

Effect of Gifmis E-Procurement Adoption on the Supply Chain Management and Operational Performances Of The Metropolitan, Municipal And Districts Assemblies (Mmdas) In Ghana, West Africa.

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Abstract

Manual procurement system had been in use by state institutions/agencies in Ghana since time immemorial, which was characterized with numerous deficiencies and problems. This had, undoubtedly, resulted in huge loses in revenue generation in state institutions. The government, in response to this, implemented GIFMIS e-procurement system in the MMDAs (state institutions) to avert the situation. There is, currently, a knowledge gap in determining and ascertaining whether the GIFMIS is serving the purpose for which it was implemented. This inhibits policy makers or implementors to make good decisions on its performance. This study seeks to bridge that gap by evaluating the effect of the GIFMIS software system on the supply chain management and the general operational performance of MMDAs in Ghana. The study was carried out at the Sefwi Wiawso Municipal Assembly (SWMA). The study targeted fifty (50) employees of some departments, purposively selected for the study, from the population constituting all the 76 employees of the Assembly. The study employed a descriptive research design technique and quantitative research approach. Structured questionnaires and interviews were the research instruments employed for the study. Self-administration of the questionnaires to the respondents and pick later approach was adopted in retrieving primary data from the respondents. The data was analyzed using Statistical Package of Social Science (SPSS, Version 23.0) software. Descriptive statistics (frequency and percentage) and inferential statistical techniques (regression and correlation) were employed to analyze the study's main objectives. The findings were presented in tables for easy understanding and interpretation. The findings revealed that GIFMIS e-procurement functions/practices have a strong positive relationship with the performance of Sefwi Wiawso Municipal Assembly's supply chain management system. Similarly, GIFMIS e-procurement process showed a moderately weak positive relationship with the general performance of the Wiawso Municipal Assembly.

Key Words: Procurement system, public procurement, business-to-business, demand management, electronic procurement.

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I. Introduction

Background to the Research

Generally, the systematic coordination of companies' operations among firms/institutions through their supply chains to integrate supply and demand management is termed supply chain management (SCM) (Stevenson 2007). Chiefly, customer happiness is decided by the effectiveness of every firm's supply chain operation. Consequently, in recent times, supply chain management has progressively acquired grounds in management functions and been accorded prominence by many companies/institutions to fulfil their aims (Chegugu & Yusuf, 2017; Kaya & Azaltun, 2012). Mainly, SCM process comprises procurements of products and, or services for use (or for direct profit) by firms/persons at the lowest possible overall cost, in the appropriate quantity and quality, in the proper time, in the right place, and from the right source, often via a contract.

As a supply chain function, public procurement is the act of purchasing goods/commodities and contracting works and services by ministries, departments, or Agencies of a state with resources from state budgets, local authority budgets, state foundation funds, domestic loans or foreign loans guaranteed by the state, foreign aid as well as revenue received from the economic activity of that state (World Bank,1995). Public

procurement thus means procurement by a public procuring entity with the usage of public funds. Again, as a function of public sector financial management, its execution comes with numerous deficiencies (Rotich & Okello, 2015).

Electronic procurement (E-procurement), which is one of the supply chain management or procurement functions, has been and continues to be embraced by most institutions/firms (especially in the public sector) to manage and improve their finances. Garran's (2005) study reveals that political, social, and cultural factors facilitate the implementation of electronic procurement. According to Garran (2005), adoption of e-procurement requires resources, specific abilities, and smartly executed transformational management strategies coupled with educational programs. Rotich & Okello (2015) argued that public procurement, which is a business process within a political system, must be conducted with the economy, integrity, accountability, national interest, effectiveness, indiscrimination among potential suppliers, and respect for international obligations at the back of ones mind.

In their quest to improve public financial management in Ghana through prudent measures (of which public procurement practices remains an important aspect), successive governments have tried to put in place (started in the late 1990s) public financial management (PFM) reform programs, which included budget, payroll improvement, audit, procurement, financial, taxpayer management and fiscal decentralization reforms, and now, the introduction of GIFMIS e-procurement system, among others, all targeted at improving public financial management (Quashigah-Sowu, 2013). Realization of the numerous deficiencies/problems, which accounted for considerable losses in public funds, in previous attempts by government (mentioned-above) in public sector financial management, led to the adoption and implementation of GIFMIS to help avert the deficiencies/issues inherent in the management of public finance which involves public procurement practices (Ametefe, 2019).

The previously instituted financial management reforms were lacking in strong budget formulation and preparation, proper accounting and monitoring system, quality, and timely data on government resources among others (Ametefe, 2019). Common problems or lags linked to previous public financial management reforms, which GIFMIS seeks to address, include insufficient budget checks, failure of interaction between multiple public financial management systems within ministries, divisions and departments, unnecessary lags in transferring funds owing to laborious manual procedures, poor record maintenance on government monetary operations, absence of precise data for efficient fiscal budgeting, inefficient accounting and budgetary reporting system, and lack of clarity in budget. Additionally, lack of training for procurement personnel, lack of professionalism amongst themselves, and unavailability of a professional body to oversee and instill discipline among procurement officers were other issues with previous reforms (Quashigah-Sowu, 2013). At the back of these flaws, Government of Ghana decided to develop the GIFMIS e-procurement platform in collaboration with the World Bank, the United Kingdom-DFID, the European Commission (EU), and the Danish International Development Agency (DANIDA) to assist in the removal of these flaws (Paintsil, 2013).

As a supply chain function, e-procurement has and continues to emerge as a reform in public procurement Corsi (2006). It is the application of e- techniques via the internet to perform supply chain activities. For instance, the processes of tendering, contract management, requirements recognition, payment etc., (Corsi, 2006; Rotich & Okello, 2015) or the usage of information technology in conducting procurement processes such as search, sourcing, negotiation, ordering, receipt, and post-purchase review (Asumba, 2010; Chegugu & Yusuf, 2017). Introduction and adoption of GIFMIS in Ghana were aimed at instituting internet-based PFM information systems on government's owned enterprises, Agencies, ministries, and departments at national, regional, and district levels (Quashigah-Sowu, 2013) to serve as an official system for recording budget, disbursements, reporting, and financial accounting, cash/asset management, auditing and internal control and to improving fiscal discipline and macroeconomic stability (Quashigah-Sowu, 2013) for the enrichment of efficiency, effectiveness, transparency, accountability, etc., in the processes of public procurement (Chegugu & Yusuf, 2017; Rotich & Okello, 2015). The use of GIFMIS has a high tendency to ensure efficient and transparent utilization of public finances to assist in the elimination of unneeded issues that arise while handling public accounts (Paintsil, 2013; Quashigah-Sowu, 2013).

The decentralization process of Ghana has led to the creation of Metropolitan, Municipal, and District Assemblies (MMDAs) as institutions/organizations that should be well- and professionally managed under articles 35 (6)(d) and 240 (2)(a) of the 1992 constitution (Stiftung, 2010). The country's MMDAs depend primarily on national budgetary allocations from the government and internally generated funds (IGF) for the development of their territorial jurisdictions; they are therefore concerned with how best to manage their business successfully within the administrative and political systems in which they operate.

In a speech read on his behalf on Wednesday, 14 October 2020, at the Regional Budget Hearing of MMDAs in Accra, the Finance Minister, Mr. Ken Ofori Attah, emphatically pointed out that there had been a shrinkage in the space for resource allocation from the central Government to the Assemblies as a result of COVID-19, and as such, there must be a concerted effort on the part of the Assemblies to improve on revenue generation through the internally generated funds (IGF). Mr. Ofori Attah used the opportunity to caution

MMDCEs against going contrary to the rules in PFM (Act 2016) and tasked them to adopt the new information technology (GIFMIS) to boost revenue generation. According to him, the IGF was going to take the center-stage of funding for MMDAs, going forward (Regional Budget Hearing of MMDAs, 2020).

To realize their goals, MMDAs require efficient leadership skills and management systems (financial and information management technologies like GIFMIS) in promoting local economic development (Stiftung, 2010) by locally generating and employing resources through efficient management and efficient resource allocation to meet developmental needs of people in the local areas (Berning, 2012).

It was against this background that this research was conducted to assess and ascertain MMDAs' e-procurement system (GIFMIS) on their SCM and overall performance. This research intends to examine and evaluate the effect of the e-procurement tool (GIFMIS) on the supply chain functions; the nexus between electronic procurement tool (GIFMIS) and MMDAs' SCM and operational performance, using Sefwi Wiawso Municipal Assembly (SWMA) as a case study, to determine and ascertain whether it was helping to achieve the purpose for which it had been adopted in the supply chain management or procurement system of the MMDAs.

Statement of the Problem

Generally, public procurement forms a significant part of every government duty of ensuring sound financial management. However, it has remained beyond the focus of many scholars (Rotich & Okello, 2015; Vaidya, Sajeev & Callender, 2006). As a result, an expertise vacuum has emerged, making it challenging for players (government entities, policymakers, and public procurement experts) to decide on accepting new technologies (new procurement techniques/trends) or decentralizing same. Ensuing the procurement problems and inadequacy of evidence-based studies in the Ghanaian context, it was tempting for policymakers to rely solely on studies from other regions, whose conclusions might be affected by methodological problems and differences in regional characteristics, to ascertain whether the adoption of the new technology (GIFMIS) was genuinely helping in averting procurement problems in the state-owned enterprises/agencies. It is imperative to note that successive governments have made several concerted efforts to have the deficiencies in procurement practices in state institutions addressed; the current attempt by the current Government in protecting the public purse through economic digitization and prudent fiscal management (in this case adoption of GIFMIS in MMDAS) is of no exception.

Although, there is in existence several information on GIFMIS, none has related it with procurement (SCM) and institutional performances. Clearly, from my review of literature, no study or investigation has been carried out on GIFMIS effects on the supply chain management and operational performances of any of the State's owned institutions including MMDAs in Ghana, creating a knowledge gap that this study seeks to fill. This study intends to bridge this gap by investigating and evaluating the effect of GIFMIS software on SCM performance and the operational performances of the MMDAs.

Therefore, it is imperative, as GIFMIS was implemented in MMDAs to enhance the operations of public procurement and management of finances in State's institutions, that its effects on the SCM and overall operational performances of the MMDAs be assessed and evaluated to ascertain whether it is serving the purpose for which it has been adopted and implemented.

This study also seeks to investigate and evaluate GIFMIS e-procurement system's benefits on the supply chain management of the Sefwi Wiawso Municipal Assembly (MMDAs).

The study was unique in the sense that, through the review, it was evident that it was going to be one of the first to examine the effect and, for that matter, the benefits GIFMIS e-procurement system had on the supply chain management/procurement system of the MDA at Wiawso Municipal of Western North Region of Ghana.

Purpose And Objectives of the Study

The study's primary purpose is to evaluate the effect of the GIFMIS e-procurement system on the supply chain/procurement management and operational performances of the MMDAs.

Specifically, the study seeks to:

1. Establish the benefits the MMDAs (SWMA) derives from using GIFMIS (e-procurement system) for its SCM/procurement activities.
2. Determine the relationship between GIFMIS and MMDAs (SWMA) supply chain management and operational performances.

Significance of the Study

This research study would have far-reaching significant implications for many different types of stakeholders, as it would lead to the identification of new areas and the generation of a new framework to prompt further research about GIFMIS's (e-procurement system's) performance in both the private and public sectors of the economy, especially, amongst Local Government Sector. This research would also immensely contribute to the building of knowledge in the procurement or supply chain management, primarily, on

approaches to successfully uphold fraud and corruption management through GIFMIS e-procurement system in government institutions and businesses/firms in general, as a source of reference, literature review and basis for further studies development.

II. Theoretical Review

Institutional Theory

The use of institutional theory can best examine and explain the dynamism associated with social, economic, and political systems, as well as how institutional norms, structures, procedures, and social interaction patterns are connected to the broader social and cultural environments (Peters, 2000; Shrum, 2001) as well as aspects of public procurement as a conventional technique (Shrum, 2001). Institutions shape the rules of the game in society, which include official and informal institutions such as extended family, the business sector, and the government department/Agency (Shrum, 2001).

