures designed to assess the effectiveness of the internal control system in achieving the entity's financial reporting objectives" (Aldridge & Colbert, 1994). To accomplish this will require ongoing monitoring activities and or separate evaluations. "Ongoing monitoring is a continuous assessment of various components of the internal control system through proper training and evaluation of personnel, continues supervision, and implementation of recommendations provided by auditors. Periodic evaluation can supplement ongoing monitoring and should be used on an ad hoc basis" (Razaee, 1995). However, highly effective ongoing monitoring activities may offset the lack of separate evaluation of internal control systems commonly found in smaller business (Tone at the Top, 2005)

## 3. The Revenue Cycle Function

The function involves a set of business activities and related information processing operations associated with providing goods and services to customer and collecting payment for those sales. The literature on specific internal control attributes relating to the revenue cycle appears to be narrowed towards the health sector other than the general corporate outlook. The function involves three yet related activities namely: billing customers, managing customer accounts, and securing payment for goods sold or services rendered. "the billing, accounts receivable and cash receipts process is an interactive structure of people, equipment, methods, and controls designed to create information flows and records that accomplish the following: support the repetitive work routines of the credit departments, the cashier, and the accounts receivable department; support the problem-solving process of financial managers; and assist in the preparation of internal and external reports" (Gelinas et al., 2005). Gelinas, Sutton and Hunton further stressed that organisations need a rapid billing process, followed by close monitoring of receivables, and a quick cash collections process to converts sales into working resources in a timely manner. Rama and Jones (2005) enumerated

the following threats to be associated with the function; failure to bill customers, billing errors, theft of cash, loss of data, and poor performance. A well designed control procedures within the revenue cycle of Ghanaian universities will help enhance performance thus reducing control threats associated with the function.

This performance control model "is judged to be effective if the five components are present and functioning effectively for operations, financial reporting, and compliance" (Colbert & Bowen, 2006). Similarly, PricewaterhouseCoopers chairman, Larry E. Rittenberg, in a review of COSO's "internal control-integrated framework guidelines for smaller public companies reporting on internal control over financial reporting opined on the need for all five components of internal controls defined by COSO to operate together to achieve effective internal control. Colbert and Bowen report also addresses the limitations of an internal control system and the roles and responsibilities of the parties that affect a system. Section 404 of the Security and Exchange Commission (2005) report on final rules relating to the implementation of the Sarbanes-Oxley Act adopted the COSO description of internal control. Contrary to claims by critics that "the framework is a board, principle-based document not particularly suited to internal-controls monitoring" (Shaw, 2006). However, Hunton et al. (2004) provided evidence to suggest that many organisations have implemented the COSO model successfully.

The Information Systems Audit and Control Foundation (ISAF) developed the Control Objectives for Information and related Technology (CobiT) to serve as generally applicable framework for IS Security and control practices for Information Technology Control (Colbert and Bowen, 2006). CobiT integrates internal control with information and information technology. CobiT defines internal control as "policies, procedures, practices, and organisational structures designed to provide reasonable assurance that business objectives will be achieved and that undesired events will be prevented or detected and corrected" whiles it defines IT control objectives as "a statement of the desired result or purpose to be achieved by implementing control procedures in a particular IT activity" (CobiT, 1995). These definitions were adapted from COSO and SAC respectively. The framework has proved to help meet the multiple needs of management by bridging the gaps between business risks, control needs, value creation and technical issues. It provides a sound approach to implementing IT governance-related initiatives in a well-controlled environment (Hardy, 2006). The CobiT framework classified IT control objectives into four domains namely; Planning and implementation, acquisition and implementation, delivery and support, and Monitoring. According to the Internal Auditor (2004), although PCAOB has not endorsed a specific IT control framework, some auditors have found that CobiT works well with their Sarbanes-Oxley Act compliance efforts. The Price Waterhouse (2006) IT Governance Global status report indicated that "awareness in the general population of the existence of CobiT has increased by 50 percent since 2003, from 18 percent to 27 percent. In addition, one out of six respondents who know CobiT claims to know the content to a great extent".

