INTERNAL CONTROL SYSTEM AND REVENUE GENERATION: EVIDENCE FROM AN EMERGING ECONOMY'S RESEARCH INSTITUTE

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ABSTRACT

Revenue accruing to the government to finance its expenditure has been dwindling while the cost of managing the government keeps increasing. Even with the introduction of various reforms towards enhancing revenue generation in the public sector, revenue from government-owned agencies keeps declining. As a result, the study was carried out to examine the impact of the control environment, risk assessment, control activities, information and technology, and monitoring on revenue generation in the Cocoa Research Institute of Nigeria (CRIN). The study adopted the descriptive survey research design and a sample of fifty-four (54) staff of the departments charged with the issues of compliance with the internal control system were selected, using purposive sampling techniques. A well-structured questionnaire was used to collect primary data. The data obtained were analysed using correlation and the ordinary least square method. The regression results showed that the internal control system contributed 62.2% changes to revenue generation. Furthermore, results revealed that risk assessment (RA) had a substantial constructive effect on revenue generation while control environment, control activity and information and communication (IC), and monitoring and evaluation (ME) had insignificant positive impact on revenue generation in CRIN. The study recommends that enforcement of internal control measures, especially control environment, control activity and information and communication, and monitoring, should be taken seriously by the appropriate authorities.

Keywords: *Internal control system, Revenue generation, Research Institute, Emerging Economy and Public sector*

INTRODUCTION

Revenue accruing to the government coffer in Nigeria has been declining, while the cost of running the government has been on the high side. This dwindling revenue has been linked to a number of factors ranging from; fluctuations in the price of crude oil, revenue leakages, corruption, and mismanagement of public funds. The Nigerian revenue is majorly made up of oil and non-oil revenue. Historically, oil has been presumed to be the largest source of Nigerian revenue since 1981; the reason for the country's title as an oil-dependent nation. The Senate at its sitting on Tuesday 10th December 2019 raised the need to improve internally generated revenue (IGR) of the Government of Nigeria aside from oil (NASS/S/COF/01/20).

In order to achieve this, the Nigerian government has initiated a series of financial reforms and campaigns geared towards strengthening the internal control systems, enhancing revenue generation, and improving its public financial management system; reforms like the Treasury Single Accounts (TSA), Government Integrated Financial Information System (GIFMIS), Integrated Payroll007A and Personnel Information System (IPPIS), the use of REMITA payment platforms and the transition of MDAs from the cash basis of accounting to International Public Sector Accounting Standard (IPSAS) accrual basis with effect from July, 2016. Internal controls are instituted by Board Members, management, and other personnel to provide satisfactory confidence toward achieving stated objectives of operations, reporting, and compliance procedures (COSO, 2013).

Despite numerous rules and regulations geared towards improving revenue generation and the varying level of revenue generation strategies adopted in an organisation, the controls would only provide reasonable confidence that the objectives of the control systems are met and not an absolute assurance (Afolabi *et al.*, 2020). When economic decisions are made, to eliminate or reduce illegal or improper acts to a manageable level, a reasonable assurance is said to have been provided (Fadzil *et al.*, 2005). The study by Ivungu *et al.* (2020) revealed that corruption is on the increase in the public sector and that to reduce its pace, the government should ensure the proper functioning of the internal control mechanisms in its various organisations. The calls for public sector transparency and accountability have increased following a decline in government revenue. Ibrahim *et al.* (2017) documented that good financial management is dependent on an efficient and effective internal control mechanism in place. An increase in government expenditure is no longer commensurate with the level of revenue generated, hence the need for a more proactive drive, in increasing revenue-generating capability and plugging revenue leakages in the public sector.

A research institution is a unique public institution with distinct features. Agricultural Research Institutes (that includes Cocoa Research Institute of Nigeria) in Nigeria today are being confronted with the problem of inadequate funding which particularly limits them from adequately conducting research that will lead to improved yield, technological advancement, and even impact the lives of the citizens because they are regarded as fully funded agencies of government; as a result, they depend solely on government for personnel, overhead and capital allocation from the federal budget. Also, they are non-revenue generating agencies of government as such they pay little or no emphasis on revenue generation. Until recently, the government impressed all public institutions to improve on

revenue generation, pluck revenue leakages and commercialise their research findings and also justify the need for further funding by it (Ogunmakin, 2020; Yemer, 2017;).

