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KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KNUST)
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INVESTIGATING THE EFFECT OF INFORMATION TECHNOLOGY ON PUBLIC SECTOR PROCUREMENT PERFORMANCE IN GHANA. A STUDY OF THE JUDICIAL SERVICE OF GHANA, ACCRA.

BY

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DECLARATION

I hereby declare that this submission is my own work towards the Master of Philosophy (MPhil) in Logistics and Supply Chain Management to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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Abstract
In this study, the researcher seeks to better understand the value of Information technology (IT) in supply chain contexts at the Judicial Service. The study was supported by the resource-based view theory in conjunction with literature gathered, the researcher developed a conceptual model that links three IT-related resources (procurement processes, partner support and IT infrastructure and managerial and staff skills) to procurement performance. The model differs from previous studies by proposing a direct effect of digitally enabled procurement system on procurement performance relationships. With the objective of Investigating the Effect of Information Technology on Public Sector Procurement Performance in Ghana, out of a population of 200, a sample size of 150 was used and getting 110 responses from selected staff through a purposive sampling technique, the analysis indicates significant contribution of IT to supply chain, which is generated through development of the digitally enabled procurement capability and manifested at all processes along the supply chain. Both primary and secondary sources of data were employed in the collection of data for the study. The technological resources alone, however, does not hold the answers to IT value creation. In fact, managerial skills, which enable adaptations of supply chain processes and corporate strategy to accommodate the use of IT, are shown to play a strong role in IT value creation. Furthermore, Partner support and IT infrastructure, procurement processes and managerial and staff skills are found to be more valuable in many Public Procurement practices. Overall, the results shed light on how the public sector needs improvement in its IT infrastructure. The study was limited to only the Judicial Service of Ghana for the purposes of time and funds available but future research could consider more than one public institution. Recommendations were that there should be computers and network equipment provided, staff should be well trained and suppliers and stakeholders integrated into the implementation process with quarterly maintenance on all equipment. It was concluded that information technology in procurement could be achieved when consideration is given to the people who will be using the technology.

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LIST OF ABBREVIATIONS

DSS	-	Decision Support Systems
DLA	-	The Defense Logistics Agency
CIPS	-	Chartered Institute of Procurement and Supply
EDI	-	Electronic Data Interchange
EFT	-	Electronic Funds Transfer
GSA	-	General Services Administration
IT	-	Information Technology
MRO	-	Maintenance Repair and Operation
PPA	-	Public Procurement Authority
RFQ	-	Request for Quotation
RBV	-	Resource Based View
OECD	-	Organization for Economic and Development
CAP	-	Caribbean and Pacific

CHAPTER ONE
GENERAL INTRODUCTION

1.1 Background of the study

For decades now procurement performance has attracted immense attention from practitioners, academics, and researchers due to poor performance resulting from non-adherence to proper processes and procedure. The Public Sector is used to the manual procurement system which has led to delays and lack of transparency, efficiency, and effectiveness in operation. The procurement function has not been given the recognition it deserves in developing countries, in most public entities, regardless of the effort by partners like the World Bank, the International Trade Organisation, the United Nations Conference on Trade and Development, the World Trade Organisation and, others. This could be deliberate or sheer ignorance on the value the procurement function could contribute to any organization (Telgen, Zomer, & de Boer, 1997).

The emergence of technology in modern businesses has now become a trend that has led to increase benefits in many private organisations (Aberdeen, 2005). Over the past decades, Public Procurement has gained much consideration amongst developing nations. In most developing countries, the procurement function is transitioning from a clerical non-strategic unit to an effective socio-economic unit that is able to influence decisions and add value (Knight, Harland, Telgen, Thai, Callender, & Mcken, 2007).

None the less, most developing countries are facing a problem of rapid changes in public procurement requirements. The changes are impacting how the procurement function performs its internal and external processes and procedures in order to achieve its objectives. The ability to realize procurement goals is influenced by internal forces and external forces (Mlinga, 2009). Procurement spending plans in developing nations represent around 50 percent of government expenditure globally (Mlinga, 2009), numerous governments have undertaken a number of reforms in the area of Procurement systems to streamline and harmonize legitimate and institutional structure.

In recent years, the role of procurement has developed into a sophisticated function in most successful private organizations. Information technology in procurement is therefore seen to accelerate business changes. It takes into consideration making change, utilization, and information of tools, machines, procedures, specialties, systems, or techniques for organizations, to take care of an issue, enhance a previous arrangement, accomplishing an objective, or perform a particular capacity in connection with procurement and the procurement process (Aberdeen, 2005). The researcher, therefore, seeks to investigate the effect of information technology (IT) on public sector procurement performance in the Judicial Service of Ghana.

Procurement can be extensively seen as the acquisition of goods or services at the best possible cost of ownership, regularly in the right amount and quality, at the right time, in the perfect place and from the right source for the immediate benefit or utilization by, organizations, people, and corporations at large by means of an agreement (Lysons and Farrington, 2006).

Public Procurement, as indicated by the Public Procurement Act, 2003 (Act 663), is 'the procurement of goods, works and services at the best possible total cost of ownership, in the right amount and quality, at the right time, in the right place for the immediate advantage or utilization of governments, organizations, or people, by and large through a contract' (PPA Module, 2007). As such, Public Procurement is the procedure by which organisations get products, works, and services utilizing public funds. It is a comprehensive process that keeps running from proper procurement planning, budget allocation, bids invitation, bid evaluation, the award of the contract, contract management, and performance measurement, monitoring, auditing, and reporting.

The Public Procurement Act, 2003 (Act 663) is a thorough enactment intended to wipe out the deficiencies and authoritative shortcomings which were natural in Public Procurement in Ghana. A study by the World Bank (2003a) reported that around 50-70% of the national spending plan (after individual payments) is procurement related. Consequently, an effective Public Procurement system could guarantee esteem for cash in government use, which is vital to a nation confronting tremendous formative difficulties.

