

UNIVERSITY FOR DEVELOPMENT STUDIES, TAMALE

**THE USE OF TECHNOLOGY TO ENHANCE PUBLIC SECTOR ACCOUNTING IN
GHANA**

BY

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**A THESIS SUBMITTED TO THE SCHOOL OF BUSINESS AND LAW,
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REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN
ACCOUNTANCY**

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature..... Date.....

Name: Abdulai Abukari

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis was supervised in accordance with the guidelines on supervision of thesis laid down by the University for Development Studies.

Supervisor's Signature..... Date.....

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ABSTRACT

The study assessed the extent to which technology can be used to enhance public sector accounting in Ghana. There have been numerous interventions aimed at enhancing technology adoption in the public sector with the aim of enhancing efficiency and effectiveness. Despite these interventions, very little is known about what improvements have emerged in Public Sector Accounting that may be attributable to the use of technology.

A descriptive study design was used to gather information from 327 respondents from Ministries, Departments and Agencies (MDAs) and Metropolitan, Municipal and District Assemblies (MMDAs). Both purposive and simple random sampling methods were used to select the respondents. Questionnaires were respectively administered to the respondents. The data was analyzed by means of descriptive and inferential statistics using the Predictive Analytical Software (PSW) formally SPSS. The study revealed that the use of technology in Public Sector Accounting has, among others, contributed to improved decision making, enhanced accountability, strengthened effective budgeting, and aiding long-term financial planning. Despite the immense benefits associated with technology, the use of technology in Public Sector Accounting has come with challenges. These include lack of financial resources for staff training, audit difficulties associated with use of technology, and lack of Political Support for Public Sector Accounting Reforms. Since the adoption of technology makes substantial contributions to accountability and resource usage in the public sector, it is recommended that Government of Ghana fast tracks the process of technology adoption by involving



stakeholders, training of staff on basic computer skills and specific transitional paths for the uptake of technology.



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DEDICATION

I dedicate this work to my senior brother, Alhaji Ibrahim Mahama for making my education possible.



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LIST OF ABBREVIATIONS AND ACRONYMS

BPEMS	Budget and Public Expenditure Management System
CAGD	Controller and Accountant- General's Department
CSO	Civil Society Organisation
DANIDA	Danish International Development Assistance
DP	Development Partner
EC	European Commission
ERPFM	External Review of the Public Finance Management
ERG	Enterprise Resource Group
EU	European Union
FAA	Financial Administration Act
FAR	Financial Administration Regulations
FMIS	Financial Management Systems
GDP	Gross Domestic Product
GIFMIS	Ghana Integrated Financial Management Information System
GNI	Gross National Income
GoG	Government of Ghana
HDI	Human Development Index
HIPC	Highly Indebted Poor Countries



CHAPTER ONE

1.0 Introduction

Public sector accounting is an accounting method applied to non-profit pursuing entities in the public sector - including central and local governments, and quasi-governmental special corporations - for which the size of profits does not provide an effective measurement for evaluating performance. Economic entities in the public sector take in economic resources (input) to produce goods and services (output) (SAKURAUCHI Fumiki, 2004).

In the world of public sector accounting, however, public-sector economic entities hold peculiarities not only in the above-mentioned superiority in resources procurement on the input side but also on the output side. Specifically, goods and services produced and supplied by public sector economic entities are not subjected to the market mechanism in which prices are determined by the balance of supply and demand. In other words, optimal distribution of resources and optimal supply of goods and services through the market mechanism cannot be automatically achieved in the public sector (SAKURAUCHI Fumiki, 2004). Therefore, a government is counted on to provide public and semi-public goods and services - which are in excludable and noncompetitive in nature - in optimal quantity to its governed society by intervening the market mechanism by means of subsidies and taxation or by directly providing such goods and services to the society. In this context, distribution of economic resources and transfer of goods and services through budgetary planning, which is closely linked to various political processes, are quite important. The purpose of the public sector accounting system should be determined in accordance with the needs of its users. There would be various views





but I believe the absolute purpose of the public accounting system is to establish a system for good public governance. Public governance is a mechanism to discipline decision-making by those in charge of state affairs in a way to maximize the interest of the general public under the governing system where people - the absolute principal of the state - entrust the Cabinet or executive power as their agent to take charge of state affairs. The public sector accounting system can be defined as a tool to check and correct decision-making by the agent - the Cabinet or executive power - from the fiscal side to better protect people's interest (SAKURAUCHI Fumiki, 2004).

Technology and the accounting information systems are implemented in an organization with the aim of improving their efficiency. Companies spend large amounts of money on these tools every year in order to improve their organizational performance. The aim of this research is to determine the influence of technological alignment in PSA, information management and technological infrastructure on the performance of an institution (innovation and productivity) in which accounting information systems are used. An empirical study is conducted in PSA belonging to the service, commercial and industrial sectors in Ghana revealed that technology is an important tool in the day to day activities of the PSA.

1.1 Background to the Study

The public sector is the biggest spender and employer in Ghana and indeed, every developing country. The effectiveness and efficiency of a country's public sector is important to the development of activities, especially, in poverty reduction. A sound financial management should be relatively free of discrepancies and malfeasances to



enable it to contribute to good public services. For a nation to make progress in its developmental agenda there is the need to consistently reform its public sector (adopt new methods and strategies) for enhanced performance. Challenges of the old regime should always be taken into account and new and better alternatives offered.

Ghana after independence in 1957 carried out a number of administrative reforms in the various sectors of the economy for the purpose of effective performance and delivery to enhance “good governance”. The World Bank explained ‘good governance’ to consist of a public service that is efficient, a judicial system that is reliable, and an administration that is accountable to the public (World Bank, 1992).

It is in the light of this ‘good governance’ that public administration management reforms become very imperative. Westcott (1998) explained that the aim of the administrative reforms in the public sector is “to improve the effectiveness and performance of the public service and to ensure its affordability and sustainability” (Westcott, 1998). Some of the notable changes that have taken place over the years in public sector accounting are: the acceptance of the medium term expenditure framework in 1999; Financial organization changes through the entry of the Public Financial Management Act (Act 921) in 2016 and Financial Administration Regulations (L.I 1802) in 2004; Public Acquisition Changes in 2003; National Annuity Changes in 2008; the Organizing of the Income Accumulation Offices in 2009; and International Public Sector Accounting Standards (IPSAS) in 2009 with arrangements to embrace the full IPSAS soon.

Without a doubt, the above changes have suggestions for open division bookkeeping. These changes have changed the customary part of bookkeeping to one that is more

centred on responsibility, yield, execution estimation, effectiveness, cost funds and profitability (Guthrie, 1995).

The Public Sector in Ghana consists of three areas. These are the National level, Regional level and District level. The National level is the most noteworthy of the three levels. This is made up of services, offices and public enterprises. This is followed by the Regional level which involves services, offices and open undertakings. The third and last level is the District level (Local Government) which incorporates Metropolitan, Municipal and District Assemblies. All the levels play crucial roles in the governance of the country by providing essential government services.

The changes in the public sector accounting saw the presentation of a few bookkeeping programming frameworks. These include MS Excel, Mind Your Own Business and Ghana Integrated Financial Management Information Systems (oracle) which aim to change and modernize open part bookkeeping with a specific end goal to improve the productivity, adequacy and responsibility of open administration conveyance.

The introduction of Microsoft Office in the 1990s aimed at helping people in general bookkeeping in Ghana was a litmus test, on how worthy innovation will be in the field of bookkeeping in the public sector. The presentation of the Ghana Integrated Financial Management Information System (GIFMIS), the E-VOUCHER and the Biometric Staff Payroll Registration System are a portion of the different innovations presented in the public sector area bookkeeping framework to improve productivity and viability (Terkper, 2015).



This study essentially looked among others, into the adequacy and proficiency of bringing innovation into the Public Sector Accounting (PSA) framework and the help it has brought into the conveyance of open administrations to the Ghanaian citizenry.

1.2 Statement of the Problem

Since Ghana's return to constitutional rule in 1992, several technological reforms have been adopted in the public sector to improve effectiveness and efficiency in accounting practice of the government business. Some of these reforms included the adoption of technology in computer software such as Budget and Public Expenditure Management System – 2 (BPEMS – 2), New Payroll Management System – IPPD 3 and the Ghana Integrated Financial Management Information System (GIFMIS).

Going by Terkper in (2015), despite all the adopted reforms, the state still losses up to a tune of \$72 Million through the lack of transparency in public sector accounting (PSA). Also, the introduction of technology in public sector accounting seeks to reduce workload of public service and made convenient in production of reliable results. This is still challenged as per Terkper.

All these technological reforms are intended to replace manual systems of accounting which are mostly associated with plethora of laborious hours on work, maneuvering by public sector workers to compromise the system to their personal benefits and many others resulting in inefficiency and ineffectiveness in government business.

Even though the government of Ghana and her international partners (World Bank, International Monetary Fund (IMF), European Commission, and many others) have



invested huge sums of funds to improve the financial performance of public sector accounting, there are still much to be desired such, as of lack of timely, accurate and current information on budgetary allocations, commitments, actual revenues and expenditures, delay in Payment Processing and Financial Reporting and delay in the production of financial reports. There are also reports of poor feedback mechanisms for assessing budgetary performance and lack of a uniform Chart of Accounts, which make the comparison of the performance of various budgets difficult.

With all these revelations and insights of introducing technology into the Public Sector Accounting, it is clear that, it has not been rosy with the adoption of technology in public sector accounting. The study therefore intends to close the knowledge gap by exploring the role of technology in effective public sector accounting in Ghana.

1.3 Research Objectives

The main objective of the research study is to understand the use of technology to enhance effective public sector accounting in Ghana. The specific objectives of the study are:

1. To understand the evolution of public sector accounting in Ghana
2. To investigate the extent of technology uptake in public sector accounting in Ghana
3. To assess the contribution of technology in public sector accounting practice in Ghana.
4. To investigate any challenges posed by adoption of technology in public sector accounting





1.4 Research Questions

The research answered the following questions concerning the implementation of accounting technology in public sector organizations in Ghana:

1. What has been the evolution of public sector accounting in Ghana?
2. What has been the level of technology uptake in public sector accounting in Ghana?
3. Has technology adoption in public sector accounting contributed to efficiency and effectiveness in financial reporting in the Public Sector?
4. Are there challenges in the adoption of technology in public sector accounting?

1.5 Limitations and Delimitation of the Study

The study was carried out in a short period of time in the Northern Region of Ghana. Therefore, data collected could be different from that which could have been gotten if a longer period were used. Finally, this study narrowed its research to only public sector accountants and public sector agencies under Central Government control in the Northern Region.

1.6 Significance of the Study

The significance of the study includes but not limited to the following:

It will help policy makers to realize the need to have and implement effective accounting technology in the public sector. It will provide policy makers with information on the benefits and challenges of the use of technology in public sector accounting in particular and public financial management in general. This information will be in the form of wide spread usage or adaptation of technology in accounting in the public sector especially in

the rural districts. It will also provide information on the challenges such as skills level of personnel and the legal framework on the use of technology in accounting and may spur action on the part of relevant authorities in terms of resource allocation and improvements in the legal framework. It will also help generate knowledge to link public sector accounting with technology.

Finally the study will be helpful to academics in finance and accounting, management, law and other fields in furtherance of their practices and operations in work places. This study can also serve as reference point for other researchers.

1.7 Organization of Chapters

This write-up is divided into five chapters. Chapter one is the introduction. It provides information on the main theme of the study which highlights the background to the study, problem statement, research question sand objectives, limitations and delimitation of the study and significance of the study. Chapter two reviews the relevant literature in this area of study. The methodology of research is found in chapter three. The data gathered are reported, discussed and analysed in chapter four.

Finally, the conclusion and recommendations are captured in chapter five.



CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

In this chapter, a review of related literature is presented. It ranges from accounting practices in the governmental business to central and decentralized government levels. Information on the literature review is gathered from the publications of both academics as well as practitioners in both developed and developing countries. The literature review covers areas such as evolution of Public Sector Accounting (PSA) in Ghana, Public Sector (PS) financial management reforms and accounting, the role of technology in information processing, and literature in PSA. It also covers role of technology in producing accounting information, challenges with the adoption of technology in PSA in Ghana, and the shortcomings of the traditional public accounting system.

2.2 The Evolution of Public Sector Accounting in Ghana

Public sector accounting is a vast area with substantial literature written by various scholars. The literature ranges from accounting practices in the governmental business to central and decentralized government levels. The literature is contributed to by both academics as well as practitioners in both developed and developing countries.

About a generation ago, the only tools accountants used were a hand manual calculator, a columnar pad and a sharp pencil. In those days, electric pencils, erasers and sharpeners were among modern tools and high components that were used by accountants. Today, you probably cannot find any of those tools in an accountant's office except maybe the pencil and the sharpener. Replacing them are computers mostly personal desktop





computers and their accessories which come with their software products that do the work, as compared to some of those old, clunky four-function calculators (Douglas, 1997). Computers are now being used extensively to perform accounting duties by posting accounting events to writing reports, from developing what-if business scenarios with spread sheets to report tax returns, from tracking debtors on a data base to keeping track of fixed assets. That is not to say every accountant is using advanced software, but the number of those still using decade-old tools is insignificant.

The rapid advance in technology is seriously changing the traditional ways in which information is processed, communications conducted, and services made available (Sarfo, 2007). In terms of financial management, ICT combines accounting principles and concepts and with the relevance of an information system, analyze and record business transactions, as well as prepare financial statements and provide accounting data for the intended users (Sloan, 2001). The game changer in the area of accounting is the introduction of Microsoft office package to suit the accounting community. Most public accountants use the organisation's software applications from word processing to spread sheets which are making swift inroads in into public sector accounting transactions.

In recent years, governments all over have embarked on a wide range of financial and administrative reforms as a result of increasing social, political, economic and technological pressures on government to become more effective, efficient and accountable for the use of public resources (Hoque and Moll, 2001). It is opined that governments are pressured from increased globalization, the dissatisfaction of citizens with the current management, and curtailing of the budget spending (Wensing, 1997). According to Sciulli and Sims (2007) managers of government agencies have



increasingly looked at how the private sector operates in order to assess whether there are practices that could and should be adopted by the public sector. This is widely referred to as New Public Management (NPM) in public administration literature (see for example Ridder et al, 2005; Goddard, 2005; Sevic, 2004; Christiaens, 2004; Jan 2004; and Davis 2003). Some of the reforms include the introduction of accrual accounting, managing by outputs, a user pay regime, privatization, contracting out and standardization of financial reporting (Sciulli and Sims, 2007; Goddard, 2005).

Over the last few years, the Government of Ghana has accelerated its development and implementation of public financial management reforms through a number of measures intended to strengthen the legislation framework and improve oversight of the use of public resources. Many such reforms have occurred in the area of decentralization, budgeting, financial administration, personnel emolument and pension administration, procurement, expenditure management and internationalization of financial reporting. In most of these reforms, budgeting, financial accounting and reporting, and disbursement controls are most emphasized (World Bank Report, 2006). According to the World Bank (2006) the specific measures put in place currently to improve the efficiency of resource and information flows include the improved computerized Integrated Personnel and Payroll Database (IPPD) System, the Budget and Public Expenditure Management System (BPEMS) and the Ghana Integrated Financial Management Information System (GI FMIS).

Table 2.1: Public Financial Management Reforms (2001 – 2012)

Year	PSA reforms	Remarks
2001	Implementation of Budget and Public Expenditure Management System-2 (BPEMS2) and Audit reforms	BPEMS/IFMIS was revitalized and updated to produce BPEMS2. New Audit Law was enforced.
2003	Municipal Finance Management Initiative (MFMI)	To empower local governments to attract funds from the capital market for long term financing of infrastructure and other services.
2005-2011	Economic management capacity building project.	To provide technical assistance and capacity building for public pension and pay reforms, service delivery, decentralization, development communication and human resource management capacity.
2008	Adoption of new intergovernmental fiscal framework (IGFF) for local government funding	To develop new mechanisms for central government funding of local governments outside the constitutionally mandated transfers.
2009	Adoption of new payroll management system- IPPD 3	Plans to decentralize the payroll management system to have data processing centres in each of the ten





		regions in Ghana
2009	Reforms of Revenue Collection Agencies to form Ghana Revenue Authority	To improve tax administration and collection in Ghana through Information sharing and linkages within the government agencies.
2011/12	Ghana integrated financial management information system (GIFMIS)	Computerized system that integrates the various components of public financial management including budget, financial accounting and reporting, disbursement, and auditing.

Source: Adapted from various World Bank Reports.

Over the past two decades, researchers have directed significant energies at understanding the role of accounting in the sweeping reforms in almost every country in the world (Llewellyn, 1998; Lawrence, 1999; Llewellyn and Northcott, 2005; Mir and Rahaman, 2007) and accounting has been found to play a significant role in the successful implementation of organizational change and reforms at both micro and macro levels. The relationship between accounting and public sector reforms has been examined (Osborne and Glaebler, 1993; Oslen et al., 1998; Meyer, 1998; Lapsey, 1999; Ball, 2001; Sevic, 2004 and Goddard, 2005), however the findings are diverse. Most of the studies stress the importance of accounting to successful public sector reforms (Goddard, 2005). According to Stamatiadis (2009), public sector accounting reform has often been the first step of government reforms and it is considered as an important condition and prerequisite for the success of other subsequent public sector reforms under the new

public management movement. It follows that successful reforms, financial or otherwise, required competent and capable human resources, including competent accountants, to execute them.

Stamatiadis (2009) found that lack of knowledge and expertise as well as lack of accounting training negatively affected the successful implementation of accrual accounting reforms in Greek hospitals. In agreement with Stamatiadis, Ridder, et. al. (2005) employed the resource view in their study and concluded that human resource is a crucial determinant of successful implementation of accrual accounting and output-based budgeting in six municipalities in Germany. Chan (1999) also stressed accounting and accounting training as a very important area in China's reform process. The World Bank recognized that sound accounting and auditing systems are crucial drivers of successful public financial management reforms. These propositions call for qualified and competent accountants to operate and report on the systems. The lack of competent accounting skills is cited to be partly accountable for the failure of reforms and increasing financial irregularities in the Ghanaian public sector (Public Accounts Committee, 2010). Therefore, training and educational programmes for accountants in the public sector need to factor in the requirements of the public financial reforms agenda in order to create the needed nexus between accounting education and the reform agenda of the government.

Information technology (IT) is defined as the study of systems (especially computers and telecommunications) for storing, retrieving, and sending information. According to "Merriam Webster Dictionary", IT involves "the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data.





Tachyphemia, on the other hand, has defined information processing as the manipulation of digitized information by computers and other digital electronic equipment, known collectively as information technology (IT). A computer information processor processes information to produce understandable results. The processing may include the acquisition, recording, assembly, retrieval or dissemination of information. For example, in printing a text file, an information processor works to translate and format the digital information for printed form. Information processing has reached a gigantic proportion in recent times and it is still growing. The explosion of information processing is aided by improvement in technology. Information is processed by billions of devices, hundreds of satellites and millions of software applications. Trillions of bytes are processed every minute. Therefore, there are hundreds of technological devices that are used in processing information.

