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Payroll Fraud: Effects of Ghost Names on the Government Wage Bill in Ghana

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Abstract

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MBA, University of Ghana Business School, 2009

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Policy makers believe that there are ghost workers, persons who do not work yet receive salaries, on Ghana's public sector payroll. However, little is known about the factors that create opportunities for ghost workers. The purpose of this quasi-experimental study was to extend Cressy's conceptualization of the fraud triangle theory to test the applicability of Reinikka and Svennson's graft estimation model by using nonprobability quota sampling to select 85 heads of public agencies for participation in a cross-sectional survey. The research questions focused on the relationship between size of government agency, the estimated number of opportunities for ghost workers, and the dependent variable of occurrence of ghost workers in the public sector in Ghana. Correlational and multiple regression analysis was used to discern the relationship between the independent variables of agency size and opportunities for ghost workers and the dependent variable of number of ghost workers. Results revealed a statistically significant, positive relationship between the number of opportunities for ghost workers and the number of ghost workers. However, there was a negative relationship between the size of government agencies and both the number of opportunities for ghost workers and the number of ghost workers. The implications for social change include recommendations to revise the Financial Administration Act of Ghana by introducing new controls in the payroll administration at the Controller and Accountant General's Department to eliminate ghost workers from the payroll so that public funds can be saved to provide more public services for Ghanaians.

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Dedication

       This study is dedicated to my parents whose passion for their children's education inspired me to reach this level. Also, to my wife and children who sacrificed and encouraged me throughout the course. Finally, to all my friends who motivated me in diverse ways to enable me complete the course successfully.

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Chapter 1: Introduction to the Study

Background

Inadequate research on payroll fraud in Ghana continues to create a gap in the literature relating to ghost workers in the public service of Ghana. In most countries, the creation of ghost names is a common payroll fraud that occurs in the public services (Hossain, 2013). Ghost workers are defined as individuals "who receive salary from an organization without showing up for work or who may not exist but their salaries are appropriated by someone else" (Tanzi, 2013, p. 44). Even though the origin of the term ghost worker is not properly documented, many people believed that "ghost workers show up for brief periods at work and disappear for much of the time and in some cases do not exist but their names are kept on the payroll" (Tanzi, 2013, p. 45). In this study, I explored the literature on payroll fraud in the public sectors of developing nations and applied the knowledge in assessing the effects of ghost workers on the payroll of government in Ghana.

Poor record keeping in the public services of developing countries contributes to the creation of ghost names on the government payrolls (International Records Management Trust, 2008). Thurston (2012) claimed that "many countries have ghost workers on their payrolls who receive salaries without working for it" (p. 3). Ghost workers thus drain public funds and deprive countries of resources for development (Gee, Button, & Brooks, 2010). Despite the drain on public funds by the ghost workers, only a few studies exist on ghost workers in the public services of countries (Reinikka & Svensson, 2006). According to Gee et al. (2010), "the first step to solving a problem is to

know what it is. Equally, with fraud, it is impossible to apply the correct solutions and reduce the losses until you know the true nature and scale of the fraud" (p. 10). Where an organization has adequate information about fraud, it could manage and reduce the fraud losses more efficiently (Gee et al., 2010). Policy makers in Ghana could learn more about ghost workers and use the knowledge to formulate policies to reduce ghost workers in the public service of Ghana. However, studies on payroll fraud in Ghana are inadequate. The purpose of this study was to fill this gap in literature by examining the impact of ghost workers on the public wage bill in Ghana.

The study has social change implications for Ghana because it will inform practitioners and policy makers in the public service about the need to minimize opportunities for ghost workers and reduce the number of ghost workers to save public funds for national development. Additionally, this study may trigger payroll reforms in the public service by the government to promote efficiency in payroll management and minimize the public wage bill (Thurston, 2012). Finally, the study could be a reference for intellectuals, students, and policy makers on ghost workers in public services of developing countries. Chapter 1 includes the problem statement, nature of the study, research questions and hypothesis, purpose of the study, the theoretical foundation, and significance of the study to practice and social change.

Statement of Problem

The government of Ghana has implemented various reforms over the years to eliminate ghost workers from its public service, but the problem continues to persist. The inability of the government to address the problem of ghost workers could be due to a

lack of adequate information about the phenomenon (Gee et al., 2010). Some policy makers in the past have attempted to measure the level of ghost workers in the public service in Ghana. However, those studies were not based on statistically valid methods or scientific research. For example, Amoako-Tuffour (2002) estimated that 5.8% of salaries the government pays in Ghana goes to ghost workers every year (Amoako-Tuffour, 2002). In a budget statement to Parliament of Ghana in 2002, the Minister for Finance (2002) also indicated that 10% of the public expenditure on wages in Ghana is paid to ghost workers annually (Ministry of Finance, 2012).The basis of these estimates, however, are not known. Inadequate research on ghost workers in the public service of Ghana thus created the need for this research. This study was conducted to bridge the gap in knowledge on ghost workers by focusing on the impact of ghost workers on the public wage bill in Ghana.

Purpose of the Study

The purpose of this study was to fill a gap in literature on ghost workers by examining the impact of ghost workers on the public wage bill in Ghana. The objective was to determine how the size of management units and the number of opportunities for ghost workers correlate with the level of ghost workers in government agencies in Ghana. The overall goal was to expose practitioners and policy makers in Ghana to factors that provide opportunities for the creation of ghost workers in the public service. The information on the ghost workers will assist policy makers to formulate policies to minimize the ghost workers and reduce the public wage bill.

Research Questions and Hypothesis

The research questions and hypothesis were based on the fraud triangle theory. The elements in the fraud triangle (pressure, opportunity, and rationalization) also guided the determination of the variables in the study. The elements in the fraud triangle theory are not observable and therefore variables are chosen to represent these elements in the fraud triangle (Skousen, Smith &Wright, 2009).

The level of ghost workers in government agencies was chosen as a proxy measure for payroll fraud and represented the dependent variable in the study. The independent variables were opportunities for ghost workers and the size of management units of government agencies in Ghana. Opportunities for ghost workers and the size of management units were chosen as independent variables because of how they relate to payroll fraud (Lekubu, 2013). Detailed description of each variable, how they are measured, and their relationship with the fraud triangle is presented in Chapter 3.

The research questions and hypothesis that guided the study are as follows.

Research Questions

RQ1: How do the number of ghost workers in government agencies relate to the size of government payroll in Ghana?

RQ2: How do the number of opportunities for ghost workers in government agencies relate to the extent of ghost workers on government payroll in Ghana?

Hypothesis

H01 (a): The number of ghost workers in government agencies is not significantly related to the size of the government payroll in Ghana.

*Ha*1 (a): The number of ghost workers in government agencies is positively related to the size of the government payroll in Ghana.

*H*01 (b): The number of opportunities for ghost workers is not significantly related to the size of ghost workers in government agencies in Ghana.

*Ha*1 (b): The number of opportunities for ghost workers is positively related to the size of ghost workers in government agencies in Ghana.

Theoretical Framework for the Study

This study was grounded in the fraud triangle theory by Cressey (1950) and the graft estimation model by Reinikka and Svennson (2004). The fraud triangle is a theory that explains the motives for committing fraud (Dorminey et al., 2012). The graft estimation model, however, measures the extent of losses or theft of public funds in government agencies (Zhang, 2012). In the fraud triangle theory, Cressey hypothesized that for fraud to occur, three factors must be present. These factors are pressure, opportunity, and rationalization. Pressure refers to financial obligations on an individual (Kassem & Higson, 2012).Opportunity represents weak internal control systems in an organization (Dorminey et al., 2012), and rationalization represents the ability of individuals to justify or defend their fraud actions. Many fraud and corruption researchers have used the fraud triangle theory to explain the motives for committing fraud in the public service (Fitzsimons, 2009). The fraud triangle was also used in various studies in assessing the level of fraud losses in public organizations, particularly in education and health sectors (Reinikka & Svensson, 2006).

Another model that guided this study was the graft estimation model by Reinikka

& Svennson (2004). The graft estimation model is used to "estimate graft or theft of public funds in government agencies" (Olken & Pande, 2012, p. 8). Graft in a government agency is measured by comparing the amount allocated or released to an agency with the actual amount received by the agency. The difference between the amount released and the amount received by the agency represents graft or corruption (Olken & Pande, 2012). Chapter 2 of this study provides a detailed discussion on the fraud triangle theory and the graft estimation models. I also examine how the fraud triangle and the graft estimation models were applied in various studies in assessing the level of fraud in public institutions.

Nature of the Study

In this study, I used quantitative methods to examine the effects of ghost workers on the public wage bill in Ghana. The quantitative method was suitable for this study because it is a useful tool for establishing a correlation between variables (Schertzer & Schertzer, 2013). The quantitative method is also used to analyze the relationship between variables using a sampled data (Ahram, 2013). The quantitative evidence allows for estimates to be made based on observable data which also provides a check on the assessment itself (McKay, 2012). Over the years, policy makers in the public sector have used quantitative methods in studies aimed at reducing the cost and size of the public sector (Olowu, 2010). The quantitative method was used in this study to examine the relationship between the number of opportunities for ghost workers, size of management units, and the level of ghost workers in public institutions in Ghana.

Research Design

In this quantitative study, I used a quasi-experimental design to select management units from government agencies for a survey. The quasi-experimental design allows researchers to select participants for a study, but does not require the assignment of cases to comparison groups The study was also cross-sectional because data were collected from government agencies at one point in time and were used to establish the relationships between the variables (Lavrakas, 2008).

Sampling

I used nonprobability quota sampling technique to select management units for a survey. I selected the nonprobability quota sampling because of (a) a lack of access to the sampling frame of management units in the public service in Ghana and (b) the lack of the exact proportion of management units in the public service in Ghana. Even though records show that the size of education and health represent about 80 per cent of the workforce in the public service in Ghana (Daily Graphic, 2014), the exact proportion of management units for each sector (education and health) was unknown.

I used purposive sampling to select management units of government agencies for the survey. The purposive sampling was suitable for this study because it ensured that key government agencies are included in the sample (Patton, 2002). Using the purposive sampling in this study also ensured regional representation of management units in the survey.

Instrumentation

This study was conducted using the Public Expenditure Tracking Survey (PETS) as an instrument for data collection. The PETS is a standardized survey instrument used in data collection relating to public expenditure (Olken & Pande, 2012). The World Bank has used the PETS as an instrument to track public expenditure of countries (Olken & Pande, 2012). The questionnaire for the survey was designed to gather information on salaries and wages in the government agencies sampled. Similar PETS on salaries and wages in selected public institutions were conducted in Honduras, Papua New Guinea, and Uganda (Reinikka & Svensson, 2006). The PETS were aimed at tracking the salaries and wages allocated or released by the central government to the various agencies with the view to determining any leakages in the funds disbursement process. The PETS also assisted governments to design policies to eliminate the leakages of salary and wages in the public services (World Bank, 2001). The PETS on salaries and wages assists policy makers to identify misdirection of public funds for unbudgeted purposes in the wage disbursement process (World Bank, 2001). A detailed description of the PETS and the reason for selecting it as an instrument for this study is presented in Chapter 3.

Participants

Management units of government agencies were the unit of analysis for the study. Management unit is defined as a section or cost center of a government agency where payroll costs can be charged (Financial Administration Regulation, 2004). In Ghana, the salary budget for the public service is broken down into cost centers or management units to facilitate budget implementation and monitoring (Ye Canagarajah, 2002). Heads of

management units of government agencies provided data relating to their payroll in this study. The heads of management units were adequately briefed about the nature of the study through the consent letters, which motivated them to take part in the survey. I also believe that the anonymous nature of the survey boosted the confidence of the heads of management units to provide accurate information for the study. The various agencies sampled were given adequate time to complete the research questionnaires and return them to me.

Data Analysis

In analyzing the data for the study, I used descriptive statistics and correlational, and regression analysis. The statistical tool I used for the data analysis was the Statistical Package for the Social Sciences (SPSS). The SPSS is a statistical tool widely used to analyze complex data to ascertain variances and correlation among variables. Also, the SPSS software package is mostly used to analyze PETS data (Egbide, Francis & Sola, 2014).The SPSS was useful in analyzing the data for this study and has enhanced the validity of the study (Frankfort-Nachmias & Nachmias, 2008).

<div align="center">Significance</div>

The study has social change implications for government agencies and the Ghanaian public in general in line with Walden University's vision of applying knowledge acquired through research to address critical societal challenges. In this study, I demonstrated how the number of opportunities for ghost workers and the size of management units relate with the level of ghost workers in the public service in Ghana. This information would help practitioners and policy makers in the public service to

identify weaknesses in the payroll system and formulate policies to eliminate them and reduce the level of ghost workers in the public service. This study could also trigger government action for payroll reforms to promote efficiency in payroll management and save public funds for national development (Thurston, 2012).The study could also guide anticorruption and fraud institutions of state such as the Ghana Audit Service, the Internal Audit Agency, and the Economic and Organized Crime Organization to identify the internal control weaknesses of the payroll system and make recommendations to address them and eliminate the ghost workers from the government payroll. If the government eliminates ghost workers from its payroll, it could save public funds for investments in education, health, and also enhance the salaries paid to public servants (Thurston, 2012).Consequently, more citizens could be employed in the public service and reduce the unemployment and poverty levels in the country. Finally, the study would add to existing knowledge on payroll fraud and became a reference point for intellectuals, students, and policy makers on ghost workers in the public services of developing countries.

Definition of Terms

The definition of terms section covers explanation of words, terms, and phrases used in this study.

Biometric registration: A registration system for public servants which involved the capturing of unique features of employees such as finger prints, Iris, and photographs (Breckenridge, 2010).

Ghost workers: Ghost workers in the public service are names on the government payroll that receive salaries but are not known to a government agency or do not exist (World Bank, 1995).

Management unit: A management unit is defined as the smallest section or cost center of a government agency where payroll costs is charged (Financial Administration Regulation, 2004)

Mechanized payroll: The mechanized payroll is a computerized payroll system used in processing the salaries of public servants in Ghana and is managed by the Controller and Accountant General's Department ((McCallum, &Tyler, 2001).

Payroll fraud: Payroll fraud occurs when employees take money from an organization through the payroll unlawfully with the intention of appropriating those monies themselves ((Lekubu, 2013).

Separated staff: Individuals whose contract of employment with the government has been terminated through death, resignation, vacation of post, or dismissal and are not expected to receive salary ((World Bank, 1995).

Assumptions

Because the survey was conducted anonymously by post, it was assumed that the respondents who were heads of management units provided truthful and accurate information. I also assumed that public officials who were contacted through telephones provided accurate information. I identified delays in terminating separated staff from the payroll and the creation of fictitious names on the payroll as causes of ghost workers.

Apart from these factors, there were no other known factors responsible for the creation of ghost names on the government payroll in Ghana.

Scope and delimitation

In this study, I did not cover the impact of periodic salary increments by government, staff promotions, new staff intake, and payroll errors on the wage bill of government. Additionally, the study was limited to public servants on the mechanized payroll at the CAGD. Other public agencies that manage their own payrolls were excluded in the study. Due to **a** lack of access to the sampling frame of management units in the public service in Ghana, I used a nonprobability sampling method to select management units for the study**.** As a result of this method, the results of the study could not be generalized to the wider population of management units in the public service of Ghana.

Limitations

The limitations of the study are

1. This study was limited to ghost workers on the mechanized payroll at the CAGD. Other public agencies that manage their own payrolls were excluded in the study. As a result of this the findings could not be generalized to the entire public service in Ghana.

2. I used a nonprobability sampling to select management units for the survey. As a result of this method, the findings of this study could not be generalized to the population of management units in the public service of Ghana (Feild et al., 2016)

Summary

The government of Ghana has implemented various reforms aimed at eliminating ghost workers from its payroll, but the problem continues to persist. The reforms did not yield the desired results because policy makers lacked the requisite knowledge on ghost workers, information that is necessary in formulating effective strategies to address the problem. Inadequate information on ghost workers in the public service in Ghana was a result of limited research on the phenomenon in the country. This study was conducted to fill this gap in knowledge by examining how the size of management units and opportunities for ghost workers relate to the level of ghost workers in government agencies in Ghana. Findings of the study could guide policy makers to formulate effective policies to minimize ghost workers in the public service of Ghana and save public funds for national development (Thurston, 2012). In Chapter 2, I present the literature review; in Chapter 3, I discuss the methodology of the study; in Chapter 4, I present the analysis of data; and in Chapter 5, I outline the analysis of results with recommendations for future research and practice.

Chapter 2: Literature Review

Introduction

Ghost workers affect countries in many ways. According to Thurston (2012),

many countries have high percentages of ghost workers on their payrolls and that

people who are not working are being paid from funds that should have been used

to provide services such as education and healthcare and also pay people who are

working are a living wage. (p. 3)

 Additionally, salaries paid to ghost workers deprive governments of funds needed

to provide services for citizens (Gee et al., 2010). Ghana's public service continues to

suffer from ghost workers despite efforts made by the government to address the problem

(Amoako-Tufour, 2002). The inability of the government to effectively deal with ghost

workers in the public service was due to inadequate knowledge about the phenomenon

itself, which is the result of inadequate research on payroll fraud in Ghana. To eliminate

fraud, it is necessary to understand the nature of the fraud and how it is committed and

concealed (Kassel & Andrew 2012). Accurate information on fraud is therefore essential

in planning to minimize the fraud losses (Gee et al., 2009). Ghana can draw from the

experiences of other countries by using statistically valid methods to measure the level of

losses caused by ghost names in the public service and develop strategies to address the

losses. However, studies on ghost workers in Ghana are inadequate. In Ghana, apart from

the auditor general who reports cases of ghost workers in the public service, there has not

been any known scholarly work on the level of ghost workers in the public service of

Ghana, a situation that created the need for this research.

The purpose of this study was to use statistically valid methods to assess the impact of ghost workers on the public wage bill in Ghana. An additional aim of this study was to examine how the number of opportunities for ghost workers and the size of government agencies relate to the level of the ghost workers in the public service. The results of this study may assist public officials in Ghana to effectively plan and address the payroll fraud in the public service. Gaps identified in this literature review could form the basis for further research into payroll fraud in the public service in Ghana.

In conducting this literature review, multiple databases for peer-reviewed articles published from 2008 to the present day were reviewed. Some of the databases reviewed included the Policy and Administration databases, which covered databases such as Political Science Complete, Business Source Premier/Complete, and Political Science Complete. Other databases reviewed included the Sage Full Text Collection, Business Source Complete, and ABI/INFORM Complete, Thoreau: Search Multiple Database, Emerald Management Journals, SAGE Premier, ProQuest, World Bank Open Knowledge Repository, National Bureau of Economic Research, and LexisNexis. Google Scholar and databases of well-known international organizations were also searched for relevant peered-reviewed articles. However, to enhance the quality and depth of this study, some articles published prior to 2008 were also included in the literature review because such articles contained vital information on payroll fraud, which could not be found in current literature. The keywords used in searching for peered-reviewed articles for this literature review included *public administration and policy*, *payroll corruption*, *payroll fraud*,

public service corruption, *public service reform*, *public service census*, *government payroll administration*, *wage fraud*, *ghost workers*, and *employee fraud*.

Major sections of the literature review include the theoretical framework of fraud, payroll fraud in the public sector, efforts by the government of Ghana to eliminate ghost names in the public service, fraud theories and their application in the public sector, and the justification for the research into payroll fraud in Ghana.

Theoretical Framework

Theories generally provide the framework for understanding the nature of a phenomenon and the basis for making future predictions about the phenomenon in question. In the same manner, theories about fraud provide information on factors that create opportunities for fraud to occur and assist fraud researchers to predict the level of the fraud and recommend measures to reduce it (Vian, 2009). There are several theories on corruption that provided the framework for understanding fraud (Vian, 2008). In this study, however, I used the fraud triangle theory by Cressey (1950) and the graft estimation model by Reinikka and Svennson (2004) to understand the motives for fraud and also ascertain the level of ghost workers in government agencies in Ghana. Many studies on fraud have used the fraud triangle to explain the motives for committing fraud (Gilmore, 2011) Additionally, most fraud studies have used the fraud triangle to explain why individuals commit fraud (Fitzsimons, 2009) .The fraud triangle theory was therefore used in this study to explain the nature and motives for committing payroll fraud. The fraud triangle was developed by Cressey (1950) and has been used in various fraud studies including those relating to the public sector. Even though the fraud triangle

was developed with the private sector in mind, the concepts were found to be useful to public administration by researchers; therefore, many researchers have applied the concept in a variety of corruption and fraud studies relating to the public sector (Fitzsimons, 2009). There are a number of studies on fraud and corruption that used the fraud triangle theory. For example, Vian (2008) recommended the application of the fraud triangle theory in research to understand the problems confronting the health sector so that policy makers could craft effective programs to eliminate opportunities for fraud and strengthen the internal control systems in the health facilities (Vian, 2008) .To minimize fraud therefore, it is important to eliminate factors that cause individuals to commit fraud. The fraud triangle has identified opportunities, pressure, and rationalization as factors responsible for fraud. Policy makers could implement measures to eliminate the factors responsible for fraud and minimize fraud in organizations.

The fraud triangle was used in many fraud studies relating to the public sector. In a study on why corruption was prevalent in the Nigerian public service, Ibietan (2013) applied the fraud triangle theory and concluded that fraud persists in the Nigerian public service because the government continues to pay low salaries to public servants. Also due to weak internal control systems and the inability of the government to sanction corrupt public officials, corruption will continue to persist in the Nigerian public service (Ibietan, 2013). Based on the observations made by Vian and Ibietan, corruption in public sectors is believed to be driven by three main forces: pressure to abuse, opportunity arising from internal control weaknesses, and ability by fraudsters to rationalize their fraudulent behaviors. Corruption and fraud can be reduced in the public sectors if the factors

responsible for fraud are also reduced. The factors responsible for fraud include financial pressure of public servants, weak internal control systems in the public service, and inability to punish corrupt public officials.

To understand the fraud triangle theory, it is important to review the theoretical foundation of the fraud triangle itself. The fraud triangle theory was grounded in the classical perspective on fraud in which criminal theorists maintained that human beings have the potential to engage in fraud due to pressure or for personal gain (Bucy et al., 2008)). The classical perspective evolved into positivists' perspective on fraud where crime was perceived to be influenced by social, psychological, and cultural factors. (Bucy et al., 2008)). The special forces professed by the positivists were translated by Cressey into pressure, opportunity, and rationalization, which have now become the elements in the fraud triangle.

Four major concepts could be derived from the fraud triangle theory. The first concept is the possibility of individuals to violate the trust reposed in them by their superiors (Brody, Melendy, & Perri, 2012).Second, there are forces that motivate individuals to commit fraud in violation of the trust reposed in them (Brody, Melendy, & Perri, 2012). Third, fraud can be committed by individuals within an organization irrespective of their positions or status (Trompeter, Carpenter, Desai, Jones, & Riley, 2012). Finally, fraud can be minimized if the factors responsible for fraud are also minimized (Gbegi, & Okoye, 2013). Policy makers in Ghana could apply the concepts of the fraud triangle in research to understand the motives for creating ghost names on the

government payroll and also use the principles as a guide to formulate policies to minimize the fraud.

The graft estimation model was also developed by Reinikka and Svennson (2004) to determine leakages or theft of public funds in government institutions (Olken & Pande, 2012). To determine the level of leakages or theft of public funds, an individual needs to compare budget allocations at the central level with the actual expenditure through the various levels of government agencies up to the frontline service delivery points or facilities (Reinikka, 2001).The difference between the budget allocations at the central level and the actual amount received at the facilities determines the amount of leakage of public funds (Dehn, Reinikka, & Svensson, 2003). The instrument used to estimate graft in the public service is the PETS instrument. The PETS is a survey instrument designed to track the flow of public funds from the central government to cost centers or facility levels in public institutions (Sundet, 2007). In implementing the graft estimation model in Uganda, "the amount of a special education block grant sent down from the central government in Uganda was compared with the amount received by schools to arrive at a leakage rate of 87%" (Pande, 2012, p. 3). After the successful application of the graft estimation model in Uganda, scholars and organizations such as the World Bank continue to use the model in a variety of studies to assess the extent of leakages of public funds in government agencies (Olken & Pande, 2012). The fraud triangle and the graft estimation models have become tools for measuring the level of fraud in public institutions.