Despite the fact that the Public Procurement Act, 2003 (Act 663) has realized some rational soundness into public procurement practices, incorporating the use of information technology practice into public procurement is seen as a modern and more effective way to achieving efficiency and transparency which is been looked at by the researcher.

In public sector procurement, the procurement processes, guidelines, and exchanges must be spelled out and made accessible to people in general and in addition to potential suppliers in order to achieve procurement

performance (Ameyaw et. al., 2012). The researcher, therefore, looked at the various systems, tools, and equipment that will aid in the achievement of the research objectives. The researcher used the areas of Procurement, Logistics, Finance, Works, Projects and Reforms and the Internal Audit Departments through a purposive sampling technique of 150 sample size to collect information for the study.

As the procurement capacity of numerous organisations is turning out to be more key, procurement technology takes into account a procedure re-outline that makes the procurement process open with enhanced responsibility, transparency and reporting abilities; in this manner accelerating the procurement cycle and giving more noteworthy access to more open doors for suppliers (CIPS Technology in Purchasing, 2012).

1.2 Statement of the Problem

Regardless of the effort by the governments of developing countries, like Ghana and development partners like World Bank to improve the performance of the procurement function, public procurement is still marred by inefficiencies and effectiveness. This has resulted in unnecessary high operational costs, uncoordinated business activities, and failure to attract and retain experienced and skilled personnel in the procurement positions, thus affecting procurement performance (David, 2002; DCD/DAC, 2003; NSSF, 2005; Atkinson, 2006). This research work, therefore, seeks to investigate the effect of IT on the public sector procurement performance. Knudsen, (1999) also suggested that procurement performance starts from purchasing efficiency and effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity. The procurement system at the Judicial Service is marred with inefficiencies, delays, transparency and effectiveness which has affect procurement performance. The use of information technology has helped in achieving improved performance as practiced in the private sector which has yielded greater results (Aberdeen, 2005). The research work is therefore to determine its effect on procurement performance in the Judicial Service which lacks efficiency and effectiveness in the execution of its procurement activities. Information Technology which is an enabling tool to aid in the performance improvement is described to incorporate computer hardware, software, and communication systems, and the workforce and resources devoted to supporting the facilitation of information management, that is, the aggregation, analysis, and dissemination of task-related information (Weill, Peter 1992).

The literature, therefore, supports that IT in organisational operations gives the organisations abilities to track processes with the use of technology to ensure every aspect of the operation is monitored in other to make improvements when necessary (Lee and Whang, 2001).

This has therefore called for the researcher to investigate the Effect of Information Technology on Public Sector Procurement Performance in Ghana by using the Judicial Service as a case study.

1.3 Research Objective

The general objective of the researcher "investigating the Effect of Information Technology on Public Sector Procurement Performance in Ghana" will be designed and carried out by using Judicial Service as a case study.

Specific objectives:

I. To determine the extent of IT usage in Public Procurement processes at the Judicial Service.
II. To examine how IT can lead to improving procurement performance in Public Procurement at the Judicial Service
III. To evaluate challenges in the use of IT in Public Procurement at the Judicial Service.
IV. To evaluate the impact of IT practice in public procurement management.

1.4 Research Questions

The research question is to investigate the Effect of Information Technology on Public Sector Procurement Performance in Ghana.

The questions are;

I. What is the extent of IT usage in procurement processes at the Judicial Service?
II. How can IT improve performance in Public procurement processes at the Judicial Service?
III. What are the challenges of the use of IT in Public procurement at the Judicial Service?
IV. What are the prospects of IT practice in Public procurement?

1.5 Significance of the Study

The expectation of the researcher was that by the end of the study, the independent variables under the digitally enabled procurement resources would be accessed to determine their effect on procurement performance. But much concentration was given to the Judicial Service in order to determine the level of their procurement efficiency.

The explanation of the study lies in the significance of the utilization of IT in the Procurement process to improve performance and its progressively outstretching influences on guaranteeing viability, proficiency and all the more significantly diminishing corruption. It is in light with this and others that this study is to see if technology in procurement has had an impact on enhancing procurement performance.

The study will serve as a guide to researchers, procurement professionals and supply chain partners like suppliers and contractors who have enthusiasm for the utilization of information technology in public procurement to help their work.

1.6 Methodology of the study

This research work like any other socially constructed activity exists in a context dealing with principles and procedures in research, therefore there is the need to indicate the strategy and methods of collecting and collating data and information to be used. The study considered the Resource Base View theory to collect data where digitally enabled procurement resources (procurement process, partner support and IT infrastructure, Managerial and staff skills) was used to achieve procurement performance. This study used quantitative methods of research, and strategies such as questionnaires and field research to assess the target group understanding of technology, hence the use of mixed method techniques with primary and secondary data collection. Review of related literature on the effect of information technology and tools from SPSS and Ms Excel was used.

The study sample represents the functional departments that work within the supply chain like Logistics, Finance, Projects and Reforms, Internal Audit and Works Departments etc. that are considered support staff to the Judiciary who make up the Judicial Service participating in this study through purposive sampling technique to assess the effect of information technology on public sector procurement performance in Ghana. It is therefore expected that these initiatives will lead to the formulation of strategies that will enhance or improve performance in public sector procurement. These will result in sufficient discussions to conclude with practical and achievable recommendations for implementation.

1.7 Scope of the Study

The study provides a picture of the effect of information technology on public sector procurement performance whiles focusing on the Judicial Service of Ghana which was carried out for a period of six months. The study concentrates on stakeholders of the Judicial Service who include; suppliers, service providers and employees of the Judicial Service through the administration of questionnaire from a sample size of 150 with a target population of 200 staff and service providers. The Judicial Service of Ghana is a Public institution that can use information technology to reduce cost and lead time in all its procurement activities similar to all other public institutions and therefore identified problems will not differ as might exist in other public institutions. The research was conducted through the administration of a questionnaire to solicit information.