Zeroing down to accounting, it is important to borrow Rogers' (1995) conceptual framework of technological adoption. According to Rogers (1995), the rate of adoption of technology is determined by five attributes: (1) relative advantage, (2) compatibility, (3) complexity, (4) trial ability, and (5) observability. In Roger's (1995) view, accounting technology enhances planning and evaluation of the organization's financial position and performance by processing accounting data in a more reliable, relevant, understandable and comparable form to both internal and external stakeholders (Romney, 1997). Research suggests that Computer Accounting Information Systems (CAIS) promotes cost-effectiveness (Brynjolfsson, 2003), ease of sharing knowledge, thereby improving operations and managers' decision-making processes (Sajady, 2012).



Otley (1980) contends that computer accounting technology should be evaluated from three key dimensions: managerial, organizational and environmental context, implying that the efficacy of technology depends on both its aims and contingency factors of each firm (Sajady, 2012). From this point, assessment is based on users' satisfaction (Corner, 1989), systems' reliability (Flynn, 1992), quality and improvement of task (Gelinas, 1990). Sajady et al (2012), however, find no evidence to support the notion that implementation of CAIS is linked to enhance evaluation processes.

Another stream of research suggests a fit between factors such as technology, environment, and organizational capacity as well as social and the ethics, required to promote the initiation, adoption and effective implementation of technology in public sector accounting (see Ginzberg, 1980; Markus and Pfeffer, 1983; Stefanou, 2006). Nicolaou (2000) confirms this notion by emphasizing that the system fit explains the decision makers' perceived satisfaction with the accuracy and monitoring effectiveness of output information. In contrast, Nicolaou (2000) finds that the effect of system fit on decision makers' satisfaction with the perceived quality of information content in system outputs is marginally significant. By this Nicolaou (2000) indicating that, the 'compatibility with organizational and professional norms, values, and ways of working' is paramount to perceived Computer Accounting Information System effectiveness (Greenhalgh, Robert, Macfarlane, Bate and Kyriakidou, 2004).

Another issue worth mentioning at the developmental and implementation stages is technology security. Technology security threats include forced entry into computer rooms, destruction by fire and natural disasters, unauthorized access, disclosure, and modification or destruction of accounting data (Loch, Carr, 1992). Abu-Musa (2006a; b)



finds that entry of inaccurate data, destruction of reliable data, and introduction of computer viruses to the system, employees' sharing of passwords, and misdirecting prints and distributing information to unauthorized people are the most significant perceived security threats. Romney (2009) also find that natural and political disaster, software errors and equipment malfunctions are major challenges to technology. In recent times, hacking and phishing have further worsened the security of accounting technology.

The impact of the occurrence of these events ranges from disrupted operations to fiduciary losses and failure (Loch et al, 1992; Abu-Musa, 2004; 2006). It also lures internet users to reveal personal details (like passwords and credit card information) on a fake web page or email form pretending to come from a legitimate company (like their bank) to scammers. Consequently, firms create, maintain and update security solutions such as firewalls, encryption techniques, access control mechanisms and intrusion detection systems to combat security breaches (Katz 2000; Gordon, Loeb and Lucyshyn, 2003). These security measures, in turn, enhance the quality of the Computer Accounting Information Systems (CAIS), thus producing relevant, reliable and useful financial and managerial accounting reports for decision-making. Research, however, suggests that many corporations in the US adopted computer technology before implementing appropriate safeguards (see White and Pearson, 2001).

Heeks (2002) proposes a model to understand failures of information systems (IS) by firms in developing countries. The model offers both country context and hard-soft gaps as significant risk to its failure. Local conditions in developing countries are neglected in the design of IS, implying a considerable design-actuality gap. As well, the "hard" rational design and "soft" political actualities may differ on key dimensions: information,

technology, processes, objectives, staffing, management systems and other resources. These gaps, in turn, may result in failure.

There is also a growing body of literature suggesting that accounting control systems in developing countries, including Ghana, are ineffective due to political and trade union leaders' interventions (see Uddin and Hopper, 2001; Rahaman, Lawrence and Roper, 2004; Uddin and Tsamenyi, 2005). This, in turn, results in misappropriation of funds by top management (Amankwah-Amoah and Debrah, 2010), and poor public sector performance deficits. The huge public sector deficit, in particular, impedes the economic development of Ghana.

Research findings, however, are mixed. Here, studies show that structural adjustment programmes including international accounting practices adoption (Uddin and Hopper, 2003) may not enhance financial management controls (Uddin and Hopper, 2003; Uddin and Tsamenyi, 2005). They also found that overall performance improvements were associated with key organizational changes (including accounting and control system). More importantly, issues from GIFMIS may provide fertile ground to analyses the complex interplay of action and context that underlies organizational change. This in turn, may contribute towards formalizing technology in Ghanaian public sector organizations, indicating that the research be extended to not only to government agencies, but to the private sector.

2.3 Literature in Public Sector Accounting

Cheng (1994) examined the institutional, political and external processes that affect the accounting and financial reporting choice of state and local government. Cheng (1994)





pointed out that governmental accounting research has been predominantly and rather disproportionately concerned with identifying socio-economic and political variables statistically related to quantitative accounting and financial reporting indices as opposed to identifying interested actors and their motivations for changes in accounting and financial reporting policy in state and local governments.

Lin (1993) presented an overview of the recent developments in harmonizing governmental accounting and reporting in Canada and stated that the movement towards harmonizing governmental accounting and reporting has progressed rapidly since the beginning of the 1980s and also reviewed the current governmental accounting practice in Germany and its reform efforts after the World War II. Lin (1993) recommended that the support of outside pressure groups, the existence of inside change agents with sufficient position of power and the selection of an appropriate implementation strategy become vital to the success of reform endeavors of governmental accounting in Germany. Lin et al. (1993) evaluated the extent of compliance with the recommendations issued by the Public Sector Accounting and Audition Committee (PSAAC) by the senior governments in Canada and observed that the current level of compliance was less than satisfactory. Pendlebury et al, (1994) and Rutherford (1996) surveyed and analyzed the new annual reports and accounts being used in the establishment of Executive Agencies in the UK Civil Service. Their respective survey both revealed that there is a distinct difference between the practices of trading fund and non-trading fund agencies and showed a wide variation in the rate of progress of non-trading fund agencies towards 'commercial style' financial accounts. A similar study was conducted by Hyndman and Anderson (1995) who explored the importance of performance information in external



reporting of Executive Agencies in UK and observed that there was a significant proportion of Agencies reporting little or no information on efficiency and effectiveness and the various component parts of performance, e.g. Inputs, outputs and results. Hyndman and Anderson (1995) also inferred that such information may be unavailable in their internal/management accounting system. Coy, Tower and Dixon (1994) have provided a progress report on the tertiary education institutions' annual reports in the light of the recent public sector reforms in New Zealand and observed that the timeliness and quality of reports have improved.

Covaleski and Dirsmith (1995) studied the social and more especially rhetorical construction of accounting and accountants in the public sector. The study examined the rhetorical process by which an ensemble of calculative practices and techniques (including accounting) came to be adopted, developed, developed and justified in the state of Wisconsin (USA) at the turn of the century under the leadership of Governor Robert M. La Follette. Used primary and secondary archival materials to explicate three rhetorical strategies – Shakespearean, formalist and expertise – the Governor employed. They found that the process of institutionalizing these calculative techniques was and is profoundly political and reflective of the relative power, both overt and covert, of organized interest groups.

Ogden (1995) investigated the ways in which accounting and accounting information has contributed to and shaped the process of organizational change in one area of the public sector. In his paper, Ogden (1995) described the ways in which accounting has been instrumental in the processes of organizational change. Although his paper assumed that accounting PSA is a powerful force of change it also recognized the importance of the

context within which it exists. That is why his study is included in the *'alternative'* category

McCulloch (1992) briefly summarized the accounting changes in the context of public sector reforms in New Zealand by focusing on the central government. They argued that accrual accounting is a natural consequence of the reforms largely following generally accepted accounting practices as followed in the private sector. Allan (1993) pointed out the existing deficiencies of financial data in various levels of governments. These include lack of consistency, budgetary, accounting and financial reporting formats and standards variations between governments, inadequate and incomplete data, no comparability of each government's financial results and projections etc. Allan (1993) further argued that the adoption of comprehensive, meaningful, accurate and comparable financial information will most importantly strengthen the accountability framework and responsiveness to towards clients of the Australian public sector organizations. Same findings were reported by the survey of Ernst and Young (1995). One of the findings emanating from this survey was that there was a lagging of the use of accrual accounting for management purposes and the main problem in this regard was linked to inadequate information systems and poor training on how to use the information when produced.

Burns (1993) criticized the application of a traditional formula-based approach of depreciation for 'infrastructure assets (e.g. Water and sewer pipes or electricity grids)' of some public sector agencies and argued that it gives false and misleading readings on rate of return, written down asset valuations and future liabilities and thereby reduces the credibility of the financial reports of those agencies. Burns (1993) recommended 'condition-based' depreciation for this infrastructure asset. Craig and Clark (1993) raised





some critical issues which arise in using published accounting data to make financial assessment in collective negotiations in the public sector. They argued that conventionally prepared accounting data in the public sector are unserviceable for effective bargaining. Craig and Clark (1993) further argued that strong efforts should be made to ensure that enterprise bargains struck within the public sector are based on appropriate financial information and there is a strong body of anecdotal evidence which suggests this was not happening.

Cameron (1993) reviewed the external annual reports of the University of NSW for the period (1950 to 1988) in order to investigate the possible links between changes in annual reporting practices and changes in identifiable external or internal influences. They observed that with the exception of recent State Government legislation and associated regulation, there was little evidence of any external influence on reporting. Cameron (1993) also observed that the University's annual reports contain a variety of financial and non-financial information. Degeling et al. (1996) performed a content analysis of the reports of the Joint Committee of Public Accounts of the Commonwealth Parliament of Australia from the time of its establishment in 1914 to its suspension in 1932. From their analysis, they argued that although the Public Accounts Committee regarded them as a mechanism for infusing financial and economic rationalities into the day to day operations of government departments and instrumentalities but its evidence showed that lack of interest in accounting matters during those periods was significant.

Another group of authors' whose researches were concerned about the environmental disclosures in annual reports in the context of various reforms within public sector are Gibson and Guthrie (1995), Burritt and Welch (1995), Douglass (1995) and Gibson and

Guthrie (1996). All of them pointed out that both the quantity and quality of environmental disclosures in the annual reports of public sector organizations are low and does not meet the expectations established in the international sphere for private sector organizations.

Walker (1994) examined how the community service obligations (CSOs) of the public sector agencies have been identified and cost in practice. He argued the idea of identifying and costing CSOs inevitably involves arbitrary identification procedures and arbitrary cost allocations. Accordingly, users of those reports may well be deluded by the data. Walker (1994) also recommended that this risk of deluding data may be reduced somewhat by full disclosure about the basis of identifying and calculation the value of CSOs.

2.4 Role of Technology in Producing Accounting Information

Accounting is the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and events which are, in part at least, of financial character, and interpreting the results thereof. Accounting can also be referred to as an information system that measures, processes and communicates financial information about an economic entity (Francis, 2013). Technology has influenced accounting information processes in a very positive way. Hardly does one find anybody doing manual accounting with paper and pencil these days. Since accounting is about dealing with information – business information – any advances in this area will have a positive



impact in the accounting department, from the old days of the battery-operated calculator to the fast computers of today.

Hall (2008) argued that, computers, internet, software or even personal digital devices have changed the way business entities operate. Information technology advancement has also improved together with the accounting system. Since accounting deals with business information, any improvement in this area will create a positive impact on the entity more especially in the accounting department.

a. Equipment

The most obvious role technology plays in producing accounting information is the availability of computers, printers, scanners and faxes. The presence of these equipment in the offices creates a competitive advantage compared to those who do not have these things. Information technology (IT) has transformed the accounting world--no more green paper sheets and pencils. The good news is that prices of IT products are affordable in respect of most of such equipment. It is not just for large corporations; small businesses can get IT equipment easily and at a reasonable cost. The machines are sophisticated, fast and easy to use.

b. Economic Efficiencies

Information technology resources can significantly reduce accounting costs (Hurt, 1990). Redundant tasks can be centralized in one location through the use of information technology infrastructure. Economic efficiencies can be realized by migrating high-cost functions into an online environment. Companies can also offer email support for customers that may have a lower cost than a live customer support call. Cost savings



could also be found through outsourcing opportunities, remote work options and lower-cost communication options.

c. Software Tools in the Accounting Process

Another significant role played by technology in producing accounting information is the software tools in accounting process. In business, software is considered an intangible asset. Software tools are set of programmes or procedures associated with a system. The most common software used by businesses and agencies include accounting software, audit software, MS word processing software, MS excel and electronic data interchange (Hurt, 1990).

d. Security

In terms of security of information, technology is used widely in accounting security. Identifications and passwords limit access to confidential information. Instead of binders and papers lying around, security can be greatly improved with the proper computer programs. Using a programme, accounting information can be encrypted in a way to prevent unlawful access thereby making it reasonably safe. A lost, stolen or misplaced laptop or desktop computer can be tracked using security software that can be activated remotely.

e. Internet

The Internet provides vast sources of information that can be used by business, especially in the accounting area. Through this, documents can be shared, research can be conducted and taxes in some countries can be filed-all online (Dandago and Rufai, 2013). Connection to the Internet can be wireless and simple.



The Point-of-Sale (POS) system is commonly used by malls and department stores. Internet helps in the payment procedure of customers through real-time connection of their credit card to their respective banks. The use of barcodes helps in improving sales transaction time and automatically updating of their inventory records (Amidu et al, 2011).

f. Efficiency

One of the important features of any system or activity is its efficiency means using limited resources to achieve best possible results. In the accounting system, the things that increase efficiency are the streamlined work flow systems, shared storage and collaborative work. This also enables employees to process a greater level of work in a shorter period of time. Information technology systems can be used in automating routine tasks in order to make data analysis easier to perform and store data in a manner that can easily be retrieved for future use. Technology can also be used to answer customer inquiries. In order to be more efficient, the entity can contact the customers through email, in a real-time chat session or through a telephone routing system.

g. Speed

Speed is also one of the features of information technology. The deployment of multiple technologies results in faster transactions and outcomes. Through the integration of information technology, multiple calculations can be done in a second, resulting in the speeding up of the information generation of the system.



h. Accuracy

Technology assists in the computation of data. Since accounting work is very detailed, accuracy in recording and reporting is greatly appreciated. One of the positive effects of this system is the fact that it reduces the possibility of making mathematical errors which is one of the challenges faced in the manual system.

i. Data Management

With the help of database software, an organisation is able to store all its accounting data on a database. This infrastructure can be designed when it is internal or external. An internal centralised system can only be accessed within the organisation while an external centralised system allows data to be accessed outside the organisation using a remote internet protocol (IP) address or a domain name. In this case, employees or managers can use a company website to access relevant company accounting data by the use of passwords. This data is not exposed to the public and search engines.

j. Improved Internal and External Reporting

Because of the improved speed and accuracy in the processing of information, financial reports can be easily generated and reported to internal and external users. External users can use these reports to assess the condition of the entity. Internal user sin management benefit from this development for they need to know the details first in making economic decisions.

On the impact of computer technology on accounting, Nickels and Mchugh. (2002) observed that most companies have found that computers greatly simplify the task,



enabling managers and other employees to get financial reports exactly when they want them.

2.5 Technologies in Public Sector Accounting in Ghana

Ghana has adopted a number of technologies to improve the performance of the public sector with the aim of easing the management of increasing volume of financial data transactions that seem impossible when compiling them manually; and also enhancing performance and productivity leading to a better financial administration and accounting management. Some of these technologies are as follows;

a. Microsoft Word

This is a computer program used for the creation of word documents. Under this, textual data can also be edited, stored and printed. Accountants and other entity employees use word processing software in communicating information. They use word processing software in preparing reports, billings, memos and financial statements (Ghasemi et al, 2011).

b. Microsoft Excel

Microsoft excel contains a spreadsheet which is a form of an interactive computer application program usually used for organization and analysis of data in tabular and graphical forms. This was developed as computerized simulations of paper accounting worksheets. Today, the two most popular spreadsheets are Excel and Social-(SPSS). This can be for virtual or any task that requires computations. A company's end-off period financial statements could be exported to a spreadsheet and presented graphically to the board of directors.





With the introduction of computers in the public domain of Ghana, the MS Word and MS Excel helped a great deal to perform accounting and financial management. These applications enable the editing, storage, analyzing, and printing of data with ease by accountants. MS Excel specifically has supported the public sector accounting functions such as budgeting, preparing financial statements and creating balance sheets. In modern times, the software supports many add-ons for activities such as modeling and financial forecasting, and seamlessly integrates with external data to allow import and export banking information and financial data to and from other accounting software platforms.

c. Ghana Integrated Financial Management Information System (GIFMIS)

The Ghana Integrated Financial Management Information System (GIFMIS) was introduced in September 2009 as part of the Public Financial Management (PFM) Reforms in Ghana. The Controller and Accountant General's Department (CAGD) under the sponsorship of the Ministry of Finance and Economic Planning (MoFEP) has been implementing these reforms. It is mutually funded by four development partners- the (i) World Bank (ii) Department for International Development- DFID of UK, (iii) European Commission-EU and, (iv) Danish International Development Agency-DANIDA.

GIFMIS basically involves the use of Enterprise Resource Planning (ERP) to improve on public financial management in Ghana. The government of Ghana has taken bold steps to begin to tackle the deep-seated risks to macroeconomic and fiscal stability and to address key sources of economic inefficiency. It is implementing policies to strengthen economic management and to deal with weak governance and corruption. The budget function has been consolidated “in a strengthened budget office” and greater transparency

has been introduced to public expenditure management through regular publication of allocations of revenues to all tiers of governments, and through widespread dissemination of information.

The Government recognizes that additional challenges remain and that public expenditure management needs to be further strengthened to:

- (i) build an integrated budget based on programs that are clearly linked to key Development objectives;
- (ii) ensure greater accountability from budget holders
- (iii) allow greater emphasis on budget outcomes and impact; and
- (iv) identify and address remaining sources of leakage in budget execution in order
- (v) To strengthen efficiency of public expenditures.

This will require, in addition to changes in policies and regulations, considerable modernization and automation of current budget and financial management and procurement practices. The Government of Ghana (GoG) commenced the implementation of a comprehensive government wide GIFMIS covering the offices of the MOFEP/CAGD, all Ministries, Departments and Agencies (MDAs), 10 Regional Treasuries and 170 MMDAs, as part of a WB/DFID/EU financed project approved in December 2010. The GIFMIS is covering the functional processes associated with budget preparation, budget execution, reporting and payroll processing.