Scott (2013) identified regulatory, normative, and cultural cognitive institutions as three foundations of institutions. The regulatory pillar entails the application of rules, laws, and punishments as a means of enforcing compliance (Jeptoo & Karanja, 2017; Peters, 2000; Scott, 2013). The normative pillar focuses on norms (how issues should be handled) and values (what is desirable), with social duty serving as the foundation for compliance (Jeptoo & Karanja, 2017; Preuss, 2013; Scott, 2017). The cultural-cognitive pillar is concerned with shared understanding, such as shared ideas, symbols, and knowledge (Jeptoo & Karanja, 2017; Scott, 2013; Peters, 2000; Shrum, 2001). Several studies have recently taken the institutional approach to e-procurement (Chatterjee et al., 2002; Jeptoo & Karanja, 2017; Purvi et al., 2001). According to these studies, all organizations take on the shape they do because they get value-based ideas about how things should be arranged from their immediate culture (Jeptoo & Karanja, 2017). In accordance with Scott (2013), public procurement process, which is defined as a group of institutions with a positive interaction between purchasers and suppliers, has an impact or a bearing on a nation's economic development. These institutes, which include formal regulations controlling public procurement procedures, and informal contacts between contracting authorities and suppliers, have an impact on their mutual relations, shared agreements, and are involved in economic development activities, as well as the mechanisms put in place to maintain public procurement procedure norms, punishments, and violence in the face of state procurement laws. Government policies and efforts, and the behavior and experiences of public sector personnel have a significant impact on the adoption of a technology like e-procurement (Jeptoo & Karanja, 2017; Peters, 2000). The success of public-sector procurement process is determined by the institutional framework that emerges from economic conditions; while suppliers are interested in the large profits that may be realized/accrued following procurement processes, contracting authorities are more interested in a cost-effective and efficient purchase processes (Jeptoo & Karanja, 2017).

Due to substantial issues with manual/traditional procurement methods, MMDAs adopted and implemented e-procurement (GIFMIS). Several studies have pointed to the benefits that are attainable by public institutions/organizations using e-procurement tools. However, several issues (inhibitors) with e-procurement such as resistance to change, lack of necessary skills and competencies, and reluctance to abandon long-standing business practices impede e-procurement performance throughout the supply chain and within firms/institutions. This theory is pertinent to this research since it attempts to explain the impacts of governance structure on the deployment of e-procurement.

Network Perspective Theory

This theory, which was instituted in the 1970s and 1980s, focuses on the many interactions existing in a supply chain between firms/institutions or their partnerships (Matano, Musau & Nyaboga, 2020). According to a study by Harland (1996), a network is a relationship between/among a group of items, such as events or individuals. An institution's supply chain network depends on the type of interactions among its various members (Matano, Musau & Nyaboga, 2020). Effective collaboration between businesses/institutions and the partners with whom they deal/interact is crucial to their success and therefore Networks are seen as or understood to be helpful to businesses/institutions that are extensively involved in them as a result of the activities and investments of other enterprises in the network and are thus primarily concerned with the effectiveness of exchanges and interactions with other parties in supply chains (Hakansson and Ford, 2002; Hakansson and Snehota, 1989). There are two forms of interactions; social, commercial, and informational exchange processes; and product, production, and routine adaptation processes. Both types of interactions help to develop stable ties within a network of enterprises/institutions (Matano, Musau, & Nyaboga, 2020).

The knowledge of reciprocity, as it does occur in cooperative association, hinges on network theory (Matano, Musau & Nyaboga, 2020). In resonance with Hakansson and Ford (2002), interactive continuous relationships exist amongst/between different players or partners in the business, which has a high tendency to ensure the accumulation of new resources. The establishment of associations by institutions/firms enables more to be achieved together than achieving the same individually. The theory is significant to this research since it

helps comprehend relationships between/amongst firms/institutions. Interactions between/amongst are improved by focusing on human ties between partners and developing mutual trust via collaboration, cooperation, and process exchange. It's also crucial for this study since e-procurement necessitates a wide range of stakeholders and business-to-business techniques. This is of no exception to MMDAs as they communicate and collaborate with other firms/institutions and even individuals as part of their procurement processes. Hence, the theory relates all the aspects of the study.

Resource Base Theory

The resource-based theory (RBT), as developed by Birge Wenefeldt in 1984, stipulates that a firm's or an institution's competitive advantage centers on its resource base. A firm's resources include its human, financial, and material or physical resources and procedures or business processes (Ndunge, 2016). RBT, according to Matano, Musau & Nyaboga (2020), is employed in examining and knowing firms'/businesses' tangible (financial, human, material/physical, etc.) and intangible (capabilities, skills, competencies, etc.) assets that render them strategic advantage over others or competitors. Requisite internal capacity is a determinant factor in its ability to innovate and creatively deal with challenges in the market or industry (Ndunge, 2016). Primarily, what distinguishes an organization/firm from others is its capabilities or competencies developed from unique sets of effectively and efficiently employed resources. Firms' worthiness, uniqueness, and strategic positioning, tend to offer them competitive advantage over competitors when they can or thrive on developing their competencies from their resources as distinct goods or services (Barney, 1991; Matano, Musau, & Nyaboga, 2020). Again, Firms'/organizations' abilities to establish and realize their goals against others, outline their capabilities as the development of the resources they control/master determine their growth and not just the opportunities they get; the ability of an organization to discover or create distinctive competencies/capabilities expresses its survival and success in business (Matano, Musau & Nyaboga, 2020). As a matter of fact, the internal and external partnership capabilities of organizations cannot be acquired on a silver Plata; they can only be built/attained with time.

Information technology, such as e-procurement, may be assessed as a cost-effective and long-term charge generated from strategic resources because the resources on which it is based are limited, precious, and cannot be duplicated or substituted (Matano, Musau & Nyaboga, 2020; Ndunge, 2016). E-procurement relies on combination of vital innovative skills (creative brains) required to grasp expected gains in procurement; ability to adapt to unavoidable business changes is critical here. The advent of information communication technology and, for that matter, e-procurement has helped public institutions engage with their various suppliers locally and internationally, resulting in price reduction through competition in respect of suppliers as they are compelled to give fair prices to tenders.

E-procurement, in this study, is recognized as a process by which public institutions (like MMDAs) achieve effectiveness and efficiency in their procurement functions. This is attainable through maximization of the use of their available resources leading to the attainment of competitive advantage. A manifestation of competitive advantage, in this regard, comes into play in terms of customer satisfaction, cost efficiency, and improved lead times (Ndunge, 2016). E-procurement practices improve firms' performance by allowing enhanced cooperation (Ndunge, 2016; Matano, Musau & Nyaboga, 2020).

Disruptive Innovation Theory (DIT)

The theory of disruptive innovation was developed by Clayton Christensen in the mid-1990s and has, extensively, been discussed by some researchers (Christensen et al., 2018; Christensen, Raynor & McDonald, 2015; Larson, 2016; Moore, 2019; Rotich & Okello, 2015; Stratrix Staff Writer, 2021). DIT is defined as a process in which smaller companies/enterprises can contest established or incumbent businesses by entering through their down-market and continuing to move up-market (Larson, 2016); that is a process by which products or services of smaller businesses initially originate and take roots at the bottom of a market, persistently moves upmarket and ultimately displacing incumbent's offerings (Stratrix Staff Writer, 2021).

Christensen, Raynor & McDonald (2015) describes Disruption Innovation to imply ways by which smaller firms/businesses can fruitfully challenge established ones (incumbents), as the incumbents surpass the needs of some of their market segments and overlook/disregard the needs of those at the bottom by concentrating on improving their products and services for their most profitable and demanding customers, and eventually taking over the incumbents' markets. Aiming at the ignored segments and providing more-suitable functionality at a lower price, disruptive entrants gain a grip of or footing in the market and move upmarket, delivering the performance that meets incumbents' mainstream customer requirements and thereby capturing incumbents' markets.

According to Moore (2019), For an innovation to be portrayed as disruptive, that innovation must entirely transform a product or solution that formerly was so expensive or sophisticated that only a few well-to-do persons had access to a form that ordinary people could access. Characterized by much more simple-low-

quality solutions that are much less costly but accessible to a larger population, disruptive innovations start in two types of market: new-market footholds and Low-end footholds. With regards to low-end footholds, it begins from down markets of established businesses where smaller businesses target/concentrate on meeting similar needs as high-market solutions to less demanding and unprofitable segments of incumbents' markets with relatively low prices. Because of their low prices/costs and the advantage of meeting and satisfying down-market needs, they speedily move up-market and finally become more attractive than competitors. In respect of the new-market footholds, disrupters develop a market where there are none in existence by simply finding ways of changing non-consumers into consumers. Basically, disrupters are found of capsizing established businesses and defeating existing leaders in the market.

Disruption innovation theory serves as a model for making strategic choices when new technologies come into existence; it helps managers of incumbent businesses/firms make tactical choices between taking a sustaining path and taking a disruptive one and provides options of measures incumbents are to take when the actions of disrupters threaten them.

The theory predicts that, when entrants challenge incumbents head-on by offering superior products or services, the incumbents respond and defend their businesses through the acceleration of their innovations either by beating back the entrants by offering even better products or services at comparable prices or by the acquisition of the entrants (Christensen, Raynor & McDonald, 2015).

To be successful in their operations, disruptors require important resources/capabilities like as skilled personnel, technology, product designs, brands, customer/supplier relationships; critical processes such as decision-making procedures and coordination models that support current enterprises' operations; and corporate cultural values, which include beliefs and assumptions (Rotich & Okello, 2015).

Adoptions of innovations such as e-procurement, requires adequate preparations regarding correct tools, skilled personnel, process transformation, personnel training, and a user awareness campaign. Disruptive innovation theory supports this study, as it points to the fact that e-procurement is an invention that needs continuous development that aims at enhancing the old and manual procurement procedures and processes (Barahona & Elizondo, 2012; Rotich & Okello, 2015) in order not to be disrupted by disruptors. In e-business/e-commerce, e-procurement usage in the supply chain management functions is gradually and globally earning attention and currently securing grounds. The positive effects of e-procurement on the supply chain management and general performances of corporations/institutions, established by many studies, cannot be underscored in managing the finances of firms/institutions (Barahona & Elizondo, 2012).

Innovation Diffusion Theory

As established by Rogers (1962), Innovation Diffusion Theory (IDT) is one of the most dominant theories for information technologies (IT) adoption studies and knowledge acquisition on how IT innovations spread within and across social systems (communities). IDT is defined as the process in which an innovation is communicated through certain channels over time among the members of a social system (Rotich & Okello, 2015), and described as a process aimed at improving the economic development of corporations/institutions (Zhang et al., 2015). Innovation diffusion is an idea, practice, method, or technology that is unique or unfamiliar to members of a community/social system and is viewed as a concept that is perceived as a novel by society (Rogers, 1962). In societies, diffusion is the method or mechanism by which information about an innovation is passed from one person or unit to another over time (Zhang et al., 2015).