Payroll Fraud in the Public Sector

Payroll fraud is a problem for many countries around the world, especially the less developed ones. Salary leakages in the public services has become a major concern for most developing nations (Hossain, 2013). Statistics regarding the prevalence of ghost workers in public sectors could be found in Uganda, Honduras, and Papua New Guinea (Lewis & Pettersson, 2009). A survey conducted by the World Bank to quantify the share of ghost names on the payrolls of countries revealed that teachers and health workers in the countries where the surveys were conducted were found to continue to receive salaries even though the workers were no longer in employment in the public services (Reinikka & Svensson, 2006). According to the World Bank (2001), 5% and 8.3% of teachers and health workers on the government payroll in Honduras in 2000 were ghosts. In Papua New Guinea, the figure was 15% for teachers in 2002 (World Bank, 2004). In 2010, the percentage of ghost teachers in Honduras rose to 23% of the payroll which was equivalent to 1,347,403,178 Lempiras, or approximately USD $70,915,957 per year (World Bank. 2010).The situation on ghost workers in Africa was not different from countries already mentioned. In Uganda, for example, 20% of teachers in 1993 and 4.6% of primary school teachers in 2006 were identified as ghost workers (Lewis & Pettersson, 2009; Reinikka & Svensson, 2006).

Payroll records management

The common factor contributing to the problem of ghost workers in developing countries is poor records management systems in the public services (International Records Management Trust, 2008). Most countries particularly the underdeveloped ones

lack good personnel information systems to accurately record and regularly update the

payroll databases (Fink & Hussmann, 2013). Weak personnel database results in lack of

control over staff due to the inability of government officials to effectively monitor the

activities of employees. The problems of weak personnel database is prevalent in the

education and health sectors in Africa because of the large numbers of employees in

those sectors, coupled with ineffective supervision of staff by heads of government

agencies (Dovlo, 2005). The poor record management systems creates discrepancies

between the number of public servants on the government payroll and the actual number

of employees recorded on the staff rolls in the various agencies.

Several reasons may account for the differences between employee records and

those listed on the government payroll (Lewis, & Pettersson, 2009). One of such reasons

was that the lists of public servants were sometimes kept by multiple agencies that were

not updated concurrently (Lewis, & Pettersson, 2009). For example, when an employee

dies, resigned or vacated posts and those separations were not recorded in the books,

there is bound to be differences between official records of employees and the actual

numbers appearing on the payroll (Lewis, & Pettersson, 2009). Failure by government

agencies to regularly update their staff records also create opportunities for separated

staff to continue receiving salaries even though they no longer work for the government

(World Bank, 1995).

Ghost workers increase the wage bill of government workforce above the wage

budget which leads to budget overruns in many countries (Yanusa, 2013). The problems

of ghost workers and the drive for cost effectiveness in the public sectors were the

reasons behind the various reforms undertaken by governments to minimize public

expenditure relating to compensations (Awortwi & Vondee, 2007). The most common

method mostly used to identify ghost workers in the public sector is head count exercises

(Clark & Gelb, 2013;Ian, 1998). These headcount exercises were useful tools for

verifying the existence of employees in the public services and have assisted many

countries to identify and eliminate ghost workers from their payrolls (Tanzi, 2013). Also,

many countries have used the headcounts as a tool for cleaning their payrolls and

therefore did not consider alternative ways to monitor ghost workers apart from

conducting the staff censuses (Dovlo, 2005). Notwithstanding the benefits, headcounts do

not guarantee the total elimination of ghost names from the government payrolls. The

major challenge with head count exercises is collusion (Stanciu, 2012). Some payroll

officials collude with payroll managers to allow ghost workers to participate in head

count exercises. This practice defeats the objectives of the headcount exercises when

unauthorized employees are allowed to take part in headcount exercises and continue

receiving salary. The problem of ghost workers will persists in public institutions so

"long as those bad elements inside the civil service who are behind the crime are either

shielded or untouched" (Eme & Andrew, 2013, p. 43).

Previously, the cost of fraud was not easily measured in the public service.

However, accurate and statistically valid measurement of fraud using a variety of

techniques is possible (Gee et al.. 2010). In the same manner, the level of ghost workers

in the public service could be measured using the appropriate methodologies. Policy

makers need to know the extent of ghost worker in the public service, the savings to

make if the ghost workers were eliminated, and the cost involved in addressing the fraud

losses (Gee et al. 2010).

Types of payroll frauds

Fraud is generally classified into three main categories namely, asset

misappropriations, corruption, and fraudulent statements (Saksena, 2012). Payroll fraud

is, however, classified under asset misappropriation and includes falsification of wages,

false insurance claims and creation of ghost names on the payroll (Izedonmi & Ibadin,

2012). In the public sector, however, payroll fraud involves falsification of wages which

also includes falsifying overtime and other allowances (Gbegi & Okoye, 2013), false

persons on the payroll (ghost names), and delayed termination of separated staff from the

payroll (Lekubu, 2013). The key indicator for payroll fraud in the civil service is the

number of ghost workers on the civil service payroll (Hendriks, 2012). In the succeeding

sections, I discussed the various types of payroll frauds in the public service.

 Ghost workers.

Ghost workers in the public service are individuals who receive salary from

government but do not work or may not exist but their salaries are received by someone

else (Tanzi, 2013).

> The World Bank (1995) described ghost workers in the civil service as
> Names on the payroll, receiving wages, but cannot be shown to exist physically.
> They are workers who have died, retired, or left the civil service but were never
> recorded as such. They are fictitious persons whose pay is claimed by others.
> They are variants on a name with one person receiving two or more salaries (p. 7).

Ghost workers are therefore nonexistent employees whose names are kept on the payroll and salaries paid to them. Ghost workers may be kept on the payroll if payroll managers delay in terminating the names from the payroll (Lekubu, 2013). In some cases, payroll clerks include names of fictitious or separated employees on the payroll, forge their signatures, and collect the salaries on their behalf (Izedonmi & Ibadin, 2012). Separated staff members are employees who have severed relationship with their employers through resignations, vacation of post, or death but continued to receive salaries. Sometimes, the "ghost workers show up for brief periods and disappear for much of the time in order to pursue private activities during the time they should be working for the government" (Tanzi, 2013, p 45).

A major challenge to fighting payroll fraud is collusion (Stanciu, 2012). Payroll officers who are responsible for authorizing names on the payroll sometimes collude with other employees to create fictitious names on the payroll (Association of Fraud Examiners, 2011). Ghost workers created through collusion may be difficult to detect because those who are responsible for stopping the ghost names are themselves part of the crime. Internal control weaknesses in government agencies also create opportunities for the creation of ghost names in the public service (Wells, 2002).The creation of ghosts workers may occur in an organization if a single person is responsible for processing personnel and payroll transactions from the beginning to the end. Such individuals may create or maintain ghost workers on the payroll without the names being detected. Due to the large number of employees in the public sector, head count exercises are usually

conducted by governments to identify the ghost workers and eliminate them from the staff roll (Tanzi, 2013).

Delayed termination of names from the payroll

Delay in terminating names of separated staff from the payroll is another way of keeping ghost worker on the government payroll unlawfully (Lekubu, 2013). The delays may be prevalent at remote office locations where communication facilities may be lacking. For example, "an office manager at a satellite office might delay the reporting the termination of an employee who may be dead, resigned, or left employment and pocket that employee's check" (Webster, 2009). The delayed termination may also be prevalent on the government payrolls due to the large number of employees who work in public institutions across the country (Association of Fraud Examiners, 2011). This problem may be common in countries where payroll systems are centralized and required physical transfer of payroll data to a central location for processing (Association of Fraud Examiners, 2011).

Efforts to eliminate ghost names in the public service in Ghana

The Ghana Audit Service has over the years highlighted in its reports on public funds to Parliament, payroll irregularities and ghost workers on the government payroll. In 2007, for example, the Auditor General reported that over 1,937 ghost employees were deleted from the payroll resulting in a monthly savings of GH¢781,585, which is equivalent to USD 390,792 per month (Ghana Audit Service, 2007). Another report by the Auditor General indicated that "deletion of names of deceased employees from the government payroll took long periods some ranging from one to seven years after the

death of an employee in the public service" (Ghana Audit Service, 2008). In 2011, the Auditor General again reported that unauthorized salaries were paid to over 1,800 none existing employees causing government to lose substantial amount of public funds (Ghana Audit Service, 2011). These audit findings by the Auditor General points to the prevalence of ghost workers on the government payroll in Ghana.

The International Records Management Trust (2008) also conducted a study on the Public Sector Information Systems in Ghana and reported that:

Against the background of a vulnerable Integrated Personnel and Payroll Database (IPPD) system, unreliable data, and incomplete and fragmented paper personnel records, there had been a spate of government payroll fraud in Ghana. There was little doubt that payroll irregularities and fraud had had a damaging effect on government's credibility and the national economy. Some cases of fraud had been well publicized and the perpetrators prosecuted. Many were well documented in the Auditor General's reports, though a proportion of these were due to failure to follow procedures or take action promptly (p. 27).

The Auditor General's reports and the observations made by the International Records Management Trust have provided evidence about the existence of ghost workers in the public service of Ghana. To address the challenges of ghost workers in the public service, the government of Ghana has implemented various reforms over the years to minimize the fraud. A major reform undertaken by government to address the ghost name problem was the head count exercise for public servants during the implementation of the Structural Adjustment Program in the 1980s. Even though countries in the same

economic situation as Ghana adopted varied programs under the Structural Adjustment Program (McCoy et. al., 2008), Ghana, Uganda, and Central African Republic which had poor personnel records systems focused on eliminating ghost workers from the public services as part of measures to cut down on government expenditure (Kiggundu,2009). Ghana has thus been recognized as one nation that has implemented extensively head count exercises for public servants to eliminate ghost names from the public service and minimize the wage bill (McCallum &Tyler, 2001).

Head count exercises

A major program implemented by the government of Ghana to eliminate ghost workers from its payroll was head count exercises for civil servant in 1986 and 988 at a time the population of public servants was believed to be too large (World Bank, 1999). The objectives of the head count exercise were in two folds. The first objective was to eliminate ghost workers and reduce the size of the public service to minimize government expenditure on wages. The second objective was to collect data on public servants and build a human resource database for the public service. In the year 1995, the government under the Public Financial Management Reform Program (PUFMARP), computerized the manual public service payroll at the CAGD and eliminated unauthorized names from the payroll system in the process (International Records Management Trust, 2008). The computerization of the payroll system was regarded as the "largest and most complex IT project ever undertaken by the Government of Ghana" (McCallum &Tyler, 2001, p. 64). These efforts attracted the attention of observers of public finance who hailed the

government's commitment to expunge ghost names from the payroll records (Amoako-Tufour, 2002).

The Ghana Audit Service in 2002 also conducted a nationwide headcount exercise for public servants and deleted from the payroll over 441 ghost names representing about 0.1% of the total number of employees on the government payroll (Ghana Audit Service, 2002). Based on this exercise, the Minister for Finance in a budget statement to Parliament in 2002 indicated that there were "still over 2,000 ghost employees on the government payroll and therefore ordered the CAGD to take immediate steps to delete those names from the payroll" (Ministry of Finance, 2002, p. 491).

The head count exercise by the Audit Service was followed by public employee data collection exercise under the National Institutional Renewable Program in 2003 to clean up the payroll data and also create a human resources database for the public service (International Records Management Trust, 2008). Reconciliation of data collected from this exercise with the actual payroll data at the CAGD revealed a number of ghost workers who were subsequently deleted from the payroll.

In 2012, the government of Ghana introduced a biometric registration system for public servants to address the challenges associated with the headcount exercises (Ministry of Finance, 2012). Biometric registration is a census or headcount of public servants which involves the capturing of unique features such as finger prints, iris, and photographs of individuals. The biometric registration system of employee was introduced by government to eliminate impersonations and double registration of employees which characterized the manual headcounts exercises over the years. The

initial results from five out of ten regions where the biometric registration exercise took

place indicated that 29,563 representing 41 per cent of the total pensioners did not show

up for the exercise and as a result were regarded as ghosts workers (Ministry of Finance,

2012). The biometric registration exercise was subsequently extended to other regions

which resulted in the identification of more ghost names which were subsequently

removed from the government payroll.

Similar headcount exercises were conducted by government agencies to update

their staff records and eliminate ghost names from the payrolls. In 2009 for example, the

Ministry of Finance in collaboration with the Ghana Education Service conducted a

Public Education Sector Census with the aim of eliminating ghost workers in the

education sector. The initial results of the exercise show those "out of the 282,889

employees of the Ghana Education Service counted, 11,360 were identified as"verifiable

potential ghosts" constituting 4% of the total staff strength of the work force in the

education sector (Ministry of Finance, 2009). The total of 11,360 potential ghosts was

deleted from the payroll but some were re-instated onto the payroll after investigations

were conducted.

The results of the head count exercises and the reports by the Auditor General

provided ample evidence of the amount of money government loses as a result of ghost

names in the public service of Ghana. Even though the size of the Civil Service was

reduced to some extent through the censuses conducted in Ghana, more needs to be done

to fully eradicate the ghost workers from the public service (McCallum &Tyler, 2001).

Using head counts alone may not eliminate the ghost names from the public service so

long as there are bad elements in the public service who may continue to create the ghost

names on the government payroll (Eme & Andrew, 2013). To address the problems of

ghost workers in the public service in Ghana, policy makers require adequate information

about the fraud to assist them in planning and managing the fraud losses in a more

efficient manner (Gee et al., 2009). Additionally, if the ghost names are minimized,

government could cut down the expenditure on headcount exercises and save public

funds for national development.

Fraud theories

Several theories were developed to aid the understanding of corruption and fraud

in organizations (Kiragu et al., 2013). However, "the well-known theory that explains the

causes of fraud is the fraud triangle theory" (Ruankaew, 2013). Another model that is

used to measure the level of fraud or theft of public funds in government institutions is

the graft estimation model developed by Reinikka and Svennson (2004). This study used

the fraud triangle theory and the graft estimation model to explain the motives for fraud

and also measure the level of ghost workers on the government payroll in Ghana. The

study also reviewed literature on the graft estimation model and the fraud triangle theory

and also examined the relevance of the models to the study of payroll fraud in the public

sector.

The Graft Estimation Model

The graft estimation model was developed by Reinikka and Svennson (2004) for

measuring the extent of graft or theft of funds in public institutions (Olken & Pande,

2012). The method used for calculating graft under the graft estimation model is called

"subtraction" (Pande, 2012). The subtraction method is used to determine how much of budgetary allocations (or funds) meant for government agencies actually get to the agencies that need the funds (Reinikka & Svennson, 2004). In measuring the graft, "an individual obtains two measures of the same quantity, one measure before corruption takes place and another measure after corruption takes place. The estimate of corruption is thus the difference between the two measures" (Olken & Pande, 2012). In applying the graft estimation model to measure the level of fraud in the Uganda's public service, Reinikka & Svennson (2004) "compared the amount of a special education block grant sent down from the central government in Uganda to the amount received by schools and arrived at a leakage rate of 87%" (Pande, 2012, p. 3). The method mainly used to track public funds under the graft estimation model is the Public expenditure tracking survey (Reinikka & Svennson, 2004).

Engberg-Pedersen et al. (2005) defined the PETS as:

Quantitative exercise that aimed at tracking the flow of public resources across various layers of the administrative hierarchy from the allocating agency to the intended beneficiary with the view to determining inefficiencies in the system and their magnitude. The PETS was designed to track the flow of resources through the administrative system on a sample survey basis in order to determine how much of the originally allocated resources reached each level. It is a useful tool for locating and quantifying political and bureaucratic capture, leakage of funds, and problems in the deployment of human and in-kind resources such as staff, textbooks, and drugs (p. 15).

The PETS has been used in several studies in assessing the level of leakages and theft of public funds in public institutions. PETS conduced on non-wage expenditures have found that "graft in public spending on education appeared to be a serious problem across nations: 49% in Ghana in 1998, 57% in Tanzania in 1998, 78% in Uganda in 1995, and the weighted average of 60% in Zambia in 2001" (Reinikka & Svennson, 2004). The PETS was also conducted at the India's National Rural Employment Guarantee Scheme and the results showed "100% marginal rate of leakage in public wages as almost none of the wage increase mandated at the national level actually reached the rural workers" (Niehaus & Sukhtankar, 2010). Subsequent to the first successful application of the PETS in Uganda, the World Bank adopted the method and consistently applied it in a variety of studies relating to the public sector (Olken & Pande, 2012).

The Fraud Triangle

The fraud triangle theory was developed by Cressey (1950), a renowned criminologist, educator, and a writer whose work has provided the framework for understanding the motives for fraud and the characteristics of fraudsters (Kassem & Higson, 2012). The fraud triangle model was developed based on observations Cressey made about the behaviors of 250 criminals who were serving their jail sentences in a United States Cell. Cressey observed a common characteristics among the inmates and concluded that (a) the inmates committed the crimes as a result of non-sharable financial problems they faced, (b) took advantage of opportunities to defraud due to internal control weaknesses in the organizations they served before their incarnations, and (c) were capable of defending their criminal actions after committing the crime (Kassem &

Higson, 2012). Based on these observations, Cressey hypothesized that for individuals to

commit fraud, three factors must be present (Gbegi, & Okoye, 2013). These factors are

pressure, opportunity, and rationalization. According to Albrecht et al., (2008) "whether

the fraud was one that benefited the perpetrator directly or one that benefited a

perpetrator's organization, the three conditions for fraud are always present for fraud to

occur" (p. 6). Consequently, these three factors became the pillars in the fraud triangle

theory. The figure below shows the pictorial view of the fraud triangle.

Figure 1. The fraud triangle showing the three factors responsible for fraud.

Perceived Pressure

Financial Pressure refers to heavy financial obligations on an individual (Kassem

& Higson, 2012). Financial pressures confronting individuals could push them to commit

fraud. These pressures may take several forms including high financial need to cater for

personal obligations (Stanciu, 2012). Individuals with financial problems who have no

avenue for redress could engage in fraudulent activities to solve their financial problems

(Kassem & Higson, 2012). The financial pressures may be severe if individuals could not

obtain assistance from other sources to solve the financial problems. Additionally, the fear of embarrassment for non settlement of the financial obligations increases the financial pressure. However, some individuals may be unwilling to seek help from others for fear of being stigmatized or due to their ego or pride (Dorminey et al., 2012). The obedience theory explains the financial pressures on individuals (Gottschalk , 2013).The obedience theory states that pressure to commit fraud may be due to peer, family, and societal pressures as well as the desire to maintain high living standards beyond ones financial resources (Gottschalk, 2013).

Perceived Opportunity

Perceived opportunity represents weak internal control systems in an organization (Dorminey et al., 2012). Internal control weaknesses in organizations could create opportunities for individuals to commit fraud. In most cases, the possibility to defraud is high if the control systems are weak and the possibility of being caught is remote (Dorminey et al., 2012). Also, the ability of an individual to identify internal control weakness in an organization may be high when the fraudsters are familiar with the organization's operations and have the ability to manipulate the system to their advantage. Internal control weaknesses my also exist due to the size of an organization and the complexities of its operations (Kiragu et al., 2013).

Rationalization

Rationalization in the fraud triangle theory refers to the ability of individuals to justify or defend their fraud actions. For example, an "individual may defend his fraud action by offering reasonable explanations to justify the criminal actions. Fraudsters may

give excuses such as "it is right to act this way. I deserve this money or they owe me. I'm taking this money only as a loan. I will return it or everybody is doing it"(Dumitru, Batca & Raileanu, 2011, p. 321). The fear of losing trust with people and to avoid punishment or stigmatization are some reasons why fraudsters tend to justify their criminal actions (Kassem, and Higson, 2012: Carpenter, Jones, Keith, & Riley, 2013).

To minimize fraud, an organization must eliminate at least one of the elements in the fraud triangle (Gbegi, & Okoye, 2013). Some elements in the fraud triangle may be difficult to eliminate because they relate to personal circumstances of individuals and are controlled by the individuals themselves (Chevis & Barrum, 2012, p.13). However, opportunity which is caused by internal control weaknesses in an organization could be addressed by organizations themselves (Gbegi, & Okoye, 2013).

Contributions to the Fraud Triangle Theory

The fraud triangle theory provided the platform on which other fraud models developed. (Kassem, & Higson, 2012). Many fraud theorists have used the fraud triangle to explain the factors that motivate individuals to engage in fraud. Ruankaew, (2013) indicated that "the factors that contribute to fraud are mostly based on the fraud triangle theory" (p. 1). However, several new theories have been developed to address the weaknesses of this fraud triangle theory and further expand it (Ruankaew, 2013). Additionally, "professionals and academicians have offered important insights into the fraud triangle theory that have gone beyond the fraud triangle and enhanced the application of the theory" (Stanciu, 2012, p. 80). Contributions to the fraud triangle theory has thus enhanced the "professionals' ability to prevent, deter, detect, investigate,

and remediate fraud" (Dorminey et. al., 2010, p. 17).The succeeding sections of this chapter examined the contributions of contemporary fraud researchers on the fraud triangle theory.

The Triangle of Fraud Action

In addition to the fraud triangle was the triangle of fraud action theory that explains the actions individuals must take to defraud (Trompeter et. all, 2012). The fraud triangle theory focuses on the motives of fraudsters but the triangle of fraud action focuses on the actions an individual must take to defraud. The processes involved in committing fraud as specified in the triangle of fraud action are categorized into three major stages namely, the act, concealment, and conversion. The act means the methods a fraudster uses to undertake the fraud action. Concealment refers to the act of hiding the illegal actions to avoid detection, and finally, conversion is the ability to change the ill-gotten gains into legitimate possessions (Dorminey et al., 2012). The major contribution of the triangle of fraud action to the fraud triangle theory was the ability to provide evidential trail on the fraud actions. The evidence on fraud is required mostly by law enforcement agencies for prosecuting criminals in the court of law (Trompeter, et. al, 2013). Similarly, fraud experts need evidence to investigate and unravel the motives behind the fraud actions (Dada, Okwu, Owolabi &Sunday, 2013).

The Fraud Diamond

The fraud diamond was developed by Wolf and Hammond (2004) who introduced the "capabilities" of the fraudster as the fourth component to the fraud triangle. The principles underlying the fraud diamond was that fraud will not occur without the right

person with the right capabilities (Wolf and Hammond (2004). The theory thus threw light on the opportunity factor in the fraud triangle theory by recognizing the capabilities of fraudsters in committing crime. The capabilities of the fraudster is critical in any fraud action and therefore adding the "capabilities" as the fourth component to the fraud triangle will enhance the understanding of fraud (Wolf and Hammond, 2004).

Even though the fraud diamond did not provide information on the factors that determine fraudster's capabilities, studies have shown that fraudsters may be capable if they are well trained, educated, and occupy responsible positions within an organization or society (Stanciu, 2012). A survey conducted by the Association of Certified Fraud Examiners in 2010 shows that 51% and 49% of fraudsters interviewed had University degrees and were over 40 years old respectively (Stanciu, 2012).The survey thus used the level of education and age of fraudsters to measure the capabilities of fraudsters. Although the factors responsible for fraud may exist, fraud may not occur unless the potential fraudster has the required capability to commit the fraud (Carcello, & Hermanson, 2008).

The diagram below shows the fraud diamond after adding the capabilities of the fraudster to the elements in the fraud triangle.
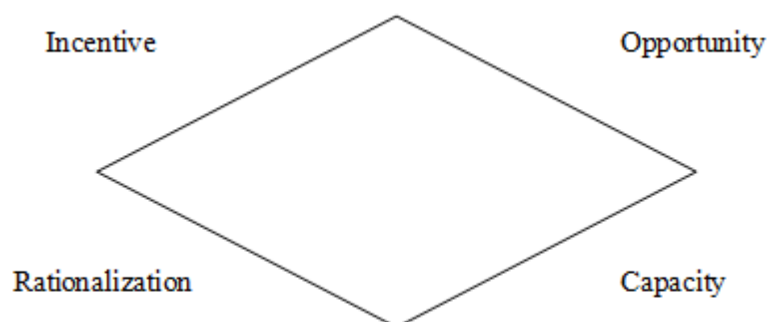
Figure 2. The Fraud Diamond.