The GoG is using Oracle Financials and Oracle HRMIS (Payroll) applications to carry out payroll processing. The Ministry of Finance and Economic Planning is using the



budgeting module of this platform to compile its budget while office of the CAGD is using Oracle Financials to carry out general ledger related operations and the Oracle Payroll module for processing the Government payroll.

Integrated financial management information systems (IFMIS) are computer- based systems that automate and store key financial information in large organizations like governments, multinational corporations and large non-profit institutions. The goal of these systems is to increase access to information while decreasing long-term costs. The initial investment of time and money to implement IFMIS is high, but the improved financial transparency and information access usually off-sets its initial expense.

An IFMIS can be off-the-shelf software or custom-made system, depending on the size and needs of the organization using the system. The primary features that distinguish IFMIS from other computer systems are:

- I. IFMIS can integrate accounting-related information, or larger organizational data management systems
- II. The standardization of data classifications for financial events.
- III. The reduction in duplicate data entry
- IV. Implementation of internal controls for transactions
- V. Production of multitude of reports.

The disadvantages of IFMIS are the following:

- a. It requires continuous support and maintenance to ensure integrity and functional use of the system
- b. It also has a high switching cost.





c. Before GIFMIS, and even PUFMARP, assessments carried on our Accounting and PFM systems highlighted several weaknesses among them are weak budget formulation, preparation and lack of ownership, weak expenditure monitoring and budgetary control, lack of proper accounting and monitoring system, lack of quality and timely data on government resources and, outmoded regulatory framework. In order to address these problems, the government of Ghana embarked on BPEMS as part of the major PFM reforms agenda (1998-2008) with the main objective of enhancing fiscal and macroeconomic stability. Due to the problems encountered in BPEMS, renewed efforts led to the rebranding of the current GIFMIS which is now Ghana flagship system of PFM reform programmes.

GIFMIS stands for Ghana Integrated Financial Management Information System, it is an integrated computerized financial management system for: budget preparation, budget execution, accounting and financial reporting; cash management; assets management; human resource and payroll management respectively.

The aim is to establish an Integrated ICT-Based PFM Information System in Ghana at the MDAs located at national, regional and levels and MMDAs to improve efficiency in public financial management.

The specific PFM problems to be addressed by GIFMIS are the following:

1. Lack of interface/integration between various PFM Systems
2. Inadequate budgetary controls over public expenditure
3. Lack of transparency in budget execution
4. Poor record keeping on public financial transactions

5. Undue delays in processing transactions due to cumbersome manual processes
6. Lack of reliable data for effective fiscal planning due to weak accounting and fiscal reporting system
7. Delays in financial reporting, especially at the national level

Table 2.2: Segments of the accounting flex field in GIFMIS

No.	Segment Name	No of Digits	Description
1	Institution	2 characters	An institutional unit as defined in the GFS 2001 Manual “is an economic entity that is capable, in its own right, of owning assets, incurring liabilities, and engaging in economic activities and in transactions with other entities.





2	Funding	5 characters	<p>The segment combines the previous separate segments for type and source of funds using a parent child relationship for sources of funds with type of fund.</p> <p>The Funding Classification provides a means to track the source of funding for expenditures. This code is particularly important as the Government reports information from direct funding to local budgets within a consolidated reporting scheme.</p>
3	Function of Government	5 characters	<p>In this segment, the classification of Outlays by Function of Government is defined using the COFOG definitions in the GFS 2001 Manual. The Functional Classification of expense is to provide a strategic overview of the allocation of budget resources between different sectors of the economy.</p> <p>(e.g. General Public Service, Health, Education, Social Protection etc.)</p>



4	Organization	10 characters	In this segment, the organization structure of the MDA is defined with the objective of budget and cost collection at defined and recognised cost centre units. It represents Ministries, MMDAs, Agencies of Governments and the Departments, and Divisions under them.
5	Program	4 characters	This segment provides the strategic objectives of the MDA/MMDA which defines the outcomes (what the mission wants to achieve) that has a direct impact on the community and addresses the specific needs and or interest of Ghanaian citizens.
6	Sub Program	4 characters	Sub programs are outputs or services that government entities provide for Ghanaian citizens. They are what should be produced to achieve the strategic objectives.
7	Project	7 characters	The project's segment has been included for prudence in order to record individual projects where there may be an activity which would have a one too many relationships to projects.



8	Activity	6 characters	Activities are individual acts which, when grouped together, constitute an output (what has to be done to produce the outputs).
9	Location	6 characters	This segment will record each geographical location, e.g. where work is performed or expenditure incurred. This is demarcated by Regions, Districts and the various Divisions.
10	Natural Account	7 characters	The natural account as produced in the trial balance is the essential component of the chart of accounts. This also refers to the broad classification of account transactions. The Account classes identified for Assemblies are Revenue, Expenses, Assets and Liabilities.
11 and 12	Spare Segments	8 characters	These are two segments with 8 characters and it is provided for future Business Operations

Source: Culled from Metropolitan, Municipal and District Assemblies Accounting Manual (2007)



2.6 International Public Sector Accounting Standards (IPSAS)

One of the major reforms in public sector transformation agenda is the adoption of public sector accounting standards. The International Public Sector Accounting Standards (IPSASs) were prepared by the International Public Sector Accounting Standards Board (IPSASB), an independent standard-setting body within the International Federation of Accountants (IFAC). The objective of the IPSASB is to serve the public interest by developing high quality accounting standards for use by public sector entities around the world in the preparation of general purpose financial statements. The IPSAS aims to improve the quality and transparency of public sector financial reporting as well to enhance governments' financial management capabilities.

Even though there are minor changes, IPSAS has recognized the following framework that is seen as the Public Sector Accounting framework worldwide.

A. Institutional Framework for Public Sector Accounting

The institutional framework should be in line with IFAC-issued International Accounting Standards. It should also support the groundwork for qualified public sector accounting staff to provide the timely, significant, and trustworthy financial information necessary to support all fiscal and budget management, decision-making, and reporting processes. The main characteristics of the framework include accounting laws and regulations; education and training of public sector accountants; application of a code of conduct; and numbers and characteristics of public sector accountants.



(1) Accounting Laws and Regulations

The Public Finance Act and the Financial Regulations are regulatory to the maintenance and compilation of accounts and does not consider International Accounting Standards. The Public Finance Act should require compliance with International Public Sector Accounting Standards (IPSAS). However, under the Public Finance Act, there are proposed rules that would promulgate the allowance of IPSAS to be followed. The future accounts should be based on Cash Basis IPSAS with notes providing other information on assets, liabilities, and contingent liabilities as required by the Public Finance Act. Progression to accrual-based statements would occur as adequate computerized accounting systems are rolled out.

A modern financial reporting framework is required for better accountability. The accounting function has been located in the Treasury. However, this has not provided a good separation of duties among departments. As new computerized public accounting systems are implemented, more suitable accounting units must be established, preferably in the ministries. Producing annual audited accounts within each government department will hold senior departmental managers accountable for their operations and use of budget funds. Development of the computerized accounting system has a tight timeline requiring intensive efforts for meeting the targets. The World Bank will provide the Ministry of Finance and Treasury with technical advice on the progressive design and implementation of the computerized public accounting system.

(2) Education and Training

Better opportunities for educating and training government accountants should be developed. Government accountants are recruited with limited accounting knowledge due



to the lack of proper curricula in universities. Government accountants need exposure and training in international accounting standards from professional institutions. Many training institutions provide a foundation for public sector accountancy qualifications of international standards, on an outreach basis. There is no comprehensive local training institution in Ghana, but the professional certification offered by the UK Association of Chartered Certified Accountants is available locally up to Stage 2. These professional accounting outreach programs will provide the core competencies needed for public sector accounting and reporting.

A training program that meets the IFAC-issued International Education Standards (IES) for professional accountants is needed for the public sector accountants and auditors. Consideration should be given, in due course, to adopting the public sector program of institutes like the Chartered Institute of Public Finance and Accountancy (CIPFA) in United Kingdom. This course can be adapted for local conditions and would provide a path for sustained, improved training. The advantage of this is that the CIPFA learning materials take into account international audit and accounting standards as required for adoption by public sector organizations. Among the CIPFA learning materials are modules covering financial reporting, accounting for decision-making, financial management, law and taxation, and information systems management.

The Ministry of Finance and Controller and Accounting General Department (CAGD) need to develop training plans. There is a need for constant upgrading of training for government accountants in the requirements of the Public Finance Act and the Public Financial Regulations and in the standards for preparing financial statements.

(3) Code of Ethics and Conduct

A code of ethics and conduct is needed to improve financial compliance and build the professionalism the government accounting staff. The current code in practice is part of the government employment contract and relates to public service behavior. It has little relevance to the IFAC Code of Ethics for Professional Accountants. A properly prepared code of ethics could help build public support that would aid in improving the state of public financial management in the country. The IFAC Code of Ethics should be the model used in preparing the national code.

The training programs should include ethics training and how the code ensures proper behavior. With certification under the professional qualifications outreach programs, accounting staff will be required to follow a code of ethics and conduct. For example, government accountants who are accepted into membership of professional institutes — whether as affiliates (for the Diploma holders) or as qualified accountants (for those who complete the full professional qualification) would be required to abide by the code of ethical standards of the respective institute, which is based on the IFAC Code.

Public sector accounting originated with the fundamental objective of ensuring effective control of the use of public funds. The traditional approach to public accounting sufficed for this purpose, being merely designed as a system for reporting budget execution. Nevertheless, it has gradually evolved to incorporate a globalised perspective with all the ensuing economic, financial and net worth implications for public sector activity.

Traditional public sector accounting was trapped in the past and slowly started to move away from business accounting, which has never stopped evolving in response to private sector demands.



Besides the shortage of information disclosed in the financial statements and notes to the financial statements, the following are the chief accounting shortcomings of the traditional public sector system versus the private sector system:

a. Cash Basis vs. Accrual Basis

In traditional public sector accounting, transactions are only recorded at the time of receipt or payment. Hence, managers do not have access to much of the information needed for proper decision-making.

b. Provisions

Provisions are not a feature of traditional public sector accounting and are merely booked when contingent liabilities generate a payment. The absence of this information in the financial statements for the accounting year when the provisions are known and the delay in recording provisions until they are paid out can strongly distort the image of the entity or institution, especially if the amount of the provisions is significant.

c. Accruals and Prepayments

Revenues or expenses spanning more than one financial year (for instance, interest earned on investments or financial liabilities) are only recorded in a traditional public sector accounting when they are received or paid out, irrespective of when the revenues or expenses were generated, which distort the profit/loss for the year.

As Fuentes (2001, p. 37) noted: “As the different aspects of public management reforms evolved – through the incorporation of new technologies, professionalization of human resources, deregulation, decentralisation and the move towards market-oriented or



customer-oriented thinking - criticism started to be levelled against traditional accounting systems because of their growing inadequacy.

The harshest criticism came primarily from academia and business, but it was not exclusive to these circles and also came from government and society which demanded a deep review of public sector accounting.”

This review was modelled on the standards applied by private sector companies.

(4) Public Sector Accountant Arrangements

The preparation of financial statements for each ministry requires a system of internal control .For each public sector body that prepares annual accounts, there should be a professionally qualified chief financial officer at post. The person in this position would be responsible for maintaining systems of internal financial controls that manage risks, and for preparing the accounts for signature by the chief accounting officer. The need to produce financial statements for each ministry would require well-working systems of internal financial controls.

B. Accounting Standards as Practiced

The diagnostic questionnaires have collected information on the current arrangements and the apparent gaps for setting public sector accounting standards and for presenting financial reports. Out of this exercise came recommended activities that will help bring local standards in line with international standards.

(1) Setting Public Sector Accounting Standards

More formal administrative actions should be taken by the Auditor General to set public sector accounting standards. Under the Constitution, the accounts of the State are kept





and maintained in such form and manner as prescribed by the Auditor General in consultation with the President of Maldives. The Public Finance Act sets the form of the annual accounts but does not specify the accounting standards required in preparing financial statements. The Auditor General should advise the President that Cash Basis IPSAS should be used as the international accounting standard in preparing financial statements with a road map to move to full accrual-based reporting over a period of time.

(2) Presenting Financial Reports

Annual financial statements should be prepared in accordance with Cash Basis IPSAS, with some early planning for effecting a transition to adopt accrual-based IPSAS. The current annual reporting statements do not accord with the format of the Cash Basis IPSAS but steps should be taken that allow them to do so in the future. The Auditor General should hold discussions with the Ministry of Finance and Treasury to arrange for the setting of standards in a formal manner and to reach an agreement that future accounts be presented in the format of Cash Basis IPSAS. Also, consolidation of controlled entities into the cash basis statements as per 1.6.5 of the Cash Basis IPSAS (e.g. public enterprises) should be considered.

State-owned enterprises should comply with new governance requirements established by the Public Enterprise Monitoring Board. State-owned enterprises follow International Financial Reporting Standards (IFRS), as issued by the International Accounting Standards Board (IASB) which require that the financial accounts should be produced annually within three months of the year-end, in accordance with good accounting practice, and should include the following :Profit and loss accounts for the year; cash flow statements for the year and balance sheet showing the position at year end There



should also be notes to support the financial accounts that set out the company's accounting policies and the main components of the accounts as required by good practice. The financial accounts should also be accompanied by a director's report that details financial activities of the company in the past and future.

All government bodies should be required to make all audited accounts available to the public. At present few accounts are available publicly, and governance requirements about the public availability and transparency requirements for these annual accounts should be made clearer.

The Auditor General should arrange consultations with the accountancy professions in the neighboring countries to consider ways of establishing similar professional accountancy arrangements in Ghana. The Public Enterprise Monitoring, which receives the audited accounts of state-owned enterprises, notes that in a few cases there have been audit qualifications to the accounts that have mainly been related to assets issues. This is one example of accounting problems that exist in Ghana. The country does not have a professional accountancy body to help regulate and support the profession. Other countries in the Region have larger numbers of professionals and operate professional bodies to regulate and support the accountants. The level of professionalism in Ghana may be improved by regional consultations and cooperation to develop similar arrangements as they exist in other nations.

However, globalization has brought about ever increasing collaboration, international trade and commerce among the countries of the world; hence, there is grave need for increased uniformity in the standards guiding financial statements so that such statement would remain comprehensible and convene the same information to users across the

world. The need for the development of unified accounting standards has been the primary driver of international public sector accounting standards for public sector financial reporting. While the commercial entities across the world are moving towards International Financial Reporting Standards (IFRS), governments are harmonizing with International Public Sector Accounting Standards (IPSAS).

Government has adopted for implementation the Accrual Basis International Public Sector Accounting Standards (IPSASs) as the reporting standard for the public sector of Ghana. IPSASs would, therefore, be the basis for the preparation of public sector accounts of Ghana for the year ended December 31, 2016, although given the complexity of the issues involved, a step by step approach to implementation, spanning a five-year period from 2016, will be encouraged

IPSASs are high quality global financial reporting standards issued by the International Public Sector Accounting Standards Board (IPSASB) of the International Federation of Accountants (IFAC) as a basis for preparing and presenting the financial statements of the public accounts of Ghana. IPSASs have been developed for use by public sector entities around the world and are meant to serve the public interest by requiring the presentation and disclosure of financial transactions in a comprehensive and consistent fashion to enhance transparency and accountable management of public resources. IPSASs regulate the recognition, measurement, presentation and disclosure requirements in relation to transactions and events in general purpose financial statements.



2.7 Challenges with the Adoption of Technology in the Public Sector Accounting in Ghana

The electoral cycle of Ghana influenced negatively the consistency of the implementation of the PFM reforms agenda. A study conducted by a Joint Evaluation in 2012 revealed a manifestation of deterioration in fiscal discipline about 18 months to elections. Consequently, there was a “build-up of arrears and a weakening of commitment and other internal controls (e.g. payroll)” (Betley, 2012). Each new government coming into power undertakes clearance of debts and putting up stricter internal control measures before the next electoral cycle thus repeating the cycle. The repetition of the cycle results in the deterioration in a number of PFM intermediate outcomes as measured by the PEFA assessment standards.

(The electoral cycle in Ghana influenced negatively, the consistency of implementation of the PFM reform agenda.) During each of the electoral cycles in the period studied, there was a marked deterioration in fiscal discipline in the 18 months leading up to the elections.(This resulted in the build-up of arrears and a weakening of commitment controls and other internal controls (e.g. payroll). In the aftermath of each election, the new government undertook clearance of arrears and tightening up of internal controls, before the following electoral cycle resulted in a repeat of the cycle. This has resulted in the deterioration in a number of PFM intermediate outcomes as measured by the PEFA assessment criteria) It has also diverted administrative effort and political attention away from the implementation of reforms. Politicisations of appointments to senior ministry and administrative positions has created uncertainty and disrupted the implementation of some reforms.



Technical sign laws – due perhaps to policy space constraints afflicted several of the PFM reforms

- a. BPEMS was over-ambitious in its conceptualisation, aiming to implement an integrated system (covering strategic budget preparation, procurement, execution, accounting, reporting, recording, and HR) to be rolled out to all MDAs and MMDAs (312 entities at that time). The design of the reform failed to take account of the limited IT familiarity and significant constraints to IT connectivity that until now have not been fully resolved. It also emphasised a technical, IT-led approach that failed to address adequately the requirements for underlying reforms to PFM processes and procedures. The management of the reforms, under a separate and relatively independent PIU, reinforced these weaknesses by marginalising key stakeholders, principally the CAGD and Budget Division, while insufficient attention was given to capacity issues and training requirements.
- b. IPPD2, the other main IT reform, was relatively more successful partly because it was much simpler in design, with its implementation focused on establishing a payroll processing and personnel management database for MDAs. As payroll processing is a central function, the new IT system involved only limited numbers of users of the system, which were concentrated at CAGD. It did not involve as many changes to underlying processes and hence posed fewer change management issues. Nevertheless, it also took close to a decade to implement at relatively high cost. IPPD2, at its current operational form only really comprises half of the system originally envisaged, providing a payroll processing function only, with no



corresponding personnel data-base. As with BPEMS, weak structures for monitoring progress and coordinating implementation contributed significantly to these failings.

- c. Weaknesses in the initial design of the MTEF directly contributed to its failure to establish a more strategic policy-led approach to budgeting. The focus of the reform was on activity-based costing and budgeting and little attention was given to the top-down strategic elements of the reform (the macro-fiscal framework, expenditure policy and sector priorities) and to the role of Cabinet in the budget decision-making process. Furthermore, the new procedures were not applied to personnel expenditure despite the fact that these represented the largest share of most MDA budgets. The result was an excessively detailed budget planning process that was not comprehensive and which lacked realism, with MDAs continuing to submit budget requests substantially in excess of the available resource framework.

Insufficient articulation of the PFM reform vision and strategy contributed to ephemeral political ownership of PFM reforms.