1.8 Limitation of the Study

The research work like any other research work was faced with challenges of time and money since the researcher had to combine office work with gathering information for the study which involved the use of money for transport. Most especially getting the respondents to answer the questionnaire, it became a challenge since some of them were always busy hence, getting them to answer the questionnaire became a challenge. Also, the study was limited to only one institution and it is therefore recommended that future research work should consider more than one institution. The researcher, however, was able to find time to gather more information for this research work.

1.9 Organisation of the thesis

The study is put into five parts. The primary part gives the background information on the study which incorporates background, problem statement, research objectives and questions, the relevance of the study, and scope of the study. The writing on the meaning of procurement, procurement processes, supply chain integration, procurement process, efficiency and effectiveness, IT infrastructure and managerial and

staff skills with the literature on other authors and hypothetical structure on how information technology could help in guaranteeing viable procurement performance improvement was evaluated in part two. Research design, population, sample and sampling strategy, sources of information, information gathering instruments and information analysis which shape the procedure of this study will be caught in part three. Part four was analyses of the data collected while section five showed a synopsis of the discoveries, conclusions and the recommendations of the study.

CHAPTER TWO
LITERATURE REVIEWS

Despite those and other constraints, they can achieve substantial savings by integrating the public sector requirements through synchronized information technology system that can provide fewer errors and aid in efficiency and improvement.

2.1 Overview of Procurement

Procurement is about all the activities involved in obtaining materials and services, managing their inflow into an organization toward the end user (Zenz and Thompson, 1994). This includes obtaining manufacturing supplies and semi-finished products for an assembly line as well as obtaining paper and pencils for a bank (Hough and Ashley, 1992). Situated between an organisation's internal customers in need of materials to satisfy their need and external suppliers providing goods and services, this function needs to connect various holes so as to simultaneously manage external and internal relationships and to balance participant's diverse objectives.

Purchasing is about the procedures of acquiring, subsequently identification of need, sourcing and selecting of a supplier, negotiating prices and other vital terms and making subsequent follow-ups on delivery, procurement is generally seen to incorporate viewpoints, for example, stores management, traffic, incoming inspection and salvage (Hugo et. al.,2002). Lambert and Stock, 1992 additionally say that, purchasing fundamentally refers to the genuine procurement of materials and whatever other exercises connected with the buying process. Procurement is more extensive in degree and incorporates buying, activity, warehousing and getting materials. Therefore for the purposes of this study the resources that could be used to aid procurement performance in a digitally enabled procurement system will be looked at.

Procurement can also be described to mean a process whereby organisations address their needs for goods, services, works and utilities in a way that accomplishes value for money on a whole life basis regarding the generation of benefits not only to the organisation, but as well as to society and the economy whilst minimizing harm to the environment (Sustainable Procurement Task Force, UK; 2009).

The Public Sector which is mostly synonymous with government refers to the Ministries, Departments and Agencies of Government. The main sources of funding for the public sector which is the primary implementer of government projects are consolidated funds of government, taxes, loans from institutions, for example, the World Bank and the International Monetary Fund, and grants from international donors and other benevolent considerate organisations.

Public procurement is therefore about undertaking procurement activities which are under the jurisdiction of government or any other public sector organisation and with the use of public funds (Ameyaw et. al., 2012). The topic under study which is looking at how government resources put together with skilled labour through the influence of technology to improve processes considers the processes of procurement efficiencies to achieve the objective (procurement performance).

2.2 Public Procurement - Perspective on Developing Countries

As per Hunja (2003) in numerous developing countries, Public Procurement has not been seen as having a strategic effect in the management of public resources. It was to a great extent regarded as a process oriented, function often implemented by non-professional staff of the purchasing offices. Therefore, little effort was made to guarantee that the strategies, rules and the institutional structure overseeing the procurement system were kept up in a way that guaranteed that, public funds were utilized as a part of the most effective and economical approach to delivering the best value for money. Hunja (2003) notwithstanding, showed that this has been changing and it is because of reasons, such as contracting spending plans, the need to battle corruption, and need to achieve good governance by increasing in citizens that, public funds are well spent.

McDonald (2008) demonstrated that the principles directing government procurement and contracting should be accountable and transparent. This does not only limit corruption but contributes to a more accountable relationship between government and citizens. It is additionally essential as a result of the immense sum included. Moreover, in government procurement accounts forms, roughly 4.5% of developing countries (GDP) and governments have a tendency to be the biggest single buyers of goods and services in many countries. A government's utilization of purchasing can accordingly be an extremely significant tool to achieve socio-economic objectives. On the other hand, if procurement reform is done accountable, with a view to achieving both cost effectiveness and more extensive advancement objectives, it can assume a powerful part in poverty reduction (McDonald, 2008).

Public procurement has been recognized as the government activity most vulnerable to corruption. As a major interface between the public and the private sectors, public procurement provides multiple opportunities for both public and private actors to divert public funds for private gain. For example, according to the 2005 Executive Opinion Survey of the World Economic Forum, bribery by international firms in Organization for Economic and Development (OECD) countries is more pervasive in public procurement than in utilities, taxation, judiciary and state capture (OECD, 2007). Furthermore, Falvey et al, (2012) stipulated that developing countries are characterized by relatively low levels of competition and have limited or no formal competition policy. Even though government procurement accounts for a significant share of public spending, the procedures for awarding and monitoring contracts lack transparency. Therefore measures need to be put in place to promote and/or regulate competition and to make procurement more transparent in order to offer potential benefits in enhancing the competitiveness and efficiency of the business environment. Falvey et al, (2012) have also indicated that the two features that make developing countries prone to anti-competitive business practices are the small or very small number of firms which tends to dominate many sectors because of small markets that can only sustain a few large firms, with the relatively weak institutional framework. Singh (2002) also argued that it is important for developing countries to establish formal competition policies, primarily because of structural changes due to privatization and deregulation.