Every IT innovation's success is dependent on or determined by four primary factors: communication channels, innovation qualities, adopter characteristics, and the social system (Rogers & Singhal, 2003; Sahin, 2006; Zhang et al., 2015). Communication channels, which include both mass media and interpersonal contact, are concerned with how knowledge about the invention is accessed and how members of a society view its use. The attributes of innovation, which affect the rate of adoption and consist of five user-perceived qualities, as defined by Rogers, can be imagined in terms of relative advantage, compatibility, complexity, trialability, and observability (Rotich & Okello, 2015; Zhang et al., 2015). The degree to which a user sees benefits or enhancements over existing technology because of adoption of innovation is referred to as relative advantage. A degree to which an invention is compatible with the current technical and socio-cultural context is compatibility. The better an innovation's chances for dissemination and adoption are, the more it can integrate or coexist with existing values, knowledge, and the desires of potential adopters (Moore & Benbasat, 1991; Tornatzky & Klein, 1982; Zhang et al., 2015). A degree to which an invention is judged to be difficult to grasp, execute or utilize is measured by its complexity (Rogers & Singhal, 2003; Zhang et al., 2015). Less complicated innovations are more likely to be quickly adopted by end-users (Tornatzky & Klein, 1982). Trialability refers to an innovation's ability to be put to test without a complete commitment to its adoption and with only a little expenditure. Individuals are more inclined to adopt an invention with better trialability (Moore & Benbasat, 1991). Observability refers to how evident an innovation's benefits are to potential users (Rogers &

Singhal, 2003). The public will only embrace an invention if the consequences are deemed helpful or advantageous (Moore & Benbasat, 1991).

Innovation diffusion theory divides users of new technologies into five categories based on their features. Individuals who wish to be the first to attempt an idea are known as innovators. People who represent opinion leaders are known as early adopters. Those in the Early Majority who demand proof that an idea works before adoption; Late Majority, sceptics that accept innovations after being used by the majority, and Laggards, those that oppose change and are the most difficult in the incorporation of processes of innovation (Rotich & Okello, 2015; Zhang et al., 2015). Those who make up 2.5 percent of the population of a society (Innovators), are the first to accept a new idea. According to Rogers, innovators can comprehend and use complicated technical information, which is necessary for bringing in innovation from outside the social order. Unlike inventors, early adopters are more embedded into the social structure. They are more likely to be well-informed about innovation, linked to new technology, and economically successful (Zhang et al. (2015). The first two groups of adopters account for 16 percent of the population in a social system. Early and later majority adopters make up 68 percent of the population in the social system, while laggards make up 16 percent of the population (Zhang et al., 2010). They are the most adamant opponents of innovation adoption, and because of their low resources and lack of awareness or knowledge of the innovation, they are most likely to become non-adopters (Zhang et al., 2015).

A social system, according to Rogers' theory (2003), is "a collection of interrelated units engaged in cooperative problem solving to attain a common purpose" (Rogers & Singhal, 2003; Zhang et al., 2015). It establishes the boundaries within which inventions are disseminated (Rogers & Singhal, 2003). According to Rogers & Singhal (2003), the structure of a social system determines people's attitudes toward innovation and, as a result, the pace at which innovations are adopted. In recent years, the diffusion of innovation theory has been widely applied to the study of people's acceptance of new healthcare information technology (Helitzer et al., 2003; Zhang et al., 2015). These studies have shown that Roger's innovation theory can be used to formulate ideas about technology adoption in e-health, and same could be stated in respect of e-procurement IT technology. The ideas of the theory are significant to this study since they aid in the development of the study and allow the researcher to comprehend the predicted relationship between the variables (e-procurement, supply chain management performance, and MMDAs performance). IDT was used to investigate how GIFMIS e-procurement innovation had been propagated or communicated among MMDA personnel and the amount to which it had been accepted by members of the departments/units employing the technology.

Technology Acceptance Theory

This research is based on Davis's Technology Acceptance Theory (TAM), which he created in 1986. The theory is one of the most popular theories for broadening people's understanding of computer technology adoption (Rotich & Okello, 2015) since the theory has been used as conceptual framework in several studies, either in its original form (Davis, 1989) or in the extended model (Rotich & Okello, 2015). TAM is a theoretical model that examines the impact of system features on user acceptance. Computer users would typically act appropriately and systematically utilize information to decide whether to embrace technology in their workplaces or not. TAM model, Primarily, predicts users' acceptance of information technology and usage in corporations/institutions (Mwangi & Kagiri, 2016). In accordance with this theory, there cannot be improvements in organizational/institutional effectiveness and performance with the emerging technologies without users embracing, accepting, and adopting the change (Davis, 1986; Rotich & Okello, 2015).

Investment in computer-based tools that support planning, communication, and decision making, is necessary and critical for any information technology-based innovation adoption (Rotich & Okello, 2015). It may, however, be unsafe to adopt some of these systems, so specification based on firms/institutions' preference and rationality is critical. Comprehension of people's opposition to technological changes is crucial; there must be a concerted effort to understand why people resist changes and find possible answers (solutions) to such concerns. Solutions include inculcating appropriate organizational culture into people, implementing change in an incremental manner and supporting it with good communication; that is people must be aware of their responsibilities and urged to carry them out (Kamel, 2014; Rotich & Okello, 2015).

Technology theory is based on and defined by two key assumptions/factors that influence peoples' willingness to make use of new technology: the system's perceived utility, such as better performance, output, success, in operations, and perception of the ease of use of the system, such as ease of learning, usage, control, and remembering (Charness, Walter & Boot, 2016; Rotich & Okello, 2015). For instance, it is unlikely for an older adult who perceives the use of technology as too difficult or a waste of time to adopt it, but more likely for another older adult who perceives it as providing needed satisfaction and ease, as wanting to learn and adopt the use of that technology (Charness, Walter & Boot, 2016). Technology acceptance theory explains how users' attitudes toward the system and perceived benefits influence their uptake and usage of new technologies (Rotich & Okello, 2015).

Electronic Procurement and Supply Chain Management (SCM) systems.

SCM as defined by Lambert et al. (1998) and Sousa et al. (2017) imply bringing together relevant activities of firms/institutions from consumers to suppliers that offer information, services and products that benefit consumers/end-users. Departmental activities such as production planning, material procurement, transportation management, warehouse management, and demand management are all parts of the supply chain. These departments work together to deliver products and services to end-users in a timely, efficient, and lucrative way (Scott and Oldfield, 2004). E-procurement operation/performance, essentially, spans E-Informing, E-Market sites, Repair and Operations (E-MRO), Enterprise Resource Planning (ERP), E-Sourcing, E-Tendering, E-Reverse auctioning etc. (Kipngeno & Barrack, 2015; Snow, 2013) as well as e-budgeting and e-financial reporting (Quashigah-Sowu, 2013), and relate to the use of information technology-based system to conduct some procurement activities including search, sourcing, negotiation, ordering receipt, and post-purchase review (Asumba, 2010; Chegugu & Yusuf, 2017).

With the advancement of technology, e-procurement has become increasingly common globally. It is not by chance that such countries as New Zealand, the United States of America, Western Australia, Scotland, New South Wales, and Italy developed e-procurement systems for public procurement activities from early 2000 to 2005 (Rotich & Okello, 2015). In Africa, for instance, e-procurement is becoming more and more popular in the management of both private and public sector finances. Most countries in African have turned to alterations of their existing laws/regulations and the deployment of e-procurement systems to cope with concerns of lack of accountability and transparency in procurement operations in the public sector; countries like Kenya and Tanzania cannot be left out of this (Rotich & Okello, 2015). The situation is not different in Ghana, where the government has made it mandatory for all public products, works, and services to be obtained/acquired via same channel. As a result, MMDAs, since 2013, have adopted the GIFMIS platform to boost transparency and accountability by providing detailed information on finance and budget (Paintsil, 2013; USIAD, 2008).

E-procurement implementation involves an elaborate process that requires government procurement structural transformation and restructuring (Commonwealth of Australia, 2005).

As claimed by Aberdeen Group (2001) and Shirzad and Bell (2012), e-procurement systems are designed for indirect and direct procurement and sourcing and their adoptions are aimed at strengthening flexibilities (organizational, strategic, technical, and environmental flexibilities). Vaidya, Sajeev & Callender (2006) noted that the most frequently utilized e-procurement processes in public procurement include E-Invoicing, E-Request for Quotations, E-Catalogues. Roma & McCue (2012) suggested that E-Signatures, E-Submission, and E-Notice, among others, essentially form part of e-procurement processes.

As stated by Osei-Owusu (2013), new information technologies like the internet and wireless telecommunications are being efficiently used by many businesses/firms to improve and enhance service and delivery processes through secure intranet systems and business-to-business (B2B) e-commerce platforms, to improve information management and integrate internal systems with external partners. Information systems/technologies help increase interaction (communication, data, information, and document interchange) between stakeholders in the business. Businesses/firms/institutions have been forced to shift their operations from a traditional/manual manner to an e-Business style (e-procurement practices) due to introduction of information and communication technology (ICT) to secure their continued existence in industries (Appiah, 2012, Ghana Finance Minister; Chegugu & Yusuf 2017; Lee et al., 2007). It is also unsurprising in today's business environment that, e-business has become ingrained in many business circles with majority of firms/institutions engaging in e-procurement processes (Mwangi & Kagiri, 2016).

In resonance with Sousa et al. (2017) and Roma and McCue (2012), businesses/institutions that make use of IT systems like e-procurement are better placed to respond to unstable and rapidly changing environments, leading to supply chain efficiency intensification as they make use these new technologies or management information systems to enhancing/improving on the efficiency of their supply chain management. Technologies allow for integrated approaches to planning, control, and monitoring of product flows from suppliers to end-users resulting in the improvement in reduction in the cost of providing customer service leading to good relationships building with logistics suppliers and customers and ultimately enhancing the exchange of information and business coordination through collaboration among all value chain participants.

Although e-procurement implementation comes with some challenges (Corsi, 2006), it is associated with several benefits (Corsi, 2006; Hunja, 2014; Kipngeno & Barrack, 2015). E-procurement comes with the reduced transaction and inventory costs, decreased corruption and fraud, lower operating costs, higher process efficiency, increased contract compliance, enhanced transparency, and productivity, as well as improved public procurement process supervision and monitoring (Aberdeen Group, 2005; Hunja, 2014; Jeptoo & Karanja, 2017; Roma and McCue, 2012). According to Rotich & Okello (2015), e-procurement results in enhanced procurement performance and catalyzes electronic documentation of the bidding process, leading to enhancement and improvement in accountability, transparency, and productivity, thereby improving procurement performance and overall organizational performance. E-procurement also leads to better efficiency

and cost savings, faster and less expensive government procurements, increased openness, and lower corruption in government services (Expect Group Meeting, 2011; Jeptoo & Karanja, 2017). E-procurement adoption also improves supplier and customer interactions and the attainment of corporate strategic procurement objectives.

Forms/Types of E-Procurement

This section of the research presents literature review on e-procurement forms, which comprises enterprise resource planning (Web-based ERP), e-tendering, e-ordering, e-informing, and e-reverse auction, e-sourcing, e-market sites and e-maintenance, repair, and operations (Ateto, Ondieki1 & Okibo, 2013; , Kipngeno & Barrack, 2015; Snow, 2013), as well as e-budgeting, e-financial reporting, and e-auditing (Quashigah-Sowu, 2013).

Electronic Maintenance, -Repair, and -Operations (E-MRO) or E- Ordering.

This type of e-procurement involves purchasing requisitions creation and approval, purchase order placements, and non-product related MRO supplies reception (Ateto, Ondieki1 & Okibo, 2013). Substantial reductions in costs of running businesses/institutions are associated with the adoption and use of e-procurement and staff training on the use of the software (Ndunge, 2016). E-procurement results in transactional and process efficiencies; it promotes cost improvements by reducing the transactional costs of firms and lessens operational costs by ensuring greater accuracy levels in the appropriation, billing, electronic documentation, payment, and system automation (Evans and Wurster, 2000). Croom (2000), contended that efficiencies are realizable through the employment of IT technologies associated with lead time reduction and allowance for better decision-making and increased rate of the procurement process as there is always a drive for lower prices by buyers from their suppliers.