There was no overriding GoG prepared strategy to guide the PFM reform process. PFM diagnostic studies were largely carried out by the DPs, often in response to their own programming agenda. PFM reforms were articulated through a mixture of DP-prepared reform initiatives (e.g. PUFMARP), short and medium-term action plans prepared by MoFEP, and PFM actions listed in the annual budget statements. The lack of a clear GoG-owned and prioritised PFM reform strategy, meant reforms often lacked impetus to address problems as they arose. As is not unusual, the focus of political leaders shifted with regularity in response to political needs and did not necessarily follow a logical pattern. This meant that reforms that may have begun with initial high-level political and





administrative support were left to struggle when such support waned; the continuation of BPEMS after DP support ended is a good example. It also led to reform initiatives becoming compartmentalised within a single department without linkage to other elements of the PFM system. For example, although activity-based budgeting reforms were introduced in the late 1990s there is still no capability within the PFM system to account for expenditure by budget activity.

Deficiencies in bureaucratic and management structures adversely affected the capacity of MoFEP to achieve the successful realisation of PFM reforms. A range of factors can be identified. These include weaknesses in the high-level management and co-ordination of the reforms, departmental rivalries, and insufficient attention to change management requirements, failure to address human resources management and capacity issues, and ineffective monitoring of progress. The result was a tendency for reforms to continue at their own pace and a failure to take timely action to redesign or halt reforms that were clearly not working. For example, although problems with the MTEF design were identified earlier on, the MTEF process continued largely unchanged despite it being widely seen as having failed. Similarly, although issues with BPEMS were identified during implementation and various solutions were attempted, leading to project expenditures mushrooming, it took a change in government to halt BPEMS completely. Weaknesses in management decision-taking processes were also reflected in the tendency for reforms to get stuck at the pilot stage.

Sustained political commitment has been a key factor to the successful implementation of PFM reforms. Both the revenue reforms and IPPD2 received strong political level support, including at Cabinet level, which facilitated their implementation. By contrast

where such support has not been present (e.g. external audit and arguably BPEMS), reform progress has been slower.

The study has also examined the role of DPs and the extent to which this influenced the success of PFM reforms. DPs played a key role in supporting the reform process and financing the implementation of the reforms. The level of DP funding appeared to be sufficient, and DPs were responsive to GoG requests, particularly at times of economic and fiscal difficulty. Fifty-five (.55) DP disbursements were broadly in line with commitments in aggregate, although the timing did not always match GoG's desired timing, which delayed some activities. Nonetheless, disbursement delays were not a critical hindrance to reform.

The way in which DP support for PFM reform was provided also had an impact on its success. Specifically:

- i. Donor support that spanned a relatively long-time horizon and which provided a flexible support framework was better able to respond to reform opportunities as they arose, which was often linked to the political cycle. The revenue reforms supported by BMZ are a good example of where a flexible approach to support facilitated the reform.
- ii. Effective co-ordination among DPs also played an important role in reducing transaction costs and avoiding overlapping initiatives.
- iii. DP support that was tightly focused and limited in scope was often more effective than large ambitious projects, such as PUFMARP, which covered several component reforms that proved unwieldy to manage.





This need to update and modernise in order to adapt to this changing, more universal and more complex environment added the complexity and dissimilarity of the public sector and generated the need for suitable accounting standards. These standards were to pursue several aims, which can be summed up in the principal advantages of International Public System Accounting Standards (IPSASs); Enhanced transparency and internal control with regard to assets and liabilities in general; Broader and more uniform reporting on costs and income, leading to better support for governance; and greater uniformity and comparability of financial statements over time and between different organizations.

Lack of Financial Literacy and Complex Financial Software

Another challenge in the adoption of technology has been blamed on the lack of financial literacy among politicians and bureaucrats and overly complex financial software reporting, making it difficult for policymakers to take advantage of the potential benefits available to public finance reports

Schagen and Lines (1996, p91) define financial literacy as “the ability to make informed judgments and to take effective decisions regarding the use and management of money”.

Among the skills and knowledge that constitute financial literacy is financial competence. Financial competence includes the understanding of basic financial services, financial records (and importance of reading and keeping them), attitudes to spending and saving, and an awareness of the risks associated with some financial products and the relationship between risk and returns.

Politicians and bureaucrats who do not have these basic skills and knowledge find it difficult to interpret financial transactions for decision making purposes. For instance, a politician with financial deficiency finds it difficult to understand why there are delays in

transfer of funds that are meant to be disbursed to beneficiaries. These include GIFMIS bank transfers.

In addition, the non-tax revenue holding accounts at Bank of Ghana sometimes is beyond the comprehension of the bureaucrats. The non-tax revenues are funds lodged into the holding accounts at Bank of Ghana as directed by Ministry of Finance without a signatory. These funds will automatically be transferred to the non-tax organization that paid the funds into the holding accounts. The processes that are involved in transferring these funds into the operational accounts are beyond the understanding of the technocrats and their representatives in the regions. The processes and mechanisms involve in the transfer technological oriented. Consequently, management shows apathy in their support for the adoption of technology. In addition, most management staff are advanced in age and are apprehensive of technological innovation with regards to their job security, hence their resistance to change (Christiaens et al, 2010).

Cost and Source of Funding

Gyaase et al (2013) in their findings on the adoption of ICT in the public sector financial management reached a conclusion that, “cost and source of funding also influence the adoption of ICT for financial management in the public sector. Cost and source of funds for initial set up can be very expensive” Gyaase et al (2013) further explained that, statistics from their study “indicated that 60% of the respondents see cost of ICT infrastructure for financial management as an influence in the adoption of ICT”. Negroponte (1995) also agreed and asserted that high cost of computers and software represents a serious impediment to Africa's accessibility to the world of information



technology. The cost of personal computers (US\$1,500- 2000) per piece is higher than the per capita income of many African nations (Negroponte 1995).

Loss of Time and Disruption Caused by Transferring Data

Again, there is loss of time and disruption caused by transferring from manual to electronic system. Furthermore, software available may not necessarily meet operational expectations of the establishment and may require a customized one. All these processes may be cumbersome and time –consuming and can negatively influence an institution to adopt ICT (Evans, 1990).

Unavailability of ICT Infrastructure

Unavailability of ICT infrastructure is also seen as a challenge in the adoption of technology in the public sector. The study carried out by Gyaase et al (2013) shows that, “12 % of respondents strongly agreed that limited ICT infrastructure could negatively influence adoption of ICT in the operations while 62 % agreed, 12 % disagreed, and 13 % strongly disagreed and 7 % expressed no opinion’ respectively. This implied that the workforce sees unavailability of ICT facilities in their departments, agencies and offices, as a challenge in the adoption of technology in the public sector accounting system.

Other related challenges in the adoption of technology in the public sector are as follows:

- i. Inadequate electricity supply to sufficiently power ICT equipment uninterrupted affects the adoption of technology in the PSA
- ii. Access to remote regions and geographical aspects (swamps, mountains, and bad roads) posing transportation and physical access difficulties



- iii. Local government geographical location in relationship with the country's capital—the closer, the better for logistical purposes. Distance from the central government is not a problem, for example, when using VSATs (very small aperture terminals) for communications, but poses significant logistical difficulties for supplies, parts, and travel related to technical maintenance and instructors to teach local employees.
- iv. Ability to keep trained people in the job positions
- v. Difficulty in acquiring replacement parts and effective hardware maintenance.

2.8 Argument for the Use of Technology in the PSA

Many writers have advanced argument for the use of technology in the PSA. These arguments strengthen the use of technology in the PS. Císař (2002) argued that, technology in the PS can improve transparency and reduce corruption. Císař (2002) further argued that, the use of technology in the public sector is one of the anticorruption strategies to enhance transparency in the PS. 'ICT can improve transparency in the public sector by increasing the coordination, dissemination and administrative capacity of the public sectors', as well as improve service delivery by employing user-friendly administrative systems' (SPIDER ICT4D ,2010). The use of technology in the PSA does not only lead to efficiency and effectiveness, but also improves the availability of information to end users. A Budget Tracking Tool used in Kenya as a collaborative platform for grass roots communities to actively engage in public resource management proved that, accountability was enhanced by enabling citizens to monitor and track both disbursements and utilization of development funds (Heacock and Sasaki, 2010).





It is also argued that, the use of technology in the PS enhances transparency in government procurement. The automation of procurement system in areas such as tender submission, bidding and the selection of contractors online has a tendency in reducing corruption. Countries such as Russia, Italy, Japan and Philippines where electronic procurement system is practiced shows how automation of public procurement system leads to reduction of information asymmetry, reduction of cost and time, and enhancement of transparency and accountability thereby leading to reduction of corruption.

The use of technology in the PSA can also enhance decentralization of accounting in the PS. Centralization can be described as a situation where decision authority is held predominantly by senior managers within an organization (The Open University, nd). Under centralization, very little, if any, discretion is handled by branch managers who must operate in accordance with the laid down procedures by the Headquarters.

Decentralization, on the other hand, is a situation where “the authority to make decision is delegated to people at lower levels of the organization” (The Open University, nd). Decentralization usually takes place where growth in size and increased complexity demands for delegation of important decision-making authority necessary. Decentralization is a matter of degree and is usually present to varying degrees in most organizations.

With the increasing need to decentralize operations in the public sector, technology facilitates the operations in the PS. For instance, with the use of GIFMIS platform organizations can pay suppliers as well as accessed their accounts through the network.

The GoG Electronic Salary Validation is another form technology has helped in the decentralization of payment of salaries in Ghana. This has helped to identify ghost names in the public-sector payroll.

Another argument in favour of the use of technology in accounting in the PS is its ability to save time. Automation of various tasks at work place can guarantee efficiency and increase productivity. Accomplishment of specific tasks by computer such as payroll automation creates opportunity for correction instantly and eliminates human errors. Quick decision- making can take place as a result of easy access to information via a single database. Again, workers in public institutions can share technological gadgets such as printers and scanners through internal network system without having to move from one department to another.

2.9 Argument against the use of technology in the PSA

Even though Císař (2002) argued in favour of technology usage in the PS to promote anticorruption, he further asserted that, employment of technology alone in public sector will not necessarily bring any tangible results in the“ anti-corruption effort unless it is accompanied by other measures aimed at minimizing corruption opportunities in the public sector”. With this assertion, it is inferred that the adoption of technology cannot solve the problem associated with corruption, especially those related to bureaucracy which characterized public entities.

It is also argued that, the use of technology in the public sector accounting can be very expensive and cost of maintenance can also be high. This happens as a result of constant improvement which requires constant and costly upgrading. On each upgrade, employees





are expected to be trained. The time taken for the training leads to loss of productivity which is coupled with cost of software and implementation resulting in high cost to the institution. It has emerged recently in Ghana that, the Social Security and Insurance Trust (SSNIT) procured an OBS software for the institution to network its branches across the country at a cost of \$66m. Information later indicated that, maintenance and other costs pushed the amount to about \$72m. Even though \$72m is known now, the amount could be more than that as the Trust continues to pay for certain components of the contract.

Critics also raised the issue of security as part of making technology unsuitable for accounting in the public sector. Even though it enhances security in data handling, there is always a hacking risk from outside the institution. Hackers could make away with huge monies by transferring funds from the organisation. Wei (2015) reported that “the most sophisticated attack the world has seen to date in terms of the tactics and methods that cyber criminals have used to remain covert” when hackers stole \$1bn from more than 100 banks and other financial institutions in almost 30 countries including Russia, Japan, Europe and US. Khandelwal (2016) also reported how hackers stole \$80m from Bangladesh Central Bank in the Federal Reserve Bank account. This happened as a result of a Malware installed in the Bank’s computer system. Despite the increased online and mobile banking security, hackers always infiltrate a number of financial institutions in several countries where millions of dollars have been stolen.

Theoretical Literature Review

A theory is a tested statement or an array of statements, which are verifiable by evidence meant to clarify its occurrences. A theory is a logical explanation of links between phenomena. Scholars should be familiar with theories, which govern their work. (Kombo

& Tromp, 2009). According to Trochim et al. (2008), a theoretical framework determines the variables to be measured in the study, statistical relations to be determined in the light of the study problems and above all guides the study.

Theoretical literature aids the researcher to comprehend the study variables, offers general structure for data analysis, and assists in choosing appropriate research design. New public financial theory and technology adoption models and theories guided this study.

NEW PUBLIC FINANCIAL THEORY

Supporters of New budgetary administration (NPM) hypotheses selection of private segment rehearses, which utilizes bookkeeping to benefit measurement and results (Lapsley et al., 2009). Hence, practices, for example, gathering and cost bookkeeping, execution spending plan and entire of governments' records (Chan, 2003; Broadbent and Guthrie, 2008) are at the focus of PSA changes. This scan for new bookkeeping based monetary administration systems has brought about the 'New Public Financial Management (NPFM)'. As indicated by Guthrie et al. (1999), in spite of the fact that there is no internationally institutionalized NPFM framework, some basic qualities can be distinguished, for example, the improvement of market situated administration frameworks, the advancement of an execution estimation approach and changes to budgetary announcing frameworks. These progressions are typically in view of the appropriation of AA in monetary revealing framework rather than the money or 'cameralistic bookkeeping' that had been the standard budgetary data framework in general society part for a long time (Guthrie et al., 1999; Wynne, 2004; Christiaens et al.,



2010). AA and money bookkeeping would be the extremes of the bookkeeping administrations, with the most recent being related to out-dated practices (Christiaens and Rommel, 2008). Between these extremes, a few varieties

would be watched consolidating components of both past premise. They would be the adjusted money premise, the altered collection premise and the 'cameralistic' bookkeeping.

TECHNOLOGY ADOPTION MODELS AND THEORIES

Hoenig (1995) and in addition Lai (2016) noticed that the rate at which installment frameworks create depends generally on a battle between fast mechanical change and common obstructions to new item or administration acknowledgment. Various speculations have proposed to clarify shoppers' acknowledgment of new innovations and their aim to utilize. These included, however were not confined to, the Theory of Diffusion of Innovations (DIT) (Rogers, 1995) that began in 1960, the Theory of Task-innovation fit (TTF) (Goodhue, and Thompson, 1995), the Theory of Reasonable Action (TRA) (Fishbein and Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), Decomposed Theory of Planned Behavior, (Taylor and Todd, 1995), the Technology Acceptance Model (TAM) (Davis, Bagozzi and Warshaw, 1989), Final form of Technology Acceptance Model (TAM) Venkatesh and Davis (1996), Technology Acceptance Model 2 (TAM2) Venkatesh and Davis (2000), Unified Theory of Acceptance and Use of Technology (UTAUT), Venkatesh, Morris, Davis and Davis (2003) and Technology Acceptance Model 3 (TAM3) Venkatesh and Bala (2008).



Rogers (1995) recommended that the hypothesis of 'dispersion of advancement' was to build up the establishment for leading exploration on development acknowledgment and selection. Rogers incorporated research from more than 508 dispersion examines and turned out with the 'dissemination of advancement' hypothesis for the selection of developments among people and association. The hypothesis explains "the procedure by which a development is conveyed through specific channels after some time among the individuals from a social framework" (Rogers, 1995, p. 5).

Essentially, it's the procedure of the individuals from a social framework conveyed an advancement through specific channels after some time known as dissemination. The Rogers' (1995) dispersion of advancement hypothesis clarified that the advancement and selection occurred in the wake of experiencing a few phases including understanding, influence, choice, execution, and affirmation that prompted the improvement of Rogers (1995) S-molded reception bend of trailblazers, early adopters, early larger part, late greater part and slow pokes as appeared i.

Empirical Literature Review

According to Zikmund et al. (2010), empirical literature review is a directed research of existing journal articles, books, newspapers, magazine reports and other published works that present empirical findings that are related to a topic under study. Literature review is a complete examination of prior inquiries relevant to a study question. Literature review provides room for the researcher to put the under studied topic into historical and intellectual context. Put differently, literature review aids the researcher to justify why the study matters.

Public sector accounting frame work

The International Accounting Standards Board (IASB) was framed in 2001 as a successor to the previous International Accounting Standards Committee (IASC), which was set up to plan and distribute, in the general population intrigue, International Accounting Standards (IAS) to be seen in the introduction of distributed money related proclamations and to advance their overall acknowledgment and recognition (International Financial Reporting Standards - IFRS, 2007). Global Accounting Standards Board (IASB) is in charge of building up, checking and giving adequate translations of the arrangements of International Financial Reporting Standards (IFRSs). IFRS since origin has presented various new helpful, unpredictable, confounding or potentially extending existing bookkeeping structures. Structures of Accounting are raised from existing

Bookkeeping Theories. Bookkeeping hypothesis is a material field in Accounting. Generally, bookkeeping originates before money related economy. This was correctly, in the period of deal economy (i.e. trade of products for merchandise) when exchanges were pre-dictated by estimation as well as by trade esteems. The statute in which merchandise were traded at a careful distance through purposeful endeavors of social event, deciding and estimating esteems are both pre and postante bookkeeping. The Trade by deal period was described by estimation imbalance, unwieldy as far as generation assortment and combined with the issue of fortuitous event of needs, were all-characteristic in bargain economy. Be that as it may, the advancement of bookkeeping hypothesis was to improve the inborn issues experienced





in deal economy, not at all like money related economy. It is correlated to comprehend the significance, degree and utilization of a hypothesis in humanities and administration sciences with a specific end goal to value crafted by bookkeeping hypothesis. A hypothesis as indicated by American Institute of Certified Public Accountants (AICPA), (1970) is a structure that

binds together the hidden rationale or arrangement of thinking. Such hypothetical structure, however abstracts from the complexities of this present reality is intended to accomplish a level of effortlessness vital for investigation. Nonetheless, hypothesis is helpful in clarifying, assessing and foreseeing the marvels related with a given field of thought like on account of bookkeeping. Osuala (2005), like Okoye (2003) sees hypothesis as an endeavor at orchestrating, connecting and coordinating experimental information for greatest illumination and unification. He included that each individual has various individual speculations in view of proposes and suspicions of shifting degrees of ampleness and truth from which he makes conclusions of different degrees of significantly and obviously of exactness.