The Cadbury model was developed by the United Kingdom's Cadbury Commission. Quite similar to COSO, the model recommends a system of internal control that ensure effective and efficient operations, reliability of financial information and reporting, and legal and

regulatory compliance (Hunton et al., 2004). The key components of the Cadbury model as Hunton, Bryant and Bagranoff rightly stated are essentially similar, except that the information systems is not included as a separate components but is inherent in the other elements (Galloway, 1994). On the other hand, The Canadian Criteria of Control Committee (CoCo) was built on the COSO and Cadbury models with similar broad definition and control elements but emphasises the role of learning within the organisation (Herremans, 1997). The framework however, groups its criteria of control into four categories namely; the purpose criteria that relates to an organisations missions and objectives, Commitment criteria that relates to ethics, policies, and corporate identity, capability criteria that relate to the competence of an organisation, and Monitoring and learning criteria that concern an organisation's evolution (Hunton et al., 2004). CoCo however differs in certain specific areas from COSO and Cadbury. The model "provides the notion of multiple frameworks or model; it addresses the reliability of internal management reporting, addresses objective setting as well as risk management, and also adapts a wider focus on monitoring to include specific reference to concepts of learning and adaptation" (Galloway, 1994).

## 4. Other Regulatory Frameworks

Although the most widely used frameworks according to Hunton, Bryant and Bagranoff are COSO, Cadbury and CoCo, it is worth reviewing other emerging models in the other present a broader view of the literature on internal control guidelines. They are; the Institute of Internal Auditors Research Foundation's Systems Auditability and Control (SAC), and the American Institute of Certified Public Accountants' Consideration of the Internal Control in a Financial Statement Audit: An Amendment to SAS 55 (SAS 78). ***The Systems Auditability and Control (SAC) report:*** The SAC report defines internal control as "a set of processes, functions, activities, subsystems, and people who are grouped together or consciously segregated to ensure the effective achievement of objectives and goals". The report emphasises the role and impact of computerised information systems on the system of internal controls. It stresses "the need to assess risk, to weigh cost and benefit, and to build controls into systems rather than add them after implementation" (Colbert and Bowen, 2006). Unlike the other models, SAC consist of three components namely; the control environment, manual and automated systems, and control procedures. The models further provide five classifications for internal information system as: Preventive, detective and corrective; discretionary and non-discretionary; voluntary and mandated; manual and automated; and Application and control. The framework focuses "on when the control is applied, whether the control can be bypassed, who imposes the need for the control, how the control is implemented, and where in the software the control is implemented" (Colbert and Bowen, 2006). ***SASs 55/78 Report:*** The SAS 78 definition of internal control replaces SAS 55 with the adoption of the COSO definition of internal control. SAS 78 also adapts the five internal control components of COSO with the replacement of three component of the SAS 55 namely; the control environment, the accounting system, and control procedures (Colbert and Bowen, 2006) thus making the model essentially similar to that of COSO.

## 5. Methodology

The paper employed quantitative study design through a survey strategy. The researcher employed two sample strategy; first seven out of twenty-one accredited Universities were

selected based on the following criteria; the three largest public Universities in Ghana with the highest student population and has been in existence for over thirty years were selected with the assumption that these institutions have well structured finance and internal audit departments with timed tested internal controls in place. Four out of the fourteen accredited private Universities that have been in existence for the past six or more years were selected in order of their year of accreditation. These criteria enabled the researcher to focus on the private Universities that have move from the infant to the growing stage of their development and thus are likely to have operational internal controls in place. This criterion was adopted so as to ensure that the selected Universities will be truly representative of the population and thus findings can be generalised or extrapolated to the targeted population with confidence.