Also, most of the literature reviewed addressed the influence of mechanisms of internal control on financial performance; accountability; and revenue enhancement either in the public or private sector (Agbenyo, *et al.*, 2018; Ibrahim, 2017; Sigilai & Njuru, 2016; Ibrahim *et al.*, 2017; Ogunmakin, 2020; Akosile & Akinselure,2016; Botchway, 2018; Celestine & Matiku, 2021 and Adeyemi & Olanrewaju, 2019). However, none of these studies focused on public research institutes in Nigeria; in addition, the studies highlighted some theories in line with the variables, but none addressed the deterrence measures in the event of deviation and non-compliance in this regard (Babatunde, 2013). It is on this basis that this study is being carried out to close the gap and also contribute to the existing knowledge by assessing the internal control system and revenue generation in CRIN. Internal control system applies to all entities, be it small, medium-sized, or large; profit-oriented, non-profit-oriented, or government enterprise; though the implementation may be different (COSO, 2013).

Specifically, the problem perceived which inspire the research into this study, focused on control system and revenue generation in the public sector with regard to the elements of internal control systems that include CE (control environment), ME (monitoring and evaluation), IC (information and communications), CA (control activities), and RA (risk assessment) and the interplay among them with a particular reference to Cocoa Research Institute of Nigeria (CRIN). The relationship between these variables has not been adequately explored in a research institution like CRIN. The broad objective of this article was to examine the effect of internal control systems (CE, ME, IC, CA, and RA) on revenue generation in the public sector with regard to public research institutes.

LITERATURE REVIEW

Internal Control System (ICS)

Application of financial, operational, and compliance ethics to the activities of an enterprise toward sustaining public confidence. ICS is a process designed by the board members, management team, and other personnel to give satisfactory security to the attainment of the stated organisational objectives, in terms of operations, reporting, and compliance procedures (COSO, 2013). International Organisation of Supreme Audit Institution described it as an integrated process geared towards identifying and controlling risk factors that may militate against the optimal performance of an organisation; and also provide reasonable assurance as to whether these goals were regularly, ethically, economically, efficiently, and effectively carried out or not; it is also aimed at protecting resources from being lost, wrongfully used or damaged. Internal control encompasses the organisational processes management uses to guide its activities and is not a separate system within an entity (INTOSAI, 2004). Ndungu (2013) defined ICS as the pillars for efficient and effective accounting controls and a tool for the attainment of organisational objectives.

Components of Internal Control

The mechanism of internal control as postulated by the Committee of Sponsoring Organization of the Treadway Commission (COSO, 2013) consists of five elements that are closely related: control environment, risk management, control activities, information and communication and monitoring.

(a)   Control Environment (CE)

CE is very important in any organisation because it sets the tone for an effective internal control mechanism. The operations of the other components of internal control rest majorly on the effectiveness of the control environment (Jones, 2008). It is described as the foundational basis with which the other parts of the control mechanism operate; it lays the framework and discipline for the attainment of the organisational goals (Konrath, 1999).

(b)   Risk Assessment (RA)

Without risk-taking, there would be no value creation. Risk assessment is the process of prioritising and quantifying risk to direct and guide organisations activity to eliminate, avoid or manage them. More precisely, risk is the probability that an expected outcome will turn out differently; that is, they could as well be, either a worse or better outcome than that expected. An internal audit department with excellent audit performance, a good audit programme, and reliable audit reporting will give a better risk assessment (Fadzil, 2005). Nuswantara *et al.*, (2017) posited that one of the malicious risks generally witnessed by all organisation is the fraud risk. Internal control risk is further classified into three, namely: financial risk, operational risk, and compliance risk.

(c)   Control Activities (CA)

Policies, processes, and procedures that assist management's decisions to minimize or avoid risks to achieve corporate objectives. The growth of the public sector's accountability will be guaranteed with a strong emphasis on control activities and operations, through laid down rules, regulations, and procedures (Aziz *et al.*, 2015). It is comprised of the following activities: preventive or detective, manual or computerized controls; like separation of functions, authorizations and approvals controls, attestations, physical controls, performance, reviews, reconciliations, and other controls aimed at enhancing the reporting structure of the organisation. Tarekegn *et al.*, (2020) documented that good control activities prevent frauds and misappropriation of public assets. Proper planning and organisation of controlling activities in a way and manner that gives reasonable security that organisational vision and mission would be efficiently and economically achieved, would be seen as adequate control (Fadzil *et al.*, 2005).