It will be helpful to express that the word 'hypothesis' is utilized at various levels even ever. Bookkeeping hypothesis may mean simply theoretical understandings or exact clarifications of occasions for monetary choices. Bookkeeping hypothesis is characterized as a firm arrangement of calculated, speculative and down to business suggestion clarifying and controlling the bookkeeper's activities in recognizing, estimating and imparting monetary data to clients of budgetary proclamation, (American Accounting



Association (A.A.A). 1966). Wolk, Dodd and Rozycki (2008) opine that bookkeeping hypothesis comprise of the essential presumptions, definitions, standards and ideas and how they are determined International Accounting Standards Board (IASB) was formed in 2001 as a successor to the former International Accounting Standards Committee (IASC), which was established to formulate and publish, in the public interest, International Accounting Standards (IAS) to be observed in the presentation of published financial statements and to promote their worldwide acceptance and observance (International Financial Reporting Standards - IFRS, 2007). International Accounting Standards Board (IASB) is responsible for establishing, monitoring and giving acceptable interpretations of the provisions of International Financial Reporting Standards (IFRSs). IFRS since inception has introduced numerous new useful, complex, confusing and/or expanding existing accounting frameworks. Frameworks of Accounting are raised from existing

Accounting Theories. Accounting theory is a material field in Accounting. Historically, accounting predates monetary economy. This was precisely, in the era of barter economy (i.e. exchange of goods for goods) when transactions were not only pre-determined by measurement but also by exchange values. The precept in which goods were exchanged at arms-length through concerted efforts of gathering, determining and measuring values are both pre and postante accounting. The Trade by barter period was characterized by measurement inequality, cumbersome in terms of production variety and coupled with the problem of coincidence of wants, were all-inherent in barter economy. However, the development of accounting theory was to ameliorate the inherent problems encountered



in barter economy, unlike monetary economy. It is pertinent to understand the meaning, scope and application of a theory in humanities and management sciences in order to appreciate the work of accounting theory. A theory according to American Institute of Certified Public Accountants (AICPA), (1970) is a structure that unifies the underlying logic or system of reasoning. Such theoretical structure, though abstracts from the complexities of the real world is designed to achieve a level of simplicity necessary for analysis. However, theory is useful in explaining, evaluating and predicting the phenomena associated with a given field of thought like in the case of accountancy. Osuala (2005), like Okoye (2003) views theory as an attempt at synthesizing, interacting and integrating empirical data for maximum clarification and unification. He added that every individual has a number of personal theories based on postulates and assumptions of varying degrees of adequacy and truth from which he makes deductions of various degrees of crucially and of course of accuracy.

It will be useful to state that the word 'theory' is used at different levels even in the history of accounting. Accounting theory may mean purely speculative interpretations or empirical explanations of events for economic decisions. Accounting theory is defined as a cohesive set of conceptual, hypothetical and pragmatic proposition explaining and guiding the accountant's actions in identifying, measuring and communicating economic information to users of financial statement, (American Accounting Association (A.A.A). 1966). Wolk, Dodd and Rozycki (2008) opine that accounting theory consists of the basic assumptions, definitions, principles and concepts and how they are derived.

THEORY OF ACCOUNTING IN PUBLIC SECTOR

The early improvement of bookkeeping framework is traceable to the most antiquated urban areas, in Mesopotamia, a home of number in the vicinity of 450 and 500 BC. (Keistar, 1965): Greece and Rome were urban areas where coinage was concocted in

around 630 BC (Chatfield, 1977) and China is the place bookkeeping frameworks were worried about the recoding of traders, sanctuaries, and domains (FU 1971). Keister (1965), additionally portrayed the utilization of earth tablets inspired with the markings of the Cuneiform content by the Scribe, a trailblazer of the present day bookkeeper. The framework

in spite of the fact that moderately straightforward by present day measures; the Mesopotamia economy did not require further developed framework to record its exchanges and property among parties. Goldberg (1949) additionally perceived the chronicle of complex exchanges of grain including a few people, an arrangement of record-continuing (bookkeeping) which is an unmistakable show that bookkeeping is socially developed. Chatfield (1977), saw the frameworks of bequest records in part of Athenian Empire, by Zenon as far as information gathering, recording and investigation by a few individual as obligation bookkeeping. This framework utilized by Zenon Papyri concerning information age, recording and examination, (however intricate and careful) were adequate to identify blunder, extortion and wastefulness in the framework. The Zenon Papyri approach had little worry for basic leadership, productivity or gainfulness,



and maybe this element may nullify a great deal of work that went into the working framework (Glautier, and Underdown 2001). The

Zenon framework was produced in the fifth Century BC and later altered by the Romans. Goldberg (1949), saw the adjustment of Zenon in antiquated Rome as the reminder book (adversaria' in Greek) and the month to month exchange of sections to the records ('codex tabulae' in Greek), from which the present record has inferred its name

'codex'. This arrangement of recording in antiquated Greece and Rome as per Goldberg (1949) and Chatfield (1977), demonstrates that the bookkeeping frameworks were for the most part worried about account and presenting misfortunes because of burglary, misrepresentation, wastefulness and defilement. It was not for basic leadership and resources security. Gulman (1939), included that the bookkeeping framework around then kept away from money related reports to pariahs or assurance of wage or assessment because of government and associated parties. The framework still uncovers that the bookkeeping framework at that period was obviously satisfying the societal needs and desires of the clients of money related explanations. Fu (1971) said the bookkeeping frameworks that were generally utilized by medieval and expansionist for traders and homes in China, under Chou administration (1122 - 1256), took into account vast physical separations and a few layers or pecking orders. Authorities who were expected to gather assesses as products for use by the magnificent government did as such to guarantee consistence. The surplus items however were gathered for send out and were utilized outside China, (Yameh, 1940). The framework, however in points of interest,



covers a few authorities and huge separations to guarantee great authoritative control through the arrangement of larger amount authorities as inspectors who report at occasional

interims of ten days, thirty days and yearly by and large. The Chou framework may apparently have stringent and fitting punishments for rebelliousness by defaulters, (Yameh, 1980). Ahmed (2000) contended that,

stores bookkeeping framework exists as general save support, uncommon hold store and save subsidize. The wellspring of the merchandise, the reasons for which they were utilized, the recurrence of charges being demanded and each duty roof were all bases of bookkeeping framework. Nwoko, (1990), in comparative vein, watched that the most punctual records known, which pre-dates financial economy, were all bookkeeping records, and were of antiquated Middle Eastern Civilization of Egypt, Mesopotamia, Crete, and Mycenae. These were primarily records of physical amounts of products. Perara and Mathew (1966), opine that coinage was created presumably in Lydia at around 700BC because of challenges experienced in keeping up the records and other inalienable elements related with bargain framework. The early bookkeeping records were engraved on stones and marble tablets in the Parthenon building accounts in Athens and Acropolis. Nwoko (1990) and Perara (1966) likewise watch that the Zenon Papyri which was found in 1915 contains data in business, agribusiness, and development activities of the private bequest of Apollonius kept under the bookkeeping framework. These records were kept in amazing and expound framework that had been in Greece since the fifth century BC.



The Zenon bookkeeping framework had arrangements for obligation bookkeeping; composed records of all exchanges, individual record for compensation paid to workers, stock records, and records for resources acquisitions and transfers. Also, it contains confirmation of inspecting of all records, (American Institute of Certified Public Accountants (AICPA), (2006).

Chapter conclusion

Technology is a tool which in modern day is used in every aspect of work. When introduced into the work environment, it brings about desired organizational development. The introduction of technology into PSA has enhanced the quality of work at a reduced speed worldwide. Technology as explained by the many scholars in the above literature is thus ligated to the development of all aspects of the public sector. Through the introduction of technological packages such as the GIFMIS, public sector finance persons are now endowed with the ability to make initiatives and decisions to solve problems that affect the financial lot of the public sector without been called to do so in most cases.

Remediating the role technology play as examined above by the different researchers above, one can infer from their explanations that its introduction in any aspect of work helps in ensuring speed, efficiency and above all, accurate reporting. PSA is of no exception.



CHAPTER THREE

METHODOLOGY

3.0 Introduction

In the previous chapter, a review of the related literature on the subject matter was made. This chapter takes a look at the selection of the study area, sampling and sampling procedure, and source of data (which included primary data, secondary data and field observations) for the study. The chapter ends by looking at data analysis and presentation, limitation and delimitation of the study.

3.1 The Study Design

The descriptive study design was employed in this research. The research is structured within the framework of descriptive research approach to obtain information, which concerns the current status of phenomenon (Saunders, Lewis & Thornhill, 2007). The use of descriptive research enabled the researcher to expose or bring to light the factors that contribute to the effectiveness and efficiency of technology and the extent to which these factors can affect accounting in the public sector.

3.2 Selection of the Study Area

The selection of Northern Region (NR) of Ghana as the study area was for several reasons. The NR hosts a lot of government agencies, departments and businesses. With a total of 26 MMDAs, the NR has one metropolis, 2 municipal assemblies and 23 district





assemblies. Most of the MMDAs host a number of government agencies, departments and businesses that have accounting departments performing similar functions such as payroll management, preparation of monthly and annual accounts, as well as handling donor support funds. All the accounts departments in the MMDAs across Ghana perform similar functions. Therefore, the performance in the NR can to a large extent reflect the public sector accounting practices and performances in the other regions.

3.3 Sample and Sampling Procedure

The target population for the study consisted of Heads of Department, Administrators, Accountants, Procurement Officers, Internal Auditors, and Budget Officers of the Metropolitan, Municipal, and District Assemblies (MMDAs), and Ministries, Departments, and Agencies (MDAs). The reasons for the inclusion of the above officers were due to the role they play in their various offices. The Heads of Department (HoDs) are the spending officers upon the advice of the accountants, hence their inclusion. The accountants and the accounts officers help in bringing to bear the extent to which the efficiency and effectiveness of the technology use. Also, the accountants and accounts officers are frontline officers in financial reporting, and are very much active in various schemes aimed at enhancing technology adoption in the public sector.

In general, 327 respondents from MMDAs and MDAs in the Northern Region were interviewed. Some staff at the Ministry of Finance also provided responses. The following are the breakdown of the respondents:

Table 3.1: Distribution of Sample Size

Sector	Respondents	MMDAs	Total
Ministry of Food and Agriculture	2	26	52
Ministry of Health	2	26	52
Ghana Education Service	3	26	78
MMDAs	17	27	142
Ministry of Finance (National level)	3	1	3
Total			327

In each MMDA, the target respondents were Coordinating Director, Accountant, Procurement Officer, Internal Auditor, and Budget Officer. The Directors and Accountants at the Ministry of Health and Ministry of Food and Agriculture were the respondents for their sectors. At the Ghana Education Service, the Director, the Accountant and Human Resource Manager were the respondents. In the Tamale Metropolis alone, 12 respondents were interviewed. The 12 respondents were part of the 327 respondents surveyed. The table below shows the breakdown of the respondents in the Tamale Metropolis.



NUMBER OF RESPONDENTS IN THE TAMALE METROPOLIS

SECTOR	RESPONDENTS
Controller and Accountant General Department (Regional Director, Regional Accountant, and Officer in-charge of GIFMIS)	3
Ministry of Food and Agriculture (Regional Director, Regional Accountant)	2
Ministry Health (Regional Director, Regional Accountant)	2
Ghana Education Service (Regional Director, Regional Accountant)	2
Regional Coordination Council (Regional Coordinating Director, Regional Accountant, and Regional Budget Officer)	3
Total	12

(Field Survey, 2016)

In selecting samples to be included in the study, non-probability sampling technique was used. Purposive sampling technique which is one of non-probability sampling technique was used to select the respondents. This is because it was believed that these officials were in the best position to respond to the research questions.





3.4 Sources of Data

3.4.1 Primary Data

The study was based on primary data collected from May to June 2016. The data collection instruments were a questionnaire and interview guides with the financial managers of the public sector in Ghana. The primary data provided reliable and accurate first-hand information relevant to this study.

3.4.2 Secondary Data

Relevant documents from government sources significant to this study were reviewed as part of the literature review. Other important literature related to the topic was also reviewed to enrich the study. These included journals and other publications, such as textbooks, research reports and internet sources. The idea of secondary data was to gather necessary information to guide the conduct of the research project and to offer theoretical backing.

3.4.3 Field Observations

This was done by the researcher to have first-hand information about the use of technology in accounting in the public sector reforms in Ghana. Issues that emerged during the field observations included availability of electricity, the use of computers and accessories, inadequate ICT infrastructure in the public sector of Ghana, especially network connectivity and the use of anti-virus software to protect the computer and data. Other issues included Legislative limitations and the relative level of computer literacy of the people.

3.5 Data Analysis and Presentation

This section deals with the methods of analysis of the data. Quantitative and qualitative methods were used to analyse the data. The data was gathered by the use of a structured questionnaire and the results were computed into percentages of the variables and subsequently presented in the form of pie charts, bar charts and tables.

Microsoft Excel was the main tool employed to analyse the data in order to help interpret the results. Justification for the choice of this program was that, this technique facilitated word processing, allowing for ease in data analysis and accurate pictorial presentations.

The responses were considered based on the relevance to the study. This gave the general idea of the study with respect to the use of technology in accounting in the public sector which serves as a benchmark for adopting IPSAS as part of government effort to achieve PFM in public sector in Ghana.



CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS OF FINDINGS

4.1 Introduction

This chapter discusses the findings of the survey carried out to find out the use of technology to enhance Public Sector Accounting (PSA) in Ghana. The survey used a semi-structured questionnaire to gather the data. In all 327 participants responded to the questionnaire. Where applicable, tables and figures are used to illustrate and support the findings.

In the analysis of the data vis-à-vis the research questions raised, frequency and percentage tables based on the types of responses by the respondents were constructed. Respondents again were assured of confidentiality of their responses and that the data provided would only be used for academic purposes.

4.2 Objective One

4.2.1 Understanding the Evolution of Public Sector Accounting in Ghana

It is important to examine the evolution of technology usage in accounting in the PSA of Ghana in order to understand the genesis of the changes that took place over the years. This section therefore examines how long respondents have been able to stay in their current positions in their entities to be able to tell the technological changes that have taken place in their organizations. It also looked at the challenges of various systems of accounting adopted.

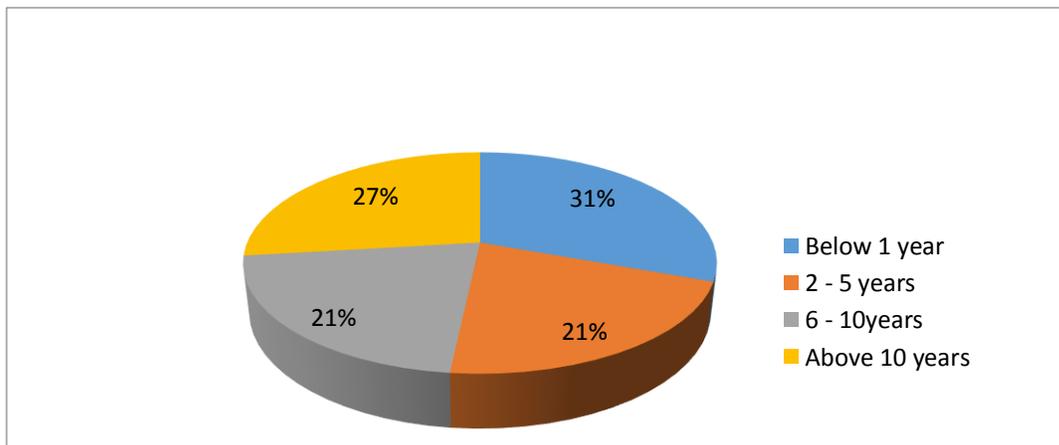


Table 4.1: How long respondents had been with their entities

Duration	Total	
	Frequency	Percentages
Below 1 year	100	31.00
2-5 years	69	21.00
6-10 years	70	21.00
Above 10 years	88	27.00
TOTAL	327	100

Source: Field Data, 2016

Figure 4.1: Period Respondents Had Stayed with their Entities



Source: Field Survey, 2016

To be able to tell the history of organizations, respondents needed to have stayed in their organizations for long. The objective here therefore was to find out how long respondents had been in their organizations.



Figure 4.1 above shows the responses on the length of time respondents had been with their respective organizations or entities. This was to find out from them the evolution of technology uptake in their respective entities. About 31% of them were less than one year in their current organizations. Also 21% indicated they had stayed between 2 and 5 years while another 21% indicated they had spent between 6 to 10 years in their current organizations. Those who had stayed above 10 years constituted about 27%. In other words, more than half (69%) of the respondents had been on their jobs for at least two years to be able to tell the technological adoption history of their various organizations. Besides given the length of time they had been with their various entities some of the respondents would have participated in implementing technological changes in their various entities.

The 21% who spent between 6 and 10 years in their organisations explained that, having kept long in their positions, they saw the introduction of computers into their organizations since 2006 by donor partners such as European Union and UNDP. Some of them explained that, they were initially trained in MS Excel to enable them use it to present their financial records. The accuracy by which they calculated their figures and the manner by which they captured and presented their financial records made their work easier than before. They were however quick to add that, when they were engaged in their current positions, they met calculators being in use in the offices. That means, the use of calculators as a technological tool to support PSA started long ago.

They further explained that, “other training programmes they received with regards to the use of technologies included (1) Intergovernmental Fiscal Framework for Local Government Funding in 2008, (2) New Payroll Management System – IPPD3 in 2009,

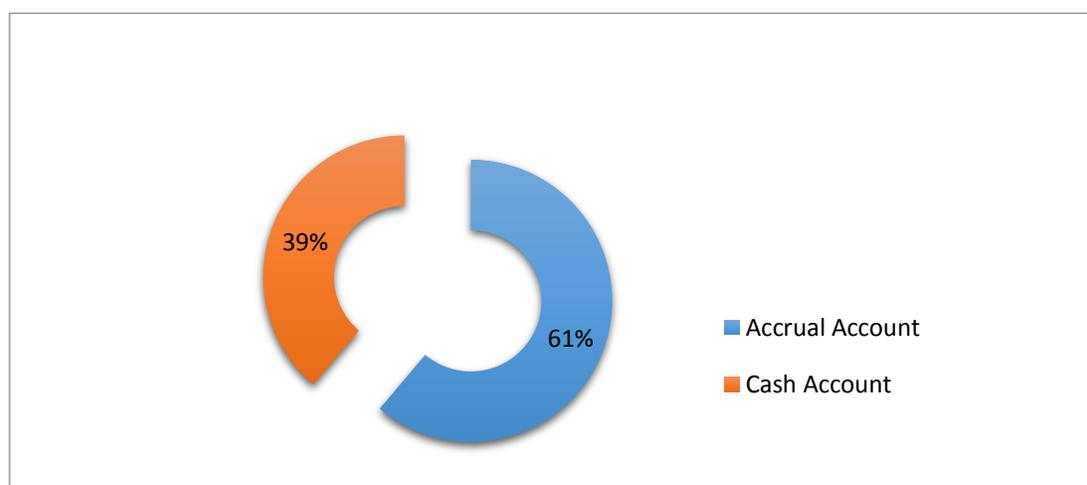
and (3) Ghana Integrated Financial Management Information System (GIFMIS) in 2011/12”. Other study that supports the argument includes In Roger's (1995) see, bookkeeping innovation improves arranging and assessment of the association's money related position and execution by handling bookkeeping information in a more dependable, important, reasonable and equivalent frame to both inside and outside partners though (Evans, 1990) contend that innovation in PSA could be unwieldy and tedious which can adversely impact an organization to receive innovation.