The Fraud Scale

The fraud scale was developed by Albrecht et al., (1984) by introducing integrity of the fraudster into the fraud triangle theory. According to Ruankaew (2013),"the fraud scale was similar to the fraud triangle except that the fraud scale used personal integrity instead of rationalization" (p. 3). The fraud scale theory placed emphasis on the integrity of individuals than rationalization (Dorminey et al 2012). The theory indicated that where the integrity of an individual is high, the possibility of the individual committing fraud may be low (Dorminey et al., 2010). The fraud scale therefore recommends the building of individual's integrity as a means of preventing fraud rather than focusing on financial pressure and opportunity which may be difficult to control (Rae & Subramaniam, 2008).

The M.I.C.E

The M.I.C.E is an acronym for money, ideology, coercion, and ego (Stanciu, 2012). The model was developed by Ramamoorti et al. (2009) to explain the financial pressure in the fraud triangle. The model recognized four factors as variables contributing to financial pressures on individuals. The first variable is money. The theory stipulated

that some individuals may regard money as the ultimate in life because money enhances their purchasing powers. Ideology in the theory also refers to wealth as a symbol of success in society (Michalak, 2011). Coercion refers to force or coercion to commit fraud. The last factor in the M.I.C.E model is ego. The theory stipulates that people may engage in fraud to maintain their status in society (Kassem, & Higson, 2012). All the elements in the M.I.C.E model add to the financial pressures of individuals which increases the probability of individuals to commit fraud. "The principles underlying the M.I.C.E model, however, may not be sufficient in addressing fraud because other factors in the fraud triangle namely, opportunity and rationalization were not covered by the model" (Kassem, & Higson, 2012).

<div align="center">**Limitations of the Fraud Triangle**</div>

Even though the fraud triangle was widely accepted as an excellent model for understanding and detecting fraud, it has some weaknesses (Buchholz, 2012). One criticism of the theory was that "the research for the fraud triangle was based on interviews conducted for criminals at one location and without further research it cannot be extrapolated to other areas or jurisdictions (Brennan, & McGrath, 2007). Cieslewicz (2012) who was a strong critic of the fraud triangle maintained that Cressey did not consider "societal level factors across international borders when developing the fraud triangle theory" (p.219). Cieslewicz's contention was that all the data Cressey and other contributors used in developing the theory were collected in America without considering the conditions prevailing in other parts of the world. To enhance the universal application of the fraud triangle, Cieslewicz believed that environmental differences in other parts of

the word should be factored into the theory. In the views of Cieslewicz, environmental factors may include religious and philosophical traditions, culture and social norms, and societal conditions such as rule of law, political climate, and socioeconomic factors" (Cieslewicz, 2012). These factors may differ from place to place depending on the environment in which the fraud occurred. These observations by Cieslewicz suggested that environmental factors may influence the interpretation of behaviors and therefore should be considered in the fraud triangle to enhance the universal application of the theory.

Another limitation of the fraud triangle was that the theory did not address the interrelationships between criminals' thinking patterns, behavioral traits, intelligence, and culture of the fraudster (Brody et al., 2012, p. 528). Additionally, the theory "did not provide the tools for assessing the likelihood of fraud occurring under conditions of collusion" which is an important contributing factor to fraud (Buchholz, 2012, p. 113).

Despite these criticisms, the fraud triangle has been applied extensively in public administration (Fitzsimons, 2009). In particular, the theory was applied in various sectors in the public service to explain the nature and motives behind fraud and corruption. The fraud triangle has also helped to deepen the understanding of policy makers on fraud and equipped them to develop effective strategies to combat the ghost workers.

Application of the Fraud Triangle in the Public Sector

The principles underlying the fraud triangle theory were applied in various corruption and fraud studies including those relating to the public sector. In a study on why corruption persisted in the public service of Nigeria, Ibietan (2013) observed that

"for as long as the fraud triangle of need, opportunity, and weak sanctions subsists, corruption in the Nigerian public service will not be tamed but will continue to have more active converts" (p. 46). The purpose of this study by Ibietan (2013) was to establish a link between public accountability and corruption in the Nigerian Public Service. The study was conducted against the background of lack of accountability by public institutions and the inability of relevant authorities to prosecute corrupt public officials. The study was undertaken to confirm whether weak accountability and penal systems were the causes of corruption in the Nigerian public service. The study classified corruption in the Nigerian public service into two major categories namely, "petty or survival corruption which is practiced by civil servants who were grossly underpaid and depended on small rents from the public to feed their families and pay school fees"(Eme, Okoh & Onwuka, 2009). The second category of corruption was grand corruption and practiced by politicians and top public officials who by their "natural human factors of greed and ambition for social, psychological, economic, and political powers engaged in corrupt activities" (Ibietan, 2013, p. 42). Grand corruption was regarded as the abuse of an influential position for private gain, and exploitation of a system for securing unmerited advantage" (Ibietan, 2013, p. 43). The study further noted that since internal control and accountability mechanisms were weak in the public service in Nigeria, public officers continued to abuse the system for their benefits (Ojukwu & Shopeju, 2010). The study recognized financial pressure arising from natural human factors of greed and weak control systems as major factors for corruption among top Nigerian public servants. Low salaries of public servants which created financial needs among employees were also

identified as factors responsible for fraud among the lower level staff in the Nigerian public service.

Another application of the fraud triangle was in a study conducted by Vian (2008) to explain the factors responsible for corruption in the health sectors of developing countries. The study described how financial pressures, opportunities, and rationalization in the fraud triangle were used to explain corruption among health workers. The aim of the study was to use the fraud triangle to explain the nature of corruption and how policy makers could apply the fraud triangle theory to craft appropriate measures to combat corruption in the health sector. The study noted that corruption among health workers were driven by three main factors namely, (a) workers who abuse public position for private gains do so because of financial obligations, (b) workers were capable of rationalizing their corrupt behaviors, and (c) opportunities in the health institutions created the avenue for fraud among the health workers. Health workers felt pressured to commit fraud because salaries in the public services were low. Higher salaries, however, may not reduce fraud if opportunities and other incentives for fraud persist (Ferrinho et al., 2004). The study gave three reasons for creating opportunities in the health facilities. Opportunities were created because health workers had monopoly power over their clients, had greater discretion to make critical decisions, but their level of accountability was low .The study further noted that even though there wasn't much research to link fraud in the health sector to the ability of individuals to rationalize corruption, there were studies which showed that "individual beliefs, attitudes, and social norms influenced people's decision to defend their corrupt activities (Vian, 2008).The study concluded that

the fraud triangle theory could help policymakers to create an evidence based anti-corruption policy by defining the circumstances under which corruption occurs and be able to minimize opportunities, pressures, and rationalization for corruption. The concepts in the fraud triangle were used by policy makers in the health sector to develop strategies to minimize corruption cases in drug supplies and facility user fees. The study therefore recommended the application of the fraud triangle theory to craft effective programs to close off opportunities, alleviate pressures and strengthen resistance to corruption in the health sector (Vian, 2008).

The Financial Intelligence Unit of the Royal Papua New Guinea Constabulary also applied the principles of the fraud triangle in understanding the reasons for the wide spread corruption cases in the Papua New Guinean public service.

A study conducted by Chevis & Barrum (2012) shows that;

An examination of the circumstances of many Papua New Guinean public servants showed that many of them were in situations where at least the first three factors in the fraud triangle are present. Low relative wages and family pressures providing the motivation for fraud. Rationalization that everyone else is doing it or if I don't take it someone else will and lax governance, poor oversight and a less diligent banking sector provided ample opportunity for fraud. (p. 13).

The study also recognized the capability of public servants as a major factor responsible for fraud in the Papua New Guinean public service. Lessons in the "fraud triangle and fraud diamond undoubtedly provided useful insights into individual instances of fraud which was certainly useful when applied in organizations to prevent fraud"

(Barrum & Chevis , 2012, p. 13). The study acknowledged the difficulties in reducing

financial pressures and the capacity of public servants to rationalize their corrupt

behaviors. The study, however, recommended that rationalization in fraud could be

reduced through constant education of public servants to increase their perception that

corruption could be noticed and that the culprits could be punished. The study also

recommended stiffer legislative controls and good leadership in the public sector as a

way to reduce fraud. Additionally, stiffer regulations in the banking sector could prevent

public servants from placing their proceeds from fraud into the banking system (Barrum

& Chevis, 2012).

The fraud triangle was also applied in ascertaining whether corruption may be a

problem for public sector reforms or can be a result of it (Fitzsimons, 2009). Fitzsimons

cited an example of public administrators who use their positions to siphon resources

from distressed state institutions which were to be divested or privatized. Public

administrators utilized insider information about actions government intended to take

concerning state institutions to defraud (Fitzsimons, 2009) The fraud triangle therefore

provided the framework for understanding fraud in the public sector and could guide

policy makers to develop measures to combat the fraud (Fitzsimons, 2009).

Variables in the study

The variables in this study were identified during the literature review. In

particular, the fraud triangle theory which provided the theoretical foundation for this

study guided the determination of the variables. According to Skousen, Smith, and

Wright (2009), the "components of the fraud triangle (pressure, opportunity, and

rationalization) are not directly observable thus proxy variables are developed to serve as proxy measures for pressure, opportunity, and rationalization in the fraud triangle" (p. 59). Based on this concept in the fraud triangle, the level of ghost workers was chosen as a proxy measure for payroll fraud (Hendriks, 2012) and represents the dependent variable in the study. The independent variables are opportunities for ghost workers and the size of management units. These factors were chosen as independent variables because of how they related to payroll fraud (Lekubu, 2013).

The level of ghost workers

The level of ghost workers refers to names on the government payroll who do not actually work in the workforce. They are workers who have died, retired or left the public service but continued to receive salary (World Bank, 1995). For the purposes of this study, ghost workers were measured as the number of employees who have died, retired, resigned, vacated their post or do not work for the public service but continued to receive salary through the payroll (Tanzi, 2013). Ghost workers thus represents fraud in the fraud triangle which is also influenced by the elements in the fraud triangle namely pressure, opportunity, and rationalization.

Opportunities for ghost workers

"Opportunities for ghost workers represent factors that provide the avenue for the creation of ghost workers on the government payroll (Association of Certified Fraud Examiners, 2012). In this study, the opportunity for ghost workers was a proxy measure for opportunity element in the fraud triangle theory. The factors that create the opportunity for ghost workers are retirement, death, resignation, vacation of posts, dismissal, and any

other factor that creates opportunity for ghost workers in the public service. For the purposes of this study, each factor represents an opportunity for ghost worker in a government agency. According to the fraud triangle theory, weak internal control systems in organizations create the opportunity for fraud to occur (Dorminey et al., 2012). In the public service of Ghana, poor records management systems also contributes to the internal control weaknesses in the payroll administration and provides the opportunity for separated staff to receive salary on the payroll (International Records Management Trust, 2008).

Staff strength of management units

The staff strength of management units represents the number of employees in a management unit. In payroll fraud research, the number of employees in an organization determines the size of the organization (Association of Certified Fraud Examiners, 2012). According to the fraud triangle, as the size of an organization increases, the internal control systems of the organization become weak due to the complexities of its operations (Kiragu et al., 2013). The size of management units therefore represents the opportunity element in the fraud triangle.

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Justification for payroll fraud research in Ghana

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Ghost workers in the public service of Ghana have been a major concern for governments over the years. Various governments have implemented reforms to eliminate the ghost workers from the public service but the problem continues to persist. One of the measures the government of Ghana has implemented to eliminate the ghost workers from the public service was head count of public servants but the exercises did not yield the much needed results (World Bank, 1999). The inability of government to

effectively deal with ghost workers in the public service was due to inadequate

knowledge about the phenomenon itself which could also be due to a lack of adequate

research on payroll fraud in Ghana. According to Gee et al., (2010), "the first step to

solve a problem is to know what it is. Equally, with fraud it is impossible to apply the

correct solutions and reduce the losses until you know the true nature and scale of the

problem" (p. 10). To address fraud in the public service more effectively, countries

around the world are shifting from the traditional ways of dealing with fraud to a more

proactive and sustainable methods. The new approach to fraud was to use statistically

valid methods to measure the fraud losses and manage it efficiently. This principle was

applied in the UK where the extent of losses in the National Health Service was measured

and appropriate measures found to reduce the losses by close to 60%" between 1998 to

2006 (Gee et al., 2010). Lessons from the National Health Service could be applied in

Ghana to eradicate ghost workers from the public service payroll. According to Gee et

al., 2010), "where losses have been measured, and the organizations concerned have

accurate information about their extent, there were examples where such losses have been

substantially reduced" (p. 12.). Currently, the limited research on ghost workers in Ghana

gave room for policy makers to provide their own views about the extent of ghost

workers in the public service of Ghana, information which cannot be used for effective

planning to reduce the losses.

Amoako-Tuffour estimated that ghost workers represent 5.8% of government

expenditure on salaries every year (Amoako-Tuffour, 2002). In the same year, the

Minister for Finance (2002) in a budget statement to parliament indicated that " 10% of

the total amount spent on salaries of both civil and public servants were lost every month

through the insertion of ghost names on workers' payrolls" (p. 494). These estimates were

inaccurate because they were not based on scientific research and therefore cannot be

used for effective planning to address the ghost name menace in the public service of

Ghana. This study filled this gap by using statistically valid methods to measure the

extent of ghost workers in the public service of Ghana which could guide policy makers

in the country to formulate appropriate policies to minimize the ghost names in the public

service.

      Measurement of fraud losses were done several times across the world and has

assisted many countries to efficiently manage fraud. In the United States of America for

example, measurement of losses as a strategy to reduce fraud losses become a legal

requirement for government agencies after the passage of the Improper Payments

Information Act (IPIA) of 2002. Under the IPIA, "major U.S. public institutions were

required to estimate the annual amount of payments made where fraud and error were

present, and to report the estimates to the President and Congress with a progress report

on actions to reduce them" (Gee et al., 2009, p. 7).

      In Ghana, the Auditor General was equally required by law to submit its report on

the public accounts to Parliament for consideration and further action. However, the

report only captures actual losses identified without including annual estimates of fraud

losses (Audit Service Act, 2000).

      The objectives of estimating the cost of fraud was to ascertain the extent of losses

and the benefits to derive if the losses were reduced. Knowledge about fraud losses could

guide policy makers to determine the level of investment to make in fighting the losses (Gee et al., 2010). This approach to fraud prevention could be applied in Ghana to effectively manage and minimize the leakages of public funds arising from ghost workers in the public service. The study further examined how the size of management units and opportunities for ghost workers relate to the level of ghost workers in the public service. This study will be a step towards the adoption of a new approach to fighting ghost workers in the public service of Ghana.

Discussions, Analysis, and Conclusions

The literature review focused on existing studies on payroll fraud and ghost names in the public services of developing nations. To address the problems of ghost workers, governments in Ghana over the years have implemented various reforms to eliminate the ghost workers from the public service. These efforts attracted the attention of observers of public finances who hailed government's commitment to expunge ghost names from the payroll and pension records (Amoako-Tufour, 2002). However, these efforts did not achieve the needed results of eliminating the ghost workers from the public service. The inability of government to effectively address the problem of ghost names may be due to limited knowledge about the phenomenon in the country. This study addressed this gap by using the statistically valid methods to measure the extent of ghost workers in the public service of Ghana.

The fraud triangle theory by Cressey (1950) and the graft estimation model by Reinikka and Svennson (2004) provided the theoretical basis for the study. The fraud triangle provided the framework for understanding fraud and the characteristics of the

fraudsters. The graft estimation model is also used to determine leakages or theft of

public funds in government institutions (Olken & Pande, 2012). The graft estimation

model used the PETS which is a standardized survey instrument to measure the extent of

fraud in government agencies. Comprehensive discussion of the research design, the

sampling methods, and the instrument for data collection were presented in Chapter 3 of

this study.

Chapter 3: Research Method

Introduction

Ghost workers drain public funds and deprive nations of resources for development (Gee et al., 2010). The government of Ghana continues to pay salaries to separate staff that are dead, resigned, have vacated their posts, or have been dismissed from the public service. However, the extent of the payments to the separated staff is yet to be known. This study was conducted to fill the gap in the literature on how payment of salaries to ghost workers affects the government wage bill in Ghana. It is important for policy makers to know the extent of fraud losses caused by the ghost workers to enable them to formulate policies to minimize it. In Chapter 3 of this study, I present the nature of the study, the methodology for data collection, instrumentation, and tools for data analysis.

Research Design and Rationale

In this study, I used quantitative methods to examine the effects of ghost workers on the public wage bill in Ghana. I also examined the relationship between the number of opportunities for ghost workers, the size of management units, and the level of ghost workers in management units of government agencies. The quantitative method was selected because it is a useful tool for establishing the correlation between variables in a study (Schertzer & Schertzer, 2013). Quantitative methods also analyses the relationship between variables using sampled data. (Ahram, 2013) Additionally, the quantitative statistical analysis allows estimates to be based on observable data, which provides a check on the assessment itself (McKay, 2012). The quantitative method has been used

over the years in studies aimed at reducing the cost and size of the public sector (Olowu, 2010). In this study, I employed a quasi-experimental design to select government agencies in Ghana for a survey. The quasi-experimental design allows researchers to select participants for a study, but does not require the assignment of cases to comparison groups. This quasi-experimental study was cross-sectional where data were collected from government agencies through a sample survey at a point in time and the relationships between the variables were determined (Lavrakas, 2008). I also used the PETS techniques to collect data on ghost workers in selected government agencies in Ghana. The PETS is a standardized survey instrument used to track public expenditure and has been used to identify leakages and inefficiencies in the public expenditure management processes (Astorga et al., 2012). The PETS is therefore used to determine the amount of leakages of public funds and inefficiencies in the budget implementation process.

The variables for this study were opportunities for ghost workers, staff strength of management units, and the number of ghost workers on the payrolls of management units. Opportunities for ghost workers are events that provide the avenue for the creation of ghost workers in government agencies. Such events include deaths, resignations, vacation of posts, or dismissals from the public service. The staff strength of management units represents the number of employees in a management unit which also measures the size of the management unit (Association of Certified Fraud Examiners, 2012). Ghost workers represent names on the government payroll who receive salary but do not exist. They are workers who have died, retired, or left the public service, but continue to

receive a salary (World Bank, 1995).In this quantitative study, I applied descriptive statistics and correlational analysis to describe the relationship between opportunities for ghost workers, staff strength of management units, and the number of ghost workers on the payrolls of management.

Methodology

Population

Management units in the public service in Ghana were selected for a survey. A management unit is defined as the smallest section or a cost center of a government agency where payroll costs are charged (Financial Administration Regulation, 2004). In Ghana, the salary budget of government is allocated to cost centers within a government agency with the view to facilitate budget implementation and monitoring (Ye Canagarajah, 2002). A detailed description of the sampling method is provided in the subsequent sections of this chapter.

Sampling

I used nonprobability quota sampling method to select management units for a survey. Nonprobability sampling is a sampling technique in which participants are selected for a study based on the judgment and convenience of the researcher (Tansey, 2007). The nonprobability sampling was selected for this study because of a lack of access to the sampling frame of management units in the public service in Ghana. The nonprobability sampling is not concerned with having the number of participants that match the proportions in the population. Instead, the nonprobability sampling includes only enough cases for analysis even with small groups (Trochim, 2006).Quota sampling

was also used because there was no information on the exact proportion of management

units in the public service in Ghana. Even though records show that the size of education

and health represent about 80 per cent of the population of public servants in Ghana

(Daily Graphic, 2014), the exact proportion of management units for each sector

(education and health) was unknown. In addition to the quota sampling, I also used

purposive sampling which is a nonprobability sampling method to select management

units for the survey (Tongco, 2007) The reason for using the purposive sampling was that

it allowed key agencies to be included in the sample for an indebt study (Jupp, 2006). The

purposive sampling also ensured that key agencies in the public service are included in

the survey (Patton, 2002). Using the nonprobability sampling means that the results of the

study could not be generalized to the population of management units in the public

service in Ghana (Feild et al., 2016).This constraint was identified as a limitation of the

study and was highlighted in Chapter 1.

A power analysis was conducted to determine the suitable number of management

units for the survey. The sample size of 85 was obtained based on an alpha value of 0.05

and a statistical power level of 0.8 to arrive at a medium effect size of $r= 0.3$ (Cohen,

1988; Singleton & Straits, 2005). According to Filed (2009),

> If we take the standard alpha value of 0.05 and a statistical power of 0.8, then we
>
> need 783 participants to detect a small effect size of $r=0.1$, 85 to detect a medium
>
> effect size of $r= 0.3$, and 28 participants to detect a large effect size of $r=0.5$. (p.
>
> 58)

These conventional statistical values were used to arrive at the sample size of 85 management units to maintain a statistical significance of the study (Cohen, 1988; Singleton & Straits, 2005).

Inclusion/Exclusion Criteria

The inclusion criterion for this study was that only public institutions whose payrolls were prepared by the CAGD were included in the study. The total of 480,139 employees on the mechanized payroll at CAGD as at the end of 2012 represented 80% of the total number of employees in the public service of Ghana (Controller and Accountant General's Department, 2012). Public institutions whose salaries are not prepared through the payroll at CAGD were excluded from the sample.

<div align="center">

The Instrument

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Public Expenditure Tracking Survey

I used PETS as an instrument for data collection. The PETS is a standardized survey instrument used to track the flow of public funds in public institutions (Reinikka & Svennson, 2004). The PETS may be described as an instrument used to track public funds from the central government to government facilities or agencies (Sundet, 2007). The PETS was used in a variety of studies by the World Bank to track public expenditures of countries (Olken & Pande, 2012). After the first successful implementation of PETS in Uganda in 1999, the PETS has become a standard instrument used by many scholars and organizations in a variety of studies relating to fraud and corruption in the public service (Olken & Pande, 2012).

The PETS has been used by policy makers and researchers to track wages and salaries from the central budget to the cost centers or government agencies. The PETS also assists policy makers to monitor approved wages and to develop policies to minimize any leakages (World Bank, 2001). In Honduras, Papua New Guinea, and Uganda, Staff Tracking Surveys were used to track public wages and also to quantify the share of ghost workers in the public services of the respective countries (Reinikka & Svensson, 2006). The Staff Tracking Survey tracks the actual salaries paid to employees to the budgeted salaries at the facility level. Tracking wages and salaries may be a difficult task. More importantly, it is difficult for policy makers at the central government level to ascertain whether all employees in the public service exist and are working at places they are supposed to work, and performing their responsibilities according to their job descriptions (World Bank, 2001).The PETS is used to "diagnose inefficiencies, low quality of services, leakage of resources, such as shirking and ghost workers in the public service" (Astorga et al., 2012, p. 18). PETS require careful design and implementation (Reinikka, & Smith, 2004, p. 47). The steps involved in the PETS implementation include (a) preparation which involves the definition of scope and identification of objectives and actors; (b) drawing of a sampling strategy and questionnaire design; (c) actual implementation, analysis of data, and reporting; and (d) dissemination and institutionalization (Reinikka, & Smith, 2004). The questionnaires for this study were designed to capture data on (a) the number of employees in management units surveyed, (b) whether the employees exists, (c) whether the employees were working where they

were supposed to be working, and (d) whether the employees were doing what they were

supposed to be doing according to their contracts of appointment.

Validity and Reliability of the Instrument

In quantitative research "the concepts of validity and reliability are inseparable

from the measurement"(Frankfort, & Nachmias, 2008, p. 158). The "key indicators for

quality measuring instruments in research are the reliability and validity of the measures

used" (Kimberlin & Winetrstein, 2008, p. 2276).