(d)   Information and Communication (IC)

This is the direction of the flow of information within the organisation. Information and communication is the part of internal control that ensures the communication of relevant and reliable information in a manner that is timely to interested stakeholders, to aid the discharge of their responsibility within the organisation. According to Adeyemi and Olarewaju (2019), efficient use of all mediums of communication as an element of internal control is needed for proper accountability in the public sector. Also, Tarekegn *et al.* (2020 posited that internal and external sources of

information that are reliable, relevant, and realistic must be identified, processed, retrieved, and communicated to their different users within the required time of need. Information obtained from these sources will be used as a guide or backing for the activities of the other internal control elements.

(e) Monitoring and Evaluation (ME)

Monitoring is meant to give an appraisal or assurance that the control measures are functioning effectively and that the activities of an organisation conform to laid down rules and regulations (Fadzil *et al.*, 2005). The monitoring could be an ongoing process or separately conducted periodically. It is the job of the internal audit to appraise the effectiveness of the ICS put in place and confirm if it is working as expected (Fadzil *et al.*, 2005). The outcomes of the monitoring activities should be made available to the management on a regular basis; and should be reported as well to the board members. When existing controls are not adequate, sufficient, and effective, there may be a need for changes or improvements. Fraud deterrence and detection activities are involved in monitoring and evaluation. Firms' monitoring and reporting procedures; and compliance with rules and regulations are enhanced by an effective internal control mechanism (Jokipii, 2009).

Revenue Generation

Revenue is the accumulation of economic benefits in the course of business, particularly when they increase equity other than increase relating to contribution from equity participation. Ibrahim (2017) sees revenue as inflows or enhancement of a firm's assets or payment of liabilities during a period. For example, sales of goods, service delivery, and other activities that may increase equity. Celestine and Matiku (2021) posited that to improve revenue collection efficiency, there is a need to support an improved internal control system; such as separation of functions, physical controls, and reconciliations. Also, Ibrahim (2017) opined that the success of any organisation in meeting up with its revenue target level is unequivocally associated with an effective internal control system.

There are two (2) major sources of revenue in the research institutions; external and internal source of revenue. The external source comprises government subventions (capital, recurrent, and research allocations) and international/domestic research grants; while the internal source includes income from sales of farm produce, laboratory services, farm establishment, consultancy services, and access/rental fees. An effective internal control system for revenue generation requires more than total commitments to policies and procedures; but involves the use of decisive judgment across all levels of the decision-making process; both strategic, management, and operational.

Empirical Review and Hypotheses Development

Control Environment (CE) and Revenue Generation

Yemer (2017) posited that an effective understanding of the association among internal control, revenues, and revenue strategies is a good opportunity to establish proper controlling measures that will diversify revenue strategies thereby reducing future risk and earning sufficient revenue to attain corporate objectives. The control environment is very important in any organisation because it sets the tone for an efficient and efficient internal control mechanism. The

operations of the other elements of internal control hinge majorly on the effectiveness of the control environment (Jones, 2008). Ogunmakin (2020), Sigilai and Njiru (2016); and Ndungu (2013) have interrogated the relationship between control environment and revenue generation (RG). The findings of their empirical studies suggest that a strong CE performs a crucial role in easing revenue generation by enhancing financial management practices, guaranteeing acquiescence with regulations, and nurturing a philosophy of transparency and accountability. The authors concluded that institutions that make development, as well as maintenance of a robust CE its priority, have the potential to harvest improvement in their revenue performance alongside sustainable long-term finance.

Despite the above submissions, the relationship between control environment and revenue generation has not been adequately explored especially in a public research institution like the Cocoa Research Institute of Nigeria. Consequently, this research hypothesizes that:

H_{O1}: The control environment does not affect the revenue generation of the Cocoa Research Institute of Nigeria.

Risk Assessment (RA) and Revenue Generation

Findings from empirical investigations conducted by Ibrahim, Diibuzie, and Abubakari (2017), Ibrahim (2017), Fadzil, Haron, and Jantan (2005) underscored the significance of incorporating assessment of risk into the processes of strategic decision-making to boost revenue generation and sustain today's dynamic competitive advantage as well as uncertainty in the business landscape. By implementing an approach that is proactive to risk management, business entities can recognize and exploit revenue opportunities despite the fact they are aiming at the efficient management of risks that may impede the performance of business. Although, Fadzil (2005) submitted that an internal audit department with excellent audit performance, a good audit programme, and reliable audit reporting will give a better risk assessment, fraud risk according to Nuswantara *et al.* (2017) has continued to be one of the malicious risks generally witnessed by all organisation. This motivated Yemer (2017), to posit that an effective understanding of the association among internal control, revenues, and revenue strategies is a good opportunity to establish proper controlling measures that will diversify revenue strategies thereby reducing future risk and earning sufficient revenue to attain corporate objectives.