The second strategy involves the use of two sample sets focusing on the finance and internal audit departments of the first sample strategy. This method largely enabled the research to focus on the departments responsible for the operational and monitoring of revenue cycle internal controls. It is significant to mention that the focus of the research is an assessment of the effectiveness or otherwise of revenue cycle internal controls. Thus focusing on respondents within the finance and internal audit departments will provide a more precise and objective findings. The first sample set consisted of strategic staff of the two departments namely, the finance officers, the deputy finance officers (Accounts receivables), and the internal auditors. Whiles the second consist of the Systems Accountant/Programmer, Cashiers, the Accountants (students' fees or revenue) and two of the operational staff of the internal audit. This approach enabled the researcher to obtain strategic data relating to Internal Controls and frequency and volume of internal control contribution. Similarly, the deputy finance officers (accounts receivables) were able to provide variable background contextual data relating to the Universities revenue. Whiles the internal auditors were able to provide strategic data relating to monitoring and evaluation of internal controls within the revenue cycle. The respondents in the second sample provided qualitative/attitudinal insights to this quantitative data. The total number of 49 questionnaires was individually administered to the selected respondents. The technique was employed in both sample sets. The questionnaires centred on the revenue cycle internal controls of the selected institutions. The primary research centred on the following themes; The institutions internal control environment, Assessment of the institutions internal control risk, The level of control activities within the institutions' revenue cycle, the level of control of accounting information systems in the institutions, and Internal control monitoring in the institutions. The data was analysed based on themes and the research questions.

## 6. Results and Findings

### *6.1 Control Environment*

Table 1 shows respondents responses to the internal control environment existing in the case universities surveyed. About 51.2% of respondents show that internal controls are highly reliable in the Ghanaian universities while 48.8% of participants said internal controls are fairly reliable within the universities. The level of documentation of internal control appears to be comprehensive and consistent within universities in Ghana. The study reveals a high level of formal communication and training related to internal control awareness in Ghanaian universities. Taking into consideration all aspects of internal control implementation strategy

options available for the institutions such as control within business operations, controls integral to operations, control processes considered part of strategy and commitment to continuous improvement, controls integral to operations appear to be most important strategy of the universities in Ghana. Considering all dimensions of internal control procedures, 75.6% of participants classified internal control procedures within the universities in Ghana as formal and standard. There was an equal proportion of 50% real-time and periodic monitoring of internal controls in the universities in Ghana. The findings of the internal control environment reveal that top management makes a commitment to strong internal control and clearly conveys this through their actions. The findings points to a strong control consciousness throughout the universities in Ghana.

Table 1. Control environment responses

| Description | N | | Mean | Median | Std. Deviation |
|---|---|---|---|---|---|
| | Valid | Missing | | | |
| Internal Control reliability | 41 | 0 | 2.15 | 2.00 | 0.91 |
| Levels of Internal Control documentation | 41 | 0 | 2.24 | 3.00 | 0.89 |
| Levels of awareness of Controls | 41 | 0 | 2.90 | 3.00 | 0.70 |
| Value of Internal Controls | 39 | 2 | 3.33 | 3.00 | 0.96 |
| Internal Control procedures | 41 | 0 | 2.63 | 3.00 | 0.70 |
| Kinds of internal Control monitoring | 36 | 5 | 1.50 | 1.50 | 0.51 |

*6.2 Risk Assessment*

The results in table 2 show the level of internal control risk assessment existing in the case universities in Ghana. About 80% of Ghanaian universities have established either formal or informal mechanisms to ensure that activities that may adversely affect achievement of university or departmental wide objectives are clearly communicated to management. A higher than expected number of 65% Ghanaian universities' management identifies possible correlations between activities that may combine and interact to create significantly different impacts or probabilities. Almost 60% of Ghanaian universities management assesses for inherent risk, each activity or combination of activities that represents a risk, considering both likelihood and impact and then develops a risk response. Also, 60% of Ghanaian universities management assesses residual risk after risk response for each risk has been developed. Nearly 66% of Ghanaian universities management applies an appropriate trend of quantitative or qualitative techniques across the various departments or functions such that sufficient consistency exists to assess risk and likelihood of their occurring. A significantly high number of departments in Ghanaian universities clearly understand the processes involve in analysing risk in the departments incorporating the significance of risk and assessing the likelihood of their occurrence. The findings of this control component revealed that Ghanaian universities have structured risk assessment processes in place that emphasise

the importance of financial reporting objectives, identifies and analysis financial reporting risk, and assesses fraud risk.