Table: 4.2 Types of Accounting System Used in the PSA

Types	Frequency	Percentage
Accrual	200	61
Cash	127	39
Total	327	100

Source: Field Data, 2016

Figure 4.2: The Type of Accounting System Used in the PSA



Source: Field Survey, 2016

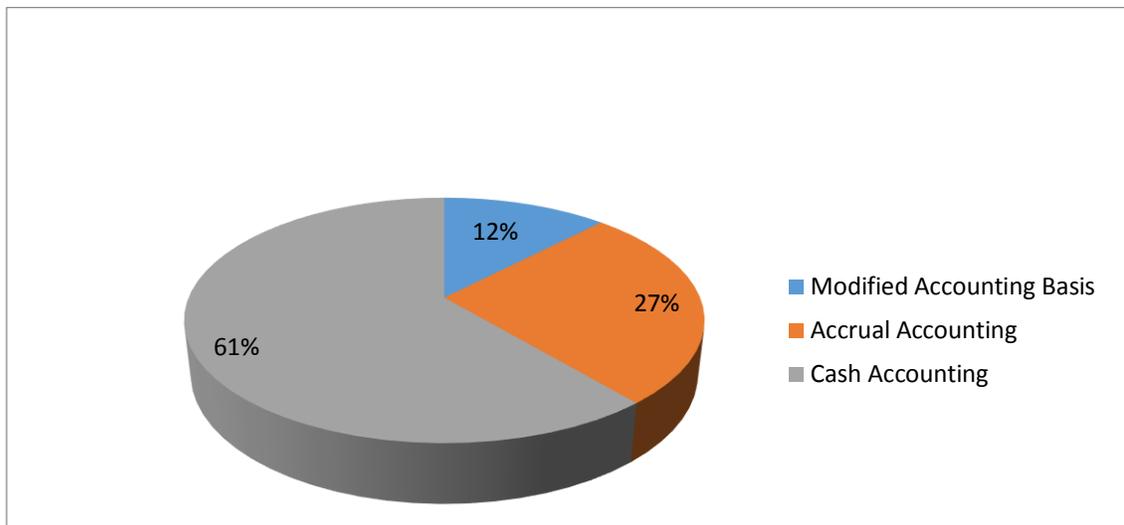
The researcher wanted to know the type of accounting system PS entities currently use. Respondents were therefore asked about the current type of accounting system used in their organizations. In all, 61% of them indicated they use accrual accounting as against 39% of those who use cash accounting. This shows that, even though 39% still use cash accounting, the 61% usage of accrual accounting indicate an acceptance of International Public Sector Accounting Standards thus drifting away from cash accounting gradually. There is some positive relation between this finding and MMDA accounting manual for (2007) and the public financial management ACT 921 2016 which state all public entities must use accrual accounting proponents like McCulloch (1992) summarized the accounting changes in the context of public sector reforms in New Zealand by focusing on the central government. They argued that accrual accounting is a natural consequence of the reforms largely following generally accepted accounting practices . Figure 4.2 above shows the responses from the survey.

Table 4.3: System of Accounting before the Adoption of Accrual Accounting System:

Responds	Frequency	Percentage
Modified accounting basis	40	12
Accrual Account	87	27
Cash accounting	200	61
Total	327	100



Figure 4.3: System of accounting used before the adoption of the current system



Source: Field Survey, 2016

Figure 4.3 above illustrate the responses about the system of accounting used before the adoption of accrual accounting. About 61% indicated they were using cash basis accounting, 21% said they were using accrual accounting whiles 12% said they were using modified accounting basis. Therefore, the money accounting framework at first depended on reserve discharged by central government which uses accrual accounting to MMDAs in light of their financial plan exhibited to central government. It is money based since consumptions are brought about when they happen while income is received when money is gotten. This implies that money is received when local government discharge shares of appointment. All things considered they can now cause consumption in view of money discharged by local government. With this, the MMDAs are bound by law to spend precisely the measure of money discharged within that accounting period. Public Sector Accounting in Ghana was more or less a book keeping exercise in the public sector accounting records. As a result of changes and reform by various



governments it has enhanced its effectiveness by the adoption IPSAS which harmonizes public sector accounting reporting system. For instance, in the past salaries were paid by cash. However, the adoption of IPSAS has brought some changes to this practice and it no longer exists. Hitherto MMDA budgets were presented without justifications to the items on it. In recent times, the adoption of composite budget system compels the MMDAs to justify every budget line estimated. This kind of change has made every officer responsible and accountable to whatever action he takes in line of duty. This was gathered from interactions with public formal treasury staff who worked with government department in northern region accountants.

Conclusion

Concluding from the above, one will infer from the responses that the accrual accounting system is most preferable due to its flexibility in Accountability. Again, it makes working easier in terms of producing financial reports for stakeholders.

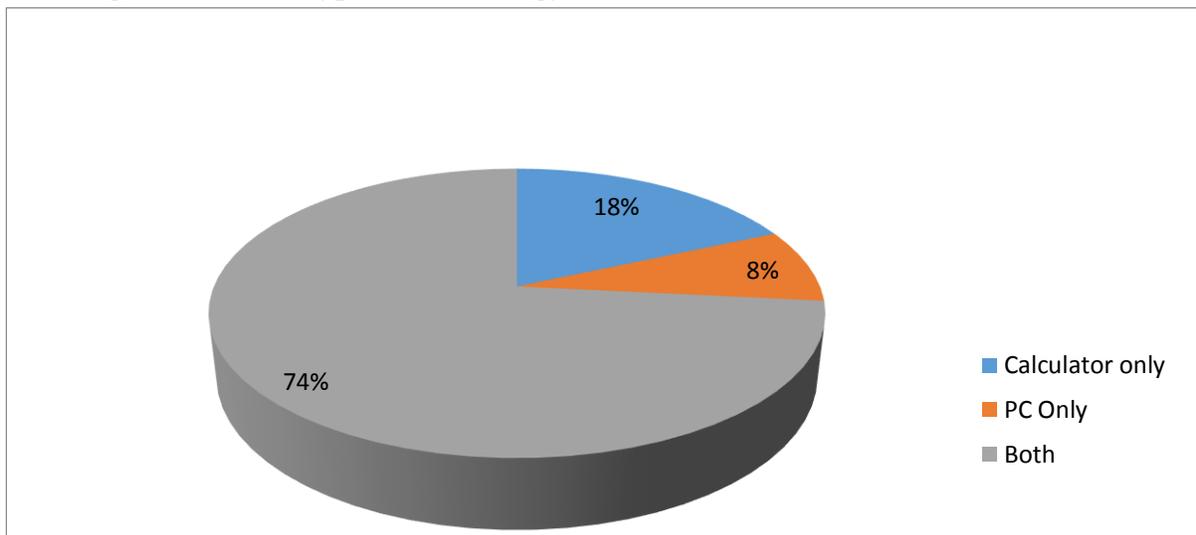


4.3 Objective Two:

4.3.1 The extent of technology uptake in public sector accounting in Ghana

This section deals with the extent to which technology has been accepted and used in public sector accounting in Ghana. The objective is to find out how wide technology has been accepted and used in PSA and its achievement in the sector.

Figure 4.4: The Type of Technology Used in the PSA in Ghana



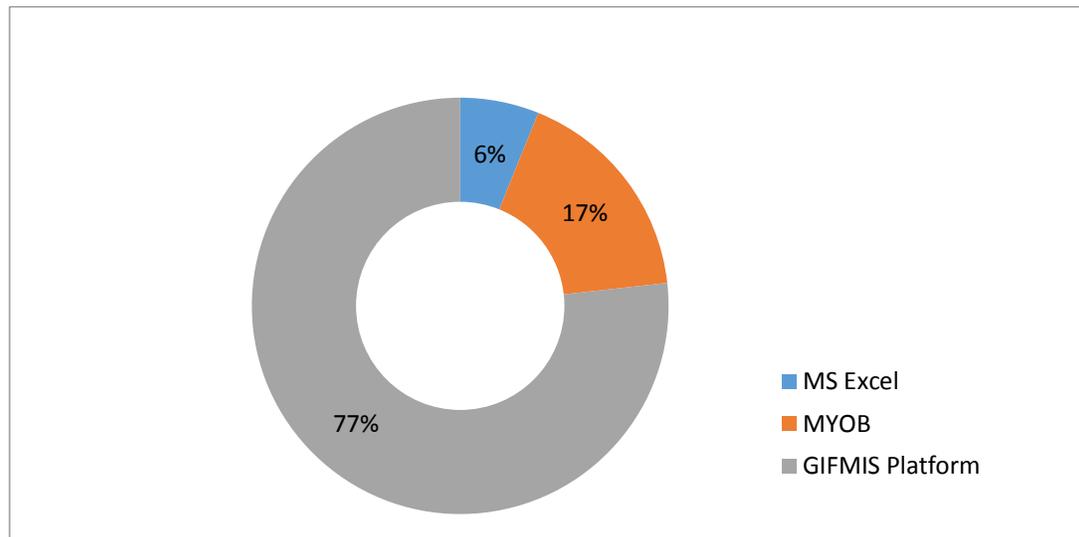
Source: Field Survey, 2106

There are different types of technologies available and used in different public sector accounting (PSA) depending on their capacity to afford. Some PS entities still use personal calculators with a lot of paper work whilst other use personal computers. Figure 4.4 above shows the responses from the survey. About 18% indicated they still use calculators only in the office, 8% said they use only PC while a greater majority of 74% indicated they use both PC and a personal calculator in their work. The extensive use of personal computers and calculators by public sector workers as revealed by the survey means that most of the respondents were still not in control in the use of the computer to



generate reports for public use. This was supported by the finding of Gyaase et al (2013) Implied that the workforce sees unavailability of ICT facilities in their departments, agencies and offices, as a challenge in the adoption of technology in the public sector accounting system.

Figure 4.5: Type of Accounting Software Used in the PSA in Ghana



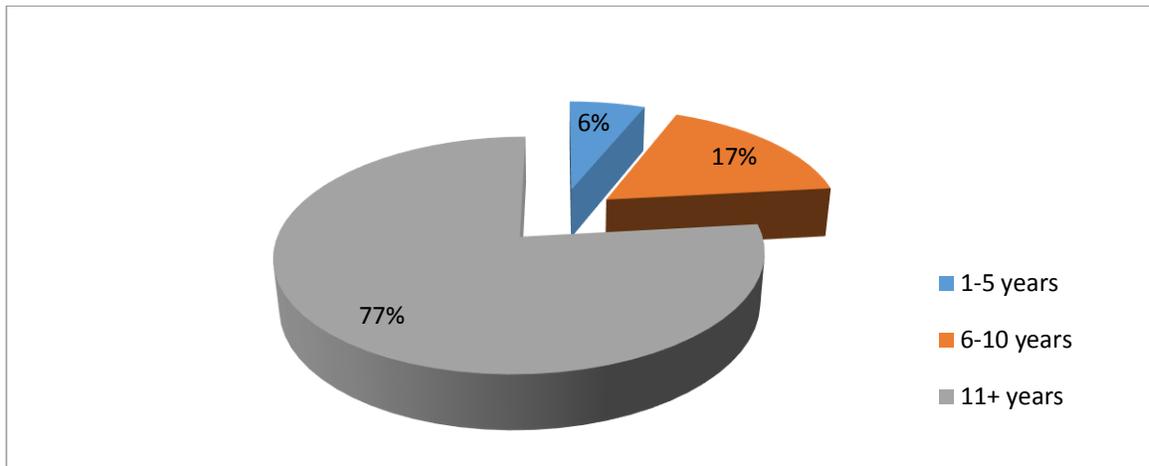
Source: Field Survey, 2016

Since majority of public sector accountants (PSA) use personal computers for accounting purposes, the researcher wanted to know what types of accounting software were being used to generate accounting information in their entities.

Figure 4.5 above shows the responses from the survey on the accounting software used in their organizations. About 77% indicated they were on the GIFMIS platform whilst 17% indicated they used Manage Your Own Business (MYOB) accounting software. Another 6% said they still used MS Excel programme to generate accounting information in their offices. This means that, majority of PSAs use technology to perform their duties.



Figure 4.6: The Length of Period Technology has been used in PSA

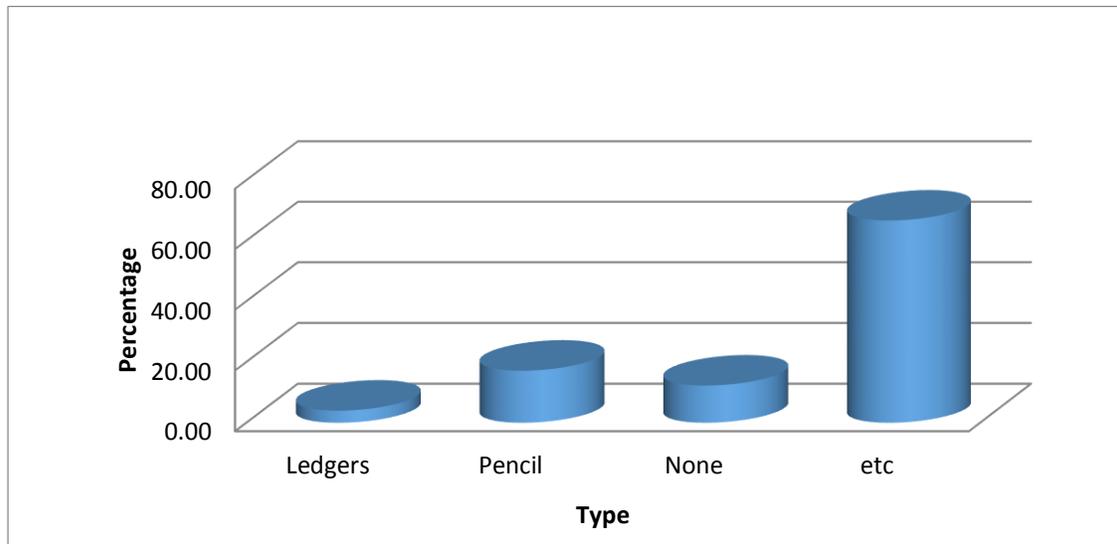


Source: Field Survey, 2016

In an attempt to understand the acceptance level of technology in the PSA, the researcher attempted to find out how long users/respondents had been using technology in their entities. An overwhelming number of respondents (77%) indicated they had been using technology for the past 11 years and over, 17% indicated they had been using technology in their entity for a period of 6-10 years, and another 6% indicated they had been using technology for not more than 5 years. The Figure 4.6 below shows the responses from the survey.



Figure 4.7: Nature of Accounting before the Introduction of Technology to Entity?



Source: Field Survey, 2016

Public sector accounting in the past was mostly on double entry basis where ledger books, cash books, trial balance, receipts and payment accounting were prepared and sometimes with journal accounts. These accounts were prepared monthly and submitted to the Controller and Accountant-General with copies sent to the Auditor- General. The purpose of this was to ensure that public accountants prepared their accounts in line with public accounting mandate such that funds released by central government were used judiciously for the purposes.

Compliance with public accounting reporting standards is very necessary because the accounts are prepared in line with their intended purposes. Survey supports the assertion made by (Prawitt, 1997) that, the only tool accountants used was a hand manual calculator, a columnar pad and a sharp pencil. In those days, an electric pencil, erasers and sharpener were among modern tools and high components. Replacing them are computers—mostly personal desktop computers and their accessories which come with

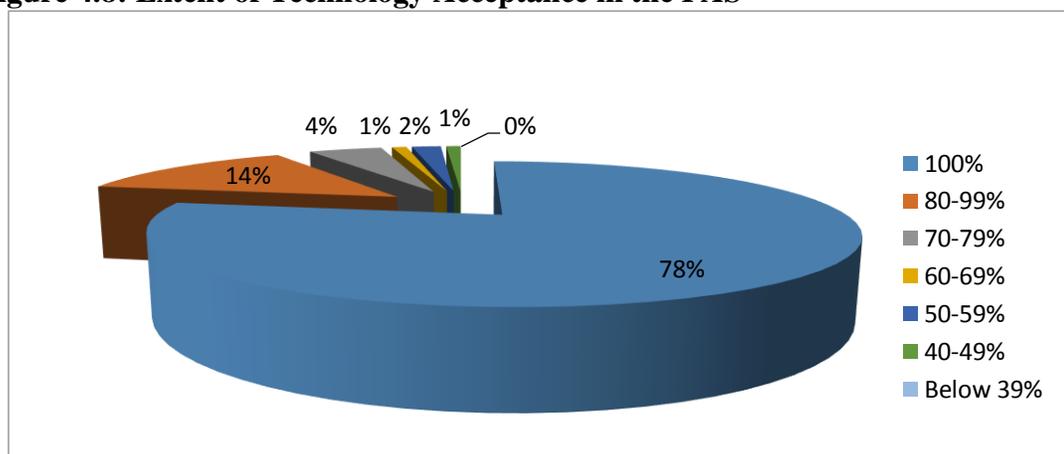


their software products that do the work, and (then some, of those old, clunky four-function calculators).

Table 4.4: Acceptance of Technology in the PSA

Responses	Frequency	Percentage
YES	20	6
NO	307	94
TOTAL	327	100

Figure 4.8: Extent of Technology Acceptance in the PAS



Source: Field Survey, 2016

Having been able to know the length of period respondents stayed in their entities, it was important to know directly how they had accepted the use of technology in the performance of their duties. The chart (Figure 4.8) above illustrates the responses from the survey. About 78% of the respondents indicated they fully accepted technology. In other words, they completely accepted to use technology in the performance of their duties as accountants. Another 14% indicated their acceptance level of technology to be



between 80-99%, 4% indicated 70-79% as their acceptance level while, 2% indicated 50-59%, and some 1% indicated 60-69% as their respective acceptance level of technology. Figure 6 below shows the extent of technology acceptance in the public sector accounting (PSA) in Ghana.

Conclusion

On the extent of technology acceptance in the public sector accounting (PSA) in Ghana, one would say that technology had been with PSA for far too long. As much as 78% or (255) of the respondents indicated they fully accepted technology. In other words, they completely accepted to use technology in the performance of their duties as accountants. Again, it's worth mentioning that prior to the introduction of the GIFMIS Platform, Microsoft excel (spree sheet) was the most used computer application.

4.4 Objective Three:

The study attempted to find out from the respondents some of the importance of the use of technology in the PSA. Respondents were asked to choose whether they ‘‘Agree’’, ‘‘Disagree’’ or ‘‘Not Sure’’ to some statements on the contributions of technology to the public sector accounting (PSA.) The responses are illustrated below (Table 4.4).