Many developed and developing countries have embraced changes of their national procurement systems for guaranteeing that public funds are utilized as a part of the most proficient and economical way and that the system delivers value for money. Progressively, it is contended that government recognizes the (money related) savings from a better organised and transparent procurement system (Hunja, 2003). The primary targets of public procurement systems are value for money, efficiency, transparency, probity and accountability (Arrowsmith, 2005). A related issue is the opening up of the procurement business sector to foreign competition, where agreements have been reached at both the regional and international levels. The justification behind opening up public procurement is that protectionist measures out in the public procurement can constitute barriers to trade (and competition) that promote cost inefficiencies (Cecchini 1992). It is, therefore, important for governments to open up procurement to international competition since competitive practices promote efficiency in public procurement and help public authorities get less expensive, better quality goods and services at lower costs (Falvey et al., 2012).

European Commission (2004) recommended that upgraded competition and transparency decrease costs by around 30%. The open, non-discriminatory and transparent methodology can likewise help the competitiveness of firms working out in the public procurement markets (The Cecchini Report 1988). In any case, while considering the span of contestable procurement in developing countries one needs to consider that a significant part of procurement in Africa, Caribbean and Pacific (ACP) States which is financed through aid and all the time attached to the procurement of goods and services from the donor country that is, regardless of the Government's own approach, procurement is not open (Falvey et al. 2007).

In developing countries, for example, Sri Lanka, more control of public procurement is put in the hands of the organization. The Ministers and Government Departments are in charge of meeting the requirement of the government and are given more power to manage the funds however they more often than not remain firmly controlled by central audit unit operated by the Ministry of Finance and Auditors Office (Arrowsmith and Davis, 1998). However, Raymond (2008) demonstrated that such power or control is frequently abused by the government officials in this way achieving tragic outcomes for the nation. The procurement system in Ghana even though its vested in the hands of the various departments and ministries within the country, their activities is being controlled by the Public Procurement Act 2003 (Act 663) and its amended Act 2016 (Act 914)

2.3 The Procurement Process/ Cycle

The International Trade Centre, ICT (1990) saw the Procurement process as a progression of steps and activity which culminate in the user getting the right products, at the right time and the right cost. The researcher has identified the procurement process to be of great importance to the achievement of the research objectives and it was therefore considered as part of the areas looked at.

The procurement process starts with the identification of need and communication of that need to the procurement department, selection of a supplier/tendering, sourcing, negotiation, ordering, receiving and accepting products and services, receiving invoice and making payment, post contract control, storage and disposal, thus, the diagram below shows the Procurement Cycle for Goods for an organization.

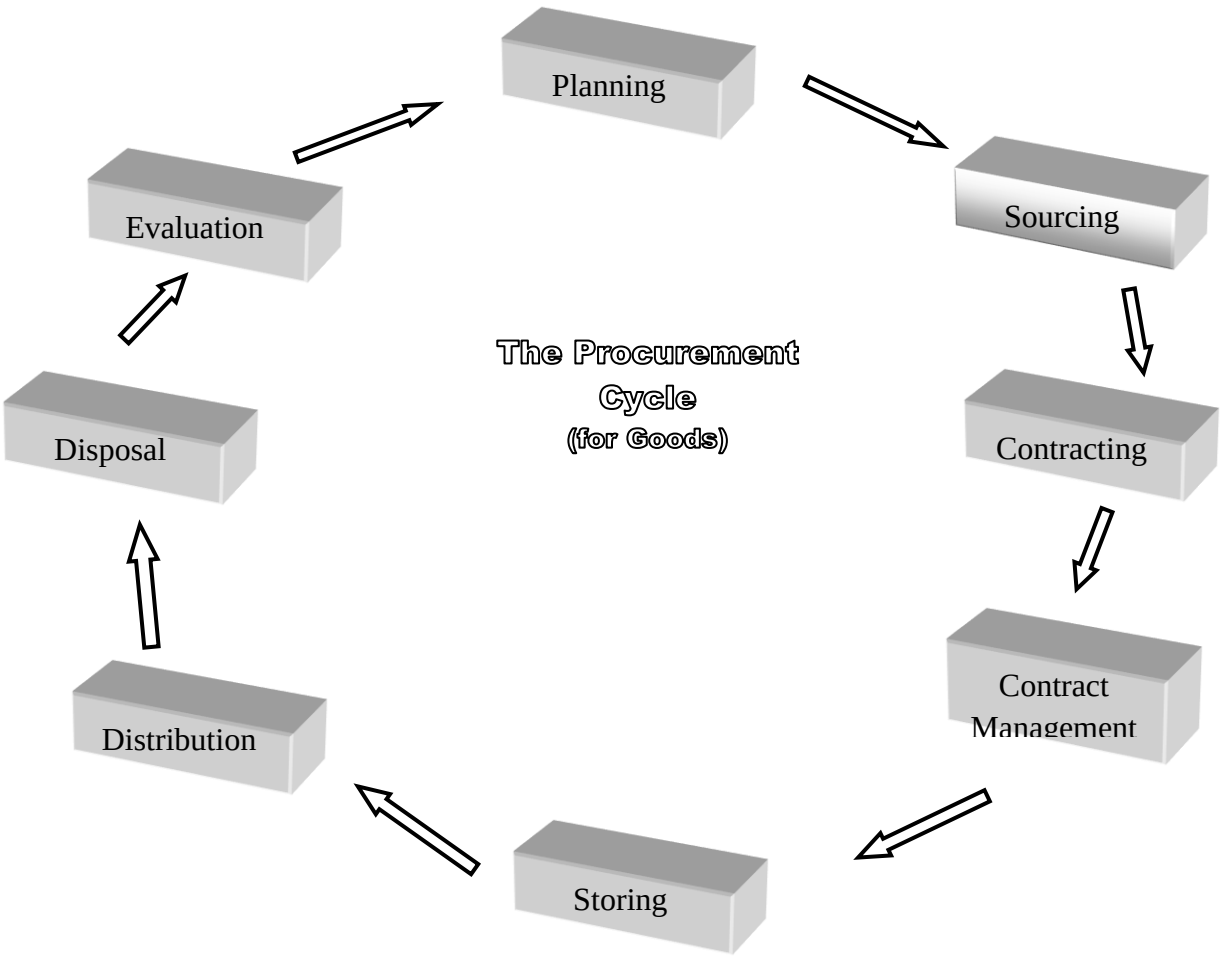


Figure 2.1: Public Procurement Process
Source: Public Procurement Act 2003, (Act 663)