E- Sourcing

E-sourcing deals with identifying new suppliers for specific types of customers' needs/requirements using internet technology (Ateto, Ondieki1 & Okibo, 2013). It is argued by Aberdeen (2005) to mean the employment of the internet and other IT Technologies as a tool in the identification, evaluating, negotiating, and building of supplier and customer relationships that has high tendencies to aid supply chain management or procurement processes effectively and efficiently. E-sourcing is not only used to cost effectively identify vendors but, more importantly, it is used to procure, at the best minimum cost, goods/works/services and, at the same time, achieve firms' goals (Ndunge, 2016). As it helps businesses/institutions in the enhancement of knowledge through training of employees on the use of sourcing techniques, e-sourcing aims at achieving process efficiencies of costs and lead time reductions as well as making it easy for buyers to use internet technology to identify (within and across businesses/firms) new suppliers for the supply of their needs (Aberdeen, 2007). Flexibility in decision making and accessibility to lower prices are some of the benefits associated with e-sourcing practices, as stated by Boer et al. (2002).

Tendering

E-tendering is purchasing process that has to do with the invitation of potential suppliers to make offers relating to prices they are willing to offer their offerings/services for, including their terms and conditions for sale; acceptance of which forms the basis of an agreement between the customer/buyer and supplier (Ndunge, 2016). It involves sending information and price requests to suppliers and receiving responses from suppliers using internet or IT technology (Ateto, Ondieki1 & Okibo, 2013). According to Ndunge (2016), supplier selection, contract negotiation, and order placement and payment are the standard procurement procedures (which are relevant in controlling expenditure, ensuring accuracy in approvals and reduction in overpayments, that are required to be followed by businesses in every stage of the procurement process. Senior management's permissions are necessary in situations where approvals of items that cost higher than certain specific prices are to be granted to enhance procurement performance (Lysons & Farrington, 2006; Ndunge, 2016)). With e-tendering, suppliers can easily download tender documents and return them online. In this way, it tends to promote competition among bidders and fosters transparency and efficiency in the tendering process for both the customers and suppliers (Aberdeen, 2007). However, e-tendering attracts bidders from all walks of life to submit their bids for a tender or even express interest to pre-qualify in the e-tendering practices.

E -Reverse Auction

As a real-time online bidding process where the winner is the lowest bidder (Smart, 2010), the reverse auction offers bidders a robust negotiating tool to bid/sell. It also uses IT to purchase goods and services from suppliers or potential suppliers (Ateto, Ondieki1 & Okibo, 2013) and customers who, give the contracts to bid for them, for which the lowest bidder is considered the winner. The reverse auction makes room for competition, enhances competitiveness, and improves the prices of goods and services (Ndunge, 2016). As

stated in Attaran and Attaran (2002), the usage of e-reverse auctions has a considerable/vast potential to reduce purchasing costs. Many of the studies conduct in e-procurement show that, with e-reverse auctions, firms/businesses realize savings in time, quality, and money (Ndunge, 2016). This accounts for its broad usage by businesses in dealings with suppliers who can offer better quality products or services and lower price offerings (Boer et al., 2002).

E- Informing

E-informing involves using IT in assembling and disseminating purchasing information from and to both internal and external parties (Ateto, Ondieki1 & Okubo, 2013). It deals with the use of the internet to seek and dispense information on purchasing from customers and sellers. Information sharing between buyers and suppliers is critical for ensuring the fulfilment of orders to the required specifications by suppliers (Ndunge, 2016).

Enterprise Resource Planning

Enterprise resource planning (ERP) deals with the use of IT in the creation and improvement of purchasing requisitions, placement of purchase orders, and receipt of goods and services (Ateto, Ondieki1 & Okibo, 2013).

In the olden days, when manual procurement practices were in use, there were supply delays due to production challenges, which led to substantial financial losses by businesses. What motivated ERP implementation in modern businesses/firms was the demand/need for an open and efficient, timely flow of information between the businesses/firms, suppliers, distributors, and consumers. ERP improves an firm's business processes and ultimately increases its competitive edge over others (Matano, Musau & Nyaboga, 2020).

Findings of studies conducted by Uigur and Ernan (2013), according to Matano, Musau & Nyaboga (2020), on the effects of business process re-engineering and enterprise resource planning on supply chain performance in the Uganda manufacturing sector revealed that, integrating ERP system strategies positively influences the supply chain management overall performance; ERP was found to have significantly reduction in transactional costs and lead time and enormous improvement in procurement performance, where it was in use in purchasing orders.

E-Market sites

E-Marketing entails buyers using technology to acquire electronic access and purchase offerings from selected providers (services and products). Buyers are able to add offerings to their shopping carts, create a requisition for them, seek approval from suppliers, receive purchase orders, and electronic process invoices where (through internet) they have access to suppliers' offerings through integration of suppliers' supply chains and buyers' financial systems (Ateto, Ondieki1 & Okibo, 2013).

E-Budgeting, E-Financial Reporting& and E-Auditing

According to Quashigah-Sowu (2013), GIFMIS, as an IT-based public financial management information system, has an additional electronic financial management functionality that involves electronic budget preparation and execution, accounting/financial reporting, cash management, assets management, and financial auditing. GIFMIS, in this respect, is utilized as a system for budget preparation, recording, disbursements, financial accounting and reporting, and internal control and auditing. It aids in improving fiscal discipline and macroeconomic stability.

Benefits of E-Procurement

Institutions/firms that use e-procurement are associated with the following benefits: Price reduction in tendering, time reduction to source materials, lower administration costs, reduction in procurement staff, competitive advantage, communication improvement, etc. (Eadie et al., 2007).

First, there is the benefit of price reduction in tendering, as there is no paperwork, postage fee, or costs regarding the preparation and sending of tender documents in e-procurement. Additionally, sending tender documents is faster than the manual means of documents sent through the post office. It, therefore, improves order tracking and tracing, as it is much easier to trace the orders and make desired corrections in instances where errors are detected in the previous order (Gebauer et al.,1988).

Secondly, there is the advantage of time reduction to source materials in e-procurement, consistent with Eadie et al. (2007). Staffs, using e-procurement software, have sufficient time to engage in some other pertinent procurement stuffs rather than wasting lots of time on paper invoicing in terms of writing, filing, and posting. Thus, e-procurement is associated with lower administration costs because it employs less paperwork (Rankin et al., 2006). Time wastage on movements, especially from one geographic location to another in search of

potential suppliers or buyers, is enormously reduced as it allows ready access to information on the internet with the twinkle of an eye. Also, a reduction in buying from suppliers other than those with whom a purchasing agreement has been negotiated (maverick buying) is related to e-procurement usage.

Thirdly, it also leads to a reduction in procurement staff. E-procurement process is done electronically, and so the number of staff required to facilitate the process is significantly reduced (Ateto, Ondieki1 & Okubo, 2013) and resulting in the attainment of competitive advantage through a reduction in costs (Eadie et al., 2007).

Fifthly, e-procurement system has an ability to offer a business/firm with a competitive edge over its counterparts. firms using e-procurement have a discrete advantage over adversaries/competitors using a much slower manual process of having to post documentation between and within firms. E-procurement performance results in extensions of supply chains of firms beyond geographical boundaries to a much wider group where suppliers could be monitored on timely delivery and quality products and services delivery. Hence, suitable suppliers can be contacted when needed in the future. There is also always accessibility to every prospective supplier and buyer at the convenience of whoever needs the other, leading to greater market access and increased productivity, with the usage of e-procurement system.

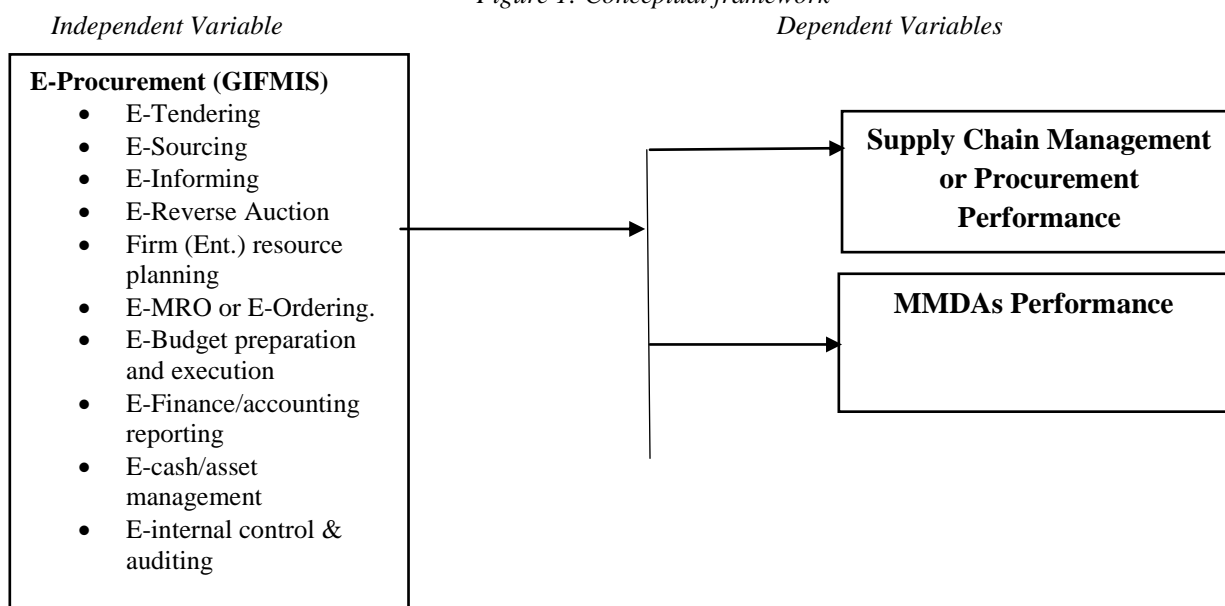
Last, but not one, e-procurement is associated with improvement in communication. In line with the argument of Eadie et al. (2007), e-procurement enables the flow of electronic documentation through the supply chain. It increases the speed of returns and visibility of tenders/suppliers' prices. It also allows more accessible and quicker communication of requirements and, therefore, improves understanding of requirements and due compliance besides providing clients/tenders with information on tendering.

Lastly, e-procurement comes with reduced operating and inventory costs. It stems from the fact that almost all paperwork associated with manual procurement is eliminated, not forgetting the total elimination of postage costs and other expenses relating to sending and receiving documents when they are done through posting (Ateto, Ondieki1 & Okubo, 2013). 2016).

Conceptual Framework

The independent variables of this research emanated from the components of GIFMIS e-procurement processes as practiced in the MMDAs. The independent variables include Enterprise resource planning (ERP), e-tendering, e-ordering, e-informing, e-reverse, e-sourcing, e-marketplaces, (E-MRO), e-budgeting, e-financial reporting, and e-auditing auction electronic services (functionalities of GIFMIS) discussed above. The dependent variables, on the other hand, include supply chain management performance and MMDAs overall performance. The effect of e-procurement on supply chain management and MMDAs' general performances would be measured in terms of reduced procedure lead time, quality service delivery, competitiveness, cost reduction, transparency, and operational efficiency and real-time response to customers for organizational performance.

Figure 1: Conceptual framework



Empirical Studies/Reviews

E-procurement is more likely to be useful in scattered supply chains since it aids in using procurement resources towards unified procurement processes, leading to improved/increased business performance. Firms attain the most substantial benefits when they wholly integrated e-business across the supply chains. Numerous studies show that e-procurement-supported supply chains can benefit from better integration and collaboration (Mwangi & Kagari, 2016). Perceived suppliers' capabilities are critical determinants in e-procurement adoption by firms as it is challenging to integrate information systems across firm boundaries in supply chains when suppliers lack capabilities. Notwithstanding, the perceived ease of use and usefulness of technology such as e-procurement are essential drivers of customers' acceptance or rejection of that technology.

The potential e-procurement has, as proven by several studies, in the enhancement of supply chain management and firms' performance cannot be underscored (Aberdeen Group, 2001; 2005; 2007). These studies show that, e-procurement system's associated increased supply chain transparency allows businesses to decentralize operational procurement procedures while centralizing strategic procurement processes, resulting in improved procurement and, ultimately, business success.