Table 2. Internal control risk assessment responses

| Description | N | | Mean | Median | Std. Deviation |
|---|---|---|---|---|---|
| | Valid | Missing | | | |
| Formal/Informal mechanisms on adverse activities | 41 | 0 | 1.80 | 2.00 | 0.56 |
| Correlation between activities that create different probabilities and impact | 41 | 0 | 2.24 | 2.00 | 0.73 |
| Assessment for inherent risk | 41 | 0 | 2.22 | 2.00 | 0.73 |
| Consideration of Residual risk | 41 | 0 | 2.41 | 2.00 | 0.77 |
| Trend of quantitative/qualitative techniques | 41 | 0 | 2.22 | 2.00 | 0.73 |
| Understanding of Risk analysis techniques | 41 | 0 | 2.20 | 2.00 | 0.87 |

*6.3 Control Activity*

*Finance function general controls*, 95% of Ghanaian universities have developed adequate detailed accounting policies and procedures. Ghanaian universities review their accounting policies and procedures regularly and timely. Nearly 87% of universities in Ghana ensure that accounting policy manuals are made available to the appropriate personnel. A significant proportion (90%) of Ghanaian universities Finance officers or directors have adequate authority over principal accounting records and employees at all locations. Close to 98% of Ghanaian universities management or council authorises and/or approves academic facilities user fees.

*Cash receipts deposits:* Essentially a high percentage (82%) of Ghanaian universities have developed internal processing systems capable of separating payments received from the related accounting documents at the earliest possible processing point. Also, 78% of these universities analyses all range of cash management techniques and banking services at their disposal to determine what benefit can be derived from their use. In addition, 90% of Ghanaian universities deposit policies and procedures are in accordance with the universities guidelines. Over 92% of these universities properly and accurately record and account for deposits in a timely manner. Close to 80% segregates cash collection and deposits preparation from cash recording and general ledger entries. However a less than 80% (76%) of the universities segregates cash receipts from the disbursement function. Essentially almost all the universities in Ghana control receipts with the use of cash registers and ensuring that receipts are pre-numbered. Only about 65% of the universities in Ghana ensure that receipts are balanced to collection on a daily basis. Almost 95% of the universities ensure that un-deposited cash receipts are protected.

*Gifts and Grants:* Close to 80% of Ghanaian universities have established procedures to ensure differences between gifts, grants and contracts appropriately recognised in the universities' accounting systems. However, only 65% of the universities have developed

criteria for the approval of grants and contract proposals. Nearly 44% of the universities have established criteria for accepting gifts. A proportion of close to 66% of Ghanaian universities have established procedures to ensure that expenditure from restricted gifts complies with donor's intent. Essentially, 84% of Ghanaian universities have procedures in place to ensure that schedule officers prepare technical and progress reports of grants and contracts in accordance with terms of agreements. Nearly 70% of Ghanaian universities' finance officers have all grants and contracts on file.

*Revenue:* Over 80% of Ghanaian universities have established procedures to ensure the recording and reconciliation of revenue generating transactions. Almost 86% of the universities ensure that dispensing of goods and services accurately recorded. An essential proportion of close to 90% of the universities finance departments reconciles sales records to the appropriate accounting system. Close to 70% of Ghanaian universities management reviews data trends of sales and cash receipts to reveal trends that require management's attention. A significant proportion of the universities in Ghana have established appropriate policies that ensure pricing of goods and services are adequate to recover the universities direct and indirect cost.

*Petty Cash:* Close to 85% of Ghanaian universities ensure that petty cash trend are authorised by the head of finance. 84% of the universities ensure that petty cash funds are used for the intended purpose and supported by relevant documentations. About 64% of the Ghanaian universities ensure periodic counting of petty cash funds by someone other than the schedule officers.