Notwithstanding the above empirical submissions, the relationship between risk assessment and revenue generation has not been adequately explored especially in a public research institution like the Cocoa Research Institute of Nigeria. Consequently, this research hypothesizes that:

H_{O2}: Risk assessment does not affect the revenue generation of the Cocoa Research Institute of Nigeria.

Control Activities (CA) and Revenue Generation (RG)

Even though Aziz *et al.* (2015) opined that policies, processes, and procedures will assist an organizational management's decisions to minimize or avoid risks to achieve corporate objectives and that the growth of the public sector's accountability will be guaranteed with a strong emphasis on control activities and operations, through laid down rules, regulations, and procedures, much has not been achieved as far as revenue generation is concerned. Findings of these studies carried out by Celestine and Matiku (2021), Botchwey (2018), Babatunde (2013), Aziz, Ab-Rahman, Alam and Said (2015) highlight the censorious role of control activities (CA) in piloting revenue generation

(RG) and aiding competitive advantage in business entities. By applying effective frameworks of control, businesses can boost operational efficiency, lessen revenue leakages, and advance a culture of transparency and accountability across the firm. The implications of the studies encompass business executives, regulators, stakeholders, and auditors seeking to strengthen control activities (CA) and enhance revenue generation (RG) in multinational organizations.

To be precise, the association linking CA to RG has not been adequately unearthed especially in a public research institute like Cocoa Research Institute of Nigeria. Consequently, this research hypothesizes that:

H_{O3}: Control Activities do not affect the revenue generation of the Cocoa Research Institute of Nigeria.

Information and Communication (IC) and Revenue Generation

Through an empirical study, Adeyemi and Olarewaju (2019) opined that efficient use of all mediums of communication as an element of internal control is needed for proper accountability in the public sector (improved revenue generation as leakages are being blocked). Also, Tarekegn *et al.* (2020) posited that internal and external sources of information that are reliable, relevant, and realistic must be identified, processed, retrieved, and communicated to their different users within the required time of need. Information obtained from these sources will be used as a guide or backing for the activities of the other internal control elements (information obtained can be used to block leakages in the financial system of an organization thereby resulting in improved revenue generation). Researchers like Adeyemi and Olarewaju (2019), Afolabi, Ogunleye, and Olukoya (2020), and Agbenyo, Jang, and Cobblah (2018) have examined the association connecting (IC) and (RG). The findings of these studies underscored the censorious role of information and communication (IC) in steering revenue generation (RG) and sustaining competitive advantage in companies. By putting money into having efficient IC practices and systems, organisations can improve the agility of the organisation, responsiveness of customers, and capabilities for innovation, resulting in enhanced revenue performance and success of the market.

To the best knowledge of the authors, the association linking information and communication to revenue generation among research institutes, especially in a developing economy like Nigeria, has not been adequately explored. Consequently, this research hypothesizes that:

H_{O4}: Information and communication do not affect the revenue generation of the Cocoa Research Institute of Nigeria.

Monitoring and Evaluation (ME) and Revenue Generation

Outcomes of the empirical works of Nuswantara, Maulidi and Pujiono (2017), Akosile andAkinsulure (2016), and Jokipii (2009) showed that systematic monitoring of performance, mechanisms for timely feedback, and decision-making that is data-driven had a positive influence on revenue generation (RG) capabilities, thereby assisting firms to recognize revenue opportunities, lessen revenue risks efficiently, and improve sales strategies. To Fadzil *et al.* (2005), monitoring and evaluation could be regarded as an ongoing process or separately conducted periodically and it is the function of the internal audit to review the efficiency of the system of internal control in place and confirm if it is working as expected. The outcomes of the monitoring activities should be made available to the management regularly; and should be reported as well to the board members. When existing controls are not adequate, sufficient, and effective, there may be a need for changes or improvements. Jokipii (2009) submitted that fraud deterrence and

detection activities are involved in monitoring and evaluation. The author added that firms monitoring and reporting procedures, and compliance with rules and regulations are enhanced by an effective internal control mechanism. Despite these submissions, much has not been achieved as far as revenue generation is concerned especially among public research institutes like CIRN. In short, the effect of ME on revenue generation among public research institutes in a developing economy has not been adequately explored. Consequently, this research hypothesizes that:

H_{O5}: Monitoring and evaluation do not affect the revenue generation of the Cocoa Research Institute of Nigeria.