Mwangi & Kagiri (2016), conducted a study with 112 members from different administrative levels working in the procurement department at the Sarova Chain of Hotels to investigate the effects of e-procurement on procurement performance in the hospitality sector in Kenya. The study found out that, e-procurement practices improved policy compliance at the Sarova Chain of Hotels by allowing the hotel to procure products and services from preferred suppliers quickly, increased competitive intelligence by enhancing understanding of competition, increased accessibility to quality goods at the best prices by leveraging new technology for a future working with a potential buyer, and provided a tightly integrated solution.

Ndungu (2016), investigated the influence of e-procurement implementation on the performance of government ministries in Kenya (involving users of the e-procurement system in all 20 ministries) and found out that, e-procurement had a substantial impact on government ministry performance.

The findings of Kipngeno & Barrack (2015) revealed that e-procurement is positively associated with the performance of County Governments in Kenya's supply chain function. Similarly, a study undertaken by Tarisai-Rukuni (2016) discovered that proper implementation of an electronic procurement system might be one of the state-owned enterprises' strategic instruments for increasing transparency and accountability and eliminating corruption in South Africa. The study further revealed that most of the respondent, 78 per cent had unfavorable attitudes on variables impacting the implementation. The research also unravels that, parameters influencing electronic procurement have a statistically significant positive link with effective adoption.

Furthermore, findings from Osei-Owusu (2013), on assessment of the role e-procurement plays on supply chain management of AngloGold Ashanti Iduapriem (Tarkwa) Limited, revealed that e-procurement software, when used together with internal control measures, can help combat fraud and corruption associated with the procurement functions. The survey also found out that, e-procurement is a good option for businesses to use in their procurement efforts since it offers significant cost savings. According to the study, benefits of e-procurement adoption include faster ordering and delivery times and lower purchase, transaction, and labor expenses.

Chegugu & Yusuf (2017) discovered that e-tendering boosted competition in the tendering offer for the hospital in their study of the 'influence of e-procurement practices on organizational performance in public hospitals in the county government of Uasin Gishu, Kenya'. E-invoices were able to identify costs from customers to suppliers, and e-payments made it cheaper to pay suppliers quickly on supply delivery due to lower fees paid when sending money through e-banking systems, among other things.

III. Research Methods

Research Design and Approach

A research design is a strategy and structure of a research or a blueprint for data measurement, and analysis created to find answers to research questions (Rotich & Okello, 2015; Kothari, 2004). Research design employed for any study is determined by the sort of research topic and study questions. This research employed descriptive survey design mainly used in preliminary and exploratory studies to allow researchers to gather information and summarize, present, and interpret the data to clarify, determine, and report on the current state of a population under investigation (Mwangi & Kagiri, 2016; Orodho, 2003). This approach is helpful because it allows the researcher to gather data consistent with standard methods and based on highly organized research instrument(s) and well-defined study themes and related variables. The research used case study technique for data collection/gathering.

Descriptive survey or study design is a scientific method that entails witnessing and explaining the behavior of a phenomenon without being influenced; it entails the collection, organization, tabulation, depiction, and description of the data collected for a study (Malhotra et al., 2003). This methodology was chosen for this study because it permits data collected by questionnaire or structured interview (Babbie, Halley, & Zaino,

2007). It also aims to explain people's perceptions and behaviors based on data acquired at a certain point by providing a more exact depiction of occurrences. Again, it offers advantages of getting accurate and objective replies from a wide range of respondents as well as issues about the accuracy and objectivity of data collection when it comes to reporting current events (Nwadinigwe & Azuka-Obieke, 2012).

Study Area

The research was conducted at Sefwi Wiawso Municipal Assembly (SWMA). This Municipal Assembly was chosen due to the researcher's closeness to that Assembly and access to the respondents, and the fact that there were some claims of associated fraud and corruption previous/prior to the Assembly's adoption of GIFMIS.

Population of the Study

The study's population comprises all the seventy-six (76) workers of the Sefwi Wiawso Municipal. All the fifty (50) employees in the Procurement, Finance, Budget, Stores, Internal Audit (GIFMIS users) as well as Planning, Physical Planning and Registry departments (knowledgeable in GIFMIS) of the Assembly, both at management and nonmanagerial levels, including the Municipal Chief Executive (MCE) and Coordinating Director (CD), constituted the sample frame.

Purposive/judgmental sampling technique was employed in the study to select respondents. Employees from the departments mentioned above were purposively chosen because they either, work with or have knowledge of the use of GIFMIS. They were therefore well positioned to provide requisite answers to the research questionnaires.

According to Adèr (2008) sample size of about 10% of a population can provide good reliability and therefore researchers usually sample from accessible respondents (people) to generalize them to the target populations (Bambale, 2014). This, coupled with the argument that a sample of at least thirty (30) must exist for generalization to be made statistically on a particular population (Cooper and Schindler, 2003), informed the decision of the researcher to select the fifty (50) employees from the selected departments of the Assembly (representing about 66% of the target population of 76) as sample size. Therefore, the choice of 66% of the respondents in this study (sample size of 50) was adequate for collecting reliable data for generalization.

Sampling Method

The researcher adopted purposive or judgmental sampling in carrying out the study. This method of sampling is described as the choices of units or respondents by researchers based on personal judgment (Elder, 2009) and is representative of targeted populations. This kind of sampling method is commonly applicable in situations where minimal numbers of units (small sample sizes) are involved, primarily in instances where case studies are applied.

This method was considered appropriate, realistic, and applicable to this research since the number of employees (50) targeted for the study was comparatively small as the researcher targeted only employees of the Assembly, who he believed were abreast with the use or had knowledge of GIFMIS.

Source of Data

The research used primary data collected using structured questionnaires and interviews in soliciting for and retrieving information from respondents for the assessment or evaluation of the outlined objectives. Kotler and Armstrong (2010) posited and defined primary data as collected information to handle specific situations. Likewise, in secondary data collection, one must ensure the data collected are relevant, accurate, current, and unbiased in primary data collection.

Data Collection Instrument

A research instrument is any written or physical device or tool that is used to assess or evaluate variables. Type of data to be collected is dependent on the sort of instrument to be used for data collection. Choice of a tool/device is, in turn, reliant on such factors as validity and reliability, ease of administering, ease of acquisition of response, and ease of interpretation (Mwangi & Kagiri, 2016). The researcher personally administered the questionnaires, considering the above factors, and gathered primary data from the respondents. Drop and pick later administration method was employed where the questionnaires were given out to the respondents and collected later (2hours to 5days). A Questionnaire is a research instrument comprising a series of questions and prompts used in soliciting and gathering information from a respondent. Questionnaires are cost-effective ways of retrieving information and getting inputs from large groups of individuals in relatively short time frames.

The questionnaire consisted of two (2) sections, A and B. Section A consisted of fifty-seven (57) items soliciting information on the effect GIFMIS has on MMDAs supply chain management. Section B has thirteen

(13) items also eliciting information on the impact of GIFMIS on the MMDAs Operational performance. The questionnaire comprised closed-ended questions. Close-ended questions were relevant since they were easy to ask and quick to answer; it encouraged respondents to give their inputs with ease and therefore facilitated the collection of data and also rendered easy analysis of the data required for the research.

Data Collection Procedure

The purpose of the research was explained to the respondents during the administration of the questionnaires to them, and this paved the way for the researcher to establish a good relationship with the respondents, thereby ensuring not only successful retrieval of necessary information from respondents without struggle but also a higher recovery rate. This resonated with Leedy & Ormrod, 2010. The questionnaires were self-administered to employees of the selected departments with knowledge of GIFMIS usage, after a permission had been sought for and granted by the Municipal Chief Executive (MCE) of the Assembly.

Pretesting of Research Instrument

To establish reliability and validity, which are crucial components to be considered in assessing/evaluating a particular research instrument, the researcher sought the opinions of experts in the field of the research (especially lecturers). According to Gravetter (2012), reliability deals with the consistency of research instruments; an instrument is said to offer more excellent reliability if it can give the exact value of a known quantity.

A pretest conducted in Obuasi Municipal Assembly, in the Ashanti Region, enriched the reliability of the research instrument. The idea behind not using the targeted Assembly in the research area but a different one is not to pre-empt potential respondents as in what the research is all about and not to bother them with the research pretest as their services would be required in the actual survey. Correlation between/among the independent variables (that sought to correlate the responses to each question in the questionnaire with other questions) unraveled multi-collinearity between/among the independent variables signifying existence of internal consistency (Saunders and Lewis, 2012).

The validity of an instrument, on the other hand, explains how well an instrument undertakes the measurement of a particular phenomenon/concept it purports to measure (Saunders & Lewis, 2012). This suggests tools/devices must be reliable before they are deemed valid, implying a device must be consistently reproducible. Once reproducibility has been realized, the instrument can then be examined to assess whether it is what it is supposed to be. To have this done, the researcher revised other relevant literature that served as evidence and supported the responses provided by respondents in the questionnaire; the importance of which is determined by the nature of the research questions they sought to find answers to and their findings (Saunders et al., 2009). In addition, the designed questionnaire was presented to the research supervisor for review, correction, and approval prior to or before distributing to the respondents.

Data Processing and Analysis

Proper management of questionnaires retrieved from respondents is required if a sound decision could be made based on their data. It is imperative to have raw data rightly managed for safe conversion into information for good decision making; management of data involves sorting to fish out unanswered questionnaires, checking for consistency or clarity in the responses, assignment of identification numbers and coding of questionnaires and tabulation to permit statistical analysis.

The research adopted quantitative approaches to data analysis. After being revised for wholeness, consistency, and accuracy, the collected data was quantitatively analyzed, utilizing descriptive statistics (frequency distributions, percentages) and inferential statistics (correlation and regression analysis). Tables were used to present the data. MS- Excel and SPSS Version 23 Statistical software were employed for the data analysis.

IV. Research Results Analyses, Discussions And Findings

Research results

This research sought to unearth the benefits of GIFMIS to the MMDA and determine the extent to which GIFMIS has affected or improved the supply chain management/procurement performance and the operational performance of the MMDAs. The measurements of the first objective were captured on a five-point Likert Scale where; 1 = Strongly disagree (SD), 2 = Disagree (D), 3= Unsure/Not sure (U), 4 = Agree (A) and 5 = Strongly agree (SA), whilst those of the second objective were collected on a five-point Likert Scale where; 1= No extent, 2 = Small extent, 3 = Moderate/average extent, 4 = Large extent, and 5 = Very large extent. These results are summarized and presented in Tables 1 & 2 below. The researcher lumped together responses under Agree (A) and Strongly agree (SA) for objective one and moderate extent (ME), large extent (LE), and vast

(very large) extent (VE) for objective two, as respondents' agreement with the questions in tables 1 and 2 respectively.

Benefits Derived from Using GIFMIS by the MMADs

From the results presented in table 1 below, the utmost benefits derived from using/adopting GIFMIS by MMADs were improved communication, 35 (80%); enhanced efficiency and transparency, 34 (77%); reduced corruption and fraud, 31 (70%); reduced labour/procurement staff, 29 (66%); competitive advantage attainment, 26 (59%); improved fiscal discipline and profitability, 26 (59%); lower transaction costs associated with purchasing, 25 (57%), low prices of goods and services, 21 (48%) and faster ordering and delivery times, 21 (48%) in that order. This is consistent with Eadie et al., 2007 who stated that organizations which employ the use of e-procurement are linked with the following benefits: Price reduction in tendering, squeezing in time to source materials, lower administration costs, reduction in procurement staff, competitive advantage, communication improvement and reduction in time.