*Accounts Receivables:* Most of the universities (65%) have developed procedures to facilitate recording and reconciliation of receivables, payments and managing credit. Significantly close to 80% of Ghanaian universities ensure accurate and timely recording and documentation of the billing process. A greater majority of the universities deposits receivables are timely backed by source documents. Nearly 70% of Ghanaian universities management segregates the billing function from its collection and accounting entries. Close to 80% of the universities further ensures that responsibilities for maintaining detail accounts receivables records are segregated from collection, deposits and general ledger entries. A proportion of 79% of the universities periodically review uncollected accounts balances to ensure collected actions are taken in accordance with established policies, procedures and legal requirements. Nearly 70% of universities management ensure periodic aging of accounts balances by officials outside the cash receipts and disbursements functions. The results of the responses is summarised in table 3.

Table 3. Control activity – finance function responses

| Description | N | | Mean | Median | Std. Deviation |
|---|---|---|---|---|---|
| | Valid | Missing | | | |
| Finance function documentation | 41 | 0 | 1.25 | 1.20 | 0.49 |
| Cash Receipts deposits | 41 | 0 | 1.20 | 1.00 | 0.43 |
| Gifts and Grants | 41 | 0 | 1.54 | 1.17 | 0.81 |
| Revenue | 41 | 0 | 1.31 | 1.00 | 0.65 |
| Petty Cash | 40 | 1 | 1.37 | 1.00 | 0.73 |
| Accounts Receivable | 39 | 2 | 1.38 | 1.00 | 0.73 |

*6.4 Accounting Information System*

*Information needs,* close to 70% of the universities in Ghana have adequate information gathering mechanisms in place to provide appropriate personnel with information to carry out their operating, reporting and compliance responsibilities. Most of the universities also have mechanisms to identify emerging information needs. Only 60% Ghanaian universities have developed IT plan for each department aimed at achieving institutional objectives.

*University-wide security management:* A small proportion of 45% of Ghanaian universities perform periodic high-level risk assessment of the universities' information system. However, a greater proportion of 85% of the universities performs and document risk assessment regularly, and whenever systems, facilities, or other conditions change. Significantly, 85% of the universities consider data sensitivity and integrity in assessing risk. Close to 84% of the universities ensures that final risk determinations are approved and documented. A small majority (55%) of the universities in Ghana has developed a plan that clearly describes the universities-wide security program and policies and procedures. A significant proportion (80%) of the universities management has established structures to implement and manage the university security program. Almost 80% of the universities have implemented effective security related personnel policies. 70% of the universities monitor the effectiveness of the security programs and make changes as needed. A little over 80% of the universities in Ghana periodically assess the appropriateness of security policies and compliance. An essential proportion of 82% of the universities management effectively implements, test and continually monitor corrective actions.

*Access control:* More than half (55%) of the universities in Ghana classifies its information resources according to their criticality and sensitivity. Also, 80% of the universities established criteria for resource classification and are essentially communicated to the various departments within the universities. A similar proportion of 80% of the universities classifies their information resources based on an assessment process and eventually documents these classifications. More so, 70% of the Ghanaian universities departments formally identify authorised users of the universities information resources. Essentially, close to 80% of the universities have established physical and logical controls to prevent and detect unauthorised access of the universities information system. Significantly, close to 80% of Ghanaian

universities monitors information systems access, investigates apparent violations, and takes appropriate remedial and disciplinary actions.

*Application software development and change control:* Close to 90% of the universities in Ghana ensure that information system processing features and program modifications are properly authorised. About 80% of the universities ensure that all new revised Software are thoroughly tested and approved. Nearly 84% of the universities have established procedures that ensure control of its software libraries including labelling, access restrictions and use of inventories.

*System software control:* A significant proportion of over 95% of Ghanaian universities limits access to system software based on job responsibilities, and document access authorisation. A similar proportion of 95% of the universities have established access control that enforces segregation of duties. However, about 90% of universities control changes made to the system software.