METHODOLOGY

This study employed a descriptive survey research design. The data for the study were obtained from the primary source via the administration of a structured questionnaire. The questionnaire was adapted from the works of Nuswantara, Maulidi and Pujiono (2017), Akosile andAkinsulure (2016), Jokipii (2009), Celestine and Matiku (2021), Botchwey (2018), Babatunde (2013), Aziz, Ab-Rahman, Alam and Said (2015) for the five elements of ICS (CE, RA, CA, IC, & MO). Section A of the questionnaire captured the personal information of the respondents of the study while section B focused on the internal control system; this includes statements on five elements of ICS (CE, RA, CA, IC, & MO). Section C dealt with questions about revenue generation capabilities and control procedures. The population comprised all the staff of the Cocoa Research Institute of Nigeria. A census size (the population is the sample as the sample size) of 54 staff members purposively chosen from the finance and accounts, internal audit, procurement, and administrative departments were used for the study because they were considered to be the custodians of the institute's internal control mechanism (Table 1).

Table 1: Distribution of the Sample Size

Department	Number
Finance and Accounts	23
Internal Audit	10
Administration	17
Procurement	4
Total	54

Source: Field Survey, 2023

The data analysis method adopted for this study was descriptive and inferential statistics. Frequency tables, percentages, mean and standard deviation were used. The data obtained from the questionnaires were tabulated, coded, and processed to ascertain the association between the dependent variable (Revenue) and the regressor variables (CE, RA, CA, IC, & MO) using a multiple linear regression model. The model equation was expressed as follows:

$$RGEN_i = \beta_0 + \beta_1 CE_i + \beta_2 RA_i + \beta_3 CA_i + \beta_4 IC_i + \beta_5 MO_i + \varepsilon_i$$

Where: IC= Information & Communication; RGEN = Revenue Generation; CE= Control Environment; β= Beta coefficients; CA= Control Activities; ε= Error term; RA= Risk Assessment and MO= Monitoring.

A priori expectation

This empirical study studied the impact of internal control (IC) measures on RG in the Nigerian public sector, using Cocoa Research Institute of Nigeria as a case, it is expected that the findings would offer an answer on how the elements of IC mechanism (CE, RA, CA, IC, & MO) can cause changes to revenue generation. As a result, it is believed that this study would validate existing literature where it was believed that the association connecting IC measures to revenue enhancement in the Nigerian public sector is significant. Therefore, the study expects that the association that will exist between IC measures and RG for the study under consideration would be positive and significant; all things being equal.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 > 0$

RESULT AND DISCUSSION

Demographic Characteristics of the Respondents

This segment focused on the socio-demographic characteristics of the respondents of the study as relates to their Department, Sex, Age, Level of Education attained, Professional qualification, and Job Experience.

The respondents were categorised by their position and designation in the department they worked in. Out of the 23 staff sampled, only 13 were designated as accountants while the remaining 10 were regarded as Executive Officers for possessing OND/HND. For the Internal Audit department, 7 were designated as Auditors while 4 were executive officers. The same applied to the other two departments as analysed in Table 2. Table 2 also shows that more males were involved in this study than females. The male represented 70.4% while the female respondents were 29.6%. The finding reveals that most of the staff entrusted with the enforcement of internal controls in CRIN are male.

Results of sex in Table 2 show that 88.9% of the staff was married, while 11.1% were Single. None is divorced nor separated. This is an indication that the majority of the respondents were mature and of sound mind. According to the analysis in Table 6; 3.7% of the employees were between the ages of 20 – 30 years, 29.6% were between the age of 31 – 40 years, and 66.7% were between the ages of 41 years and above. With the age range of 31 – 40 years (66.7%), it shows that the staff were mature enough to proffer solutions to the questions raised in the questionnaires. The result of qualification in Table 2 shows that the least minimum qualification obtained by all the respondents was the first school leaving certificate. 3.7% had WAEC/NECO/NABTEB certificates while 96.3% had ND, HND, B.Sc. or M.Sc. This is an indication that the respondents had a good understanding of the subject matter.

As regards professional qualification, **o**ut of the 54 returned questionnaires, only 14.8% of the respondents were professionally certified as accountants or auditors with ACCA, ACA, or CAN designation; while 85.2% were not professionally qualified. This is an indication that the professional competence of the respondents was below average. This would have a greater effect on their competence in dealing with internal control matters. On job experience, the staff were also asked to state how long they have been working in CRIN. This is as presented in Table 2. 22.2% of

the employees have worked in the organisation for a range period of 1 – 10 years; 64.8% have worked for a range period of 11 – 20 years, 11.1% worked for 21 – 30; while 1.9% worked for 31 – above. The job experience of the staff would enhance the judgment of the respondents on issues relating to the Internal Control system and revenue generation as raised in the questionnaire.