Table 1: Benefits derived from using GIFMIS by the MMADs

STATEMENT:	SD Freq(%)	D Freq(%)	U Freq(%)	A Freq(%)	SA Freq(%)
Lower prices of goods and services	4 (9.1)	7 (15.9)	12 (27.3)	20 (45.5)	1 (2.3)
Faster ordering and delivery times	1 (2.3)	6 (13.6)	16 (36.4)	16 (36.4)	5 (11.4)
Lower administration costs	4 (9.1)	14 (31.8)	11 (25.0)	13 (29.5)	2 (4.5)
Competitive Advantage attainment	4 (9.1)	3 (6.8)	11 (25.0)	7 (15.9)	19 (43.2)
Reduced labour (procurement staff)	5 (11.4)	4 (9.1)	6 (13.6)	22 (50.0)	7 (15.9)
Improved communication	1 (2.3)	1 (2.3)	7 (15.9)	27 (61.4)	8 (18.2)
Reduced operation and inventory cost	1 (2.3)	6 (13.6)	8 (18.2)	26 (59.1)	3 (6.8)
Improved fiscal discipline and Profitability	1 (2.3)	4 (9.1)	13 (29.5)	17 (38.6)	9 (20.5)
Lower transaction costs associated with purchasing	5 (11.4)	9 (20.5)	5 (11.4)	18 (40.9)	7 (15.9)
Enhanced Efficiency and transparency	1 (2.3)	6 (13.6)	3 (6.8)	12 (27.3)	22 (50.0)
Reduced corruption and fraud	2 (4.5)	5 (11.4)	6 (13.6)	18 (40.9)	13 (29.5)

Effect of GIFMIS on SCM Performance of MMDAs

The second objective of this study was to unearth the effect of GIFMIS on the supply chain management (SCM) of the MMADs. MMADs and State institutions using GIMIS have recognized it as having such functionalities/platforms that enhance procurement performance, including E-MRO, E-Sourcing, Firm/Enterprise Resource Planning, E-Informing, E-Market, and E-Budgeting, Financial Reporting, Internal Controls & Auditing.

This research was aimed to determine the level/degree at which these platforms have helped improve supply chain management/procurement and the overall operational performance of MMADs.

Effect of E-Ordering / (E-MRO) on the SCM of MMDAs

Results obtained from correlation (Table 6) revealed a strong positive correlation between SCM performance at the SWMA and E-Ordering/E-MRO. Prediction results from the regression model (Tables 3 & 5) indicate that a unit increase in E-Ordering/E-MRO would increase SCM performance at MMADs.

Descriptive statistics illustrate that E-Ordering/E-MRO affects the SCM performance of SWMA to a great extent. From the responses in Table 2, E-Ordering/E-MRO practices increased ordering for supplies on time, 33 (75%), reduced time wastage in order, 32 (73%), enabled timely requisition of materials from MMADs' central stores, 37 (84%), reduces ordering cost, 36 (82%), allowing specification of order criteria as in purchase order, 37 (84%) and ensured timely submission of purchase requisitions for approval, 39 (89%).

Effect of E-Sourcing on the SCM of MMDAs

In determining whether the E-sourcing functionality/platform of GIFMIS influences SCM performance at the SWMA, the result obtained from correlation analysis (Table 6) revealed a strong positive correlation between SCM performance and E-sourcing. Results from the regression model (Tables 3 & 5) illustrated that a unit increase in E-sourcing would produce a corresponding enhancement in SCM performance.

As illustrated by Table 2, descriptive statistics depicted the fact that e-sourcing activities' effect on SCM performance at SWMA is (to a large extent) influenced, as e-sourcing helped streamline bidding processes, 35 (80%), increased access to transparent price information, 39 (89%), allowed checking on most current prices of different supplies, 32 (73%), enabled evaluation of diverse suppliers' offerings in quality and price, 38 (86%), allowed suppliers from anywhere in the world to compete for MMADs bids, 35 (80%), assisted in understanding potential suppliers business cultures, 37 (84%), forced discipline in the suppliers sale processes, 36 (82%), caused reduction in purchase prices, 36 (82%), improved supplier adherence to delivery dates, 35 (80%) and, finally, improved product compliance with orders placed by MMADs, 38 (86%).

Effect of E-Tendering on the SCM of MMDAs

In the case of E-tendering, the correlation analysis (Table 6) revealed a high positive correlation between E-tendering and MMDAs SCM performance. Regression model (Tables 3 & 5) also showed a linear link whereby a unit increase in E-tendering leads to a comparable rise in SCM performance.

Moreover, descriptive statistics also reveal that E-tendering has a significant impact on MMDAs SCM performance. E-tendering practices have not only allowed timely bidding process initiation and closure, 35 (80%), and supplier selection coupled with timely bid evaluation, 37 (84%) in the AWMA, but also reduced staff numbers in the procurement department, 38 (86%), increased procurement volumes processed, 30 (68%), and reduced transportation costs associated with manual tendering, 37 (84%).

Effect of Enterprise Resource Planning (ERP) on the SCM of MMDAs

The study established a substantial positive link (Table 6) between SCM performance at the MMDAs (SWMA) and firm/enterprise resource planning (ERP). From Tables 3 and 5, the regression model projected that, a unit improvement in firm asset planning also would result in an improvement in SCM performance.

Results from descriptive statistics also established that, enterprise resource planning significantly affects SCM performance. Responses from this study, according to the adoption of ERP as seen in Table 2, has helped electronic documentation of bidding processes, 39 (89%), enhanced integration between/among departments, 36 (82%), improved enquiries into various stages of order processing, 39 (89%), provided suppliers easiness to identify when to deliver products/services, 40 (91%), enabled up to date inventory record keeping, 37 (84%), eliminated time wastage, 37 (84%), decreased the amount of goods/products that expire prior to its use, 34 (77%), helped track business material/cash resources, 38 (86%), improved supplier adherence to expiration date requirements, 38 (86%), intensified the training of staff yearly, 24 (55%), enabled implementation of timely training plans, 37 (84%), guaranteed clear description of job duties, 39 (89%), enhanced timely contacting of suppliers when urgent orders are required, 39 (89%), improved collaboration between the MMDAs and their suppliers, 39 (89%), improved inventory usage and control, 40 (91%), easy costing of materials in the central stores, 38 (86%), enhanced effectiveness of monitoring of current projects, 38 (86%), enhanced payments through electronic payments processing, 40 (91%), improved inter departmental coordination, 39 (89%), Reduced clients service time, 37 (84%) and enhanced feedback reception by customers, 38 (86%). The findings of the research resonate with Lamming (2012), which established the fact that ERP enables businesses to utilize a single system to integrate their entire business process and produce an enterprise-wide view of critical corporate information.

Effect of E-Informing on the SCM of MMDAs

When it came to the impact of e-informing on SCM performance at MMDAs, correlation data showed a high positive association (Table 6) between procurement performance and E-informing. Regression analysis/model (Tables 3 & 5) predicted that a unit improvement in e-informing will cause a rise in MMDAs (SWMA) SCM performance.

From descriptive statistics, the research established that, e-informing practice positively affects SCM performance to a great extent. Consistent with the data retrieved from respondents (Table 2), e-informing has facilitated effective communication delivery/dissemination within MMDAs and their suppliers, 36 (82%), ensured availability of information on suppliers/vendors, 35 (80%), helped to understand potential suppliers' cultures, 41 (93%) and facilitated information provision by suppliers to the MMDAs about their offerings, 39 (89%).

Effect of E-Reverse Auction on the SCM of MMDAs

The findings in Table 2 also indicate that E-Reverse Auction has a positive bearing on the SCM performance of MMDAs. Correlation results (Table 6) signified a robust positive correlation between SCM performance and E-Reverse Auction at SWMA, while prediction results from the regression model (Tables 3 & 5) showed linear relation, as increases in E-Reverse Auction activities would also result in gains in the SCM performance.

As depicted by the responses (Table 2), descriptive statistics show that E-Sourcing influences the SCM performance of SWMA to a large extent. It enabled selection of lowest bidders, 38 (86%), improved facilitation of bidding processing, 39 (89%), improved prices at which goods and services could be procured, 39 (89%), enabled purchasing of goods and services from known and unknown suppliers, 39 (89%) and increased competition among bidders and enhanced competitiveness, 28 (64%).

Effect of E-Market on the SCM of MMDAs

E-market place practice has positive effect on the SCM of MMDAs. From Table 6, correlation analysis established strong positive correlation between e-market and SCM performance at SWMA. The regression model, according to Tables 3 & 5, affirmed that, increase in the use of GIFMIS for e-marketing purposes would cause an increase in SCM performance at SWMA.

From Table 2, e-market procurement activities provided access to suppliers' offerings through integration of suppliers' supply chains and MMDAs financial systems, 35 (80%), enabled timely creation of requisitions for suppliers offerings and reception of approvals for them, 38 (86%) and also enabled timely reception of purchase orders and processing of electronic invoices, 37(84%).

Effect of E-Budgeting, Financial Reporting, Internal Controls & Auditing on the SCM of the MMDAs

Regarding the effect of E-Budgeting, Financial Reporting, Internal Controls & Auditing on the SCM Performance of MMDAs, a strong positive correlation was found, from the correlation model, to exist between GIFMIS and SCM performance at SWMA in accordance with Table 6. Regression model confirmed that, increased E-Budgeting, Financial Reporting, and Internal Controls activities would improve SCM performance of MMDAs (Tables 3 & 5).

From Table 2, E-Budgeting, Financial Reporting, Internal Controls & Auditing activities of the SWMA resulted in an improvement in budget preparation, recording and disbursements, 39 (89%), enhanced financial accounting and reporting, 40 (91%) and internal control and auditing, (89%) of the SWMA.

Table 2: The Impact of GIFMIS E-Procurement Practices on the MMDAs SCM Performance

STATEMENT:	NE Freq(%)	SE Freq(%)	ME Freq(%)	LE Freq(%)	VE Freq(%)
E-Ordering /(E-MRO)					
Increased ordering for supplies on time	3 (6.8)	8 (18.2)	10 (22.7)	20 (45.4)	3 (6.8)
Reduced time wastage (Reduced inbound lead time) in ordering	1 (2.3)	11 (25.0)	5 (11.4)	19 (43.2)	8 (18.2)
Enabled timely requisition of materials from MMDAs' central stores	3 (6.8)	4 (9.1)	21 (47.7)	10 (22.7)	6 (13.6)
Reduced ordering cost	3 (6.8)	5 (11.4)	10 (22.7)	25 (56.8)	1 (2.3)
Enabled specification of order criteria, as in purchase order	2 (4.5)	5 (11.4)	13 (29.5)	15 (34.1)	9 (20.5)
Ensured timely submission of purchase requisitions for approval	0 (0)	5 (11.4)	8 (18.2)	25 (56.8)	6 (13.6)
E-Sourcing					
Enabled streamlining of bidding processes	3 (6.8)	6 (13.6)	18 (40.9)	13 (29.5)	4 (9.1)
Increased access to transparent price information	1 (2.3)	4 (9.1)	17 (38.6)	16 (36.4)	6 (13.6)
Allowed checking on most current prices of different supplies	2 (4.5)	10 (22.7)	9 (20.5)	15 (34.1)	8 (18.2)
Enabled evaluation of different suppliers' offerings (products or services) in terms of prices and quality	4 (9.1)	2 (4.5)	9 (20.5)	22 (50.0)	7 (15.9)
Allowed suppliers anywhere in the world to compete for MMDAs bids	3 (6.8)	6 (13.6)	5 (11.4)	14 (31.8)	16 (36.4)
Assisted in understanding potential suppliers' business culture	2 (4.5)	5 (11.4)	10 (22.7)	25 (56.8)	2 (4.5)
Forced discipline in the supplier's sale process	2 (4.5)	6 (13.6)	18 (40.9)	17 (38.6)	1 (2.3)
Reduced purchase prices	3 (6.8)	5 (11.4)	12 (27.3)	18 (40.9)	6 (13.6)
Improved supplier adherence to delivery dates	3 (6.8)	6 (13.6)	8 (18.2)	19 (43.2)	8 (18.2)
Improved product compliance with order placed	0 (0)	6 (13.6)	11 (25.0)	20 (45.5)	7 (15.9)
Enterprise Resource Planning					
Enabled electronic documentation of bidding processes	1 (2.3)	4 (9.1)	12 (27.3)	14 (31.8)	13 (29.5)
Improved integration between/among departments	1 (2.3)	7 (15.9)	4 (9.1)	20 (45.5)	12 (27.3)
Enhanced enquiries into various stages of order processing	0 (0)	5 (11.4)	7 (15.9)	24 (54.5)	8 (18.2)
Provided suppliers easiness to identify when to deliver products/services	4 (9.1)	0 (0)	11 (25.0)	17 (38.6)	12 (27.3)
Enabled up to date inventory record keeping	0 (0)	7 (15.9)	10 (22.7)	20 (45.5)	7 (15.9)
Eliminated time wastage (Reduced outbound lead time)	2 (4.5)	5 (11.4)	12 (27.3)	17 (38.6)	8 (18.2)
Decreased amount of goods/products that expires prior to use	5 (11.4)	5 (11.4)	8 (18.3)	20 (45.5)	6 (13.6)
Helped track business resources (cash/materials)	2 (4.5)	4 (9.1)	21 (47.7)	14 (31.8)	3 (6.8)
Improved supplier compliance with expiry dates necessities	2 (4.5)	4 (9.1)	19 (43.2)	15 (34.1)	4 (9.1)
Increased staff trained per annum	3 (6.8)	17 (38.6)	11(25.0)	10 (22.7)	3 (6.8)
Enabled timely training plans implementation	2 (4.5)	5 (11.4)	15 (34.1)	13 (29.5)	9 (20.5)
Ensured clear job description and duties	2 (4.5)	3 (6.8)	5 (11.4)	26 (59.1)	8 (18.2)
Enabled timely contacting of suppliers when urgent	2 (4.5)	3 (6.8)	12 (27.3)	20 (45.5)	7 (15.9)