Validity

Validity of an instrument tests whether researchers are measuring what they are

expected to measure (Frankfort, & Nachmias, 2008). Public Expenditure Tracking

Survey is, however, concerned with content validity. Content validity measures the extent

to which the measurement used in the study covers all the attributes of the phenomenon

under study. There are two components of content validity. These are face validity and

sampling validity. Face validity measures the appropriateness of the instrument used in

measuring the phenomenon in question. However, sampling validity tests whether the

population is adequately sampled for the study (Frankfort, &Nachmias, 2008). To ensure

the content validity of PETS, researchers use data triangulation strategy to validate the

information provided by the respondents. According to Gauthier & Wane (2009) a "key

aspect of the PETS is data triangulation whereby questions were integrated in the

instruments to capture critical information and assess the validity of the answers at the

region, district, and facility levels" (p. 5). "Once the triangulation of the central, regional,

and administrative data confirmed that the data are correct one may be confident that the

questionnaires administered to the regions have captured all the resources sent to the

regions" (Amin, & Chaudhury, 2008, p. 200). There are studies that used the PETS to

quantify the share of ghost workers and employee absenteeism in the public sector

(Reinikka & Svensson, 2006). The extensive use of the PETS by scholars and

organizations in studies relating to the public sector confirms the validity of the PETS as

a suitable instrument for measuring the level of ghost workers in the public service

(Olken & Pande, 2012).

The data collection process gave enough assurance that heads of management

units provided truthful and accurate information which enhanced the validity of the study.

Research shows that "self-reported data are accurate when individuals understand the

questions and there is a strong sense of anonymity and little fear of reprisal." (Brener

et.al., 2003, p. 437). This study was planned and executed under strict conditions of

anonymity which boosted the confidence of participants to respond to the questionnaires.

This anonymous data collection strategy was recommended and approved by the IRB to

minimize the risks of the study to participants and also encourage them to provide

accurate information. Specific measures adopted to protect participants from risks and

also encourage them to provide accurate information were (a) participants were

adequately informed through the consent letters about the voluntary nature of the study

and their right to withdraw from the survey without any consequences to them, (b) the

consent letters also encouraged participants to complete the survey independently and if

possible outside their office environments to minimize any interferences, and (c) the

survey adopted a low-pressured communication strategy whereby the questionnaires and

consent letters were mailed to the participants by post. Also, self-addressed envelopes with stamps on them were added to each research packet and were used by the participants to mail the completed questionnaires back to researcher. I believe these measures boosted the confidence of participants to provide truthful and valid information for the study.

Reliability

Reliability refers to the "extent to which a measuring instrument contains errors that appeared consistent between observations either during any one measurement, procedure, or each time a given variable is measured by the same instrument"(Frankfort, & Nachmias, 2008). Reliability of an instrument also means that the instrument would produce the same result any time it is used over a period of time or across different studies. The "consistent findings of a study across measures significantly increased the reliability of the data" (Reinikka, & Svensson, 2006, p. 365). This study adopted the principles in the PETS to develop the questionnaires because the PETS has been recognized as a reliable instrument for assessing leakages and corruption in the public services (Reinikka, & Svensson, 2006). Also, as a result of the successful implementation of the PETS is Uganda in 1999, the method was consistently applied in many countries including Honduras, Papua New Guinea, and Uganda (Reinikka & Svensson, 2006), Mozambique (Lindelow, 2008), and Tanzania (Sundet, 2004) to assess the level of fraud in the public services. Razafindrakoto, & Roubaud (2010) observed that "the positive properties of PETS has prompted the international usage of the tracking surveys in recent years" (p, 16).

Data Analysis

I began the data analysis process by first entering the data into the SPSS system.

The data entry was followed by data review and cleaning to eliminate errors from the

data (Reinikka, & Smith, 2004). The study then used descriptive statistics, co-relational

and regression analysis to analyze the relationship between the variables namely,

opportunities for ghost workers, staff strength of management units, and the number of

ghost workers in the management units surveyed. The "correlation coefficient determines

the strength and direction of the relationship between the variables "(Frankfort &

Nachmias, 2008, p. 362). Correlation coefficient ranges between -1.0 and +1.0,

signifying strong negative or positive relationships respectively between the variables. A

correlation coefficient of 0.0, however, means no or weak relationship between the

variables. The significant value of p in the correlation coefficient determines the

confidence level at which the null hypothesis could be rejected. The p value less than.05

means that there is high confidence that genuine relationships exists between the

variables and therefore the null hypothesis should be rejected (Simon, 2011).According

to Bell, DiStefano, & Morgan (2010) the "significance value of p means that the results

of the study for the appropriate degrees of freedom and statistical tests are unlikely to be

a function of chance alone" (p. 378).

Research questions and hypothesis

The following research questions guided the study.

Research Questions

RQ1: How do the number of ghost workers in government agencies relate to the

size of government payroll in Ghana?

RQ2: How do the number of opportunities for ghost workers in government agencies relate to the extent of ghost workers on government payroll in Ghana?

Hypothesis

H01 (a): The number of ghost workers in government agencies is not significantly related to the size of the government payroll in Ghana.

Ha1 (a): The number of ghost workers in government agencies is positively related to the size of the government payroll in Ghana.

H01 (b): The number of opportunities for ghost workers is not significantly related to the size of ghost workers in government agencies in Ghana.

Ha1 (b): The number of opportunities for ghost workers is positively related to the size of ghost workers in government agencies in Ghana.

Ethical Considerations

The ethical issues relating to this study were adequately addressed. Data collection for the study did not start until the Institutional Review Board (IRB) of the Walden University issued a written approval letter (No. 01-06-15-0272538) for the study. Heads of management units were adequately briefed through the consent letters attached to the questionnaires about their rights regarding the survey. The study was voluntary and that participants were allowed to withdraw from the study without any consequences to them. The consent letters also indicated the researcher's responsibility to treat all information provided by respondents confidential. The researcher will not use the information provided by participants for any purpose outside of this research project.

Physical data in this research are kept in a safe and securely locked while those in electronic form are protected by a secure password. Data will be kept for a period of at least 5 years, as required by Walden University. Since I am an employee of the CAGD, I did not include participants from the CAGD or any of its agencies in the survey. The consent letter and the approval letter from the IRB are included in the documentations for the study.

Summary

This quasi-experimental study utilized non probability quota sampling to select management units for a survey. The non probability quota sampling method was suitable for this because of (1) lack of access to the sampling frame of management units in the public service in Ghana, and (2) lack of the exact proportion of management units in relation to the total population of management units in the public service in Ghana. This study utilized Public Expenditure Tracking Survey (PETS) as an instrument for data collection for the study. SPSS statistical software was then used to capture, validate, and analyze the data. Finally, the study used descriptive statistics, co-relational and regression analysis to analyze the relationship between opportunities for ghost workers, staff strength of management units, and the number of ghost workers in the management units surveyed. Chapter 4 presents the data analysis of the study.

Chapter 4: Results

Introduction

The purpose of this study was to examine the effects of ghost workers on the public wage bill in Ghana. The objective was to examine the relationship between the number of opportunities for ghost workers, the size of management units, and the number of ghost workers in government agencies. Knowledge about these relationships will assist payroll managers and policy makers in the public service in Ghana in formulating policies to improve efficiency of the payroll management to minimize ghost workers and save public funds for national development. In this chapter, I focus on the analysis of the data collected based on the methodology proposed in Chapter 3. Descriptive statistics and correlational and regression analysis were used to analyze the research questions and hypothesis for the study. Results of the data analysis are presented in this chapter while the interpretation of findings and recommendations are presented in Chapter 5. Major sections of this chapter include data collection procedures, data analysis, descriptive statistics, statistical assumptions, correlation and regression analysis, discussions of research questions and hypotheses, and a summary of results.

Research Questions and Hypothesis

This study was guided by the following research questions and hypothesis.

Research Questions

RQ1: How do the number of ghost workers in government agencies relate to the size of government payroll in Ghana?

RQ2: How do the number of opportunities for ghost workers in government agencies relate to the extent of ghost workers on government payroll in Ghana?

Hypothesis

*H*01 (a): The number of ghost workers in government agencies is not significantly related to the size of the government payroll in Ghana.

*Ha*1 (a): The number of ghost workers in government agencies is positively related to the size of the government payroll in Ghana.

 *H*01 (b): The number of opportunities for ghost workers is not significantly related to the size of ghost workers in government agencies in Ghana.

*Ha*1 (b): The number of opportunities for ghost workers is positively related to the size of ghost workers in government agencies in Ghana.

Data Collection

The data collection process begun after the IRB gave an approval (No. 01-06-15-0272538) for the study. The data collection involved a survey on selected management units in the public service of Ghana. In Ghana, employees in the Ghana Education and Ghana Health Services represent 80% of public servants in Ghana (Daily Graphic, 2014). Using purposive sampling, I ensured that an adequate number of management units in Ghana Education and Ghana Health Services were included in the sample to enhance the representativeness of the survey (Canagarajah & Ye, 2002). The sample of 85 management units was selected from 35 Ghana Education Service (41%), 27 Ghana Health Service (32%), and 23 other public institutions (27%). The other public

institutions included the Local Government Service, the Ghana Audit Service, and the Civil Service.

In this survey, the participants were requested to complete 37 questions with the view of gathering information on ghost workers in the management units selected. I used a nonprobability sampling to select management units for the survey because of (a) a lack of access to the sampling frame of management units in the public service in Ghana and (b) a lack of the exact proportion of management units in relation to the total population of management units in the public service in Ghana. Questionnaires and the consent forms were mailed to participants through a registered postal delivery system. There were no rewards for participating in this survey. However, self-addressed envelopes with prepaid stamps on them were included in the research packets and were used by the participants to return the completed questionnaires back to me.

The survey was administered to selected heads of management units (N=85) in the public service. Out of the 85 questionnaires distributed, a total of 45 were returned, representing a 53% response rate. The survey took a total of 6 weeks to complete. Within the first 2 weeks of the survey, only seven participants returned the competed questionnaires. After 3 weeks, an additional 12 participants responded. To improve the response rate of the survey, the questionnaires, together with the consent forms, were mailed again through an ordinary postal system to the 66 participants who failed to respond to the questionnaires after the initial distribution of the survey. An anonymous phone administration of the survey was also conducted where the questionnaires were read over the phone to a number of participants who provided answers to the questions.

The participants who were contacted on the phone offered themselves voluntarily and provided the answers to the questions. After the phone administration and reposting of the questionnaires to participants, an additional 26 completed questionnaires were received, which brought the number of responses to 45.

Data Analysis

The aim of the data analysis was to examine the relationship between the number of opportunities for ghost workers, the size of management units, and the number of ghost workers in government agencies. The SPSS statistical software was used to perform the data analysis. Prior to the data analysis, the data were reviewed to ensure that errors did not exist. The questionnaires and other documentations relating to the survey were properly arranged and filed in a chronological manner to facilitate easy retrieval in the future. Descriptive statistics and correlational and regression analysis were used to describe and analyze the relationship between the variables under study.

Descriptive Statistics

The descriptive statistics were used to describe and summarize the variable data without making inferences or generalization about the population (Field, 2009). In this descriptive statistics, I used frequency distributions and percentages to describe the research results. The results of the descriptive statistics are presented in Table 1 below.

Table 1

Frequency Distribution of Opportunities for Ghost Workers (N=85)

Opportunities for ghost workers	Frequency of separated Staff	Percentage
Retirement	112	43%
Vacation of Post	50	19%
Deceased	36	14%
Temporary Salary suspension	30	11%
End of Training (Trainees)	19	7%
Unknown Staff	4	2%
Resignation	3	1%
Employees taking multiple salaries	3	1%
End of Contracts	3	1%
Study Leave without Pay	2	1%
Employee On Transfer	1	0.38%
Total	263	100%

Table 1 presents the frequency distribution of separated staff recorded under each type of opportunity for ghost workers. Out of the 263 separated staff identified, a total of 198 (76%) occurred through retirements, vacation of posts, and deceased employees. The breakdown of the separated staff under the types of opportunities for ghost works was 112 retirements (43%), 50 vacation of posts (19%), and 36 deceased staff (14%). The least number of separated staff recorded were end of contracts (three or 1%), study leave without pay (two or 1%), and employees on transfer (one or 0.38%) The least opportunities for ghost workers accounted for about 3% of the separated employees in the government agencies surveyed.

Analysis of separated staff by sectors also shows that Ghana Education Service recorded 190 of separated staff (72%), Ghana Health Service 47 of separated staff

(18%), and the Local Government Service eight (3%) out of the 263 separated staff identified (see Figure 3).

Percentage of ghost workers by sector
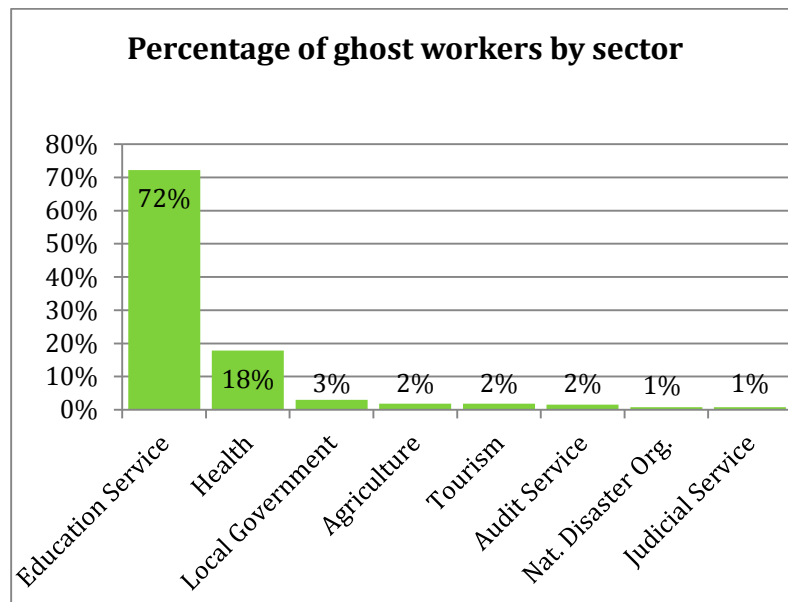
Figure 3. Histogram shwoing the percentage of seperated staff in the selected agencies
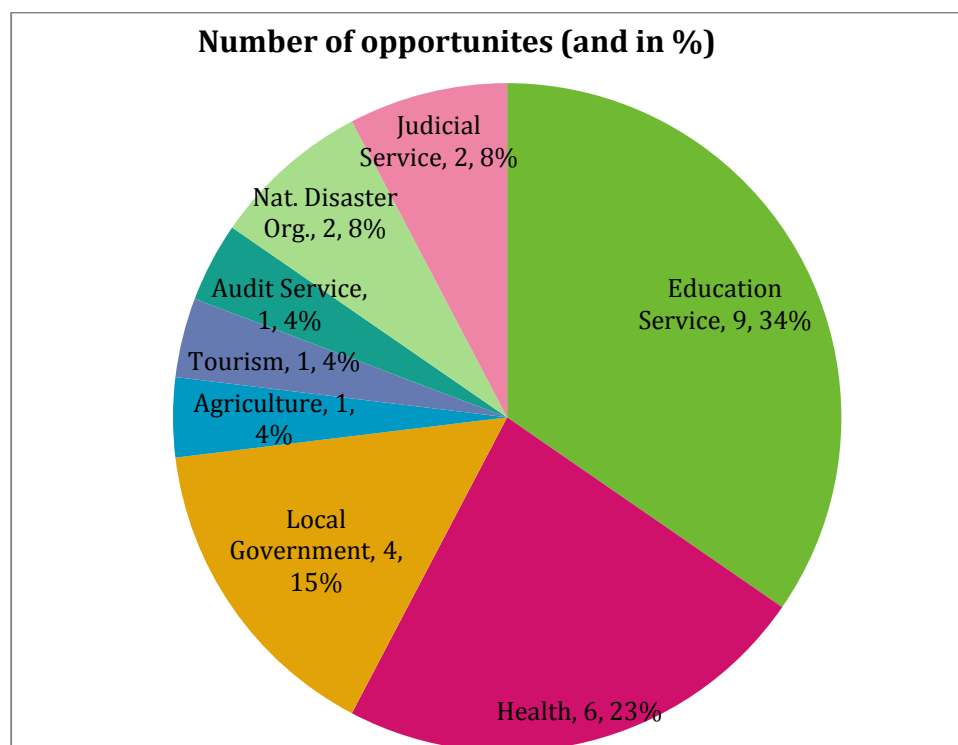
Figure 4. Number of opportunities by sectors (also in percentages)

Figure 4 shows the number (and percentage) of opportunities for ghost workers by sectors. Ghana Education Service had nine (34%) types of opportunities, Ghana Health Service had six (23%), and the Local Government Service had four (15%).The least number of opportunities of one (4%) each were recorded in the Audit Service, Tourism, and the Ministry of Agriculture.

The overall results of the descriptive statistics show that the highest number of opportunities for ghost workers occurred through, retirements, vacation of posts, and deceased employees. The largest number of opportunities and also occurred in the largest government agencies in the public service namely, the Ghana Education Service, Ghana Health Service, and the Local Government Services. Also, the Ghana Education and the Health Services whose employees represent about 80 per cent of the total employees in the public service in Ghana (Daily Graphic, 2014) recorded the highest number of opportunities for ghost workers.

Statistical assumptions

The assumptions underlying parametric tests were reviewed to ascertain the appropriate statistical tests to apply in the correlational analysis for this study. The review of assumptions was necessary because the appropriate statistical test for a correlational analysis depends on the normality of the data distribution (Field, 2009). Normality tests for the data relating to the number of opportunities for ghost workers, staff strength of management units, and the number of ghost workers were conducted using the histogram, Skewness and Kurtosis, as well as Kolmogorov-Smirnov and Shapiro-Wilks tests. The

results from the normality tests show that the distributions of the data relating to the

variables were not normal hence the choice of a non parametric tests for the data analysis.

The various normality tests are presented in the succeeding paragraphs.

Histogram of distribution

Histogram showing the frequency distribution of the number of opportunities,

staff strength of management units, and the number of ghost workers are presented in the

histograms below. The criterion for the determination of normality using the histogram is

that the values of the mean and standard deviation must be equal (Barrett, Leech &

Morgan, 2005). Another criterion used for the determination of a normal distribution

using a histogram is that the distribution must be symmetrical and bell shaped.
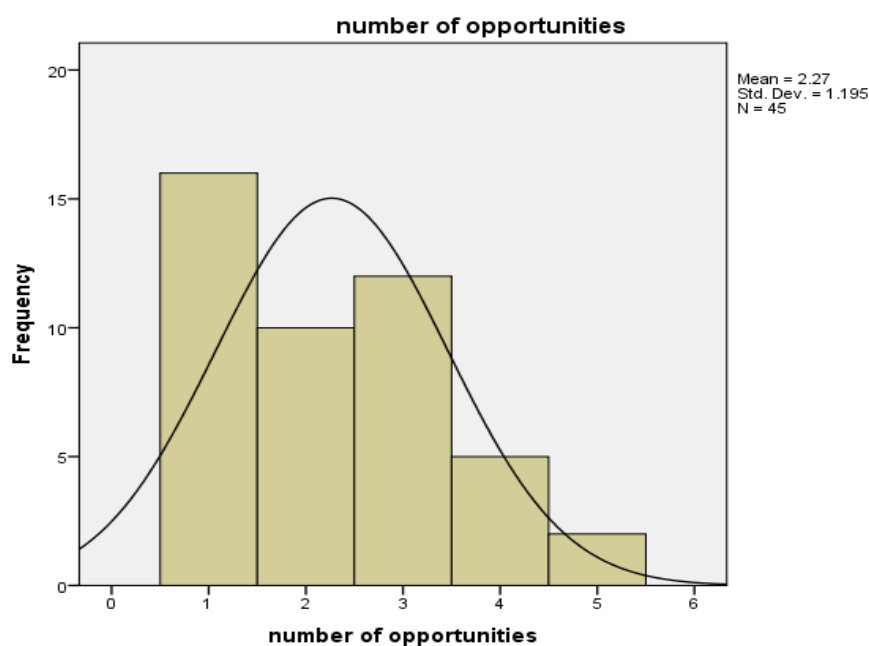
Figure 5. A Histogram showing the frequency distribution of opportunities for ghost
workers

The histogram in Figure 5 represents the distributions of data relating to the

number of opportunities for ghost workers in the management units selected for the

survey. Visual observation of the histogram with the normal distribution overlay across the bars shows that the frequent scores are clustered at the left hand side of the graph which implies that the distribution is skewed or not symmetrical and therefore not normal. Another observation made about the histogram was the flat shaped nature of the distribution curve which also shows that the distribution is not normal. Additionally, the descriptive statistics shows that the mean and standard deviation relating to the number of opportunities for ghost workers were not equal, ($M = 2.27$, $SD = 1.20$) and therefore violated the conditions for normality.
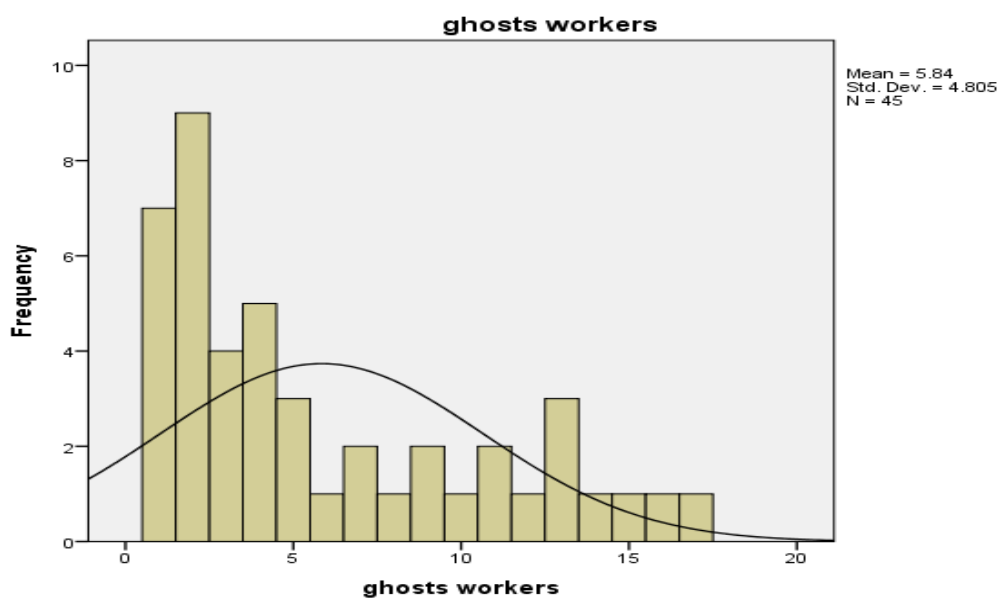
Figure 6. A Histogram showing the frequency of ghost workers identified

The histogram in Figure 6 represents the distributions of data relating to the number of ghost workers in the management units selected for the survey. Visual observation of the histogram with the normal distribution overlay across the bars shows that the frequent scores are clustered at the left hand side of the graph which implies that the distribution is skewed or not symmetrical and therefore not normal. Another

observation made about the histogram was the flat shaped nature of the distribution curve which implies that the distribution is not normal. The descriptive statistics shows that the mean and standard deviation relating to the number of ghost workers were not equal ($M =$ 5.84, $SD = 4.81$) and therefore violated the conditions for normality.
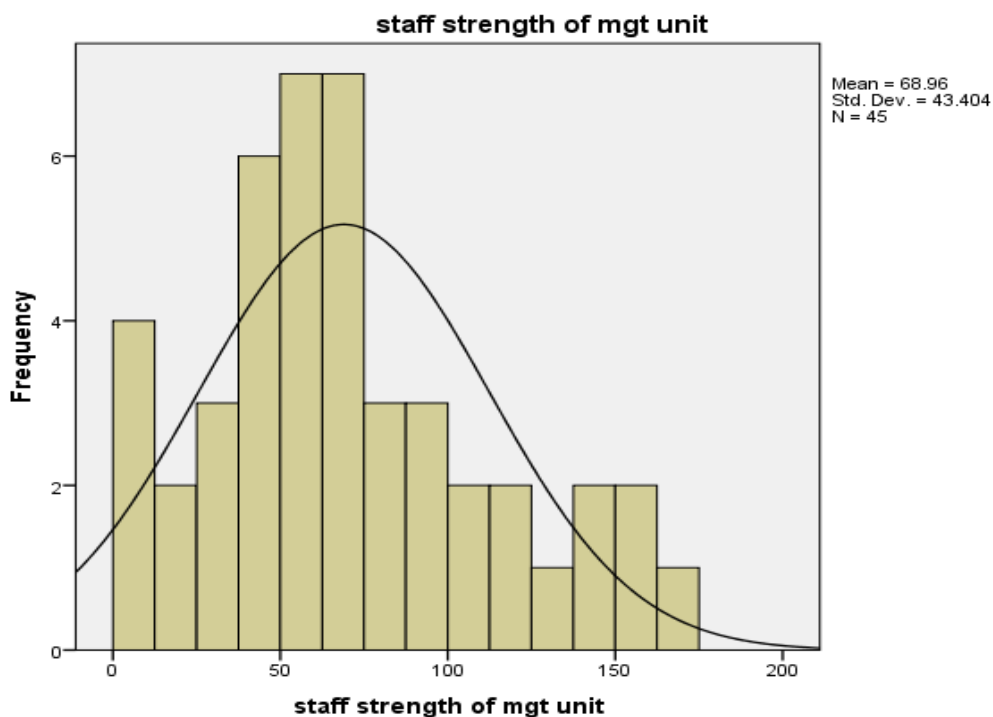
Figure 7. A Histogram showing the frequency of the staff strength of management units

The histogram in Figure 7 represents the distributions of data relating to the staff strength of management units selected for the survey. Visual observation of the histogram with the normal distribution overlay across the bars shows a that the frequent scores are clustered at the left hand side of the graph which implies that the distribution is skewed or not symmetrical and therefore not normal. Another observation made about the histogram was that flat shaped nature of the distribution curve. The descriptive statistics

also shows that the distribution of data is not normal, (*M* = 68.96, *SD* = 43.40) and therefore violated the condition for normality.