Table 2: Demographic Characteristics of the Respondent's Staff Designation by Departments

Designation	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Accountant	13	24.1	24.2	24.1
Auditor	7	13.0	13.0	37.0
Administrative Officer	12	22.2	22.2	59.3
Procurement Officer	3	5.6	5.6	64.8
Others	15	35.2	35.2	100.0
Total	**54**	**100.0**	**100.0**	

Gender of Respondents	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Male	38	70.4	70.4	70.4
Female	16	29.6	29.6	100.0
Total	**54**	**100.0**	**100.0**	

Age Range of the Respondents	Frequency	Percentage	Valid Percentage	Cumulative Percentage
20-30 years	2	3.7	3.7	3.7
31-40 years	16	29.6	29.6	33.3
41 years and above	36	66.7	66.7	100.0
Total	**54**	**100.0**	**100.0**	

Level of Education Attained	Frequency	Percentage	Valid Percentage	Cumulative Percentage
WAEC/GCE/NABTEB	2	3.7	3.7	3.7
ND/HND/B.Sc/MS.c	52	96.3	96.3	100.0
Total	**54**	**100.0**	**100.0**	

Professional Qualifications Obtained	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Not Applicable	46	85.2	85.2	85.2
Professional Qualifications	8	14.8	14.8	100.0
Total	**54**	**100.0**	**100.0**	

Level of Job Experience	Frequency	Percentage	Valid Percentage	Cumulative Percentage
1-10years	12	22.2	22.2	22.2
11-20years	35	64.8	64.8	87.0
21-30years	6	11.1	11.1	98.1
31years and above	1	1.9	1.9	100.0
Total	**54**	**100.0**	**100.0**	

Normality Test

A normality test was carried out on the data to ascertain their appropriateness for the analysis. Shapiro-Wilk test of normality was conducted for this study. The table below shows that all the variables were found to be normal accepted at p > 0.05.

Table 3: Tests of Normality

	Kolmogorov-Sminov[a]			Shapiro-Wilk		
	Statistics	**df**	**Sig.**	**Statistics**	**df**	**Sig.**
CE	.114	54	.078	.973	54	.271
RA	.096	54	.200[*]	.974	54	.300
CA	.109	54	.163	.967	54	.142
IC	.138	54	.012	.966	54	.128
ME	.083	54	.200*	.971	54	.221
RGE	.128	54	.028	.968	54	.151

*This is a lower bound of the true significance.
a. Lilliefors significance
Source: Authors' Computation, 2023

For both the Shapiro-Wilk and Kolmogorov-Smirnov tests, a level of significance that is greater than 0.05, indicates that the data is normally distributed.

Correlation Analysis

The study applied Pearson correlation to ascertain the level of relationship between internal control mechanism and revenue generation in CRIN. The findings of the analysis to test the interplay between the variables are given in Table 4. The association between the outcome and and predictor variables lying between perfect negative correlation and perfect positive correlation was established using Pearson correlation; to ascertain the direction as well as strength of the association that exists connecting the revenue generation of CRIN and the five elements of internal control mechanism. The relationship linking CE as an element of internal control to revenue generation in CRIN was found to be statistically significant and moderately positive at r = 0.372 and p–value = 0.006. It was also found that the association linking RA to revenue enhancement in the Institute was positive and significant as evidenced by r = 0.549 and p-value = 0.000. Further results revealed that CA has a positive and significant relationship with RG at r = 0.284, p-value = 0.038. Also, the association that linked IC and RG together in CRIN was at r = 0.323, p-value = 0.017. Finally, the relationship between ME and RG in CRIN was found to be positive and statistically significant at r -= 0.472, p-value = 0.000. All the five independent variables were found to be positive and statistically significant; indicating that an increase in either of them would result in to increase in RG of the Institute by 37.2%, 54.9%, 28.4%, 32.3%, and 47.2% respectively.