2.3.1 Procurement Planning

This starts the procurement process and refers to the acknowledgment by the user department of the requirement for a specific item, works or services. The identified need is then communicated to the procurement department to start the sourcing of that good, work or services. Public Procurement Act 2003, (Act 663). Planning is seen to be a vital tool for the achievement of every objective hence the need to plan. Procurement Entities/Units in the wake of accepting a need for managing demand from the user department is required to set up a plan for the financial year. A procurement plan ought to give a detailed breakdown of the goods, works, or services required; a schedule of the delivery, implementation or finishing dates for products, works, and services required; source of funding; an indication of any item that can be accumulated for procurement as a single package; and an estimation of the value of every package of goods, works, or services and the procurement method to be utilized.

Satisfactory procurement planning and prioritization of needs by a procurement entity/unit is an essential prerequisite for ensuring that there is a value for any amount of money spent on goods, works or services. Public Procurement Act 2003, (Act 663)

In the public sector, regular checking and redesigning of the procurement plan are important to enable comparison between actual performance and planned performance and to make changes where necessary.

2.3.2 Sourcing

Lysons (1996) characterizes sourcing as the process of identifying, selecting and developing suppliers. Section (35-42) of the Public Procurement Act 2003, (Act 663) of the republic of Ghana states five (5) Methods of procurement that guides people in public sector Procurement in selecting a supplier for the award of the contract. The Methods include Competitive Tendering, Two-stage Tendering, Restricted Tendering, Single-source Procurement, and Request for Quotation. This will help achieve the researcher's objectives of improved procurement performance since supplier's consideration in terms of integration will be paramount.

2.3.3 Evaluation and Award

After tenders or bids have been received, there is the need to do an evaluation of the bids to choose the supplier who is most economically responsive. In the Public Sector, the criteria used for the evaluation and award of contract are; lowest cost, quality, and cost based, the margin of preference and others. Also, based on the evaluation, there might be the need to negotiate. If that happens the organization will have to go through the negotiation process which includes; planning, setting negotiation objectives, coming out with the negotiation teams and styles and finally, establishing areas for an agreement where the contract will be based. This as part of the researcher's objective will help establish whether information technology can be of help in this area of evaluation in order to achieve procurement performance.

2.3.4 Contracting

At this phase in the procurement process, an agreement is made between the purchasing organisation and supplier after a successful evaluation of the offers. Moreover, this is the place where economical responsive or potential suppliers are notified that they have won the agreement or otherwise with reason (i.e debriefing). In the case of the public sector, a contract is awarded only to a successful tender and the award notice is published. Contracts awarded should be managed by allocating of responsibility and performance benchmarks to suppliers, modifying the forms of contract as and when necessary, communication and using the right? and dispute resolution methods to ensure a contract awarded to a supplier is well executed. All these processes could be digitalized in order to reduce the process cost and increase efficiency

2.3.5 Contract Management

Here, a contract manager must be selected to monitor and evaluate the contract performance. Then, the manager will come out to allocate responsibilities and performance standards to be met by the supplier. By using communication channels, doing expediting and how disputes will be resolved in case any do arise. Lastly, making sure that the contract awarded to the supplier is well executed. A digitally enabled procurement will be able to provide a platform where all processes could be monitored through a designed software.

2.3.6 Inspection and Accepting Issues

The basic principle of procurement is to obtain goods, works or services that meet the needs of the user organization. In ensuring that this aim is achieved, goods received, or works and services procured are checked on delivery by comparing it to the specifications on which the contract was added to know if they are of good quality standards. Hence, goods, works or service procured can then be accepted and paid for where the procurement officer or the buyer's organization is satisfied with the delivery. These could be done electronically if findings from the research prove information technology can be used in procurement management at the Judicial Service.

2.3.7 Storing

The stores may be defined as a place in an organization where all bought in materials and equipment are kept and issued to the user departments. The store's function is basically concerned with holding stock, inventory control systems and management will then be used to make sure that the goods are stored under appropriate conditions. The stores should also have appropriate materials handling equipment, ensuring safety, security of goods and stores personnel. Lastly, ensures proper allocation of responsibilities.

2.3.8 Distribution
The store's function is responsible for the distribution of all items in the stores to various user departments either through the use of regional stores or a centralized store by using the appropriate transportation system taking into consideration the available infrastructure. A tracking system could be employed through a digitally enabled procurement system to ensure all items get to their destination.

2.3.9 Disposal
The contribution of the stores functions in ensuring a successful completion of the procurement process is very essential and covers the disposal of obsolete stock items and surplus items. Disposal of stock items is normally done through auctioning. However, in Ghana's Public Sector, the section 84 of the Public Procurement Act 2003, (Act 663) provides a guide for disposal of obsolete and surplus items which states that disposal shall be by transfer to government departments or other public entities, with or without financial adjustment; sale by public tender to the highest tenderer, subject to a reserve price; sale by public auction subject to a reserve price; or destruction, dumping or burying.

2.3.10 Evaluation
A review of the performance of the whole procurement function is very necessary to enable the procurement department to identify the various areas that need improvement and more resources. It also helps to measure the level of compliance with laid down principles and procedures in the procurement process to ensure efficiency and effectiveness of the procurement function. Procurement audit is one of the tools that are used in evaluating the procurement function in the public sector. The emergence of technology has made system audit very simple since a software can easily audit the whole process within a short time.