According to Field (2009), however, "we can't look at the shape of a distribution or diagram and conclude the normality of a distribution" (p. 134). As a result of this other normality tests such as the Skewness and kurtosis as well as Kolmogorov-Smirnov and Shapiro-Wilks were conducted to confirm the normality test results obtained using the histogram.

Skewness and Kurtosis

Skewness and kurtosis are also used to determine the normality of a distribution. The criterion for determining normality using the skewness and kurtosis is that the values of the skewness and kurtosis must be zero (Field, 2009). The skewness and kurtosis values for the data relating to the number of opportunities, the number of ghost workers, and the staff strength of management units are presented in Table 2 below.

Table 2.

Table showing the results of Skewness and Kurtosis

	number of opportunities	Number of ghosts workers	staff strength of management units
Skewness	.543	.872	.560
Std. Error of Skewness	.354	.354	.354
Kurtosis	-.640	-.531	-.259
Std. Error of Kurtosis	.695	.695	.695

Table 2 shows the skewness and standard errors (*SE)* for the number of opportunities (.543, *SE*=.354), the number of ghost workers (.872, *SE*= .354), and the staff strength of management units (.560, *SE*=.353). The positive skew values indicate

that the frequency scores were clustered at the left hand side of the distribution which

implied that the data was not symmetrical. Also the skew values (Skweness > 0) means

the distributions is not symmetrical and therefore not normal.

Table 2 also shows the Kurtosis values and the standard errors (*SE)* for the

number of opportunities (-.640, *SE*=.695), the number of ghost workers (-.534, *SE*=.695,

and the staff strength of management (-.259, *SE*=.695). The negative values for the

Kurtosis indicate a flat and light tailed distribution which violated the normality rule.

Additionally, the Kurtosis values (*platykurtic*, kurtosis < 0) means the distributions were

flat and therefore not normal.

Kolmogorov-Smirnov and Shapiro-Wilks

Kolmogorov-Smirnov (*K-S*) and Shapiro-Wilks tests have more power to detect

deviations from normality (Field, 2009). The significant value (*p*) in the *K-S* and Shapiro-

Wilks tests determine the normality of a distribution. If the test is insignificant (*p* <.05)

then the distribution of the data is significantly different from normal (Field, 2009).

However, if the test is not significant (*p*>.05) then the distribution is normal. The results

of the Kolmogorov-Smirnov (*K-S*) and Shapiro-Wilks tests were presented in Table 3

below.

The *K-S* test shows a significant value of *D* (45) = 0.211, *p*=.000 for the number

of opportunities for ghost workers. The result of the Shapiro-Wilks test also shows a

significant value of *D* (45) = .864, *p*=.000 for the number of opportunities for ghost

workers. The significant values of both the *K-S* and Shapiro-Wilks tests of *p*<.001

violated the normality condition.

From Kolmogorov-Smirnov test (*KS*) a significant value of *D* (45) = .205, *p=*.000

was obtained for the number of ghost workers. The result from Shapiro-Wilks test also

shows a significant value of *D* (45) = .859, *p=*.000 for the number of ghost workers. The

significant values of both the K-S and Shapiro-Wilks tests of *p=*.001 means that the data

is not normal.

From Kolmogorov-Smirnov (*KS*) test a significant value of *D* (45) = .136, *p=*.035

was obtained for the Staff Strength of Management Units. The result of the Shapiro-

Wilks test also shows a significant value of *D* (45) = .947, *p=*.038 for the same variable

which means that the distribution is not normal.

Table 3.

Table showing results of Kolmogorov-Smirnov and Shapiro-Wilks tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Number of Opportunities	.211	45	.000	.864	45	.000
Ghost Workers	.205	45	.000	.859	45	.000
Staff Strength of Management Unit	.136	45	.035	.947	45	.038

Note. a= Lilliefors Significance Correction

Conclusion on the normality tests

The results of the normality tests using the Histogram, Skewness and Kurtosis,

and the Kolmogorov-Smirnov and Shapiro-Wilks tests show that the distribution of the

data relating to the number of opportunities for ghost workers, staff strength of

management units, and the number of ghost workers were not normal.

As a result of the non normality of the distributions, Spearman's correlation

coefficient which is a statistical test for analyzing non parametric data was used for the

data analysis. The next section presents the correlational analysis of the data to assess the direction and strength of the relationship between the variables.

Co-relational analysis

The correlational analysis was conducted using the Spearman's correlation coefficient to assess the direction and strength of the relationship between the variables. The Spearman's correlation coefficient was used for the data analysis because the distributions of the data relating to the variables under study were not normal (Hauke & Kossowski, 2011).

Spearman's Correlation Coefficient

Spearman's Correlation Coefficient was used to establish both the direction and strength of the relationship between the variables. The strength of the correlation coefficients range between -1 and +1. The negative and positive values signify the direction of the relationship between the variables. However, a correlation coefficient of 0 (zero) means an insignificant or no relationship between the variables. The p (probability) value in the correlation coefficient also determines the confidence level at which the null hypothesis could be rejected. The probability value of $p < .05$ means that there is a greater possibility of a genuine relationships between the variables and therefore the null hypothesis should be rejected (Simon, 2011). However, a probability value of $p > .05$, means that there is not enough evidence of genuine relationships between the variables and therefore the null hypothesis would not be rejected.

Correlation Coefficient using the absolute values of the variables

The correlational analysis was first conducted using the absolute values of the variable data obtained from the survey. In this analysis, the number of ghost workers was measured as the number of employees who died, retired or left the public service but continued to receive salary (World Bank, 1995).The number of opportunities for ghost workers was also measured as the number of factors that provided opportunities for the creation of ghost workers in the public service. The factors were retirement, death, resignation, vacation of posts, dismissal, and any other factor that created avenue for the creation of ghost workers in the public service. For the purposes of this study, each factor represents an opportunity for the ghost workers in the public service. The staff strength of management units also measured the number of employees in a management unit in question (International Records Management Trust, 2008).

Table 4 shows the Spearman's correlations coefficient between the number of opportunities for ghost workers, the staff strength of management units, and the number of ghost workers in the management units surveyed.

Table 4

Table showing Spearman's correlation coefficient using absolute values of variables

			number of opportunities	ghosts workers	staff strength of management unit
Spearman's rho	number of opportunities	Correlation Coefficient	1.000	.909**	.219
		Sig. (2-tailed)		.000	.149
		N	45	45	45
	ghosts workers	Correlation Coefficient	.909**	1.000	.371*
		Sig. (2-tailed)	.000		.012
		N	45	45	45

staff strength of management unit	Correlation Coefficient	.219	.371*	1.000
	Sig. (2-tailed)	.149	.012	
	N	45	45	45

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

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

The correlation coefficient between the number of opportunities for ghost workers and the number of ghost workers in the management units was determined and the results shows that the number of opportunities for ghost workers was positively related to the number of ghost workers (r_s =. 909, n=45, p = .000). The positive value of the correlation coefficient r_s =. 909 means that as the number of opportunities for ghost workers increases, the number of ghost workers also increases by almost the same magnitude. The significance value of p <.05 also means that there is a significant evidence that genuine relationship exist between the number of opportunities for ghost workers and the number of ghost workers in the management units selected. This significant relationship supported the rejection of the null hypothesis.

The next correlation coefficient was between the number of opportunities for ghost workers and staff strength of management units. The correlation coefficient between the number of opportunities for ghost workers and the staff strength of management units was determined and the result shows that the number of opportunities for ghost workers correlated positively with staff strength management units (r_s =.219, n=45, p =.149). The positive correlation coefficient of r_s = .219 means that as the size of a management unit increases, the number of opportunities for ghost workers also increases. The significance value of p >.05, however, means that there is not enough evidence to

support the relationship between the number of opportunities for ghost workers and the staff strength of the management units.

The final correlation coefficient was between the staff strength of management units and the number of ghost workers on the payroll. The correlation coefficient between these variables shows that the staff strength of management units correlated positively with the number of ghost workers on the payroll ($rs =.371$, $n=45$, $p = .012$). The positive correlation coefficient of $r_s =.371$ means that as the number of employees on a management unit increases, the number of ghost workers on the payroll also increases. The significance value of $p <.05$ also means that there is significant evidence of a genuine relationship between the staff strength of management units and the number of ghost workers on the payroll.

Correlation Coefficients after removal of variations in the variable data

The correlation coefficients were initially determined using the absolute values of variables obtained from the survey. However, using the absolute values of variables for the correlational analysis "could lead to false discoveries, missed discoveries, or both" as there were differences in the size of management units and the number of ghost workers in each management unit (Gagnon-Bartsch, Jacob & Speed, 2013, p. 1). The variations in the data were thus removed using factors that best correlated with each variable (Gagnon-Bartsch, Jacob & Speed, 2013).

Measurement of ghost workers

Given that there were variations in the absolute values of the number of ghost workers in each management units surveyed, the number of ghost workers in each

management unit was remeasured using either the number of employees in the

management unit or the number of opportunities for ghost workers as factors.

The level of ghost workers for each management unit was recalculated as

$$\frac{\text{Number of ghost workers} \times 100}{\text{Staff strength of management units}}$$

Alternatively, the level of ghost workers in each management unit was recalculated using

the number of opportunities for ghost as a factor as follows

$$\frac{\text{Number of ghost workers} \times 100}{\text{Number of opportunities for ghost workers}}$$

Measurement of staff strength of management units

To remove the variations in the size of management units, the staff strength of

management units were re-measured using either the number of ghost workers or the

number of opportunities for ghost workers as factors. The staff strength of management

units were thus measured as

$$\frac{\text{Staff strength of management units} \times 100}{\text{Number of ghost workers}}$$

Alternatively, the staff strength of management units were measured using the number of

opportunities for ghost workers as a factor as follows

$$\frac{\text{Staff strength of management units} \times 100}{\text{Number of opportunities for ghost workers}}$$

Measurement of opportunities for ghost workers

The number of opportunities for ghost workers were measured as the number of

factors that created the avenue for the creation of ghost workers in the management units.

The factors were retirement, death, resignation, vacation of posts, dismissal, or and any

other factors that provided opportunity for the creation of ghost workers in the public

service. For the purposes of this study, each factor represents an opportunity for ghost

workers in the management units.

`The correlation coefficients between the variables were determined using the new

values of the variables (after the removal of the variations) and the results discussed in the

succeeding paragraphs.

Test for normality

Normality tests were initially conducted for the variable data based on the

absolute values obtained from the survey. The absolute values of variable data were

subsequently re measured to remove the variations in them to prevent false or missed

discoveries in the study (Gagnon-Bartsch, Jacob & Speed, 2013). To determine the

normality of the distributions after the removal of the variations, another normality tests

were conducted using skewness and kurtosis, and kolmogorov-smirnov and shapiro-wilks

tests. The results of the normality tests are presented below.

Skewness and Kurtosis

Table 5 shows the Skewness, kurtosis, and standard errors (*SE*) respectively for

management units per number of opportunities (1.863, 3.315, *SE*= .354,0.695),

management units per number of ghost workers (3.458, 15.611,*SE*=.353, 0.695), ghost

workers per size of management units(1.546,1.928, *SE*=.354, 0.695), ghost workers per

number of opportunities (.271,-.987, *SE*=.353, 0.695), and the number of opportunities

(.543,-.64, *SE*=.354, 0.695). According to Field (2009), "for a distribution to be normal

"the values of skewness and kurtosis should be zero" (p. 138). In the normality tests,

however, the skew values and kurtosis were not zero which implies that the distributions

of the variables were not symmetrical and therefore not normal.

Table 5

Table showing the results of Skewness and Kurtosis

	Management Units per No. of opportunities	Management Units per No. of ghost workers	Ghost workers per size of management units	Ghost workers per No. of opportunities	number of opportunities
Skewness	1.863	3.458	1.546	0.271	0.543
Std. Error of Skewness	0.354	0.354	0.354	0.354	0.354
Kurtosis	3.315	15.611	1.928	-0.987	-0.64
Std. Error of Kurtosis	0.695	0.695	0.695	0.695	0.695

Kolmogorov-Smirnov and Shapiro-Wilks

Kolmogorov-smirnov (K-S) and shapiro-wilks tests were also conducted to test

the normality of the distributions of the variable data (Table 6). According to Field

(2009), "kolmogorov-smirnov (K-S) and shapiro-wilks tests have more power to detect

deviations from normality" (p. 145). The criteria for the determination of normality using

the kolmogorov-smirnov (K-S) and shapiro-wilks test is that if the significant value of p

is less than 0.5 then the distribution is not normal. Since the significant values of p were

less than 0.5 for all the variables, it shows that the distributions of the variable data were

not normal.

Table 6

Table showing the results of kolmogorov-smirnov shapiro-wilk tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ghost worker per management unit	0.196	45	0.000	0.822	45	0.000
ghost worker per opportunity	0.220	45	0.000	0.871	45	0.000
management unit per opportunities	0.232	45	0.000	0.789	45	0.000
management units per ghost workers	0.232	45	0.000	0.643	45	0.000
number of opportunities	0.211	45	0.000	0.864	45	0.000

a. Lilliefors Significance Correction

Because of the non normality of the variable distributions, I used the Spearman's Rho correlation coefficient which is a statistical test for analyzing non parametric data (Field, 2009).

Correlation coefficient of variables 1

In the correlation coefficient of variables labeled 1 (in Table 7), the number of ghost workers and staff strength of management units were measured using the staff strength of management units and the number of opportunities for ghost workers respectively as factors.

Table 7

Table showing Spearman's correlation coefficient using new measurements 1

			number of opportunities	Ghost worker per management unit	Management unit per opportunities
Correlations 1					
Spearman's rho	number of opportunities	Correlation Coefficient	1.000	.649**	-.424**
		Sig. (2-tailed)		.000	.004
		N	45	45	45
	Ghost worker per management units	Correlation Coefficient	.649**	1.000	-.823**
		Sig. (2-tailed)	.000		.000
		N	45	45	45
	Management unit per opportunities	Correlation Coefficient	-.424**	-.823**	1.000
		Sig. (2-tailed)	.004	.000	
		N	45	45	45

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

Note: Spearman's rho correlation coefficient for the variables using the size of management units and the number of opportunities as factors to measure the level of ghost workers and the size of management units respectively.

The correlation coefficient between the number of opportunities for ghost workers and the level of ghost workers was determined and the result shows that the number of opportunities for ghost workers positively correlated with the level of ghost workers (r_s =. 649, n=45, p = .000) (Table 7). The positive value of the correlation coefficient r_s =. 649 means that as the number of opportunities for ghost workers increases, the level of ghost workers also increases by the same magnitude. The significance value of p <.05 means that there is a significant evidence of a genuine relationship between the number of opportunities for ghost workers and the level of ghost workers in the management

units selected. The significant value of $p < .05$ thus supported the rejection of the null hypothesis

The next correlation coefficient calculated was between the number of opportunities for ghost workers and management units per opportunities. The correlation coefficient between these variables shows a negative correlation between the number of opportunities for ghost workers and the management units per opportunities ($r_s = -.424$, $n=45$, $p = .004$). The negative correlation coefficient of $r_s = -.424$ means that as the number of employees on a management unit increases, the number of opportunities for ghost workers decreases. The significance value of $p < .05$, however, means that there is enough evidence of a genuine relationship between the number of opportunities for ghost workers and the size of management units on the government payroll.

The third correlation coefficient was between the management unit per opportunities and the level of ghost workers. The correlation coefficient between these variables shows that the size of management units correlated negatively with the level of ghost workers ($r_s = -.823$, $n=45$, $p = .000$) (Table 7).The negative correlation coefficient of $r_s = -.823$ means that as the number of employees in a management unit increases, the level of ghost workers on the payroll decreases. The significance value of $p < .05$ also means that there is significant evidence of a genuine relationship between the size of management units and the level of ghost workers on the payroll.

Correlation coefficient of variables 2

In the correlation coefficient analysis labeled 2 (in Table 8), the staff strength of

management units and the level of ghost workers were measured using the number of

ghost workers and the number of opportunities for ghost workers respectively as factors.

Table 8

Table showing Spearman's correlation coefficient using new measurements 2

			number of opportunities	Management units per ghost workers	Ghost worker per opportunities
Correlations 2					
Spearman's rho	number of opportunities	Correlation Coefficient	1.000	-.644**	.526**
		Sig. (2-tailed)		.000	.000
		N	45	45	45
	Management units per ghost workers	Correlation Coefficient	-.644**	1.000	-.401**
		Sig. (2-tailed)	.000		.006
		N	45	45	45
	Ghost workers per opportunities	Correlation Coefficient	.526**	-.401**	1.000
		Sig. (2-tailed)	.000	.006	
		N	45	45	45

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

Note: Spearman's rho correlation coefficient for the variables using the number of ghost
workers and opportunities for ghost workers as factors to measure the size of
management units and the level of ghost workers respectively.

The correlation coefficient between the number of opportunities for ghost workers

and the level of ghost workers was determined and the result shows that the number of

opportunities for ghost workers correlated positively with the level of ghost workers on

the payroll ($r_s =$. 526, n=45, $p = .000$) (Table 8).The positive value of the correlation

coefficient of $r_s =$. 526 means that as the number of opportunities for ghost workers

increase on the payroll, the level of ghost workers also increase by the same magnitude.

The significance value of $p < .05$ means that there is significant evidence of a genuine relationship between the number of opportunities and the level of ghost workers in the management units selected. This significant value of $p < .05$ thus supported the rejection of the null hypothesis.

The next correlation coefficient was between the number of opportunities for ghost workers and the size of management units. The correlation coefficient between these variables shows a negative correlation between the number of opportunities for ghost workers and the size of management units ($r_s = -.644$, $n=45$, $p = .000$). The negative correlation coefficient of $r_s = -.644$ means that as the number of employees on a management unit increases, the number of opportunities for ghost workers also decreases. The significance value of $p < .05$ means that there is enough evidence of genuine relationship between the number of opportunities for ghost workers and the size of the management units.

The third correlation coefficient was between the size of management units and the level of ghost workers. The correlation coefficient between these variables shows that the size of management units correlated negatively with the level of ghost workers ($r_s = -.401$, $n=45$, $p = .006$) (Table 8). The negative correlation coefficient of $r_s = -.401$ means that as the number of employees on a management unit increases, the level of ghost workers on the payroll decreases. The significance value of $p < .05$ also means that there is significant evidence of genuine relationship between the size of management units and the level of ghost workers on the payroll.

Conclusions on the correlation coefficients

The correlation coefficient was first calculated using the absolute values of variables obtained from the survey. The correlational analysis based on the absolute values shows a positive relationship among all the variables namely, the number of opportunities for ghost workers, staff strength of management units, and the number of ghost workers on the payroll. The significant values also showed that genuine relationship exist between the number of opportunities for ghost workers and the number of ghost workers as $p < .05$. The study also showed that there is a genuine relationship exist between the staff strength of management units and the number of ghost workers on the payroll as $p < .05$. However, even though there was a positive relationship between opportunities for ghost workers and the staff strength of management units ($r_s = .219$), the significant value was $p > .05$ which means that there was not enough evidence of a genuine relationships between the number of opportunities for ghost workers and the staff strength of management units and therefore could not support the rejection of the null hypothesis.

Given that there were variations in the absolute values of the variables, the variables were re measured using factors that best correlated with the variables in the study (Gagnon-Bartsch, Jacob & Speed, 2013). The correlation coefficient between the variables using the new measurements of variables shows that there is a positive relationship between opportunities for ghost workers and the level ghost workers on the payroll. The results, however, showed a negative relationship between opportunities for ghost workers and the size of management units. Similarly, there was a negative

relationship between the size of management units and the level of ghost workers on the payroll.

However, the study has shown that genuine relationship exist between the number of opportunities for ghost workers, size of management units and the level of ghost workers as *p <.05* for all the variables. Since the removal of variation in the data was to avoid "unwanted variations and prevent false or missed discoveries" (Gagnon-Bartsch, Jacob & Speed, 2013, p. 1), the decisions on whether to accept or reject the null hypothesis were based on the results of the data analysis after the removal of variations from the data.

Regression analysis

I used descriptive statistics to describe the study data and correlational analysis to determine the relationship between the number of opportunities for ghost workers, the size of management units, and the level of ghost workers in government agencies in Ghana. The correlational analysis also examined the direction and strength of the relationship between these variables. Multiple linear regression analysis was used to determine the weight of the independent variables in the regression equation.

Descriptive Statistics

The descriptive statistics were used to describe the basic characteristics of the sample data and also summarize the results of the analyses in a concise way (Hokanson, 2009). The descriptive statistics used central tendencies and percentages to describe the basic characteristics of the sampled data. The variable values were measured at ratio level and therefore became possible to determine the mean and standard deviation of the level

of ghost workers, the size of management units, and the number of opportunities for

ghost workers (Hokanson, 2009).

The descriptive statistics shows a mean value for the number of opportunities as

2.27 (SD = 1.195), mean value for ghost workers per opportunities as 2.31 (SD = 1.019),

and the mean value of ghost workers per management units as 10.16 (SD = 8.914). The

study also shows a mean value of management units per ghost workers as 21.29 (SD =

24.49), and a mean value of management units per opportunities as 39.89 (SD = 24.49)

(see table 9). The mean and standard deviations were used in the determination of

normality of the variable distributions which also formed the basis for using the

Spearman's Rho statistical tests for the data analysis.

Table 9.

Table showing descriptive statistics of variables

Variables	median	mode	mean	SD	N
number of opportunities	2	1	2.27	1.195	45
ghost workers per opportunities	2	2	2.31	1.019	45
ghost workers per management units	8	3	10.16	8.914	45
management units per ghost workers	13	10	21.29	24.49	45
management units per opportunities	31	39	39.89	34.01	45

Statistical Assumptions

Before conducting the multiple linear regression analysis, I reviewed the

statistical assumptions underlying multiple regressions to determine the extent to which

the regression model could be used to draw conclusions about the study sample. The

assumptions for the multiple regressions I tested were multicollinearity, homogeneity of

variance, independent errors, linearity, and normality. The results of the regression

assumptions are presented below.