Table 4: Correlation Analysis Result

		Control Environment	Risk Assessment	Control Activities	Information & Communication	Monitoring & Evaluation	Revenue Generation
Control Environment	Pearson Correlation	1	.588*	.320*	.339*	.322*	.372**
	Sig. (2-tailed		.000	.019	.012	.018	.006
Risk Assessment	Pearson Correlation	.588*	1	.251	.254	.396*	.549**
	Sig. (2-tailed)	.000		.068	.063	.003	.000
Control Activities	Pearson Correlation	.320*	.251	1	.335*	.454**	.284*
	Sig. (2-tailed)	.019	.068		.013	.001	.038
Information & Communication	Pearson Correlation	.339*	.254	.335*	1	.458**	.323*
	Sig. (2-tailed)	.012	.063	.013		.000	.017
Monitoring & Evaluation	Pearson Correlation	.322*	.396**	.454**	.458**	1	.472**
	Sig. (2-tailed)	.018	.003	.001	.000		.000
Revenue Generation	Pearson Correlation	.372**	.549**	.284*	.323*	.472*	
	Sig. (2-tailed	.006	.000	.038	.017	.000	

** Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at 0.05 level (2-tailed).

Internal control system and revenue generation

The revenue Generation drive of Cocoa Research Institute of Nigeria (CRIN), being a public organisation was regressed against components of the IC mechanism. This helped to ascertain the influence of IC measures on revenue enhancement in CRIN. The analysis was carried out at a 5% level of significance.

Table 5: Model Summary

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate	Durbin-Watson
1	.622[a]	.387	.323	.43395	1.872

a. Predictors: (Constant), ME, CE, CA, IC, RA
b. Dependent variable: REG

Table 5 indicates that the regressor variables contributed 62.2% of changes in the revenue generation drive in CRIN as explained by adjusted R^2 of 38.7% of the deviation in revenue generation. However, other variables or proxies not

contained within the model accounted for 37.8% of the variables in revenue generation of the Cocoa Research Institute of Nigeria (CRIN), Nigeria. The result also revealed that the interplay between the predictor variables and revenue generation in CRIN is high and significant.

Table 6: ANOVA (Analysis of Variance)

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.703	5	1.141	6.057	.000[b]
	Residual	9.039	48	.188		
	Total	**14.742**	**54**			

a Dependent variable: REG
b Predictors: (Contant) ME, CE, CA, IC, RA

Table 6 indicates the significance of the overall model. It tested the association linking ICs and revenue generation of CRIN. The value of F- calculated is 6.057. Therefore, since F- calculated was greater than F- critical, it suggests that the model was significant at p-value = 0.000 indicating a level of significance of less than 0.05. It shows that the model was significant and statistically fit in depicting how the internal control system impacts revenue generation in CRIN.

Table 7: Coefficient of Determination

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	β	Std. Error	β	t	Sig.	Tolerance	VIF
(Constant)	1.299	.327		3.969	.000		
CE	.005	.098	.007	.047	.963	.600	1.668
RA	.288	.101	.415	2.860	.006	.606	1.651
CA	.037	.139	.035	.265	.792	.749	1.335
IC	.085	.124	.090	.685	.496	.737	1.356
ME	.168	.096	.248	1.746	.087	.632	1.581

a Dependent variable: Revenue generation

Where RGEN is the dependent variable (revenue generation), CE is the control environment; CA is control activities; RA is risk assessment; IC is Information & Communication; and MO is monitoring. The constant had a positive coefficient value of 1.299 and p-value of 0.000 which is significant. Thus, holding all other factors constant, revenue generation will increase by 1.299 (129.9%). An increase in the control environment variable by one unit would increase revenue generation by CRIN by 0.005. A unit upsurge in RA would result in an upsurge in RG of CRIN by 0.288; a unit upsurge in CA would lead to an upsurge in revenue generation of CRIN by 0.37; a unit upsurge in IC

activities would result in an upsurge in revenue enhancement by 0.085; while a unit upsurge in ME activities would lead to an upsurge in revenue generation of Cocoa Research Institute of Nigeria, (CRIN) by 0.168.

This study was conducted to determine if internal control measures influence revenue generation in the public sector. It was hypothesized that CE, RA, CA, IC, and ME activities would predict the level of revenue generation in the Nigerian public sector. To test this hypothesis, multiple regression was applied. Results revealed that 32.3% of the variance in revenue generation can be accounted for by the predictors, collectively, $F_{(5, 48)} = 6.057$, $p<.000$. The analysis also covers the variance inflation factors and Tolerance test for multicollinearity problems between the predictor variables. With values of tolerance above 0.1 and VIF values of less than 10; there was no multicollinearity problem identified. Looking at the unique individual contribution of the predictor variables, the result shows that control environment ($t=.047=$, $p>0.05$), risk assessment ($t=2.860$, $p<0.05$), control activities ($t=.265$, $p>0.05$), information & communication ($t=.685$, $p>0.05$) and monitoring & evaluation ($t=1.746$, $p>0.05$) had positive influence revenue generation. However, only risk assessment ($t=2.860$, $p<0.05$) was statistically significantly related to revenue generation. The relationships of the other four predictors were insignificant.