3.4 Procurement Process, Efficiency, Effectiveness and Performance
Knudsen, (1999) suggested that procurement performance starts from purchasing efficiency and effectiveness in the procurement function in order to change from being reactive to being proactive to attain set performance levels in an entity.

According to Van Weele (2006) purchasing performance is considered to be the result of two elements: purchasing effectiveness and purchasing efficiency. Performance provides the basis for an organisation to assess how well it is progressing towards its predetermined objectives, identifies areas of strengths and weaknesses and decides on future initiatives with the goal of how to initiate performance improvements. This means that purchasing performance is not an end in itself but a means to effective and efficient control and monitoring of the purchasing function (Lardenoije, Van Raaij, & Van Weele, 2005).

Purchasing efficiency and purchasing effectiveness represent different competencies and capabilities for the purchasing function. CIPS Australia (2005) presents the differences between efficiency and effectiveness. Efficiency reflects that the organisation is "doing things right" whereas effectiveness relates to the organisation "doing the right thing". This means an organisation can be effective and fail to be efficient, the challenge being to balance between the two.

For any organisation to change its focus and become more competitive Amaratunga & Baldry (2002) suggest that performance is a key driver to improving the quality of services while its absence or use of inappropriate means can act as a barrier to change and may lead to deterioration of the purchasing function.

Organisations which do not have performance means in their processes, procedures, and plans experience lower performance and higher customer dissatisfaction and employee turnover (Artley & Stroh, 2001, Amaratunga & Baldry, 2002 and CIPS Australia, 2005). Measuring the performance of the purchasing function yields benefits to organisations such as cost reduction, enhanced profitability, assured supplies, quality improvements and competitive advantage as was noted by Batenburg & Versendaal (2006)

Until an organisation measures purchasing performance they will never know how well they are performing and why they should measure purchasing performance. Department of Public Works, Queensland Government (2006) identified four reasons for measuring purchasing performance:
i) It provides feedback on the extent to which the planned outcomes for purchasing are being achieved in the organisation.
ii) It provides information for analysis and decision-making.
iii) It provides information to executive management about the effectiveness, efficiency, value and contributes to the recognition of the procurement function.
iv) It provides focus and motivation for purchasing staff.

2.5 Traditional Procurement Process

Figure 2.5 as delineated beneath gives a representation of a non-specific acquiring handle that is a practical procurement process in many organisations (Jooste and Thompson, et al., 2000). It can be noticed that the traditional procurement process contains a lot of steps which includes numerous entities with various parts and obligations with the manual system of undertaking procurement process. Purchasing or procurement becomes very difficult when operated on a large scale. This leads to wastage of valuable time and sometimes maintaining a constant flow of information across all sectors of the procurement system (Hough and Ashley, 1992).

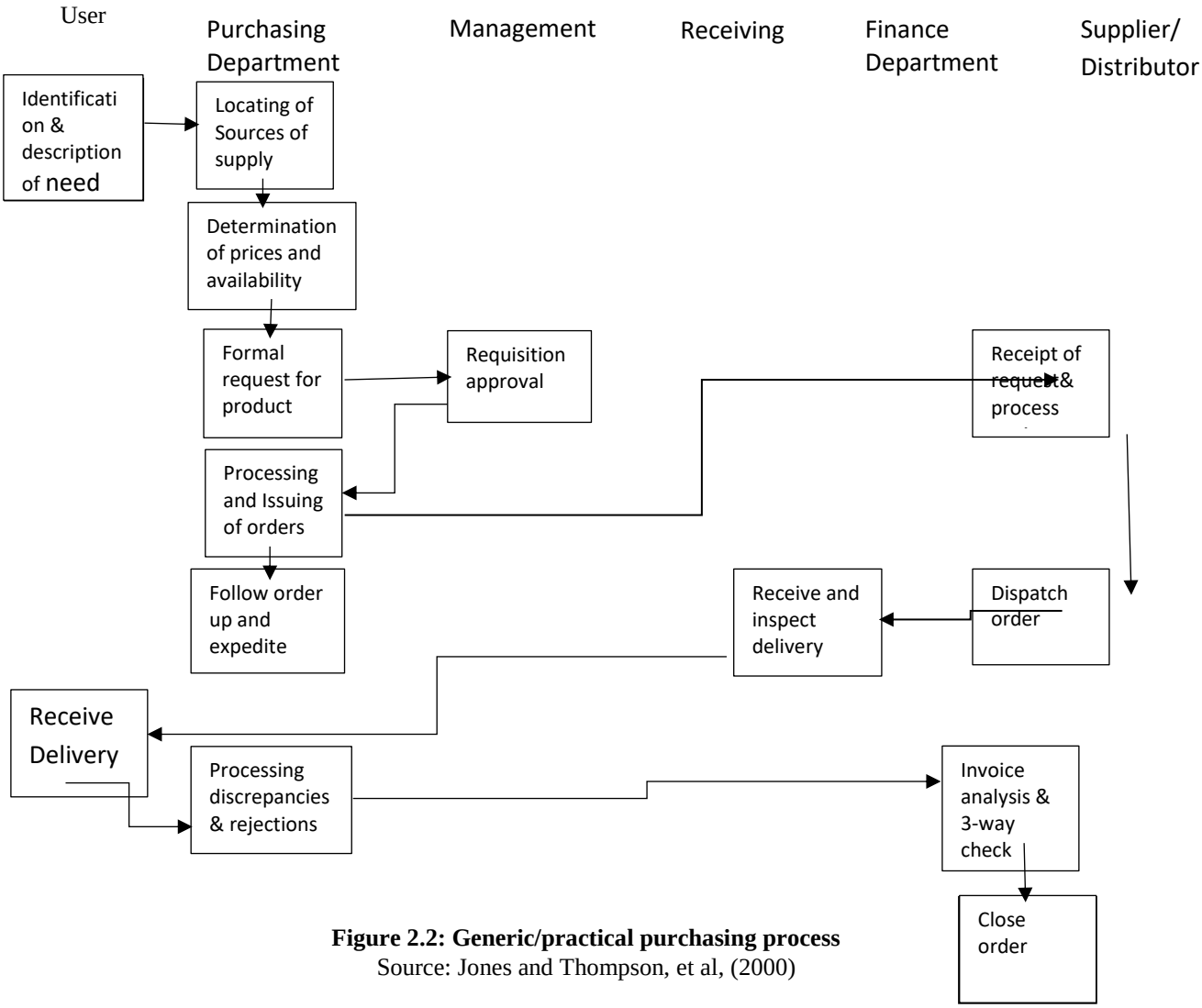


Figure 2.2: Generic/practical purchasing process
Source: Jones and Thompson, et al, (2000)

Implementing an IT based procurement system will not only reduce cost and save time but also, will help reduce the number of processes and automate most of the processes to make work easy.