Independent Errors

The Durbin-Watson statistics was used to test the existence of independent errors

in the regression equation. The Durbin-Watson statistics was first calculated using the

level of ghost workers per number of opportunities as the dependent variable and

management units per ghost workers and the number of opportunities as independent

variables. The Durbin-Watson statistic value of 2.121 obtained is between 1 and 3 which

means that there is no autocorrelation between the variables (Table 10). The second

Durbin-Watson statistics was calculated using the level of ghost workers per management

units as the dependent variable and management units per opportunities and the number

of opportunities as the independent variables. The Durbin-Watson statistic value of 1.909

obtained is between 1 and 3 which also means that there is no autocorrelation between

the variables (Table 10).

Table 10

Table showing the results of Durbin-Watson statistic

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.522[a]	0.272	0.238	0.889	2.121
2	.675[a]	0.455	0.429	6.733	1.909

Linearity

To test the linearity assumption for the multiple linear regression model, the

standardized residuals (errors) were plotted against the standardized predicted values of

the dependent variables. The scatter plots (Figures 8 and 9) show no pattern between the

variables and therefore satisfied the assumption for linearity.
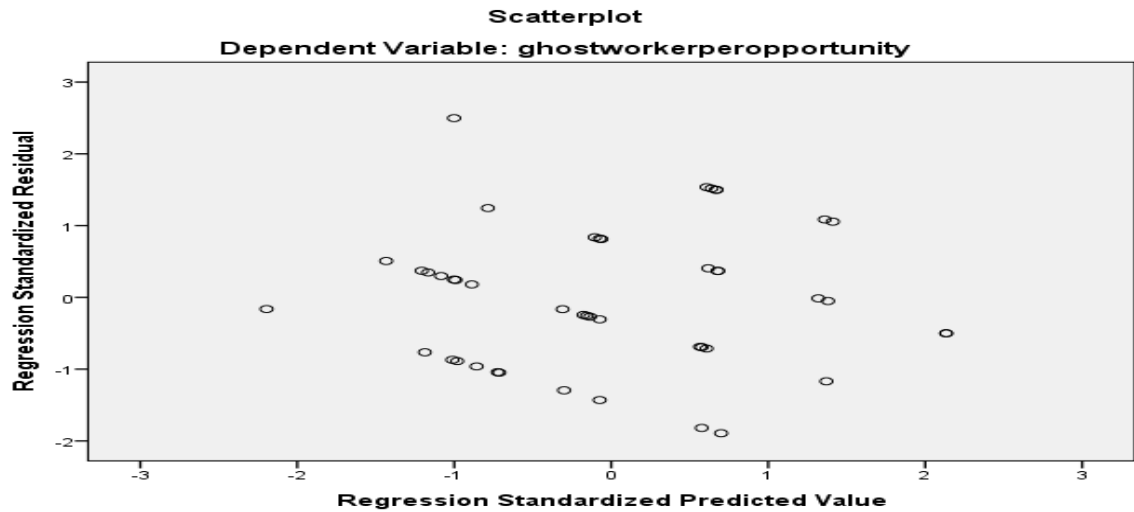
Figure 8. Scatter plot showing the relationship between standardized residuals and standardized predicted values for ghost workers per opportunities
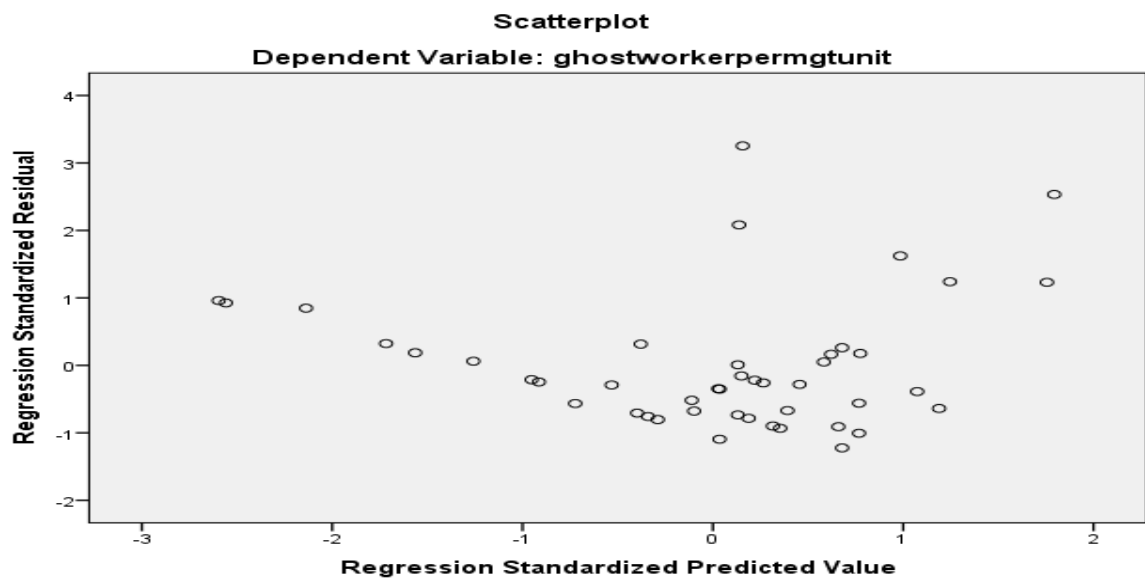
Figure 9. Scatter plot showing the relationship between standardized residuals and standardized predicted values for ghost workers per management units.

Homogeneity of variance.

Levene's test was conducted to determine the homogeneity of variance in the variables. The levene's test for the number of opportunities using ghost workers per management unit as a factor showed no significant difference as $F(4, 40) = .767$, $p = .553$. Another levene's test for the number of opportunities using ghost workers per opportunity as a factor also showed no significant difference as, $F(4, 40) = 2.052$, $p = .105$. The levene's test of $p > .05$ means that the test is not significant and therefore satisfied the condition for homogeneity.

Another Levene's Test was conducted for management units per opportunities using ghost worker per management unit as a factor which showed a significant difference of $F(32, 12) = 13.296$, $p = .000$. The final Levene's Test was conducted for management unit per ghost workers using ghost workers per opportunity as a factor and the results was significant, $F(23, 21) = 2.152$, $p = .041$. The levene's test of $p < .05$ means the test is significant and therefore violates the condition for homogeneity.

Further test for homogeneity of variance was conducted using the scatter plots. According to Filed (2009) "if the dots in a scatter plot seems to have a pattern and are more spread out at some point on the plot than others then this probably reflects violations of both homogeneity of variance and linearity" (p. 251). The scatter plot in (Figures 8 and 9), however, did not show any pattern and therefore satisfied the assumption of homogeneity of variance.

Multicollinearity

Multicollinearity was examined between the number of opportunities and management units per opportunities using the variance inflation factor (VIF). The results of the multicollinearity for the number of opportunities was, VIF= 1.268 and that of management units per opportunities was, VIF= 1.268. The tolerant statistics for the predictor variables were also.789 each for the number of opportunities and management units per opportunities. Since the tolerance values were greater than 0.1 and the VIF values less than 10 it implies that multicollinearity do not exist between the variables (table 11).

Multicollinearity was also examined between the number of opportunities and management units per ghost workers. The results of the multicollinearity for the number of opportunities was, VIF= 1.330 and that of management units per ghost workers was, VIF= 1.330 (Table 11). The tolerant statistics was .789 each for the number of opportunities and management units per ghost workers. No perfect collinearity was observed between the variables as the VIF values were less than 10 and the tolerance statistics were also more than 0.1 (Field, 2009). This means that multicollinearity do not exist between the variables.

Table 11

Table showing multicollinearity between the variables

Models		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	number of opportunities management units per	2.606	0.957	0.349	2.724	0.009	0.789	1.268
	opportunities	-0.115	0.034	-0.439	-3.422	0.001	0.789	1.268
2	number of opportunities management units per ghost	0.378	0.129	0.444	2.923	0.006	0.752	1.33
	workers	-0.005	0.006	-0.132	-0.867	0.391	0.752	1.33

Normality of distribution

The kolmogorov-smirnov (K-S) and Shapiro-Wilks were used to test the normality

of the variable data. The Kolmogorov-Smirnov (K-S) and Shapiro-Wilks tests were used

for the normality test because they have more power to detect deviations from normality

(Field, 2009). Kolmogorov-smirnov (K-S) and Shapiro-Wilks in Table 3 show significant

values of $p < 0.001$ for all the variables. This means that the distribution of the variable

data were significantly different from normal distribution and therefore not normal.

Multiple linear regression analysis

The multiple linear regression analysis was conducted using the default enter

(forced entry) procedure in the SPSS analytical software to determine how much each

independent variable contributed to the variations in the level of ghost workers. The

analysis also determined how much the number of opportunities and the size of

management units collectively contributed to the variations in the level of ghost workers.

The results of the regression analysis are presented in this and chapter 5.

Table 12

Table showing coefficients and standard errors of variables

Variables	ghost workers per management unit			Ghost workers per opportunities		
	Beta (*β*)	S.E	t-ratio	Beta (*β*)	S.E	t- ratio
Constant	8.837	3.19	2.77	1.570	.401	3.913
number of opportunities	2.606	.957	2.724*	.378	.129	2.923*
management units per opportunities	-.115	.034	-3.422**			
management units per ghost workers				-.005	.006	-.867***
R^2		.455			.272	
N		45			45	

*p <.05
**p <.01
***p>0.5

Multiple regression analysis 1

Table 12 represents regression results for two regression models. In the first regression model, the level of ghost workers and the size of management units were measured using the staff strength of management units and the number of opportunities for ghost workers respectively as factors (same measurement was used for the correlational analysis in Table 7).

In the second regression model, the level of ghost workers and staff strength of management units were measured using the number of opportunities for ghost workers and the number of ghost workers respectively as factors (same measurement was used for the co relational analysis in Table 8). The results of the multiple linear regression analysis are presented below.

Weights of the independent variables in the first regression model

The results obtained from the regression analysis using the beta (β) weight shows that for each unit increase in the number of opportunities for ghost workers there was a 2.606 increase in the level of ghost workers in government agencies. The results also show that for each unit increase in the management units per opportunities, there was a reduction of -.115 in the number of ghost workers.

Statistical significance of the independent variables and the overall fit of the regression model

The R^2 value in a multiple regression model represents the coefficient of multiple determination which defines the proportion of the variations in the dependent variable that the independent variables explain (Filed, 2009). The R^2 value of .455 in the regression model means that the number of opportunities and the size of management units together explained 45.5% of variations in the level of ghost workers. The R^2 value of 45.5% also means that the study could not explain 54.5 % of the variations in the dependent variable. This implies that other independent variables not included in the regression model accounted for 54.5 % of the variations in the dependent variable and therefore could be the subject matter for future studies (Ragan, 2011).

The regression model shows that the number of opportunities and management units per opportunities explained a significant amount of the variance in the level of ghost workers, $R^2 = .455$, $F (2, 42) = 17.56$, $p < .01$ and therefore the regression model fits the data. The model also shows that the number of opportunities significantly predicted the level of ghost workers $\beta = 2.606$, $t (42) = 2.724$, $p < .01$. Also, the management units per

opportunities significantly predicted the level of ghost workers, β =-0.115, t (42) = -

3.422, $p < .01$.

Multiple regression analysis 2

      Weights of the independent variables in the second regression model

      The regression analysis using the beta (β) weight shows that for each unit increase

in the number of opportunities there would be an increase of .378 in the level of ghost

workers in the government agencies. The results also show that for each unit increase in

the management units per ghost workers, there was a -.005 reduction in the level of ghost

workers.

      Statistical significance of the independence variables and overall fit of the

model

      The R^2 value of .272 in the regression model implies that 27.2% of the variations

in the level of ghost workers could be explained collectively by the number of

opportunities and the management units per ghost workers. The R^2 value of 27.2 % means

that the study could not explain 72.8% of the variations in the dependent variable. This

means that other independent variables not included in the regression model accounted

for 72.8 % of the variations in the dependent variable and could be the subject matter for

future studies (Ragan, 2011).

      The regression model shows that the number of opportunities and management

units per opportunities explained a significant amount of the variance in the level of ghost

workers, $R^2 = .272$, F (2, 42) = 7.861, $p < .01$ and therefore the regression model fits the

data. The regression model further shows that the number of opportunities significantly

predicted the level of ghost workers, β =.378, *(t* (42) = 2.923, *p*<.01). The analysis, however, shows that management units per ghost workers did not significantly predict the level of level of ghost workers, β=.005, (*t* (42) = -.867, *p* >.05).

In the first regression model, management units per opportunities contributed significantly to the variances in the level of ghost workers, β =-.115, *t* (42) = -3.422, *p* < .05. However, the second regression model shows that management units per ghost workers did not contribute significantly to the level of ghost workers, β =.005, *t* (42) = -.867, *p* >.05. The differences in the significant values of management units per opportunities and management units per ghost workers could be the results of different factors used in measuring the size of management units. Measuring the size of management units could thus be considered in future studies to standardize its use.

Since management units per ghost workers did not significantly explain the variances in the level of ghost worker, the regression equation was re run for only the number of opportunities. The results of the regression analysis are presented below.

Table 13

Table showing simple linear regression of variables

variables	ghost workers per number of opportunities		
	Beta	S.E	t- ratio
constant	1.327	.286	4.64
number of opportunities	.434	.112	3.881*
R^2		.259	
N		45	

*p <.05

Weight of the independent variable in the linear regression model

Simple linear regression equation was used to measure the amount of variations in the level of ghost workers which was caused by the number of opportunities. The linear regression model shows that for each unit increase in the number of opportunities, there was an increase of .434 in the level of ghost workers (Table 13).

Statistical significance of the independence variables and overall fit of the model

The R^2 value of .259 in the regression model means that 25.9% of the variations in the level of ghost workers could be explained by the number of opportunities. This means that the study could not explain 74.1% of the variations in the dependent variable. Future studies are recommended to determine other variables that may account for the remaining 74.1% of the variations in the dependent variables.

The simple linear regression model shows that the number of opportunities explained a significant portion of the variances in the level of ghost workers, $R^2 =. 259$, $F (1, 43) = 15.059$, $p < .01$ and therefore fits the regression model. The number of opportunities was thus considered the best variable in explaining the variations in the level of ghost workers, $\beta =-.434$, $t (43) = 3.881$, $p < .01$.

Conclusion on the multiple regression analysis

The regression model shows that the number of opportunities and management units per opportunities significantly explained 45.5% of the variations in the level of ghost workers. The study also shows that the number of opportunities and management units per ghost workers explained 27.2% of the variations in the level of ghost workers. However, management units per ghost workers did not significantly contribute to the

variations in the level of ghost workers, $\beta = .005$, $t(42) = -.867$, $p > .05$. Based on the insignificance value of the number of the management units per ghost workers the regression equation was re run for the number of opportunities and the results shows that number of opportunities contributed 25.9% of the variations in the level of ghost workers. The 54.5 % and 74.1 % respectively of factors not included in the regression models in this study should be considered for future studies (Ragan, 2011).

Analysis of research questions and hypotheses

The research questions that grounded this study were

RQ1: How do the number of ghost workers in government agencies relate to the size of government payroll in Ghana?

RQ2: How do the number of opportunities for ghost workers in government agencies relate to the extent of ghost workers on government payroll in Ghana?

Hypothesis

$H01$ (a): The number of ghost workers in government agencies is not significantly related to the size of the government payroll in Ghana.

$Ha1$ (a): The number of ghost workers in government agencies is positively related to the size of the government payroll in Ghana.

$H01$ (b): The number of opportunities for ghost workers is not significantly related to the size of ghost workers in government agencies in Ghana.

$Ha1$ (b): The number of opportunities for ghost workers is positively related to the size of ghost workers in government agencies in Ghana.

The study used the Spearman's Correlation coefficient to answer the research questions and also used the p (probability) values to determine the level of confidence to place on the correlation coefficient to either accept the alternate hypothesis or reject the null hypothesis. The analysis of the research questions and the conclusions drawn on the hypotheses are discussed in the succeeding paragraphs.

Research question 1 and related hypotheses

The research question 1: was how do the number of ghost workers in government agencies relate to the size of government payroll in Ghana? The Spearman's correlation coefficient using the new measurements of variables showed a negative relationship between the staff strength of management units and the level of ghost workers on the payroll (r_s =-.823, n=45, p = .000) and (r_s =-.401, n=45, p = .006) (see Tables 7 and 8) respectively. The significant values of p<.05 of variables under both measurements also means that there is a strong evidence to support the relationship between the variables and therefore the null hypothesis which stated that the number of ghost workers in government agencies is not significantly related to the size of the government payroll in Ghana was rejected. The alternate hypothesis that the number of ghost workers in government agencies is positively related to the size of the government payroll in Ghana was thus accepted.

Research question 2 and related hypotheses

The research question 2: was how the number of opportunities for ghost workers in government agencies relates to the size of ghost workers on the government payroll in Ghana? The Spearman's correlation coefficient using the new measurements of the

variables showed a positive relationships between opportunities for ghost workers and the level of ghost workers on the payroll ($r_s =$. 649, n=45, $p = .000$) and ($r_s =$. 526, n=45, $p =$ .000) (see Tables 7 and 8). The significant values of $p<.05$ for both measurements also means that there is a strong evidence to support the relationship between the variables and therefore the null hypothesis that the number of opportunities for ghost workers is not significantly related to the size of ghost workers in government agencies in Ghana was rejected and the alternate hypothesis that the number of opportunities for ghost workers is positively related to the size of ghost workers in government agencies in Ghana was accepted.

Additional findings

Additional findings discovered related to the relationship between opportunities for ghost workers and the staff strength of management units. The Spearman's correlation coefficient using the new measurements of the variables showed a negative relationship between opportunity for ghost workers and the staff strength of management units ($r_s =$-. 425, n=45, $p = .004$) and ($r_s =$-. 644, n=45, $p = .000$) (see Tables 7 and 8). The significant values of $p<.05$ under both measurements also showed a strong evidence to support the relationship between the number of opportunity for ghost workers and the staff strength of management units.

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Summary and transition

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This chapter presented the analysis of data and discussions of the research questions and hypothesis. Based on the significant values obtained from the Spearman's correlation coefficient, the following conclusions were drawn on the hypothesis. (a) the

null hypothesis that the number of ghost workers in government agencies is not

significantly related to the size of the government payroll in Ghana was rejected and the

alternate hypothesis that the number of ghost workers in government agencies is

positively related to the size of the government payroll in Ghana was accepted, (b) the

null hypothesis that the number of opportunities for ghost workers is not significantly

related to the size of ghost workers in government agencies in Ghana was rejected and

the alternate hypothesis that the number of opportunities for ghost workers is positively

related to the size of ghost workers in government agencies in Ghana was accepted.

Additional findings indicated that there was a negative relationship between

opportunities for ghost workers and the staff strength of management units. The

significant value of $p<.05$ means there is a strong evidence to support the relationship

between opportunities for ghost workers and the staff strength of management units.

Multiple regression analysis was also used to assess the relationship between the

variables and also determine the extent to which the regression model could be used to

draw conclusions about the study sample. The results of the regression analysis show that

the number of opportunities and management units per opportunities significantly

explained 45.5% of the variations in the level of ghost workers. Similarly, the number of

opportunities and management units per ghost workers also explain 27.2% of the

variations in the level of ghost workers. The remaining variations in the level of ghost

workers of 54.5 % and 74.1 % respectively of factors not included in the regression

model should be considered for future studies (Ragan, 2011). The next chapter focused

on the interpretation of finding, implications for social change, and recommendations for

further research and practice.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Studies on payroll fraud in Ghana did not receive the desired attention from scholars despite the salary leakages caused by ghost workers on the government payroll (Reinikka & Svensson, 2001).The purpose of this quantitative study was to examine the effects of ghost workers on the payroll of government in Ghana. The variables under study were the number of opportunities for ghost workers, the staff strength of management units, and the number of ghost workers on the government payroll. Opportunities for ghost workers are factors that provide the avenue for the creation of ghost workers on the government payroll. These opportunities include deaths, retirements, resignations, vacation of posts, or dismissals from the public service (World Bank, 2001). The staff strength of a management unit represents the number of employees in a management unit. The number of ghost workers on the payrolls, however, represents the number of employees who continue to receive salary even though their employment contracts have been terminated. In this study, I addressed the following research questions: (a) How do the number of ghost workers in government agencies relate to the size of government payroll in Ghana? and (b) How do the number of opportunities for ghost workers in government agencies relate to the size of ghost workers on government payroll in Ghana?

I used descriptive statistics and correlation and regression analysis to describe and assess the relationship between the variables under study. In the findings from the correlational analysis, I found a negative relationship between the size of management

units and the level of ghost workers on the payroll. The negative relationship between the size of management units and the level of ghost workers was also noted in the regression analysis as management units per opportunities and management units per ghost workers related negatively with the level of ghost workers. However, in both the correlational and the regression analysis, I found a positive relationship between the number of opportunities for ghost workers and the level of ghost workers on the payroll. I also made an additional finding in respect of the relationship between opportunities for ghost workers and the staff strength of management units. I found a negative relationship between opportunities for ghost workers and the staff strength of management units.

This study has social change implications for Ghana because it could help policy makers to address the weaknesses in the payroll system and minimize ghost workers in the public service and save public funds for national development. In this section, I focus on the interpretation of the research results.

Interpretation of the Findings

The interpretation of findings was based on the data analysis in Chapter 4 and also the literature review in Chapter 2. I found a positive relationship between opportunities for ghost workers and the level of ghost workers on the payroll (Tables 7 and 8). As the opportunities for ghost workers increase in the public service, the number of ghost workers also increases on the payroll. This finding supports the fraud triangle theory, which states that weak internal control systems in organizations create the opportunity for fraud to occur (Dorminey et al., 2012). Furthermore, in the public service of Ghana, poor records management systems contribute to the internal control weaknesses in the payroll

administration and provide the opportunity for the creation of ghost names on the payroll (International Records Management Trust, 2008).

The next finding was the relationship between the staff strength of management units and the level of ghost workers on the payroll. In the Spearman's correlation coefficient, I found a negative relationship between the staff strength of management units and the level of ghost workers on the payroll (see Tables 7 and 8). The negative correlation between these variables means that as the size of management units increases, the number of ghost workers decreases. This finding did not support the principles in the fraud triangle, which states that as the size of an organization increase, more opportunities for fraud are created due to the size and complexities of its operations (Hogan et al., 2008).

Another finding was a correlation between the staff strength of management units and the number of opportunities for ghost workers. In the Spearman's correlation coefficient, I found a negative relationship between the staff strength of management units and the number of opportunities for ghost workers on the payroll (see Tables 5 and 6). As the number of employees in a management unit increases, the number of opportunities for ghost workers decreases. This finding did not support the principles in the fraud triangle, which states that as the size of an organization increases, the number of opportunities for fraud also increases due to internal control weaknesses (Hogan et al., 2008).

There was a positive relationship between opportunities for ghost workers and the level of ghost workers in the payroll in Ghana. In the analysis, however, I found a

negative relationship between opportunities for ghost workers and the staff strength of management units. Also, there was a negative relationship between the staff strength of management units and the level of ghost workers on the payroll.

Limitations of the Study

The study was limited to government agencies on the mechanized payroll at the CAGD. Other public agencies that manage their own payrolls were excluded from the study. Additionally, due to **a** lack of access to the sampling frame of management units in the public service in Ghana, I used a nonprobability sampling method to select management units for the study**.** As a result of the nonprobability sampling, the results of the study could not be generalized to the wider population of management units in the public service of Ghana. Further studies with access to the full list of all management units in the public service in Ghana with a wider sample size are, therefore, recommended.