*Segregation of duties:* Over 80% of the universities in Ghana identifies and implement policies that segregate incompatible duties. Similarly, 80% of the universities have established access controls to enforce segregation of duties. A high proportion of 96% of the universities in Ghana exercises control over personnel activities by adopting formal operating procedures, supervision and reviews.

*Service Continuity:* A significant majority (70%) of the universities in Ghana assesses the criticality and sensitivity of computerised operations and identifies supporting processes. Nearly 80% of Ghanaian universities perform data backup procedures to prevent and minimise potential interruptions of the universities information systems. Only a small proportion of close to 40% have developed and documented a contingency plan for the universities information systems. Similarly, only about 35% of the universities periodically test their contingency plans and adjust it as appropriate.

*Authorisation control:* Close to 95% of the universities in Ghana ensure that source documents are controlled and require authorised. Nearly 90% of these universities restrict access to blank source documents. Also, close to 90% ensure that source documents are pre-numbered. Almost all the universities in Ghana ensure that source documents are controlled and require authorisation signature. A significant proportion of the universities (90%) utilises batch control sheets that incorporates essential information for batch processes. Close to 90% of Ghanaian universities independently review data before they are entered into the university's accounting information systems. A significant majority of the universities have restricted access to data entry terminals. Nearly 90% of the universities utilises master files and exception reporting to ensure that all data processes are authorised.

*Completeness control:* A high proportion of 98% of the Ghanaian universities ensure that all authorised transactions are entered into and processed by the universities accounting information systems. Significant, almost all universities performs reconciliations to verify data completeness.

*Accuracy control:* Close to 90% of the universities in Ghana ensure data entry design features contributes to data accuracy, while a similar proportion perform data validation and editing to identify possible erroneous data. Also, nearly 95% of the universities ensure that erroneous

data are captured, reported ad investigated for prompt correction by management. Close to 90% of the universities review output reports to help maintain data accuracy and validity.

*Control over integrity of processing and data files:* A considerable proportion (70%) of the universities in Ghana ensures that current versions of programs and data files are used during information processing. Almost 80% of the universities have developed routines to verify that the proper version of the computer file is used during information processing. Only a small majority of 60% of the universities have routines for checking internal file header labels before information processing. Close to 80% of the universities' information systems protect against concurrent file update. The findings on the accounting information systems showed that Ghanaian universities effective identify, capture, and communicate information in a form and timeframe that enables employees to carry out their responsibilities to ensure sound financial reporting. Table 4 summarises the outcome of the survey responses on internal control practices integrated into the case universities Accounting Information System.

Table 4. Accounting Information System (AIS) responses

| Description | N | | Mean | Median | Std. Deviation |
|---|---|---|---|---|---|
| | Valid | Missing | | | |
| Information needs | 40 | 1 | 2.15 | 2.00 | 0.62 |
| AIS general controls | 29 | 12 | 1.93 | 2.00 | 0.61 |
| AIS Access controls | 35 | 6 | 2.05 | 2.00 | 0.50 |
| Application Software development and change control | 41 | 0 | 2.37 | 2.00 | 0.70 |
| AIS systems Software control | 41 | 0 | 2.15 | 2.00 | 0.58 |
| Segregation of duties | 39 | 2 | 1.88 | 2.00 | 0.51 |
| AIS service continuity | 39 | 2 | 2.44 | 2.00 | 0.92 |
| Access to blank source documents restricted | 40 | 1 | 1.88 | 2.00 | 0.46 |
| completeness control | 41 | 0 | 2.10 | 2.00 | 0.58 |
| Accuracy control | 41 | 0 | 1.98 | 2.00 | 0.76 |
| Control over integrity of processing and data files | 38 | 3 | 2.20 | 2.00 | 0.75 |