orders are required					
Improved collaboration between the MMDAs and their suppliers	4 (9.1)	1 (2.3)	5 (11.4)	24 (54.5)	10 (22.7)
Improved inventory usage and control	1 (2.3)	4 (9.1)	17 (38.6)	15 (34.1)	8 (18.2)
Easy costing of materials in the central stores	2 (4.5)	4 (9.1)	10 (22.7)	22 (50.0)	6 (13.6)
Monitoring of current projects efficiency	2 (4.5)	4 (9.1)	7 (15.9)	21 (47.7)	10 (22.70)
Enhanced payments through electronic payments processing	0 (0)	4 (9.1)	8 (18.2)	13 (29.5)	19 (43.2)
Improved inter departmental coordination	0 (0)	5 (11.4)	6 (13.6)	22 (50.0)	11 (25.0)
Reduced clients service time	1 (2.3)	6 (13.6)	14 (31.8)	14 (31.8)	9 (20.5)
Improved feedback reception by customers	2 (4.5)	4 (9.1)	13 (29.5)	18 (40.9)	7 (15.9)
E-Informing					
Facilitated effective information delivery/dissemination	4 (9.1)	4 (9.1)	10 (22.7)	19 (43.2)	7 (15.9)
Ensured availability of information on suppliers/vendors	2 (4.5)	7 (15.9)	10 (13.6)	21 (47.7)	8 (18.2)
Helped to understand potential suppliers' culture	1 (2.3)	2 (4.5)	13 (29.5)	24 (54.5)	4 (9.1)
Facilitated information provision by suppliers to the MMDAs about their offerings	2 (4.5)	3 (6.8)	9 (20.5)	26 (59.1)	2 (9.1)
E-Tendering					
Enabled timely bidding process initiation and closure	4 (9.1)	5 (11.4)	17 (38.6)	10 (22.7)	8 (18.2)
Enabled timely bids evaluation and supplier selection	1 (2.3)	6 (13.6)	9 (20.5)	22 (50.0)	6 (13.6)
Reduced staff numbers at the procurement department	3 (6.8)	3 (6.8)	12 (27.3)	20 (45.5)	6 (13.6)
Increased procurement volumes processed	3 (6.8)	11 (25.0)	12 (27.3)	13 (29.5)	5 (11.4)
Reduced transportation costs	4 (9.1)	3 (6.8)	9 (20.5)	21 (47.7)	7 (15.9)
E-Reverse Auction					
Enabled selection of lowest bidders	3 (6.8)	3 (6.8)	21 (47.7)	8 (18.2)	9 (20.5)
Improved facilitation of bidding processing	1 (2.3)	4 (9.1)	16 (36.4)	11 (25.0)	12 (27.3)
Improved prices at which goods and services could be procured	4 (9.1)	1 (2.3)	11 (25.0)	22 (50.0)	6 (13.6)
Enabled purchasing of goods and services from known and unknown suppliers	0 (0)	5 (11.4)	10 (22.7)	21 (47.7)	8 (18.2)
Increased competition among bidders and enhanced competitiveness	2 (4.5)	14 (31.8)	12 (27.3)	6 (13.6)	10 (22.7)
E-Markets					
Provided access to suppliers' offerings through integration of suppliers' supply chains and buyers' financial systems	2 (4.5)	7 (15.9)	20 (45.5)	13 (29.5)	2 (4.5)
Enabled timely creation of requisitions for suppliers' offerings and reception of approvals for them	0 (0)	6 (13.6)	12 (27.3)	17 (38.6)	9 (20.5)
Enabled timely reception of purchase orders and processing of electronic invoices	3 (6.8)	4 (9.1)	16 (36.4)	14 (31.8)	7 (15.9)
E-Budgeting, Financial Reporting, Internal Controls & Auditing					
Improved budget preparation, recording and disbursements	2 (4.5)	3 (6.8)	5 (11.4)	25 (56.8)	9 (20.5)
Enhanced financial accounting and reporting	0 (0)	4 (9.1)	13 (29.5)	15 (34.1)	12 (27.3)
Enhanced internal control and auditing	1 (2.3)	4 (9.1)	4 (9.1)	24 (54.5)	11 (25.0)

Regression and Correlation Analyses on GIFMIS & MMDAs SCM performance Data

Findings from descriptive analyses, based on Table 2, established a linear association between GIFMIS e-procurement functions/practices (independent variable) and the MMDAs supply chain performance (dependent variables).

To measure the relationship between predicted (dependent) and explanatory (independent) factors or between the latter, a model was developed using regression analysis to examine the effect of explanatory variables on predicted variables or between explainer variables. Multiple regression measures were coded, entered, and computed using the Statistical Package for Social Sciences (SPSS V 21.0). Found in the table below (Table 3) is a summary of the model.

Table 3: Summary of the Regression Model (GIFMIS-SCMP)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
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1	.558 ^a	.312	.295	14.07584
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a. Predictors: (Constant), GIFMIS

The following regression equation was adopted by the researcher:

$$P = a + bx + e$$

where P = SWMA SCM; x= GIFMIS, e=margin of error.

R (correlation coefficient) is 0.558, indicating a high positive correlation between GIFMIS e-procurement functionalities and SWMA supply chain management performance, as shown in Table 3. According to the regression model, the coefficient of determination (Adjusted R2) is 0.295, meaning that the impacts of GIFMIS e-procurement practices (i.e., predictor variables) affect 29.5% of SWMA supply chain management performance. In comparison, the remaining supply chain management aspects other than the usage of GIFMIS account for 70.5% variation. These include Manufacturing/operations, logistics/distribution, reverse logistics etc.

Table 4: The Variance Analysis (GIFMIS-SCMP)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3766.462	1	3766.462	19.010	.000 ^b
	Residual	8321.425	42	198.129		
	Total	12087.886	43			

a. Dependent Variable: SCM

b. Predictors: (Constant), GIFMIS

Based on the ANOVA statistics, as established from the regression model, the significance level was 0% (should not exceed 0.05%), which indicates that the data can be relied upon to conclude on the population parameters. Hence, the model was significant.

The estimated F value of 19.01 is higher than the crucial value of 2.49, indicating that all predictors impacted on SWMA supply chain management performance.

The research model was also determined using the coefficient table. The results are listed in the table below:

Table 5: Coefficients (GIFMIS-SCMP)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance
1	(Constant)	136.318	15.363		8.873	.000	
	GIFMIS	1.448	.332	.558	4.360	.000	1.000

The regression equation derived from the table of coefficients (Table 5) above is used to explain the impact of GIFMIS e-procurement practices on MMDAs SCM performance as below.

$$P = 136.318 + 1.448x + e.$$

The equation depicts a positive relationship between GIFMIS procurement practices and the supply chain management performance of the SWMA. When there is no adoption or usage of GIFMIS in the SWMA, the supply chain management performance, P, will be 136.318. Increments in the usage of GIFMIS, x will result in the corresponding increments in the supply chain management performance, P by 1.448.

The use of Pearson Product Moment Correlation was not only to examine and assess the degree of multicollinearity amongst the GIFMIS e-procurement functions (independent variables) but, more importantly, to determine the degree of their associations with the MMDAs SCM performance (dependent variable), as illustrated by the correlation matrix (Table 6) below.

Table 6: Pearson Product Moment Correlation

		FP	E-Ordering	E-Sourcing	Enterprise Resource Planning	E-Informing	E-Tendering	E-Reverse Auction	E-Markets	E-Bud., FR, IC & Aud.	SCM
FP	Pearson Correlation	1	.338*	.366*	.435**	.429**	.411**	.367*	.484**	0.081	.583**
	Sig. (2-tailed)		0.025	0.015	0.003	0.004	0.006	0.014	0.001	0.599	0.000
	N	44	44	44	44	44	44	44	44	44	44
E-Ordering	Pearson Correlation	.338*	1	.660**	.305*	.388**	.468**	0.237	0.204	0.228	.707**
	Sig. (2-tailed)	0.025		0.000	0.044	0.009	0.001	0.122	0.185	0.137	0.000
	N	44	44	44	44	44	44	44	44	44	44
E-Sourcing	Pearson Correlation	.366*	.660**	1	.384*	0.285	.331*	0.032	0.290	0.239	.700**
	Sig. (2-tailed)	0.015	0.000		0.010	0.060	0.028	0.838	0.057	0.119	0.000
	N	44	44	44	44	44	44	44	44	44	44
Enterprise Resource Planning	Pearson Correlation	.435**	.305*	.384*	1	.367*	.500**	0.230	0.161	0.097	.771**
	Sig. (2-tailed)	0.003	0.044	0.010		0.014	0.001	0.134	0.296	0.530	0.000
	N	44	44	44	44	44	44	44	44	44	44
E-Informing	Pearson Correlation	.429**	.388**	0.285	.367*	1	.603**	.409**	0.161	.334*	.671**
	Sig. (2-tailed)	0.004	0.009	0.060	0.014		0.000	0.006	0.297	0.027	0.000
	N	44	44	44	44	44	44	44	44	44	44
E-Tendering	Pearson Correlation	.411**	.468**	.331*	.500**	.603**	1	0.158	0.085	0.251	.715**
	Sig. (2-tailed)	0.006	0.001	0.028	0.001	0.000		0.305	0.585	0.100	0.000
	N	44	44	44	44	44	44	44	44	44	44
E-Reverse Auction	Pearson Correlation	.367*	0.237	0.032	0.230	.409**	0.158	1	0.221	0.171	.425**
	Sig. (2-tailed)	0.014	0.122	0.838	0.134	0.006	0.305		0.150	0.267	0.004
	N	44	44	44	44	44	44	44	44	44	44
E-Markets	Pearson Correlation	.484**	0.204	0.290	0.161	0.161	0.085	0.221	1	-0.105	.331*
	Sig. (2-tailed)	0.001	0.185	0.057	0.296	0.297	0.585	0.150		0.497	0.028
	N	44	44	44	44	44	44	44	44	44	44
E-Bud., FR, IC & Aud.	Pearson Correlation	0.081	0.228	0.239	0.097	.334*	0.251	0.171	-0.105	1	.386**
	Sig. (2-tailed)	0.599	0.137	0.119	0.530	0.027	0.100	0.267	0.497		0.010
	N	44	44	44	44	44	44	44	44	44	44
SCM	Pearson Correlation	.583**	.707**	.700**	.771**	.671**	.715**	.425**	.331*	.386**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.028	0.010	
	N	44	44	44	44	44	44	44	44	44	44

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

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

Source: Research data, (2021)

The findings revealed that the degree of correlations between the GIFMIS (independent variable) and SCM performance (dependent variable) are greater than those between/among the independent variables, indicating that multicollinearity among the independent variables has no impact on the findings. Impliedly, it stipulates a significant positive correlation between GIFMIS and the supply chain management performance of SWMA and, therefore, many dependencies of SCM performance on GIFMIS e-procurement practices.