Finally, the study was limited to the relationship between opportunities for ghost workers and size of management units with the level of ghost workers in government agencies. However, due to cost and time, I did not examine the relationship between opportunities for ghost workers and the size of management units with the cost of the payroll of management units. In view of this limitation, it is recommended that further studies on the relationship between opportunities for ghost workers and the size of management units with the cost of the payroll be considered as a subject for future research.

Implications for Social Change

Ghost workers "deprive citizens of quality of public services for which they have paid their taxes in order to receive"(Gee et al., 2010, p. 4). Salaries paid to the ghost workers could be used to provide services such as education, health care, and other social services (Thurston, 2012, p. 3). This study has social change implications for the government of Ghana, tax payers, and citizens at large. This study has the benefit of providing insight into the weaknesses of the payroll system which could help policy makers to address the challenges of ghost workers and save public funds for national development (Thurston, 2012). If ghost names are eliminated, more citizens could be employed in the public service and thereby minimize the unemployment and poverty levels in the country. This study will also be published in peer-reviewed journals and will be available for scholars, students, fraud examiners, and policy makers to use for further research to advance knowledge in payroll fraud.

Finally, the results of this study will be shared with management of the Controller and Accountant General's Department and other government agencies to assist them with improving the payroll delivery and saving public funds for national development.

Recommendations for Action

The government of Ghana has implemented measures to address the challenges of ghost workers on its payroll, but the problem continues to persist (World Bank, 1999). To minimize fraud, it is essential to understand the nature and scale of fraud and develop measures to eliminate it. Gee et al. (2010). The outcomes of this study will enlighten

payroll managers about the weaknesses in the payroll processes that create opportunities

for ghost workers on the government payroll.

Payroll managers need to break down the size of the management units into

manageable units to facilitate monitory and supervision of employees on the payroll

(Hogan et al., 2008). Public officials and laws makers should amend the financial laws

that regulate the management of the government payroll, the Financial Administration

Act 2003 (Act 654), and the Financial Administration Regulation 2004 (LI 1802) by

giving authority to the CAGD to break down the payrolls into smaller units to ensure

effective monitoring and supervision of employees on the payroll.

Recommendations for Further Study

This study was cross-sectional because data was collected through a survey at one

point in time and the relationships between the variables determined (Lavrakas, 2008).

Future studies could be longitudinal where data would be collected over a period of time

to improve understanding of the relationship between the variables (World Bank, 2001).

Additionally, future studies could exploit regression models in the data analysis to be able

to predict the level of opportunities and other weaknesses in the payroll system. The

findings from this study were exciting and therefore further studies with access to the full

list of all management units in the public service in Ghana is recommended as the next

step. Finally, there could be further research to establish how long separated staff remains

on the payroll before they are deleted from the payroll system. How long separated staff

were kept on a payroll before deletion is an essential information because "analyzing the

duration of frauds reported can provide insights into areas of opportunity for

organizations to increase their fraud detection effectiveness" (Association of Certified

Fraud Examiners, 2012, p. 13).Finally, the regression models in tables 12 and 13 revealed

that the independent variables in the study could explain 45.5% and 27.2% respectively

of the variations in the level of ghost workers. The remaining variations in the level of

ghost workers of 54.5 % and 74.1 % respectively of factors not included in the regression

model should be considered for future studies.

Conclusion

This quantitative study revealed that there was a positive relationship between

opportunities for ghost workers and the level of ghost workers. However, the study shows

that there was a negative relationship between the size of management units and the level

of ghost workers. An additional finding was that there was a negative relationship

between the size of management units and the number of opportunities for ghost workers.

Implications for social change include exposing policy makers on how opportunities for

ghost workers and the size of management units relate to the level of ghost workers,

information required for planning to eliminate ghost workers and save public funds for

national development.

References

Ablo, E., & Reinikka, R. (1998). *Do budgets really matter? Evidence from public spending on education and health in Uganda*. Policy Research. Working Paper No.1926, World Bank, Washington, DC.

Ahram, A. I. (2013). Concepts and measurement in multi method research. *Political Research Quarterly*, *66*(2), 280-291. doi:10.1177/1065912911427453

Akinwale, A. A. (2011). *Labor reform and industrial conflicts mismanagement in Nigeria. Emerging trends in employment relations in Africa: National and international*. Paper Prepared for Presentation at The Sixth IIRA African Regional Congress of Industrial Relations: Perspective Lagos, Nigeria. Retrieved From:

http://www.ilo.int/public/english/iira/documents/congresses/regional/lagos2011/5t hsession/session5b/regorms-conflict.pdf

Albrecht, C., Albrecht, C., Landau, S., & Malagueno, R.(2008). Financial statement fraud: Learn from the mistakes of the US or follow in the footsteps of its errors. *Internal Auditing*, *23*(2), 30-37. Retrieved from: http://repository.essex.ac.uk/id/eprint/4761

Amoako-Tuffour, J. (2002). *Ghost names, shadow workers, and the public sector wage bill. Occasional Papers*, 34, 1-22. Accra, Ghana: Institute of Economic Affairs.

Amin, S., & Chaudhury, N. (2008). An introduction to methodologies for measuring

service delivery in education. *Being?* Working Paper 4248. 67-110. doi:

10.1596/978-0-8213-7185-5

Andy, P. (2005). *Discovering statistics using SPSS (*3ʳᵈ ed.). London, England. Sage

publications.

Angelucci, C., & Russo, A. (2011). Moral hazard and collusion in hierarchies. *Mimeo*.

Retrieved from

http://www.webmeets.com/files/papers/earie/2012/469/MHCH.pdf

Association of Certified Fraud Examiners. (2006). Report to the nation on Occupational

Fraud and Abuse. *Global fraud report*,1-64. Retrieved from:

http://www.acfe.com/uploadedFiles/ACFE_Website/Content/documents/2006-

rttn.pdf.Association of Fraud Examiners. (2011).Ghost employees' frauds: Payroll frauds.

Retrieved from

ttp://brisbaneacfe.org/library/occupational-fraud/ghost-employees-frauds-

payroll-frauds/

Association of Certified Fraud Examiners. (2012). Report to the Nation on Occupational

Fraud   and Abuse. *Global fraud report*, 1-74. Retrieved from:

https://www.acfe.com/uploadedFiles/ACFE_Website/Content/rttn/2012-report-to-

nations.pdf

Audit Service Act (2000), Act 584. Republic of Ghana.

Awortwi, N., & Vondee, J. (2007). Drifting towards convergence? Motivation and

performance management in state and private companies in the provision of

telecom services in Ghana. *Public Administration and Development*, *27*(4), 261-

272. doi: 10.1002/pad.458 I stopped reviewing here. Please go through the rest of your references and look for the patterns I pointed out to you.

Bell, B. A., DiStefano, C., & Morgan, G. B. (2010). A Primer on Disseminating Applied Quantitative Research. *Journal of Early Intervention*, *32*(5), 370-383. doi: 10.1177/1053815110389461

Breitmeier, H., Underdal, A., & Young, O. R. (2011). The Effectiveness of International Environmental Regimes: Comparing and Contrasting Findings from Quantitative Research1. *International Studies Review*, *13*(4), 579-605. doi:10.1111/j.1468-2486.2011.01045.

Brennan, N. M., & McGrath, M. (2007). Financial statement fraud: Some lessons from US and European case studies. *Australian Accounting Review*, *17*(42), 49-61. doi.org/10.1111/j.1835-2561.2007.tb00443.x

Brody, R. G., Melendy, S. R., & Perri, F. S. (2012). Commentary from the American Accounting Association's 2011 annual meeting panel on emerging issues in fraud research. *Accounting Horizons*, *26*(3), 513-31.doi:http://dx.doi.org/10.2308/acch-50175

Buchholz, A. K. (2012). SAS 99: Deconstructing the fraud triangle and some classroom suggestions. *Journal of Leadership, Accountability and Ethics*, *9*(2), 109-118. Miami, Florida: North American Business Press

Bucy, P. H., Formby, E. P., Raspanti, M. S., & Rooney, K. E. (2008). Why Do They Do It: The Motives, Mores, and Character of White Collar Criminals. *John's L. Rev.*, *82 (* 401). p. 401-571.Retrieved from:

http://heinonline.org/HOL/LandingPage?handle=hein.journals/stjohn82&div=16
&id=&page=

Carcello, J. V., & Hermanson, D. R. (2008). Fraudulent Financial Reporting: How Do
We Close the Knowledge Gap? *The Institute for Fraud Prevention, research
study. p. 2-21. Retrieved from:* http://www.theifp.org/research-grants/IFP-
Whitepaper-1.pdf

Certified Practicing Accountants, Australia (2011).Employee fraud: A guide to
reducing the risk of employee fraud and what to do after the fraud is detected.
CPA Australia .p. 2-14. Southbank, Australia: Author. Retrieved from:
www.cpaaustralia.com.au

Chevis, J., & Barrum, B. (2012). Applied forensic accounting–Experiences from the
Papua New Guinea Financial Intelligence Unit. *National Forensic Accounting
Teaching and Research Symposium 2012- (Re) defining the Forensic
Accountant, merging practice, research and education*: Retried from
http://business.uow.edu.au/content/groups/public/@web/@commerce/@econ/doc
uments/doc/uow128340.pdf

Christopher, J., Schertzer, C. B., & Schertzer, S. M. (2013). Accounting Faculty
Internships A Descriptive Study. *SAGE Open*, *3*(2), p. 1-18,
DIO:2158244013490701.

Cieslewicz, J. K. (2012). The Fraud Model in International Contexts: A Call to Include
Societal-level Influences in the Model. *Journal of Forensic & Investigative
Accounting*, *4*(1), p. 214-254. Baton Rouge, Louisiana , *E.J. Ourso School of*

Business and the Department of Accounting, Louisiana State University

Cohen, J. (1988). *Statistical power analysis for the behavior sciences* (2nd ed.).

Mahwah,NJ: Lawrence Erlbaum

Cohen, J., Ding, Y., Lesage, C., & Stolowy, H. (2013). Expectation Gap and Corporate

Fraud: Is Public Opinion Reconcilable with Auditors' Duties?. In *CAAA Annual*

Conference. Retried from https://research.mbs.ac.uk/accounting-

finance/Portals/0/docs/2010/ExpectationGapandCorporateFraud.pdf

Controller and Accountant- General's Department (2012). Report and Financial

Statements on the Public Accounts on the Consolidated Fund of the Republic of

Ghana for the year ended December 31, 2012. p. 1-18. Accra, Ghana: Advent

Press. Retrieved from: www.cagd.gov.gh

Dada, S. O., Owolabi Sunday, A., & Okwu, A. T. (2013). Forensic Accounting a

Panacea to Alleviation of Fraudulent Practices in Nigeria. *International Journal*

of Business Management & Economic Research, *4*(5), p. 787-792. Retrieved

from: http://ijbmer.com/docs/volumes/vol4issue5/ijbmer2013040503.pdf

Dehn, J., Reinikka, R. &Svensson, J. (2003) 'Survey tools for Assessing Performance in

Service Delivery', Public Services Research Group, World Bank, Washington

D.C.

Dorminey, J., Fleming, A., Kranacher, M., and Riley, R. (2010). "Beyond the Fraud

Triangle: Enhancing the Deterrence of Economic Crimes." *The CPA Journal,*

80(7), p. 17-23.New York, NY: New York Society of CPAs

Dorminey, J., Fleming, A. S., Kranacher, M. J., & Riley, R. A. (2012). The evolution of fraud theory. *Issues in Accounting Education*, *27*(2), p. 555-579. doi.org/10.2308/iace-50131

Dovlo, D. (2005). Wastage in the health workforce: some perspectives from African countries. *Human Resources for Health*, *3*(1), p. 1-9.doi:10.1186/1478-4491-3-6

Dumitru, C. G., Batca, V., & Raileanu, S. (2011). The Fraud in the Health Systems-A Financial of Ethic Problem?. R*evista de management comparat international/review of international comparative management*, *12*(6), 319-325. Retrieved from: http://ideas.repec.org/a/rom/rmcimn/v12y2011i6p319-325.html

Egbide, B. C., Sola, A. K., & Francis, I. (2014). The Impact of Budget Reforms on the Quality of Budget Management in Nigeria. *Journal of Accounting and Auditing Research & Practice*, *2014*, b1-15. Doi: 10.1186/s12872-015-0002-8

Eme, O. I., & Andrew, V. O. (2013). Civil Service and Cost of Governance in Nigeria. *International Journal of Accounting Research,1(2),p. 27-48.*Retrived from: http://www.arabianjbmr.com/pdfs/AC_VOL_1_2/4.pdf

Engberg-Pedersen et al. (2005). "Public Expenditure Tracking Surveys: A Stocktaking." Draft Report. Washington, DC: World Bank. Mimeo

Ferrinho et al., 2004. Pilfering for survival: how health workers use access to drugs as a coping strategy. *Human Resources for Health*, *2*(4), 1-6. DOI: 10.1186/1478-4491-2-4

Field, A., & Hole, G. J. (2002). Parametric Statistics. *How to design and report*

experiments. p. 159-172. London. Sage publications

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). p. 31-60.London, England: SAGE Publications

Feild, L., Pruchno, R. A., Bewley, J., Lemay, E. P., & Levinsky, N. G. (2006). Using Probability vs. Nonprobability Sampling to Identify Hard-to-Access Participants for Health-Related Research Costs and Contrasts. *Journal of Aging and Health*, *18*(4), 565-583. doi: 10.1177/0898264306291420

Financial Administration Regulation, 2004 (LI 1802), Republic of Ghana

Fink, H., & Hussmann, K. (2013). Addressing corruption through sector approaches: Exploring lessons from the Moroccan anticorruption strategy for the health sector. *U4 Practice Insight*, *2013*(2). Retrieved from: http://www.cmi.no/publications/file/4786-addressing-corruption-through-sector-approaches.pdf

Fitzsimons, V. G. (2009). A troubled relationship: corruption and reform of the public sector in development. *Journal of Management Development*, *28*(6), 513-521. DOI:10.1108/02621710910959675

Frampton, T. W. (2013). Predisposition and Positivism: The Forgotten Foundations of the Entrapment Doctrine. *The Journal of Criminal Law & Criminology*, *103*(1). p. 1-34. doi.org/10.2139/ssrn.2127646

Frankfort-Nachmias, C. & Nachmias, D. (2008). Design and Structure of Research. *Research methods in the social sciences.* (7th ed.), p. 138-158.New York, NY: Worth Publishers.

Gagnon-Bartsch, J., Jacob, L., & Speed, T. P. (2013). *Removing unwanted variation from high dimensional data with negative controls*. Technical Report 820, Department of Statistics. University of California, Berkeley. California.

Gauthier, B., & Wane, W. (2009). Leakage of Public Resources in the Health Sector: An Empirical Investigation of Chad†. *Journal of African Economies*, *18*(1), 52-83. doi: 10.1093/jae/ejn011

Gbegi, D,O,& Okoye, E.I (2013). An evaluation of the effect of fraud and related financial crimes on the Nigerian economy. K*uwait chapter of Arabian Journal of Business and Management Review,*2(7),p. 81-91. Retrieved from: http://www.arabianjbmr.com/pdfs/KD_VOL_2_7/9.pdf

Gee, J., Button, Mark and Brooks, G. (2009). The financial cost of fraud: what data from around the world shows. Working Paper. United Kingdom, Macintyre Hudson: Milton Keynes.

Gee, J., Button, Mark and Brooks, G. (2010). The financial cost of healthcare fraud: What data from around the world shows. Working Paper. United Kingdom, Macintyre Hudson: Milton Keynes.

Gee, J., Button, Mark and Brooks, Graham (2010) .The financial cost of UK public sector fraud: A less painful way to reduce public expenditure. Working Paper. Macintyre Hudson: Milton Keynes.

Gelb, A., & Clark, J. (2013). Identification for Development: The Biometrics Revolution. *Center for Global Development, Working Paper 315.p. 34-81.Washington DC*. Center for Global Development.

Ghana Audit Service (2007).Auditor-General's Report on the Public Accounts of Ghana (Consolidated Fund) for the year ended 31st December 2007, p. 56-141, Accra, Ghana: Advent Press.

Ghana Audit Service (2008).Auditor-General's Report on the Public Accounts of Ghana (Consolidated Fund) for the year ended 31st December 2008, p. 5-41, Accra, Ghana: Advent Press.

Ghana Audit Service (2011).Auditor-General's Report on the Public Accounts of Ghana (Consolidated Fund) for the year ended 31st December 2011, p. 11-243, Accra, Ghana: Advent Press.

Gilmore, H. (2011). This Is Not A Symposium On How To Commit Fraud, But If It Were... *Michigan State Journal of Business & Securities Law*, *11*(2), 199-223. Retrieved from: http://works.bepress.com/harvey_gilmore/12

Gottschalk, P. (2013). White-Collar Criminals in Modern Management. *Modern Management Science & Engineering*, *1*(1), p1-12. doi:hdl.handle.net/11250/93822

Gurkan, A., Kaiser, K., & Voorbraak, D. (2009). Implementing Public Expenditure Surveys for Results: Lessons from a Decade of Global Experience. PREM Notes. No. 52820. p. 2-14. Washington D.C: The World Bank

Hauke, J., & Kossowski, T. (2011). Comparison of values of Pearson's and Spearman's correlation coefficients on the same sets of data. *Quaestiones geographicae*, *30*(2), 87-93, DOI: 10.2478/v10117-011-0021-1

Hendriks, C. J. (2013). Integrated Financial Management Information Systems:

guidelines for effective implementation by the public sector of South Africa: original research. *South African Journal of Information Management*, *15*(1), 1-9. doi: 10.4102/sajim.v14i1.529

Hogan, C. E., Rezaee, Z., Riley, R. A., & Velury, U. K. (2008). Financial statement fraud: Insights from the academic literature. *Auditing: A Journal of Practice & Theory*, *27*(2), p. 231-252.doi.org/10.2308/aud.2008.27.2.231

Hokanson, J. E. (2009). Basic Biostatistics for Geneticists and Epidemiologists: A Practical Approach: By Robert C. Elston and William D. Johnson. *American Journal of Epidemiology*, *170*(1), 130. doi:10.1093/aje/kwp106

Hossain, M. I. (2013). Measuring Effectiveness of Public Expenditures in Bangladesh: A Survey Based Case Study in the Education Sector . *Ritsumeikan Asia PacificUniversity (RCAPS)*.Working Paper Series .RWP-13002. Japan, Oita Beppu: Ritsumeikan Asia Pacific University

Ian, L. (1998). Civil Service Reform in Africa: Mixed results after 10 years. *Finance & Development*, *35*(2), p. 42-45. *Working Paper 97/179. Washington DC: IMF*

Ibietan, J. (2013). Corruption and Public Accountability in the Nigerian Public Sector: Interrogating the Omission. *European Journal of Business and Management*, *5*(15), 41-48. Retrieved from: http://www.iiste.org/Journals/index.php/EJBM/article/view/6201

International Records Management Trust (2008). Fostering Trust and Transparency in Governance: Ghana Case Study. Investigating and Addressing the Requirements for Building Integrity in Public Sector Information Systems in the   ICT

Environment. *International Records Management Trust*. London, United Kingdom: Author.

Izedonmi, F., & Ibadin, P. O. (2012). Forensic Accounting and Financial Crimes: Adopting the Inference, Relevance and Logic Solution Approach. *African Research Review*, *6*(4), p. 125-139. doi.org/10.4314/afrrev.v6i4.9

Kassem, R., & Higson, A. (2012). The new fraud triangle model. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*, *3*(3), p. 191-195. Retrieved from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2121206

Kiggundu, M. (2009). Retrenchment programs in Sub-Saharan Africa-Lessons for demobilization. *Bonn International Center for Conversion (BICC).Paper 10 , p. 8-24.* Bonn, Germany: International Center for Conversion.

Kimberlin, C. L., & Winetrstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, *65*(23). DOI 10.2146/ajhp070364

Kiragu, D. N., Wanjau, K. L., Gekara, M., & Kanali, C. (2013). Effects of bank growth on occupational fraud risks in commercial banks in Kenya. *International Journal of Social Sciences and Entrepreneurship*, *1*(3), p. 469-480. Retrieved from: http://www.ijsse.org/articles/ijsse_v1_i3_469_480.pdf

Kwawukume, V & Mustapha, S. (2014, July, 17). Electronic payslip system to capture government workers. *Daily Graphic*. Retrieved from http://www.graphic.com.gh

Lavrakas, P. J. (2008). Encyclopedia of Survey Research Methods*: Sage Research Methods* (Vol.1), p. 1. doi: http://dx.doi.org/10.4135/9781412963947

Leech, N. L., Barrett, K. C., & Morgan, G. A. (2005). *SPSS for intermediate statistics: Use and interpretation*, P.289-443, London: UK. Psychology Press.

Lekubu, B. K. (2013, August). Issues of Corruption in South Africa's Municipalities. *Conference Proceedings. South African Association of Public Administration and Management (SAAPAM)*. Cape Town, South Africa: Author.

Levi, M., & Burrows, J. (2008). Measuring the Impact of Fraud in the UK A Conceptual and Empirical Journey. *British Journal of Criminology*, *48*(3), 293-318. doi: 10.1093/bjc/azn001

Lewis, M., & Pettersson, G. (2009). Governance in education: Raising performance. *World Bank Human Development Network Working Paper*. p. 1-60.Washington, DC: Social Science Electronic Publishing.

Lindelow, M. (2008). Tracking Public Money in the Health Sector in Mozambique. Are You *Being Served?, p.* 173.DOI: 10.1596/978-0-8213-7185-5

McCallum, N., & Tyler, V. (2001). International experience with civil service censuses and civil service databases. *International Records Management Trust*. London, United Kingdom: International Records Management Trust.

McCoy, et. al (2008). Salaries and incomes of health workers in sub-Saharan Africa. *The Lancet*, *371*(9613), p. 675-681. DOI: 10.1016/S0140-6736(08)60306-2

McKay, S. (2012). Social Policy Excellence - Peer Review or Metrics? Analyzing the 2008 Research Assessment Exercise in Social Work and Social Policy and Administration. *Social Policy & Administration*, *46*(5), 526-543. doi:10.1111/j.1467-9515.2011.00824.

Michalak, S. (2011). Motives of espionage against one's own country in the light of idiographic studies. *Polish Psychological Bulletin*, *42*(1), p.1-4. DOI: 10.2478/v10059-011-0001-2

Ministry of Finance (2009). Government to begin verification of potential ghosts. Press Release. Retrieved from:

http://www.mofep.gov.gh/sites/default/files/press_release/GHOST_NAMES.pdf

Ministry of Finance (2009). Public Education Sector Census/Headcount.   Retrieved from:http://www.mofep.gov.gh/sites/default/files/press_release/GHOST_NAMES .pdf

Ministry of Finance (2012).Budget Statement and Economic Policy of the Government of Ghana for the 2002 financial year presented to Parliament. Budget Speech, p. 38-46, Accra, Ghana: Advent Press

Nunberg, B. S., & Nellis, J. R. (1995). Civil service reform and the World Bank (Vol. 161). *World Bank Publications*. Washington, DC: World Bank.

Ojukwu, C. C. and Shopeju, J. O. (2010) "Elite Corruption and the Culture of Primitive Accumulation in 21st century Nigeria", *International Journal of Peace and Development Studies*, 1(2), p. 15-24. Retrieved from:

http://elawnigeria.com/articles/Elite%20Corruption%20and%20the%20Culture% 20of%20Primitive%20Accu.pdf

Olken, B. A., & Pande, R. (2012). Corruption in Developing Countries. *Annual Review of Economics.*, *4*(1), 479-509. DOI: 10.1146/annurev-economics-080511-110917

Grimes, D. A., & Schulz, K. F. (2002). Descriptive studies: what they can and cannot do. *The Lancet*, *359*(9301), 145-149. DOI: 10.1016/S0140-6736(02)07373-7

Olowu, D. (2010). Civil service pay reforms in Africa. *International Review of Administrative Sciences*, *76*(4), p. 632-652.Sage. DOI: 10.1177/0020852310381203

Onwuka, C. C, Okoh. C. I. and Eme, O. I. (2009) "Corruption in Nigeria: Nature, Forms and Challenges before Anti-Corruption Agencies", *Interdisciplinary Journal of Contemporary Research in Business.*1 (8), p. 114-132, Melbourne, Australia: Institute of Interdisciplinary Business Research.