The outcome of this empirical study reveals that the institute under review had moderate control environment activities in place, these include an effective and efficient governing board (GB and regulatory agencies; a well-structured organisation with clear lines of responsibilities; staff commitments to honesty and ethical values; punishment and deterrent for breach of ethical conducts. This is evidenced by the regression result obtained where a unit upsurge in CE resulted in an upsurge in revenue generation by 0.005. The finding of the study shows that the control environment had a positive but insignificant relationship with the revenue generation of the Institute. It applies that the management of CRIN should align their goals, performance metrics, and structures for incentives to inspire behaviour that would drive revenue generation. This is in line with the findings of Sigilai and Njuru (2016) who stated that CE had a positive but insignificant effect on RG in Kenya's Nakuru Level Five hospitals.

The study determined the influence of RA on the revenue generation of the Nigerian public sector with CRIN as a point of reference. The study found that the institute had a well-established risk assessment policy in place with a clear objective; well well-defined risk identification process; an appropriate structure; and risk analysis and measurement techniques. From the regression result, a unit increase in risk assessment activities of the institute would result in an upsurge in revenue generation by 0.288; the finding of the study shows that RA had a positive and statistically significant relationship with the RG of the Institute. This finding implies that management should arrange and invest in practices to strengthen risk management. The findings of the study about RA activity are in agreement with the findings of Afolabi *et al.* (2020) and Celestine and Matiku, (2021) who stated that RA had a positive and significant effect on revenue generation in money deposit banks in Osun state and the Energy Enterprise of Tanzania.

The result also reveals that there were adequate and effective control activities in the institute: such as proper attention to exceptional and undesired issues; the presence of functional controls as a deterrent and warning for exceptional activities; proper documentation of revenue items; separation of duties; and presence of sound internal control

measures. From the regression analysis, a unit upsurge in CA would lead to an upsurge in revenue generation of CRIN by 0.37. This result has been buttressed by the findings of Ogunmakin (2020) and Celestine and Matiku (2021) that the interplay between IC mechanism and RG in public parastatals in Ekiti State and energy enterprise in Tanzania were positive and but insignificant.

The study evaluated the influence of IC on revenue enhancement of the Nigerian public sector. The study established that Cocoa Research Institute of Nigeria had an efficient and effective information and communication activities in place such as: access to valuable information; smooth flow of information among various units and departments; sufficient and clear information; timely report submission for management decision making. The result reveals that revenue generation would increase by 8.5% with a unit upsurge in IC activities. The outcome is concurrent with the findings of Ibrahim et.al (2017) where the effect of IC on Ghana's health institutions' financial performance was seen to be positive but insignificant. The finding is not in line with those of Sigilai and Njuru (2016) and Celestine and Matiku (2021).

The result further determined the impact of monitoring and evaluation activities on revenue generation by CRIN. The outcome showed that there was no interference in the works of the internal audit (IA) and override audit's findings or recommendations; the management implement audit findings to time; presence of regular review of internal control measures; and regular analytical review of transactions relating to revenue. The regression result shows that revenue generation would rise by 16.8% with a unit upsurge in ME activities in the Institute. The regression result does not concur with the findings of Yemer and Chekol (2017) and Afolabi et al (2020).

CONCLUSION

The findings show that revenue generation for the Cocoa Research Institute of Nigeria, (CRIN) is insignificantly influenced by CE, RA, CA, IC, and MO; except for RA with a relationship that is both positive and statistically significant with revenue generation. Finally, the study concluded that the predictor variables influence revenue generation in CRIN. It is therefore sufficient to conclude that CE, CA, IC, and ME; though positive but insignificant affect revenue generation in CRIN. Revenue generation in CRIN increases with a unit increase in any of the predictor variables. Also, the fact that the predictor variables account for 38.7% of changes in revenue generation of Cocoa Research Institute of Nigeria (CRIN), implies that other factors influence revenue generation in the institute as well. The study recommends that enforcement of IC measures, especially CE, CA IC, and ME, should be taken seriously by the appropriate authorities. All these predictors must be enhanced by the management to increase the level of revenue generation.

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