*6.5 Monitoring*

As can be seen in table 5, an essential proportion of nearly 80% of Ghanaian universities management has established performance measures for processes in the various departments and receives periodic reports of results against those measures. Close to 70% of the universities personnel responsible for reports in the departments are required to "sign off" on their accuracy and integrity and are held accountable if errors are discovered. 80% of Ghanaian universities reassesses and modifies controls in the event of breakdowns or deficiencies. About 70% of the universities ensure that controls most critical to investigating high priority risk in the departments are calculated with appropriate frequency. A significant proportion of close to 85% of the universities evaluates entries of internal control system when there are major strategy changes, major acquisitions or operations and methods of

processing financial information are changed. Nearly 95% of the departments in the universities have developed appropriate levels of documentation to facilitate departmental employees understanding of internal control systems. Over 70% of the universities employees provide sufficient control and compliance training sessions and feedback opportunities. 90% of the universities identify control deficiencies through on-going monitoring activities, including managerial activities and everyday supervision of employees. Also, 75% of the universities ensure that control deficiencies are identified during separate evaluations of the internal control system. Similarly, 75% of the universities ensure that internal control deficiencies are reported to the person directly responsible for the activity and a person at least on one level higher. Close to 70% of the universities have established specifications for deficiencies that should be reported to more senior management and to the university council or board. 95% of the universities senior management also ensure that the necessary follow-up actions are taken in response to reported control deficiencies. Almost 85% of Ghanaian universities' current audit/compliance reporting procedures is timely and effective. The monitoring findings significantly revealed an effective ongoing monitoring, separate evaluation, and reporting of deficiencies.

Table 5. Internal control monitoring responses

| Description | N | | Mean | Median | Std. Deviation |
|---|---|---|---|---|---|
| | Valid | Missing | | | |
| Establishment of departmental performance measures | 41 | 0 | 2.15 | 2.00 | 0.62 |
| Departmental reports sign-0ff by responsible officers | 41 | 0 | 1.93 | 2.00 | 0.61 |
| Reassessment and design of known control breakdowns | 41 | 0 | 2.05 | 2.00 | 0.50 |
| Critical controls for investigating high priority risk | 41 | 0 | 2.37 | 2.00 | 0.70 |
| Evaluation of entries of internal control system | 40 | 1 | 2.15 | 2.00 | 0.58 |
| Levels of documentation for understanding of internal control systems | 41 | 0 | 1.88 | 2.00 | 0.51 |
| Sufficient staff training on controls and compliance and feedback | 41 | 0 | 2.44 | 2.00 | 0.92 |
| identification of control deficiencies by on going monitoring | 41 | 0 | 1.88 | 2.00 | 0.46 |
| identfication of control deficiencies during separate evaluation of internal control systems | 41 | 0 | 2.10 | 2.00 | 0.58 |
| Control deficiencies are reported to persons directly responsible at higher level | 41 | 0 | 1.98 | 2.00 | 0.76 |
| Established specifications for deficiencies reporting to senior management | 41 | 0 | 2.20 | 2.00 | 0.75 |
| Senior management ensures necessary follow-up actions on reported control deficiencies | 41 | 0 | 1.90 | 2.00 | 0.44 |
| Current audit/compliance reporting procedures are timely and effective | 41 | 0 | 1.98 | 2.00 | 0.76 |

## 7. Conclusion and Recommendations for Further Research

The findings confirm that all five components of the COSO control framework are in place, properly designed, and functioning effectively. This confirms the research hypothesis that "revenue cycle internal control techniques implemented by Ghanaian are effective". The research outcomes reject Johnson's (1992) criticisms that Africa's history, culture, and the collectivist way of life render internal control systems impractical. One study limitation of this paper is the fact that the study did not perform an independent evaluation of the revenue cycle internal controls of the sample universities. The paper was generally based on survey response from selected employees from the finance and internal audit departments of the sampled universities. Therefore, caution should be exercised in the interpretation of the results. Future research should aim at an independent examination of Ghanaian universities' internal controls system so as to express an independent opinion on the level of effectiveness of the universities internal control techniques. The American Statement of Auditing Standards states that internal control evaluation should include a study and evaluation of the existing internal control as a basis for reliance and to determine the extent of the tests to which auditing procedures are restricted (AICPA, 1985). Thus, further research study will provide a significant insight and complement this study.

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