Table 4.5: The Contribution of Technology in Public Sector Accounting Practice in Ghana

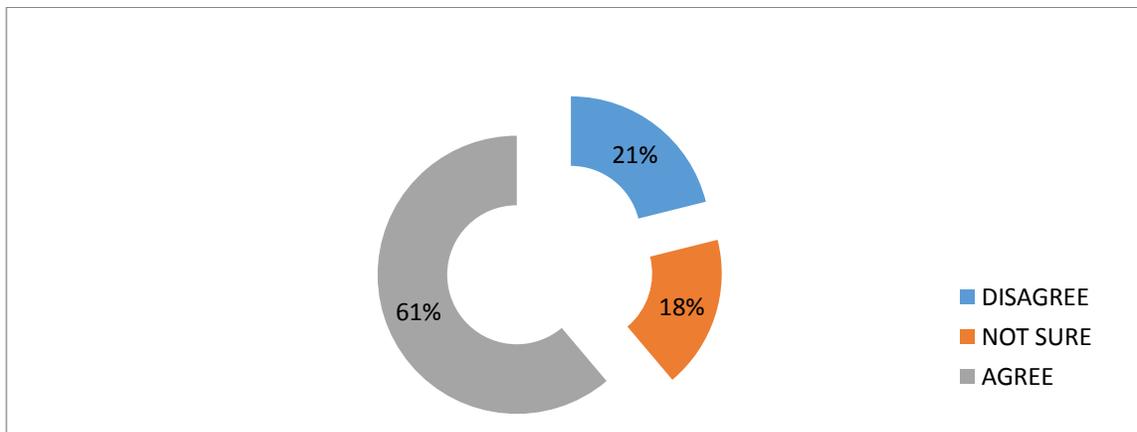
NO	STATEMENT	DISAGREE (%)	NOT SURE (%)	AGREE (%)	TOTAL
1	The use of technology improves the decision-making of public sector entities.	21	18	61	100
2	The use of technology increases the accountability of the public sector entities	11	13	76	100
3	The use of technology leads to a better management of government's financial resources.	28	27	45	100
4	The use of technology is necessary for effective cost accounting	30	27	43	100
5	Technology makes it easier to formulate budgets in the public sector.	10	28	62	100
6	Technology leads public sector entities to take a long term view when making financial	21	24	55	100



NO	STATEMENT	DISAGREE (%)	NOT SURE (%)	AGREE (%)	TOTAL
7	Technology is effective with cash basis budgeting in the Public Sector Accounting	23	4	73	100
8	Technology is effective with accrual basis budgeting in the Public Sector Accounting.	28	8	64	100
9	The cost of technology implementation is justified by its benefits	34	5	61	100
10	The adoption of technology prevents creative accounting practices	15	7	78	100



Figure 4.9 Technology in PSA Improves Decision Making of PS Entities

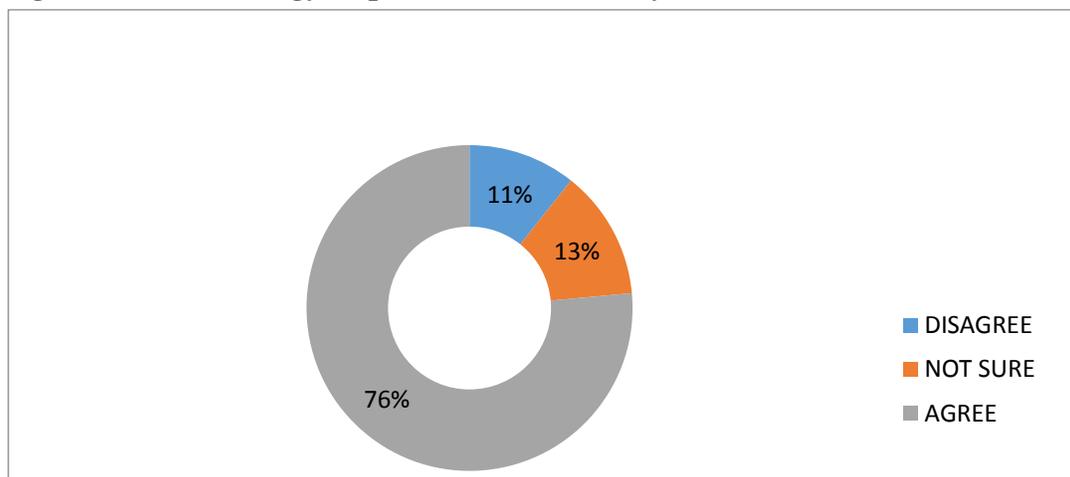


Source: Field Survey, 2016



Figure 4.9 above illustrates the responses on how the use of technology in PSA improves decision making in public sector entities. In all 61% of the respondents agreed that technology in the PSA improves decision making in the PS entities. Another 21% disagreed that technology in the Public Sector Accounting improves decision making. On the other hand, 18% were not sure if use of technology in PSA improves decision making this is data agree with with IFAC (2011, p.12) assertion that technology improves quality decision making process in public sector entities while contradicting to the finding of Marriott *et al.* (2011) on capital asset management in the National Health Service (NHS) case, which suggests that the information registered by asset management information systems is not used for decision-making purposes, and this non-useful information would not justify the accounting changes.

Figure 4.10 Technology Improves Accountability in PSA

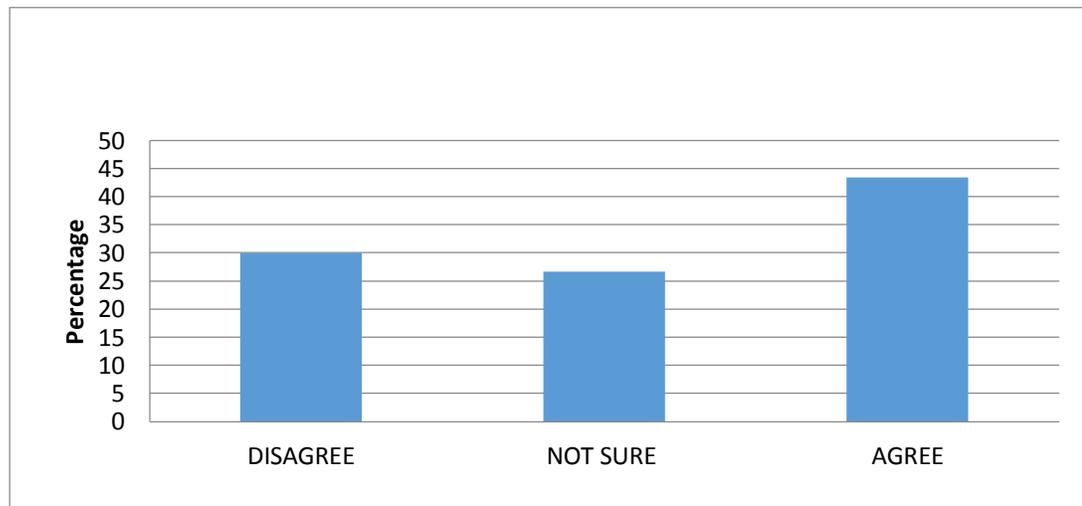


Source: Field Survey, 2016

From figure 4.10 above, the chart shows the role technology plays in accountability of PS entities in all 76% agreed that technology increases accountability of PS entities. Another 13% indicated they were not sure and some 11% disagree that technology in PSA

increases accountability in PS entities. The major issue for public sector financial reporting is that many governments departments and agencies still stick to cash basis of accounting, and therefore provide minimal disclosures relative to what the public, banks, investors, and credit providers generally expect of the private sector. Given the multitude of banks and private sector investors that hold government debt, it is not amazing that there is a growing demand for the same level of financial transparency and accountability from the public sector as is already expected from the private sector. Accrual-based accounting ensures greater transparency and accountability in public sector finances as well as better monitoring of government debt and liabilities. In a time when government reporting and transparency are being questioned, it is critical that governments work to build trust between themselves and their constituents. Governments use taxpayers' resources to invest in infrastructure and provide services that need to be accountable for as to how those resources are used.

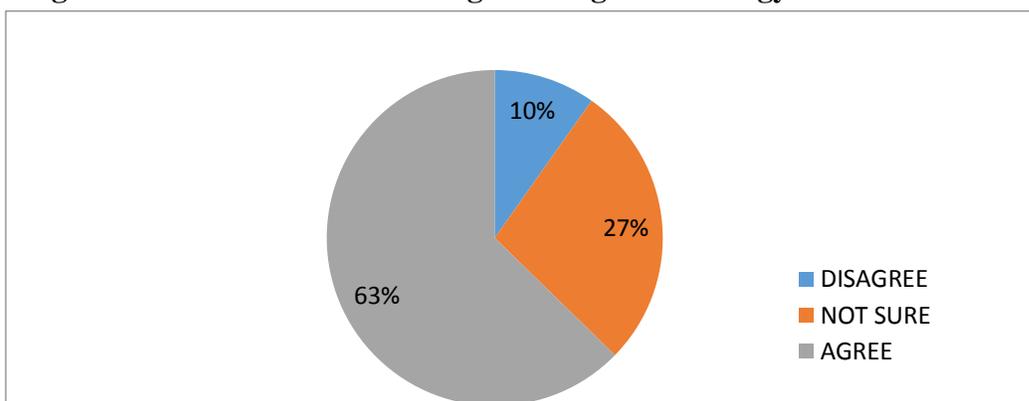
Figure 4.11 Use of Technology for Effective Cost Accounting in the PS



Source: Field Survey, 2016

With regards to cost accounting in the PSA, about 43% agreed that, technology is necessary for effective cost accounting. Another 30% disagreed that technology is necessary for effective cost accounting whilst 27% were not sure if technology is necessary for effective cost accounting. Figure 4.11 above illustrates the responses about technology being necessary for effective cost accounting.

Figure 4.11: Formulation of Budget through Technology in the PS

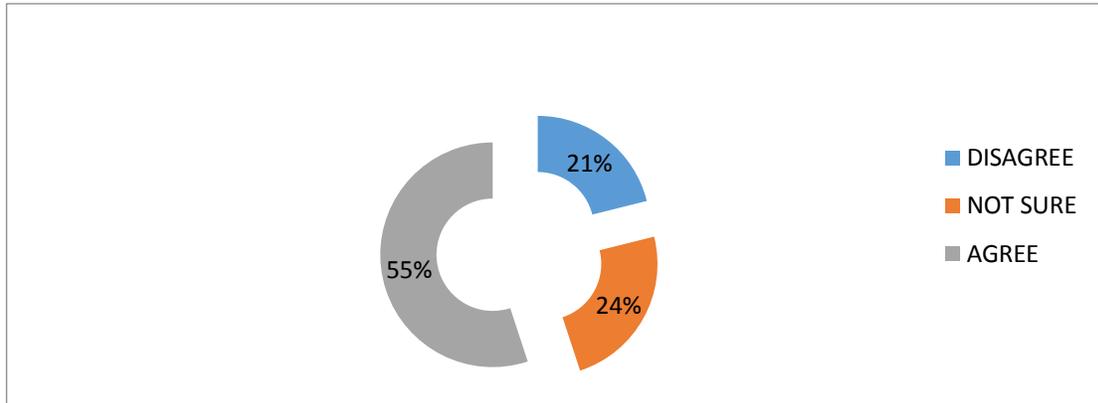


Source: Field Survey, 2016

Figure 4.11 shows the responses about the use of technology in the formulation of budget in the PSA. In all, 62% agreed that technology enhances the formulation of budget in the PSA whilst 10% disagreed with this view. Some 28 % were not sure if technology actually makes it easier for budget formulation in the PSA. It is so because technology has enhanced local government to formulate and analyse operational and capital budgets as well as administration of performance measurement programs. Budgeting technology and the systems have the ability to change current requirements for budget formulation. This finding has positive relationship with that the finding of (Bruno, 2013) in his write the up the finding are that it helps to formulate budgets.



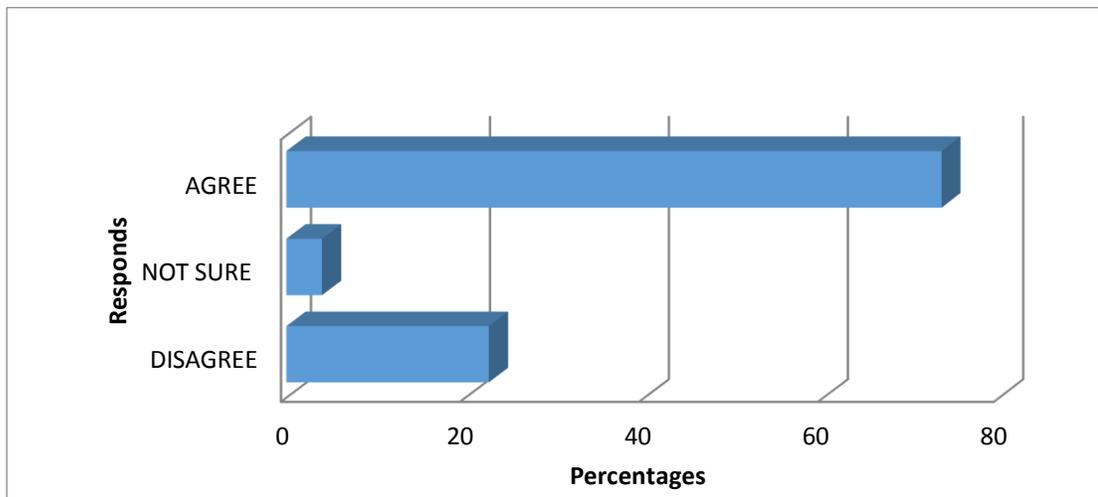
Figure 4.12 Long-Term Views When Making Financial Decisions in PSA



Source: Field Survey, 2016

In making a financial decision in the PSA, it is important to be able to forecast into the future or have a long term view. Responses from the survey indicated that, 55% agreed that technology helps in projecting a long term view when taking a financial decision in the PSA. Another 21% disagreed but 24% said they were not sure whether technology leads public sector entities to take a long term view when making financial decisions.

Figure 4.13: Benefits to Internal Users

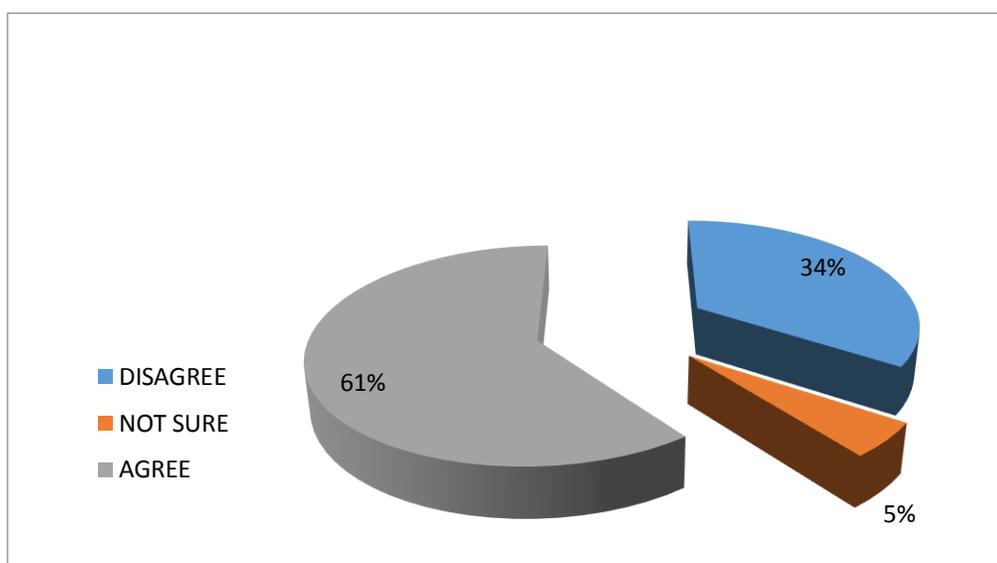


Source: Field Survey, 2016



The survey also attempted to find out how technology in the PSA benefits internal users such as the accountants, auditors, and heads of department. It was realized that 73% agreed that, technology in the PSA benefits internal users, whilst 23% disagreed. About 4% were not sure about the benefit to internal users. See item 7 from Table 4.5 above, which gives 23%. 4% and 73% respectively. Your discussion here is on benefits while Table 4.5 item is Effectiveness.

Figure 4.14: Effectiveness of Technology with Accrual Basis Budgeting in the PSA



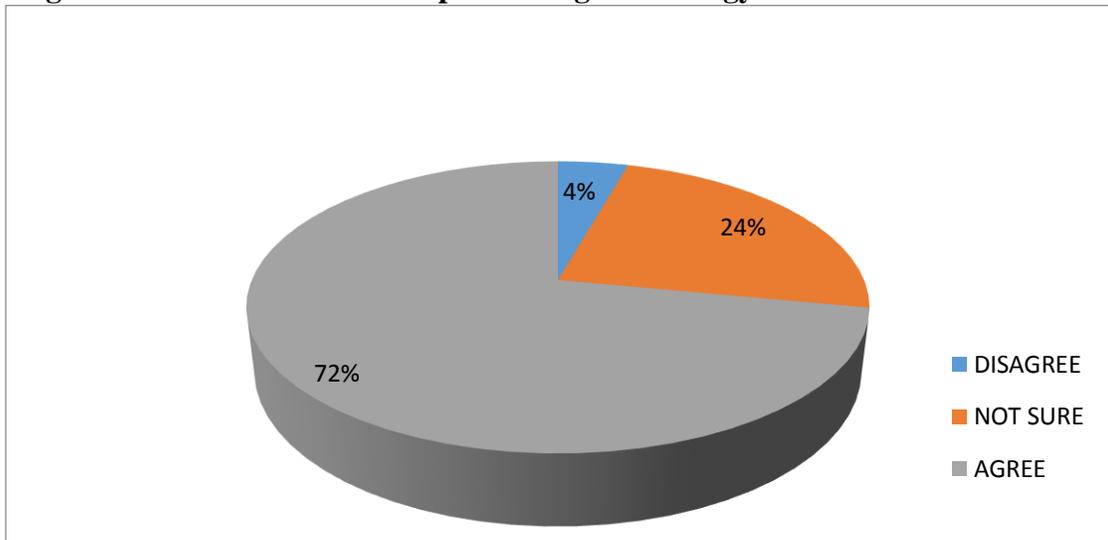
Source: Field Survey, 2016

From the responses in figure 4.14 above, the majority (64%) of respondents agreed that technology is effective with accrual basis budgeting in the PSA as compared to the cash basis.64% %. Another 28% did not agree whilst 8% were not sure of the assertion.

The introduction of performance information (PI) into budgeting has been linked to wider reform efforts to improve expenditure control and/or public sector management.

Performance budgeting initiatives tend to go hand in hand with performance management. These initiatives seek to shift the focus and emphasis of management and budgeting away from inputs and processes towards measurable results. The initiatives can be combined with reductions in input controls and increased flexibility for managers – in return for stronger accountability for the results – so as to enable them to decide how best to deliver public services and more so to create concrete information on the performance of agencies and programmes. Advocates claim that the use of performance information in budgetary decision making can contribute to improving allocation and productive efficiency as well as aggregate financial discipline.