Owusu, F. Y. (2012). Organizational culture and public sector reforms in a post–Washington consensus era: Lessons from Ghana's good reformers. *Progress in Development Studies*, *12*(2-3), 135-151. doi: 10.1177/146499341101200304

Patton, M. Q. (2002). Two decades of developments in qualitative inquiry a personal, experiential perspective. *Qualitative Social Work*, *1*(3), p. 261-283.Thousand Oaks,CA: Sage.DOI: 10.1177/1473325002001003636

Payne, C. R., & Wansink, B. (2011). Quantitative Approaches to Consumer Field Research. *Journal Of Marketing Theory & Practice*, *19*(4), 377-390. DOI:10.2753/MTP1069-6679190402

Pande, B. O. R. (2012). Lifting the curtain on corruption in developing countries.VOX. Retrievedfrom:http://www.hks.harvard.edu/fs/rpande/papers/media/Lifting%20the%20curtain.pdf

Rae, K., & Subramaniam, N. (2008). Quality of internal control procedures: Antecedents and moderating effect on organizational justice and employee fraud. *Managerial Auditing Journal, 23*(2), 104-124.DOI:10.1108/02686900810839820

Ragan, W. R. (2011). *Quantifying Occupational Stress Levels in Professional Pilots*. (Doctoral dissertation. Walden University, 2011).

Razafindrakoto, M., & Roubaud, F. (2010). Are international databases on corruption reliable? A comparison of expert opinion surveys and household surveys in sub-Saharan Africa. *World development*, (No. DT/2006/17),*38*(8), p. 1057-1069. DOI: 10.1016/j.worlddev.2010.02.004

Reinikka, R. (2001). Recovery in service delivery: Evidence from schools and health centers. In R. Reinikka, & P. Collier (Eds.), Uganda's recovery: The role of farms, firms, and government. World Bank Regional and Sectoral Studies. Washington, DC: World Bank

Reinikka, R. & Svenesson, J. 2001. Explaining leakage of public funds. WIDER Discussion Papers//World Institute for Development Economics (UNU-WIDER). (No. 2001/147).Washington D.C: The World Bank

Reinikka, R., & Smith, N. (2004). Public expenditure tracking surveys in education. *International Institute for Educational Planning*. p. 5-137. Retrieved from http://pria-academy.org/pluginfile.php/352/mod_resource/content/1/m3-1-PETS%20in%20Education%20Reinikka%20Smith.pdf

Reinikka, R., & Svensson, J. (2006). Using micro-surveys to measure and explain

    corruption. *World Development*, *34*(2), 359-370.

    doi.10.1016/j.worlddev.2005.03.009

Ruankaew, T. (2013).The Fraud Factors. *International Journal of Management and*

    Administrative Sciences, 2(2), p. 1-5.Retrieved from:

    http://www.ijmas.org/IJMAS-2205-2013.pdf

Saksena, P. N. (2012). Ethical Theories and the Incidence of Occupational Fraud.

    *Advances In Management 5(*10), p. 6-10. Retrieved from:

    http://ideas.repec.org/a/mgn/journl/v5y2012i1a7.html

Shaw, I.(2012). The Positive Contributions of Quantitative Methodology to Social

    Work Research: A View From the Sidelines. *Research on Social Work*

    *Practice.*SAGE p.129-134.DOI: 10.1177/1049731511420171.

Simon, M. K. (2011). Simon, M. K. (2011). *Dissertation and Scholarly Research:*

    Recipes for Success. Dissertation Success, LLC (2011 ed.).Seattle, Washington,

    USA: Create Space

Singleton, R.A. Jr, & Straits, B.C. (2005). *Approaches to social research.* New

    York:Oxford University Press.

Stanciu, V. (2012). Fraud, a Growing Problem-Can We Mitigate It?. *Annals of the*

    Alexandru Ioan Cuza University-Economics, *59*(1), p. 79-94.

    DOI: 10.2478/v10316-012-0005-x

Sundet, G. (2004) Public Expenditure and Service Delivery Monitoring in Tanzania:

Some International best practices and a discussi-on of present and planned
Tanzanian initiatives. Working Paper Series No. 07. Dar es Salaam,Tanzania:
HakiElimu

Sundet, G. (2007). Public expenditure tracking surveys: Lessons from Tanzania. *U4 Brief*, Working Paper No. 14. P. 2-19. Dar es Salaam. Tanzania. Retrieved from:
http://www.cmi.no/publications/file/2812-public-expenditure-tracking-surveys.pdf

Tansey, O. (2007). Process tracing and elite interviewing: a case for non-probability sampling. *PS: Political Science & Politics*, *40*(04), 765-772.DOI:http://dx
doi.org/10.1017/S1049096507071211

Tanzi, V. (2013). Corruption and the Economy. *Filozofija i drustvo*, *24*(1), 33-59.
DOI: 10.2298/FID1301033T.

Tashakkori, A., & Teddlie, C. (Eds.). (2003a). Handbook of mixed methods in social &
behavioral research. *Sage Handbook of Behavioral Science*. Thousand Oaks, CA:
Sage.

Thurston, A. (2012). Trustworthy Records and Open Data. *The Journal Of Community
Informatics, 8*(2), *p. 3-7.* Retrieved from http://ci-
journal.net/index.php/ciej/article/view/951

Trochim,W. (2000). The Research Methods Knowledge Base, 2nd Edition. Atomic Dog
Publishing, Cincinnati, OH. Retrieved from
http://www.socialresearchmethods.net/kb/

Trompeter, G. M., Carpenter, T. D., Desai, N., Jones, K. L., & Riley Jr, R. A. (2012). A

synthesis of fraud-related research. *Auditing: A Journal of Practice & Theory*,

32(sp1), 287-321. doi**:** http://dx.doi.org/10.2308/ajpt-50360

Vian, T. (2008). Review of corruption in the health sector: theory, methods and

interventions. *Health Policy and Planning*, *23*(2), 83-94. doi:

10.1093/heapol/czm048

Vian, T. (2009). Approaches to teaching and learning about corruption in the health

sector. *U4 Brief*, No.30, p. 2-4.Retrieved from:

http://www.cmi.no/publications/file/3531-approaches-to-teaching-and-learning-

about.pdf

Vian, T., Miller, C., Themba, Z., & Bukuluki, P. (2013). Perceptions of per diems in the

health sector: evidence and implications. *Health policy and planning*, *28*(3), 237-

246. doi: 10.1093/heapol/czs056

Vincent G. Fitzsimons, (2009). "A troubled relationship: corruption and reform of the

public sector in development", *Journal of Management Development*, 28(6),

p.513-512.DOI.10.1108/02621710910959675

Webster, L. A. H. (2009). Detecting office fraud in your practice. *Community Oncology*,

6(9), 412-415.Retrieved from:

http://www.oncologypractice.com/co/journal/articles/0609412.pdf

Wolfe, D. T., & Hermanson, D. R. (2004). The Fraud Diamond: Considering the Four

Elements of Fraud*. The CPA Journal .December, 2004, p. 38-42* Retrieved from:

http://digitalcommons.kennesaw.edu/facpubs/1537/.

Wells, J. T. (2002). Keep ghosts off the payroll. *Journal of accountancy-New York-*, *194*(6), 77-85. Retrieved from:

http://people.wallawalla.edu/~bruce.toews/a341/Assignments/341assign09d.pdf

World Bank (1999). Controlling and Managing Personnel Costs. Good Practice in Public Financial Management. Issue Paper 6. p. 18, Washington, DC. Author.

World Bank (2001). Honduras: Public expenditure management for poverty reduction and fiscal sustainability. Report No. 22070. P. 46-75.Poverty Reduction and Economic Sector Management Unit, Latin America and the Caribbean Region, Washington, DC. Author.

World Bank (2004). Papua New Guinea: Public expenditure and service delivery. East Asian and the Pacific Region. *PESD Working Group.* p. 11-109.Washington, DC. Author.

World Bank (2010). Public Expenditure Tracking and Service Delivery Survey: *Education and Health in Honduras* - Background Chapters, Washington, DC. Author. Retrieved from https://openknowledge.worldbank.org/handle/10986/3006 License: Creative Commons Attribution CC BY 3.0

Yanusa, A. I. (2013). Assessment of Financial Performance of Ankpa Local Government Council of Kogi State. *International Journal of Social Sciences and Humanities Review*, *4*(1), 67-79. New York, NY: Center for Promoting Ideas (CPI).

Ye, X., & Canagarajah, S. (2002). Efficiency of public expenditure distribution and beyond: A report on Ghana's 2000 public expenditure tracking survey in the

sectors of primary health and education. World Bank.

Young,W.,B and Ryu, H. (2000). Secondary Data for Policy Studies: Benefits and

Challenges. *Policy Politics Nursing Practice. 4(1),p. 302-*

*307.SAGE.D*OI:10.1177/152715440000100408

Zhang, K. (2012). Increasing Citizen Demand for Good Government in Kenya.

Retrieved from: http://cega.berkeley.edu/assets/cega_events/4/Zhang-

Kelly_Increasing-Citizen-Demand_Kenya_2012_v2.pdf

Appendix A. National Institutes of Health (NIH), Certificate of Completion

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Gilbert Nyaledzigbor** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 09/24/2011

Certification Number: 762483
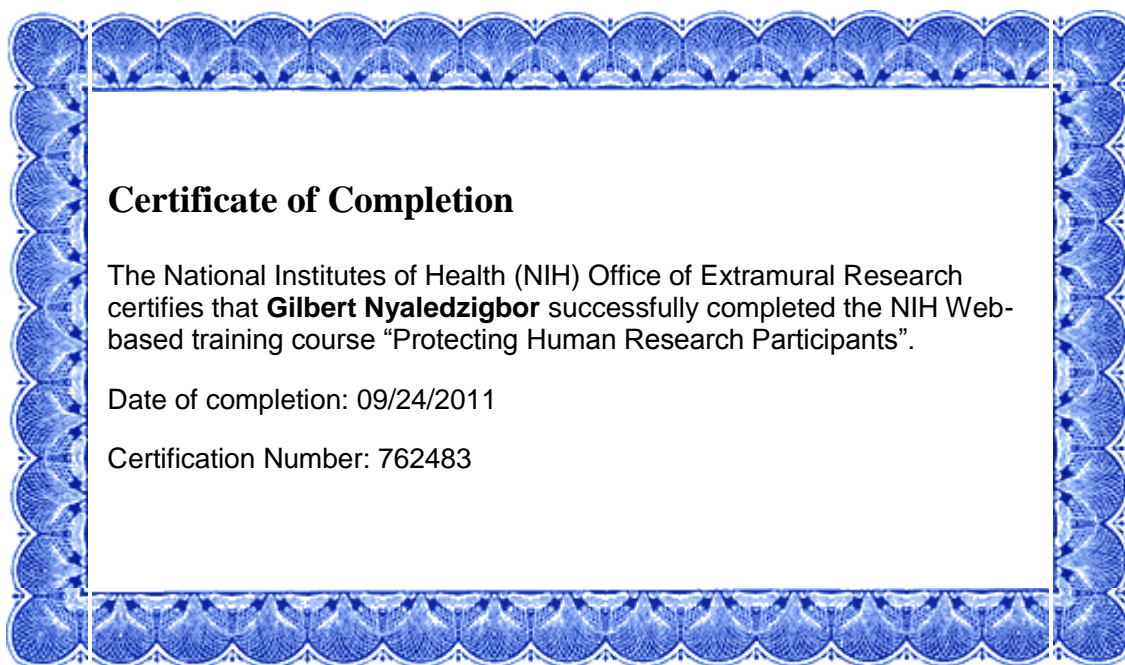
Appendix B. Questionnaire

This questionnaire is intended to gather data on a study titled, Payroll Fraud: Effects of

ghost names on government wage bill in Ghana. This study is being conducted by a

researcher, who is a doctoral student at Walden University, based in the United States.

The questionnaire will require a minimum of 20 minutes to complete. Data to be gathered

will be used for academic purposes and therefore the information to be provided by

participants would be kept confidential. To protect your privacy, no consent signature is

required after completing this survey. However, by completing and returning this survey

in an enclosed envelope by post signifies your consent to participate in this survey.

SECTION 1: Information on management units

1. Name of agency or management unit………………...………………….

2. Rank or grade of

    respondent…………………………………………………………………..

SECTION 2: Information on separated staff in government agencies in Ghana?

1. What is the staff strength of your agency/ management unit? [   ]

2. Do all employees in the agency/ management unit receive salary through the

    payroll at the Controller and Accountant General's Department (CAGD)?

    Yes [   ] No [   ]

3. If yes, how many employees receive salary through the CAGD payroll? [   ]

    If No, then answer questions 5 and 6.

4. State the number of employees not paid through the CAGD payroll   [   ]

5. Select how the employees in question 4 above are paid by selecting from the payment options below

    a. By check   [   ]

    b. cash   [   ]

    c. direct bank deposit   [   ]

6. Indicate the number of employees on CAGD payroll under each employee category below:

    a. Established/Permanent staff   [   ]

    b. Contract employees   [   ]

    c. Part time employees   [   ]

    d. Other categories not indicated above………………………………….

7. Select the source of funding for salaries of staff in your agency/ management unit?

        a. Government of Ghana funds [   ]

        b. Internally Generated funds   [   ]

        c. Donor funds   [   ]

        d. Statutory funds   [   ]

8. Please state the number of employees paid under each source of funding

        a. Government of Ghana funds [   ]

        b. Internally Generated funds [   ]

        c. Donor funds   [   ]

        d. Statutory funds   [   ]

9. How many employees on CAGD payroll retired in 2014? [   ]

10. Please provide the information on employees on CAGD payroll who retired in 2014 in the table below.

	Rank	Dates of retirement	Date CAGD stopped the salaries from the payroll
1			
2			
3			
4			

Please note: If there are more employees than the space provided in the above table, please feel free to add the details (same as in the table) on a separate sheet.

11. How many employees on CAGD payroll vacated their posts in 2014? [   ]

12. Please provide the information on employees who vacated their posts in 2014 in the table below

	Rank	Date the staff vacated their post	Date CAGD stopped the salaries from the payroll
1			
2			
3			
4			

Please note: If there are more employees than the space provided in the above table, please feel free to add the details (same as in the table) on a separate sheet.

13. How many employees on CAGD payroll went on study leave without pay in 2014? [   ]

14. Please provide information on employees who went on study leave without pay in the table below

	Rank	Date of study leave without pay	Date CAGD stopped the salaries from the payroll
1			
2			
3			
4			

Please note: If there are more employees than the space provided in the above table,

please feel free to add the details (same as in the table) on a separate sheet.

15. How many employees on CAGD payroll were deceased in 2014? [   ]

16. Please provide information on deceased employees in 2014 in the table below

	Rank	Date staff were deceased	Date CAGD stopped the salaries from the payroll
1			
2			
3			
4			

Please note: If there are more employees than the space provided in the above table,

please feel free to add the details (same as in the table) on a separate sheet.

17. How many employees on CAGD payroll resigned in 2014? [   ]

18. Please provide information on employees who resigned in active service in 2014 in the table below

	Rank	Date of resigned	Date CAGD stopped the salaries from the payroll
1			
2			
3			
4			

Please note: If there are more employees than the space provided in the above table,

please feel free to add the details (same as in the table) on a separate sheet.

19. How many employees on CAGD payroll were dismissed in 2014? [   ]

20. Please provide information on employees who were dismissed in 2014 in the table below

	Rank	Date of dismissal	Date CAGD stopped the salaries from the payroll
1			
2			
3			
4			

Please note: If there are more employees than the space provided in the above table,

please feel free to add the details (same as in the table) on a separate sheet.

21. Do you have any staff who is not currently at post in your management unit but receiving salary? Yes [   ] No   [   ]

22. State the reason(s) why these staff are not at post

	Reasons for staff not being at post	Rank	Date of absence	expected date of reporting back to work
1				
2				
3				

Please note: If there are more employees than the space provided in the above table, please feel free to add the details (same as in the table) on a separate sheet.

SECTION 3: Information on payroll cost of agencies/ management units

1. What is the total budget for Staff of your management unit in 2014?

    a. CAGD payroll   GHC………….

    b. Institution's own payroll   GHC………….

2. Do employees receive other benefits in addition to their salaries?   Yes [   ] No [   ]

3. If yes, select the additional benefits or allowances employees receive as part of their condition of service in your management unit

    a. Social security contributions   [   ]

b. Accommodation allowance   [ ]

c. Transportation allowance   [ ]

d. Utilities allowance   [ ]

e. Other benefits/allowances (please state)

      i.…………………………………

4. Do all employees take the benefits? Yes [   ] No [   ]

5. If no, state who qualifies to receive the following benefits or allowances

    a. Social security   All staff [   ] Senior staff [   ] junior staff [   ]

      none [   ]

    b. Accommodation All staff [   ] Senior staff [   ] junior staff [   ]

      none [   ]

    c. Transportation   All staff [   ] Senior staff [   ] junior staff [   ]

      none [   ]

    d. Utilities   All staff [   ] Senior staff [   ] junior staff [   ]

      none [   ]

    e. Other benefits   All staff [   ] Senior staff [   ] junior staff [   ]

      none [   ]

6. Do you think there are employees on your payroll who should not receive salary?

Yes [   ] No. [   ]

7. If yes, please provide

reasons.…………………………………………………………

……………………………………..…………………………

8. How long does it take to delete names of a separated staff from the payroll

      i. Less than one month   [   ]

     ii. Between 1 to 3 months   [   ]

   iii. Between 4 to 6 months   [   ]

   iv. Between 7 months to 1 year   [   ]

     v. More than 1 year   [   ]

9. To what extent to do you think ghost workers affect the government wage bill in

Ghana?

a) Very Significantly   [   ]

b) Significantly   [   ]

c) Not too significantly   [   ]

d) Not sure   [   ]

e) No effect   [   ]

THANK YOU FOR PARTICIPATING IN THIS SURVEY.

Appendix C. Consent Form

CONSENT FORM

PAYROLL FRAUD: EFFECTS OF GHOST NAMES ON THE GOVERNMENT

WAGE BILL IN GHANA

You are invited to take part in a research study on payroll fraud and effects of ghost

names on the government wage bill in Ghana. The researcher is inviting heads of

government agencies whose employees receive salaries through the Controller and

Accountant General's Department payroll as participants in the study. This form is part of

a process called "informed consent" to allow you to understand this study before deciding

whether to take part. Participants can print or keep a copy of the consent form for their

records. This study is being conducted by a researcher, who is a doctoral student at

Walden University, based in the United States. Background Information: The purpose of

this study is to use a sample survey to collect data from government agencies and use the

data to ascertain how the ghost workers on the government payroll affect the size of the

government wage bill in Ghana. Ghost workers in the public service are employees on

the government payroll who receive salary but do not show up for work or do not exist

but their salaries are appropriated by someone else (Tanzi, 2013). Procedure: If you agree

to take part in this study, you will be asked to respond to a number of research questions

relating to the topic under study. Each questionnaire will require a minimum of 20

minutes to complete. You are to complete the questionnaire independently and if possible

outside the office environment to minimize interferences in the course of completing the

questionnaire. Attached to the questionnaire and consent form, is an empty envelope addressed to the researcher with pre-paid stamp to be used by participants to post the questionnaires back to the researcher. Please note that there will be no compensation for participating in this study. Sample question: Below are sample questions participants would expect in the survey. 1 of 21. What is the staff strength of your agency/ management unit? 2. Do you have any staff who is not currently at post in your management unit but receiving salary? 3. How long does it take to delete names of a separated staff from the payroll? Voluntary Nature of the Study: This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one in the public service will treat you differently if you decide not to participate in this study. If you decide to join the study now, you can still change your mind later. You may also stop at any time. If your participation would violate any workplace policies, disagreement with leadership decisions, poor work performance, or anything else that could be damaging to the your position, professional reputation, promotability, or employability you can withdraw from the survey voluntarily and such withdrawal would not be disclosed or result in any negative consequences to you.

Risks and Benefits of Being in the Study: Being in this type of study does not involve any risk to your safety. The benefit of this research is to assist managers of government agencies to appreciate the effects of ghost workers on their payrolls and assist them to plan and develop strategies to eliminate the ghost workers and save public funds for national development. Privacy: Any information you provide will be kept confidential and only be known to the researcher .The researcher will not use the information you may

provide for any purpose outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Physical data in this research will be kept in a safe and securely locked while those in electronic form will be protected by a secure password. Data will be kept for a period of at least 5 years, as required by Walden University. Contacts and Questions: 2 of 2You may ask any questions you have now. Or if you have questions later, you may call on telephone number +233209792541. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott the University's Research Participant Advocate on telephone number 001-612- 312-1210. Walden University's approval number for this study is 01-06-15-0272538 and it expires on January 5, 2016. Statement of Consent: I have read the above information and I feel I understand the study well enough to make a decision about my involvement in this study. Your consent to participate in this study will be demonstrated by completing and returning the enclosed survey in the pre-addressed envelope provided. 3 of 2

Appendix D. IRB Approval Notice

IRB Materials Approved - Gilbert Nyaledzigbor

Inbox x

IRB   11:14 PM (7 hours ago)

to me, Linda

Dear Mr. Nyaledzigbor,

This email is to notify you that the Institutional Review Board (IRB) has approved your application for the study entitled, "Payroll fraud: effects of ghost names on government wage bill in Ghana."

Your approval # is 01-06-15-0272538. You will need to reference this number in your dissertation and in any future funding or publication submissions. Also attached to this e-mail is the IRB approved consent form. Please note, if this is already in an on-line format, you will need to update that consent document to include the IRB approval number and expiration date.

Your IRB approval expires on January 5, 2016. One month before this expiration date, you will be sent a Continuing Review Form, which must be submitted if you wish to collect data beyond the approval expiration date.

Your IRB approval is contingent upon your adherence to the exact procedures described in the final version of the IRB application document that has been submitted as of this date. This includes maintaining your current status with the university. Your IRB approval is only valid while you are an actively enrolled student at Walden University. If you need to take a leave of absence or are otherwise unable to remain actively enrolled, your IRB approval is suspended. Absolutely NO participant recruitment or data collection may occur while a student is not actively enrolled.

If you need to make any changes to your research staff or procedures, you must obtain IRB approval by submitting the IRB Request for Change in Procedures Form. You will receive confirmation with a status update of the request within 1 week of submitting the change request form and are not permitted to implement changes prior to receiving approval. Please note that Walden University does not accept responsibility or liability for research activities conducted without the IRB's approval, and the University will not accept or grant credit for student work

that fails to comply with the policies and procedures related to ethical standards in research.

When you submitted your IRB application, you made a commitment to communicate both discrete adverse events and general problems to the IRB within 1 week of their occurrence/realization. Failure to do so may result in invalidation of data, loss of academic credit, and/or loss of legal protections otherwise available to the researcher.

Both the Adverse Event Reporting form and Request for Change in Procedures form can be obtained at the IRB section of the Walden website: http://academicguides.waldenu.edu/researchcenter/orec

Researchers are expected to keep detailed records of their research activities (i.e., participant log sheets, completed consent forms, etc.) for the same period of time they retain the original data. If, in the future, you require copies of the originally submitted IRB materials, you may request them from Institutional Review Board.

Both students and faculty are invited to provide feedback on this IRB experience at the link below:

http://www.surveymonkey.com/s.aspx?sm=qHBJzkJMUx43pZegKlmdiQ_3d_3d

Sincerely,
Libby Munson
Research Ethics Support Specialist
Office of Research Ethics and Compliance
Email: irb@waldenu.edu
Fax: 626-605-0472
Phone: 612-312-1283

Office address for Walden University:
100 Washington Avenue South, Suite 900
Minneapolis, MN 55401

Information about the Walden University Institutional Review Board, including instructions for application, may be found at this link:http://academicguides.waldenu.edu/researchcenter/orec