Effects of GIFMIS on Operational Performance of MMDAs

The study, finally, sought to unravel the effects GIFMIS has on MMDAs overall operational performance by establishing the extent to which respondents agree with various statements to this effect.

Findings from this section of the study, as presented in Table 7 below, revealed that 11% of the respondents agreed with the assertion that, GIFMIS has affected the performance of MMDAs to a huge (very large) extent and, 45% agreed that it had influenced MMDAs to a large extent, while 18% concurred it had influenced MMDAs performance moderately. Conversely, only a few (26%) believed that GIFMIS adoption in the MMDAs has affected their performance to a small degree or has not affected it at all. The findings also established that the software system has led to cost reduction (operational, transactional, and administrative costs), reduced paper consumption and costs, and reduced inventory cost in the MMDAs. As illustrated in Table 7 below, respectively 11%, 36% and 43% (90%), 39%, 32% and 18% (89%) and 14%, 45% and 20% (79%) of the respondents, to a very large extent, large extent and moderate extent, agreed to the above claims.

To the fact that it has resulted in a reduction in procedure lead times and facilitated or guaranteed real-time responses to customers of MMDAs and their markets, respectively, the results show that 14%, 50%, and 18% (82%), and 14%, 45% and 22% (81%) of the respondents, responded in the same order as before (i.e., huge, large, and moderate extents).

In response to questions of whether GIFMIS has improved MMDAs' process streamlining, resulting in high processes efficiencies as well as enhanced service delivery leading to increased productivity and profitability in the MMDAs, the study findings as presented in table 7 below indicated that 11%, 61% and 18% (90%) as well as 11%, 66% and 11% (88%), respectively, agreed with the above statements. Also, to the questions of whether GIFMIS has improved acquisition and flow of quality information, increased competitive bidding and sourcing and reduced errors in order transmission in the MMDAs, the responses were in favour of the assertions with respectively 45%, 27%, and 16% (88%); 18%, 61% and 14% (93%); and 25%, 48% and 14% (87%) of the respondents agreeing in the same order. Notwithstanding the researcher's quest to establish from the respondents whether the GIFMIS software has enhanced procurement Quality in and among MMDAs, 27%, 52%, and 16% (95%) answered in favour of the statements in the same order (i.e., huge, large, and moderate extents).

Finally, the researcher also wanted to establish whether GIFMIS has improved transparency and accountability and reduced corruption and fraud in the procurement process of the MMDAs. Findings emanated from the respondents agreed with the statements, as 41%, 36% and 11% (88%) and 50%, 27% and 11% (88%) of the respondents, respectively, responded to the above statements in the same order.

Table 7: Effects of GIFMIS on MMDA's Operational Performance

STATEMENT:	NE Freq(%)	SE Freq(%)	ME Freq(%)	LE Freq(%)	VE Freq(%)
Reduced costs (operational, transactional, and administrative costs)	2 (4.5)	2 (4.5)	19 (43.2)	16 (36.4)	5 (11.4)
Reduced procedure lead times	1 (2.3)	7 (15.9)	8 (18.2)	22 (50.0)	6 (13.6)
Facilitated/guaranteed real time responses to customers/markets	1 (2.3)	7 (15.9)	10 (22.7)	20 (45.5)	6 (13.6)
Enhanced procurement Quality	0 (0)	2 (4.5)	7 (15.9)	23 (52.3)	12 (27.3)
Increased competitive bidding and sourcing	0 (0)	3 (6.8)	6 (13.6)	27 (61.4)	8 (18.2)
Reduced paper consumption and costs	1 (2.3)	4 (9.1)	8 (18.2)	14 (31.8)	17 (38.6)
Improved acquisition and flow of quality information	0 (0)	5 (11.4)	7 (15.9)	12 (27.3)	20 (45.5)
Reducing errors in order transmission	5 (11.4)	1 (2.3)	6 (13.6)	21 (47.7)	11 (25.0)
Reduced inventory	2 (4.5)	7 (15.9)	9 (20.5)	20 (45.5)	6 (13.6)
Procurement process transparency and accountability improvement	1 (2.3)	4 (9.1)	5 (11.4)	16 (36.4)	18 (40.9)
Reduced corruption and fraud	1 (2.3)	4 (9.1)	5 (11.4)	12 (27.3)	22 (50.0)
Processes streamlining improved	1 (2.3)	3 (6.8)	8 (18.2)	27 (61.4)	5 (11.4)
Enhanced service delivery leading to high productivity and profitability	0 (0)	5 (11.4)	5 (11.4)	29 (65.9)	5 (11.4)
Average	1 (3%)	3 (9%)	8 (18%)	20 (45%)	11 (25%)

Regression and Correlation Analyses on GIFMIS Process & MMD performance Data

From Table 7, a descriptive analysis established a linear association between GIFMIS e-procurement functions/practices (independent variable) and the MMDAs operational performance (dependent variables). To measure the relationship these variables, a regression model was utilized to examine the effect on each.

Table 8: Model Summary (GIFMIS-FP)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.181 ^a	.033	.010	4.713

a. Predictors: (Constant), GIFMIS

The following regression equation was also adopted:

$$P = a + bx + e$$

where P = Firms' Performance; x = GIFMIS, e=margin of error.

As shown in table 8, R = 0.181 (correlation coefficient) signifies a weak positive correlation between GIFMIS use and SWMAs operational performance.

Also, from the regression model, the coefficient of determination (Adjusted R²) is 0.010, implying only 1% of SWMAs performance is influenced by GIFMIS e-procurement practices adopted by the Assembly (i.e., predictor variables). In contrast, organizational factors (Named above) influence the remaining variance of 99% of SWMA's performance.

Table 9: ANOVA (GIFMIS-FP)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	31.553	1	31.553	1.421	.240 ^b
	Residual	932.878	42	22.211		
	Total	964.432	43			

a. Dependent Variable: FP

b. Predictors: (Constant), GIFMIS

The significance threshold for the ANOVA statistics (Table 9), as determined by the regression model, was 24 per cent (should not exceed 5 per cent), indicating that one cannot trust the data in determining population characteristics concerning the MMDAs operational/organizational performance, so the model was not significant.

The computed F value of 1.421 is lower than the critical threshold (2.49), indicating that not all predictors impact on SWMA performance.

Table 10: Coefficients Analysis (GIFMIS-FP)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	
1	(Constant)	43.314	5.144		8.421	.000		
	GIFMIS	.133	.111	.181	1.192	.240	1.000	

The impacts of GIFMIS e-procurement functionalities on MMDAs' (SWMA's) operational performance are determined by the regression equation derived from the table of coefficients above and are as follows:

$$P = 43.314 + 0.133x + e$$

The equation shows that GIFMIS procurement practices and the SWMA performance have a weak positive association. When GIFMIS is not adopted or used by the Assembly, its operational performance, P, will be 43.314. Enhancements in GIFMIS practices, x, will result in an increase by a factor 0.133 in P. Assessment of the degree of multicollinearity amongst the GIFMIS e-procurement functions (independent variables) using Pearson's product moment (Table 10 above) and the degree of their associations/links with the SWMA operational performance (dependent variable) revealed that the degrees of correlation between most of the GIFMIS functions (independent variables) are greater than those that exist between same and SWMA operational performance (dependent variable), indicating that the independent multicollinearity between/amongst the variables have influence on the findings. For example, from Table 10, the degree of association between e-ordering and e-sourcing is 0.660, while that between the former and SWMA's overall performance is 0.338.

Even though, linear association exists between GIFMIS e-procurement functions/practices (independent variable) and the MMDAs operational performance (dependent variables), it is very weak in. This is in contract with what exist between GIFMIS and the SCM of the MMDAS (SWMA).

The reason being that organizations' ability to align the people and resources to strategic responsibilities necessary for attaining their performances in an ethical manner that consequently results in sustainable competitive advantage, as cited by Shahrani & Zhengge (2016), is critical when it comes to their overall operational performances. For service businesses, organizational characteristics/factors (such as management, human and financial resources, business processes, business strategy, asset utilization, market share position, and company size) determine their financial performance. Firms SCM falls under its business processes, which is a subset of its organizational factors. This, from the regression and correlation models above, accounted for a high Sig value of 0.240 and a low F = 1.421 less than the critical value (2.49) and a weak positive correlation (0.181).

V. Summary Of Findings, Conclusions, And Recommendations

Findings

- The study unraveled several benefits resulting from the adoption of the GIFMIS e-procurement system. Key among these include: Reduced labor or procurement staff, improved communication, reduced operational and inventory costs, improved fiscal discipline and profitability, lower transaction costs associated with purchasing, enhanced efficiency and transparency, reduced corruption and fraud, low prices of goods and services, faster ordering and delivery times, lower administration costs, enhanced customer satisfaction and competitive advantage attainment.
- The study also unearthed a hugely positive effect of GIFMIS on the supply chain management of the MMDAs, as it established a strong positive correlation between the two. The regression model established that, any increase in GIFMIS e-procurement practices in the MMDAs, result in corresponding increase in SCM performance of the MMDAs by 1.448. the use of GIFMIS accounts for about 30% of the SCM performance of MMDAs. The remaining 70% represents the effects caused by other elements of the supply chain management other than GIFMIS (Procurement). Strong positive correlation between the two variables ($R=0.558$) was disclosed by the study.
- The study also disclosed a weak effect of GIFMIS on the general operational performance of MMDAs (SWMA). As illustrated by the regression model, any enhancement in the use of GIFMIS in SWMA would result in a corresponding enhancement in the performance of MMDAs by a factor of 0.133. A weak positive correlation between the two parameters was also unraveled ($R = 0.181$).
- GIFMIS e-procurement practices influence only 1-3% of the overall performance of MMDAs; Other organizational factors account for the remaining 97-99%.

Conclusions

Based on the research findings, the following conclusions are drawn:

1. The government of Ghana introduced GIFMIS to offer the MMDAs and other state institutions/agencies a high-performance achievement rate in their supply chain management activities/functions and enhance their general performance and competitive edge.
2. Key benefits derived from the use of the system include Reduced labor or procurement staff, improved communication, reduced operational and inventory costs, improved fiscal discipline and profitability, lower transaction costs associated with purchasing, enhanced efficiency and transparency, reduced corruption and fraud, low prices of goods and services, faster ordering and delivery times, lower administration costs, enhanced customer satisfaction and competitive advantage attainment.
3. The adoption and implementation of GIFMIS have elevated or enhanced performance (positive effect) on the supply chain management and relatively small effect on the overall operational performances of the MMDAs and for that matter SWMA. GIFMIS usage comes with huge positive effects on the supply chain management performance and relatively small positive impact on the operational performance of MMDAs. These positive impacts include real-time response to both the customers and the market, reduced times wastage, improved transparency and accountability, improved information flow in the supply chain, reduced costs, reduced inventory and improved competitive bidding and sourcing.

Recommendations

1. GIFMIS Should be implemented in all State-owned institution; the need for all state institutions to conduct general procurement activities/functions with GIFMIS software is highly indispensable.
2. Decentralization of GIFMIS by the MMDAs (into other departments) is recommended.
3. Intensification on staff training on the usage of the GIFMIS software system to ensure full operationalization of the system in State institutions (MMDAs) is recommended.

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