Figure 4.15: Cost Benefit of Implementing Technology in the PSA



Source: Field Survey, 2016

Another side of assessing the role of technology is through its cost. From the survey, about 61% indicated that the cost of implementing technology is justified by the benefits the PSA is deriving from the reforms. In other words, the benefits outweigh the cost of implementing technology in the PSA. However 34% disagreed that technology



implementation in the PSA is more beneficial while an insignificant 5% indicated they were not sure about its benefits in the PSA. The initial cost of adoption of technology must not outweigh the benefit that it will bring to the people. The purpose of this kind of argument is to adopt a system that is universal in terms of low cost as well as citizenry acceptability. This argument clearly holds considering software that are used by some government corporations. Such corporations view technology adoption only on how to make profit to enrich their benefit at the end of the year for providing quality services resulting to pressure on central government to intervene. Examples of such state corporations are; Ghana Water Company, Volta River Authority, Ghana Ports and Harbours Authority. Hyndman and Connolly (2011) identified that the transition costs technology adoption were uncertain, but likely to be substantial. They could not identify short term benefits or even alleged long term benefits that would justify by the adoption. Even though the costs may vary significantly according to the scope of the changes, it is difficult to ensure that the benefits are worth these transition costs.

This is the summary of data analysis of contribution of technology in public sector in Ghana using chi-squared test statistics.

H_0 : *The use of technology does not improve PSA practices.*

H_1 : *The uses of technology significantly improve PSA practices.*

Table 4.6 The contribution of technology in public sector accounting practice in Ghana.

ITEM	DISAGREE	NOT SURE	AGREE	TOTAL
The use of technology improves the decision-making of public	69	58	200	327



sector entities.				
The use of technology increases the accountability of the public sector entities.	35	42	250	327
The use of technology lead towards a better financial performance management of the governments' financial resources.	90	87	150	327
The use of technology is necessary for effective cost accounting.	98	87	142	327
Technology makes it easier to formulate budget in the PSA	32	90	205	327
Technology leads public sector entities to take a long term view when making financial decisions.	69	78	180	327
Technology benefits internal users of PSA.	74	13	240	327
Technology is effective with cash basis budgeting in the PSA.	93	25	209	327
Technology is effective with accrual basis budgeting in the PSA.	112	17	198	327
The costs of technology implementation is justified by its	14	76	231	321

benefits.				
The adoption of technology prevents creative accounting practices.	49	23	255	327
Technology leads to better debt management to prevent future financial crises.	22	45	260	327
Total	757	641	2260	3918

Expected Count

ITEM	DISAGREE	NOT SURE	AGREE
The use of technology improves the decision-making of public sector entities.	63.18	53.50	188.62
The use of technology increases the accountability of the public sector entities.	63.18	53.50	188.62
The use of technology lead towards a better financial performance management of the governments' financial resources.	63.18	53.50	188.62
The use of technology is necessary for effective cost accounting.	63.18	53.50	188.62
Technology makes it easier to formulate budget in the PSA	63.18	53.50	188.62

Technology leads public sector entities to take a long term view when making financial decisions.	63.18	53.50	188.62
Technology benefits internal users of PSA.	63.18	53.50	188.62
Technology is effective with cash basis budgeting in the PSA.	63.18	53.50	188.62
Technology is effective with accrual basis budgeting in the PSA.	63.18	53.50	188.62
The costs of technology implementation is justified by its benefits.	63.18	53.50	188.62
The adoption of technology prevents creative accounting practices.	63.18	53.50	188.62
Technology leads to better debt management to prevent future financial crises.	63.18	53.50	188.62

$$\begin{aligned} \text{Chi-Square Test Statistic} &= \sum \frac{(f_o - f_e)}{f_e} \\ &= \frac{(69 - 63.18)^2}{63.18} + \frac{(58 - 53.50)^2}{53.50} + \dots + \end{aligned}$$

$$\frac{(45 - 188.62)^2}{63.18} \sim \chi^2_{df, 0.05}$$

Computing the Chi-Square Test Statistic

Item	$\frac{(f_o - f_e)}{f_e}$
The use of technology improves the decision-making of public sector entities.	69.56
The use of technology increases the accountability of the public	35.01



sector entities.	
The use of technology lead towards a better financial performance management of the governments' financial resources.	40.28
The use of technology is necessary for effective cost accounting.	51.69
Technology makes it easier to formulate budget in the PSA	17.49
Technology leads public sector entities to take a long term view when making financial decisions.	12.15
Technology benefits internal users of PSA.	46.51
Technology is effective with cash basis budgeting in the PSA.	31.45
Technology is effective with accrual basis budgeting in the PSA.	72.12
The costs of technology implementation is justified by its benefits.	57.26
The adoption of technology prevents creative accounting practices.	43.93
Technology leads to better debt management to prevent future financial crises.	55.2
Test Statistic $\chi^2 = \sum \frac{(f_o - f_e)}{f_e}$	532.62

Chi-Square Test Statistic $\chi^2 = 532.62$

df = (12-1)(2-1)

= 22

Critical value $\chi^2_{22,0.05} = 33.92$

Critical value $\chi^2_{22,0.01} = 40.29$

The critical value of χ^2 0.05 and 0.01 are 33.92 and 40.29 for 22 degree of freedom. The null hypothesis is rejected at both the 0.05 and 0.01 alpha levels at 95% and 99% confidence because the obtained test statistic 532.62 higher than either of the critical values. We conclude that data about contribution of technology in public sector accounting practice in Ghana indicates that the use of technology significantly improve PSA practice statistically.

4.5.0 Challenges Posed by Adoption of Technology

The adoption of technology in PSA is not without challenges. This part assesses the challenges practitioners encounter in their line of work.

4.5.1 Lack of Financial Resources for Staff Training

Most of the public sector entities lack adequate financial resources to train their staff on the use of technology in the PSA. This is because they depend on government subvention which is inadequate to be used for such purpose.

Another challenge which was observed in the attempt to adapt to technological changes in the PSA is unavailability of computers and frequent interruption of power supply to power the computers. Most of the PS entities do not have computers in their accounts section to carry out regular training programs for their staff. Besides that, frequent power outages make it difficult to use even the few computers available. An example that was cited by the respondents was the 2014 dumsor power crisis in Ghana. Sixty-six percent (60%) of the respondents from the MDAs indicated that, poor or unavailability of internet connectivity, especially in the rural districts, makes it difficult to train staff on new reforms as some of the software use internet. Others expressed concern about high cost of



training staff, time constraints in the training as well as poor understanding of government policy directions by stakeholders.

4.5.2 Audit Challenge with the Use of Technology

Some of the respondents indicated that for audit purpose, the use of ICT in accounting seems not to receive the needed attention because computer- based auditing is not popular in Ghana. For instance, an internet generated payment voucher need to be audited using computer based audit and because computer based audit is not so popular, it creates problem for public sector accountants

Changes in the structure, financing, and services will create risks for public entities, and the Auditor-General needs to understand and take account of those risks in providing assurance as the auditor of the public sector. The implications of the changes that are being considered could be considerable.

4.5.3 Lack of Political Support for the Public Sector Accounting Reforms

Most of the respondents agreed that, there were challenges in getting political support to effect reforms in the PSA. Some of the reasons given were that, most reforms could have negative effects on the ruling government implementing the reforms, especially, when there is ban on employment. Others indicated that inadequate funds from government to support training and reforms as well as politicians focusing on political development rather than administrative development as some of the challenges.

Those who thought there were no challenges argued that, all politicians were in support of the reforms. They also claimed that, politicians were urged to adopt sound accounting



reforms to curb mismanagement of funds. Therefore, all politicians, in their view, would want to enhance good governance and would therefore support any reforms.

4.5.4 Other Challenges

Others have also indicated that non tax revenue organizations paying gross of their share into holding accounts for onward transfer into their operational accounts is a problem. Sometimes the funds are delayed by the Bank of Ghana. This delay of funds' transfers affects revenue mobilization. Also, the adoption of GFMIS which was the brain behind the adoption of IPSAS creates problems in which organization are not ready to supply goods on credit to government organizations.



CHAPTER FIVE

5.0 Summary, Conclusion and Recommendations

5.1 Introduction

This chapter discusses the summary of findings, conclusions and recommendations of the study. (The previous chapter dealt with data presentation and analysis of the study.)

5.2 Summary of Findings

As stated in Chapter One, this study aimed at exploring the Adaptation of Technology to Enhance Effective Public Sector Accounting in Ghana. To achieve this aim, the study was put into predetermined objectives which included:

- Understanding of the evolution of public sector accounting in Ghana
- The extent of technology uptake in the public sector accounting
- The role of technology in public sector accounting practice, and challenges posed by adoption of technology in PSA in Ghana.

The summary of the major findings are as follows:

The study revealed that, respondents with short stay – below one year – in their entities could not tell the technological adoption history of their organizations. PS entities also use more of accrual accounting system than cash accounting.

Also, despite the introduction of technology in the Public Sector, some few entities still use calculators only. However, majority of PSAs were found to be using both personal computers (PC) and calculators to do their work. Again, even though a small percentage (6%) of government entities still use basic Microsoft Excel and Microsoft Word to generate accounting information, the GIFMIS platform has been adopted by majority of government entities.



To add, some entities have been using technology in the accounting sector for many years. Majority of PSAs have been using technology of different shades for the past 11 years or more as revealed.

However, in an attempt to quantify the percentage of adoption of technology in the PSA, about 78% of respondents indicated they have fully accepted reforms that have introduced technology into the public sector accounting system.

As regard to the importance of accounting technology in the PSA, the survey showed that, using technology in PSA leads to improved decision making, improved accountability, formulation of budgets, and taking a long-term view when making financial decisions in the PSA.

However, some of the challenges identified in the survey include financial constraints by entities to train their staff, unavailability of internet services as some of the technologies use internet services, and intermittent power outages. Also, other challenges identified included low level of capacity of staff in terms of ICT knowledge, unavailability of computers in some departments, difficulty in getting political support for reforms and non-involvement of other relevant stakeholders such as audit services in reforms.



5.3 Conclusions

The following conclusions were therefore arrived at following the analysis in chapter four;

Respondents (27%) who stayed in PS entities beyond 10 years were able to tell the need for reforms and the kind of reforms needed.

Also, accrual accounting system is more popular than cash accounting system because of its flaws as indicated in the analysis and in the summary.

It was noted that, as part of the technological uptake in the accounting sector, majority of PS entities use computers and calculators in the performance of their duties.

It has also been established that, GIFMIS is used by majority (77%) of the PS entities in the accounting section. Besides the use of GIFMIS, another 77% have been using technology for more than 11 years. Even though GIFMIS was widely used, some entities still use traditional method of accounting involving the use of ledgers and pencils.

It was also established that, about 78% wholly accepted the use of technology in their entities. In other words, majority of PS entities have accepted technology fully in their accounting operations.

To sum up, using technology in accounting has quite surprising result which that most PSAs has no sound knowledge on basic computer application which is a major block in the uptake of technology PSA. On the benefits of PSA which in sum includes improving accounting decision making in the public sector, of which 61% agreed to this, improved accountability in the public sector entities; 76% agreed to this, enhancement of effective cost accounting of which 43% agreed to this, enhancement of budgets formulation as 63% agreed to this, helps in making a long-term view when making a financial decision,



and the cost benefit of implementing technology in accounting in the PSA is high as compared to non-implementation of such reforms; 72% agreed to this assertion.

1. Notwithstanding the benefits of implementing technology in Public Sector, there are number of challenges facing the implementation which are summarised below this as reveal during interaction with public entities stakeholders through interview, focused group discussion, as well as field observation.
 - a. Most of the public sector entities lack adequate financial resources to train their staff on the use of technology in the PSA,
 - b. shortage of computers in the PS entities and the frequent interruption of power supply to power the few computers,
 - c. Unavailability of internet connectivity in the rural districts makes it difficult to train staff on new reforms as some of the technologies need internet service,
 - d. For audit purpose, the use of ICT in accounting seems not to receive the needed attention because computer based auditing is not popular in Ghana,

5.4 Recommendations

Having identified the major challenges under this study, the following recommendations are made to facilitate the use of technology to enhance effective public sector accounting in Ghana.





Collaboration and Engagement With The Audit Service

To roll out any reform in PSA Government must include relevant stakeholders such as Ghana Audit Service. The study observes that most public sector institutions are queried due to technological reforms for which the Ghana Audit Service is not conversant with even though those institutions apply them.

Relevant Financial Regulation

Also, most of these technological reforms in the public sector do not have backing in Financial Administrative Regulations (FAR) hence, making it difficult for stakeholders to give full commitment to their implementation. Such reforms must have the full backing of the law before implementation starts. Technology in PSA goes beyond accounting records in the public sector. It includes human resource and general administrative issue. For that matter, there must be a law that governs the operation of the adoption of technology in PSA. Therefore, new reforms must always have stakeholder's involvement for them to succeed.

Continuity of Intervention By Past Successive Regimes

There should be political will for government to continue the implementation of reforms in PSA started by past governments. Even if the in-coming government needs to discontinue such reforms, it should weigh the benefits of such reforms. It has been realised that government has saved huge sums of money by implementing several reforms such as biometric payroll system and payroll direct validation. Hitherto, the entire amount saved would have been used to pay ghost names on government payroll.

The adoption and implementation of biometric payroll system is yielding greater results. Consequently, the ghost names in government payroll have been deleted thus cleaning the payroll system.

Staff Training

Staff training in basic computer application will help enhance the effectiveness in public accounting systems. Capacity building of major stakeholders in PSA will therefore help the reform to succeed.

The study revealed that most of staff in the organisations lacked basic computer knowledge which is the basis for any technology uptake in PSA.

Transitional Arrangement

Transitional path of adoption of technology in PSA need to be specific in that the entire critical factors such as top management concern and technical operational staff must take into consideration the scope of the uptake.

GOVERNMENT AND DONOR SUPPORT

Government and donor organisations should support Public Sector entities with computers and capacity of staff to enhance the implementation of government reforms. There should also be the provision of internet facilities to the rural districts to enhance their accounting performance.

Even though it is important for the government to release funding for the implementation of reforms such as those in the accounting technology, it is equally important for the MMDAs to be innovative in raising internally generated funds for such purposes. These include seeking support from international donors, NGOs, philanthropic organisations



and individuals, and engaging in commercial activities such as farming. Such funding can help the PS entities to implement their reforms successfully.

The study also revealed that most accounting professionals (both in academic and in practice) have little interest in PSA as result of lack of academic interest or non-availability of PSA teaching and learning material.

There is also clear evidence of weak Public Sector Accounting teaching in Ghana as well low interest from stakeholders on the requirements of public sector financial management reforms that are currently on-going in Ghana. Therefore, PSA curriculum and teaching in tertiary educational institutions should be expanded in such way that new reforms will be included to meet the demand of reform in order to achieve the objective of the stakeholders.

There should be collaboration between academia and government financial management actors such as Controller and Accountant General Department (CAGD), sub vented organisations, public corporations and companies and the Ghana Audit Service. This will go a long to strengthen the reforms or technology uptake or other reforms that government want to embark on in public financial management.



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APPENDIXES

Districts in Northern Region

No.	District	Capital	Status
1	Bole	Bole	District
2	Bunkpurugu-Yunyoo	Bunkpurugu	District
3	Central Gonja	Buipe	District
4	Chereponi	Chereponi	District
5	East Gonja	Salaga	District
6	East Mamprusi	Gambaga	District
7	Gushegu	Gushegu	District
8	Karaga	Karaga	District
9	Kpandai	Kpandai	District
10	Nanumba North	Bimbilla	District
11	Nanumba South	Wulensi	District
12	Saboba	Saboba	District
13	Savelugu-Nanton	Savelugu	Municipality
14	Sawla-Tuna-Kalba	Sawla	District
15	Tamale Metropolitan	Tamale	Metropolitan
16	Tolon	Tolon	District
17	West Gonja	Damongo	District
18	West Mamprusi	Walewale	District
19	Yendi Municipal	Yendi	Municipality
20	Zabzugu	Zabzugu	District
21	Kumbungu	Kumbungu	District
22	Mankragu/ Moagduri	Yagaba	District
23	Sagnarigu	Sagnarigu	District
24	Mion	Sang	District
25	Tatale/Sanguli	Tatale	District
26	North Gonja	Daboya	District



Questionnaire

**UNIVERSITY FOR DEVELOPMENT STUDIES, GHANA
DEPARTMENT OF ACCOUNTANCY AND COMMERCE,
SCHOOL OF BUSINESS AND LAW
MASTER OF SCIENCE IN ACCOUNTING**

TOPIC

**THE USE OF TECHNOLOGY TO ENHANCE EFFECTIVE PUBLIC SECTOR
ACCOUNTING IN GHANA**

Dear Sir/Madam,

The purpose of this letter is to invite you to participate in a questionnaire to investigate the use of technology to enhance effective public accounting in Ghana. So, our target respondents are financial directors, auditors, managers with public sector entities and public sector accounting expertise. The questionnaire covers four areas (a) investigate the evolution of PSA,(b) level of technological uptake in PSA reforms in Ghana, (c) the role of technology in PSA reforms in order to achieve PFM in Ghana,(d) the challenges of technology in PSA in Ghana. The response is for academic purpose only. Respondent will not be identified either by name or position. The feedback will be treated confidentially and protected, in line with ethical procedures and in accordance with data protection legislation. Your feedback, time and support are highly appreciated.

Yours Sincerely,

Sign

To understand the evolution of public sector accounting in Ghana



1. How long have you been working in your current organization?
Below 1 year 2 – 5 years
6 – 10 years Above 10 years
2. Does your entity use accrual or cash accounting basis?
Accrual Account Cash Account
3. What are the challenges facing the accounting system?
4. What system of accounting were you using before the adoption of the current system?
Modified Accounting Basis Accrual Accounting
Cash Accounting
5. Can you describe how this system used to work?
6. What were some of the challenges with that system?

To investigate the extend of technology uptake in public sector accounting in Ghana

1. Do you use technology in the accounting section of the organisation?
Calculator only PC only
Both
2. What type of technology do you use?
Calculator only PC only
Both
3. What type of accounting software do you use in your entity?
4. How long have you been using technology in the organisation?
1– 5 years 6 – 10 years



11 years

5. How was accounting handled before the introduction of technology to your entity?

MS Excel MYOD

Etc

6. Do you still use some element of traditional method of accounting?

Ledger Pencil

None Etc

7. How wide is technology accepted in your entity?

100% 80 – 99%

70 - 79% 60 – 69%

50 – 59% 40 – 49%

Below 39%

To assess the contribution of technology in public sector accounting practice in Ghana.

1. Does technology improve the decision-making of public sector entities?

Disagree Not Sure

Agree

2. Does technology increase the accountability within public sector entities?

Disagree Not Sure

Agree

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10. Is the cost of technology implementation justified relative to benefits?

Disagree Not Sure
Agree

11. Does the adoption of technology prevent creative accounting practices?

Disagree Not Sure
Agree

12. Does technology lead to better debt management to prevent future financial crises?

Disagree Not Sure
Agree

Challenges Post by Adoption of Technology

What were some of the challenges faced in the attempt to train staff to adopt the reforms?

- 1
- 2
- 3
- 4

What were some of the challenges faced in an attempt to adjust the IT system to meet accounting?

- 1
- 2
- 3

What were the challenges faced in redesigning the chart of accounts to fulfil the accounting?

- 1
- 2
- 3

Were there challenges in getting political support for the public sector accounting reforms?

- 1
- 2
- 3
- 4