2.6 Information Technology and Procurement

Information technology in procurement can best be described to mean any business process that relates to the product, methods, inventions and standards used for the purpose of producing information (Kumar, 2006). Information technology can also be described to mean the preparation, collection, transformation, retrieval, storage, access, presentation and information into either graphics, text, image, voice or video. Information technology normally takes the form of information movement between human, people, and machines or between machines. It guarantees the determination, advancement, organization, operation, upkeep and development of data innovation resource predictable with authoritative objectives and goals (Boar, 1993). He further says information technology is the ability base on what an organisation builds up its business information system. The practice leads to cost and time reduction in procurement management. Another advantage is the improvement of processes like contract management, supplier relationship management, and workflow management.

2.7 E-Procurement

As per Elliff, (2001), e-procurement is concerned with any buying related action that includes electronic correspondence, for example, the internet or another related programming, to offer organisations some assistance with achieving expanded quality. Beginning from point-and-snap requesting which utilizes Web-based indexes of individual suppliers to commercial centers that unite in one place, and the items offered by various suppliers.

The definitions above clearly explains that information technology in procurement could be done from both the internet and any other electronic software system that allows for information transfer.

Because of the way procurement is a sweeping capacity, a satisfactory e-procurement solution ought to incorporate all purchasing circumscribing viewpoints to understand the full esteem.

2.7.1 Prospects of E-procurement

Gaining from the effects and agreements that the sending of creative systems in organisations and applications as of now had numerous establishments, we imagine considerably more radical changes to business phones and hierarchical structures throughout the following years as electronic trade agreements turn out to be more develop and more across the board. As a general improvement in the development framework, we see the part change between end clients and the procurement capacity merge, i.e., new purchasing systems will proceed to either computerize buying operations or push them down to the end client, permitting the purchasing division to focus more on vital and administrative assignments. Computerized purchasing, contract posting, e-tendering and electronic barters are different regions where enormous increases are yet to be harvested.

- Beginning with institutionalized products, particularly MRO supplies, electronic auctions may start to assume a vital part in numerous more diverse aggressive environment than today. Including suppliers and bidders around the world, they would rehash continuously, so a planned buyer could dial in and see the spot cost of paper, seats, or some other gear supplies and figure out if to buy now or to sit tight a while at the cost to perhaps turn out to be greater. As more advanced depiction strategies advanced, cutting edge purchasing will likewise highlight more mind boggling things and permit coordinating of supply and request as for cost, as well as for components, for example, management of quality or rate of delivery.

- Developing an electronic RFQ and transferring it to the electronic market space to be simple for purchasing organisations. Suppliers and temporary workers would have the capacity to electronically get in touch with one another, arrange a group-based methodology, and consequently react to the RFQ.

- An organisation with a few decentralized little purchasers of the same goods would have the capacity to join the requests to influence its buying energy to agree at the best cost, usage, for instance, intranet-based inward Web shapes for solidification. The same idea can likewise be connected in- between hierarchical settings where an outsider or purchasing affiliation would go about as a go-between utilizing purchasing power for little and medium-sized organisations utilizing the Internet and The Web for correspondence and as a device for sourcing.

- Under ordinary circumstances, IT will bolster or even robotize every single distinctive sort of procurement systems and procedures over the whole organisation by directing specialized details, endorsement structures, and payment guidelines as indicated by interior strategy limitations, outer

necessities, and business sector opportunities. Therefore, procuring divisions will, in the end, get to be made out for the most part supervisors and systems integrators, less of agents, secretarial staff, and regulatory backing. Also, this has been the advanced system from which buying has customarily moved from to end up acquisition which is more vital.

In spite of the fact that what's to come depends on a few improvements that are as at now unmistakable as we push ahead, their novelty and the absence of accessible innovation and industry measures make it exceptionally hard to conjecture future advancements. It is not clear what future Internet-based procurement systems will look like or convey to endure and how well they will be acknowledged by purchasing and offering organisations in the business, whether regular gauges will develop, resemble, and what the subsequent changes in procurement procedures will, in the long run, get to be.

2.7.2 Operational Impact of E-Procurement

Thompson et al., (2000), expressed that e-procurement's points of interest are fundamentally found in the circuitous purchasing area (products and managements that are not connected specifically to the assembling systems) with the under-recorded significant advantages:

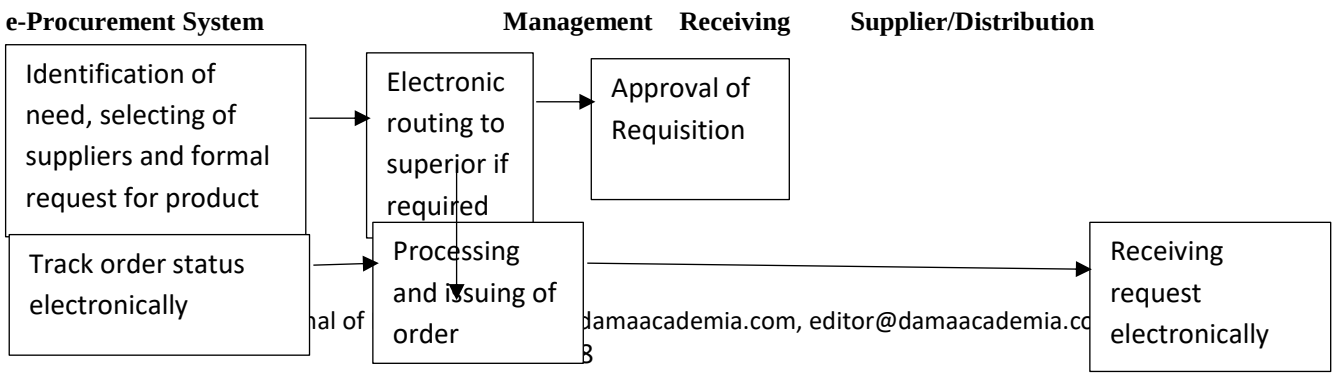
- Systems that permits suppliers to have new entry clients furthermore takes into consideration purchasers to discover new suppliers.
- There is an expanded exactness of the information given by lessening the quantity of information passage focuses inside of the procedure. The vital information is just entered once.
- The procurement of an electronic steering which dispenses with the issue of lost reports and the requirement for manual processing. This prompts expanded control and responsibility for business acquisition.
- The system gives constant processing of all request status.
- Payment for buys made by most elements can be naturally activated after checking of the receipt of the delivery note and the buy request (happens consequently). In spite of the fact that it doesn't inexorably mean programme payment coordination with Electronic Funds Transfer (EFT) or Procurement Card (P-Card) agreements would robotize the aggregate procure-to-pay process.
- Reduced organizational cost, and additionally decreasing the organization weight of procuring experts in an organisation.

Table 2.1 gives various superfluous expenses that are connected with the acquirement process (Laaper, 1998) and abridges how data innovation in obtainment expects to diminish costs.

Table 2.1: Reducing Procurement Costs through e-Procurement

Associated Procurement Costs	**Solution Through e-Procurement**
Keeping up a bigger than required supplier base.	As a consequence of the expanding request and electronic procurement system from on inventory spending, organisations can figure out what to be bought. This has to take after on impact of a diminished supplier base.
Obtaining larger-than-needed volumes	Information technology in Procurement help organisations to control their purchases. Through information, research organisations can lessen spending per item sort.
Lack of standardization	The products in an electronic procurement system follow a standardized process through approval to procurement
The cost of extended lead and cycle times.	Longer lead times may result in carrying unnecessary safety stock. Electronic Procurement system help organisations provides a tracking system to ensure efficiency and effectiveness
The cost of order processing and receiving.	Information technology in Procurement help to simplify order processing. The costs which are connected with accepting can be lessened if the system is incorporated with the right back-end system to guarantee a three-way check

Source: Neef (2000)



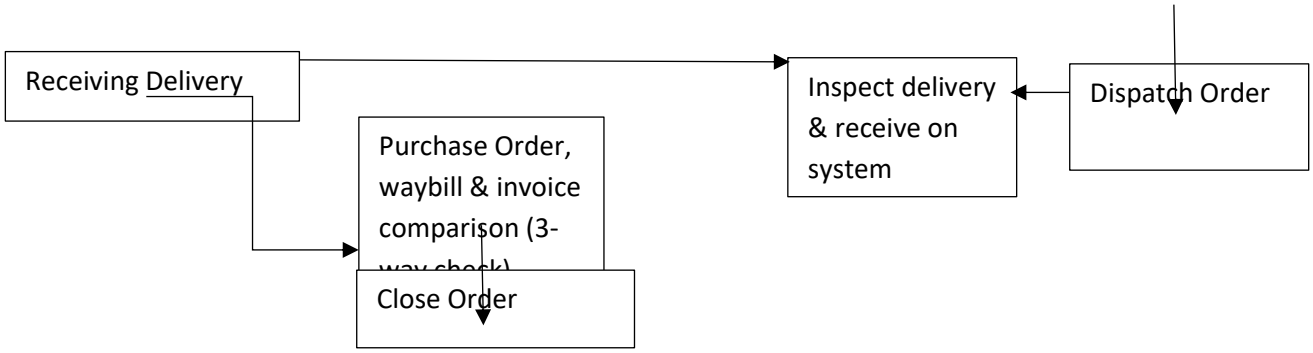


Figure 2.3: The e-Procurement Process
Source: Lee & Whang, (2001)

2.8 Concept of Supply Chain

The competitive environment has changed drastically in recent decades and has turned out to be exceptionally perplexing (Stock et al., 1999; Christianse and Kumar, 2000). Globalization likewise importantly affects business environment and on every single business organisation, particularly in most recent, two decades. In the 1980s when different weights, particularly from clients and authoritative environment, were powerless, the cooperation with substances outside hierarchical fringes was frail (Rushton et al, 2001; Murphy and Wood, 2004). Particularly in the 1990s, happened the movement structure ill-disposed cost driven connections between organizations towards collaboratively oriented organizations driven partnerships between the organization (Howard, 2005).

Organizations began to understand that they are not ready to act freely (any longer) on the worldwide business sector. The globalization has constrained organizations, to search for more compelling approaches to arranging the stream of materials into and out of the organization. The key to such coordination is a joint effort and nearer organization with suppliers (Mentzer et al., 2001). A coordinated effort with elements/organizations outside hierarchical outskirts could bring generous advantages for all organizations included (Drew and Smith, 1998; Ballou, 2007; Rushton et al., 2001; Murphy and Wood, 2004; Balou, 1999). In the early beginnings, organizations concentrated principally on the mixes with its suppliers (Slack et al., 1995; Deffe and Stank, 2005; Ballou, 1999).

A mix of organizations, particularly with its suppliers and different elements outside authoritative fringes is known as a store network (SC) idea, which underscored that few unique associations are included in getting the item to the end client (Rushton et al, 2001; Cooper et al, 1997). Because of the changed business environment, investment in one or much more SCs has turned into a critical (pre)condition for organization's available/future achievement (Lummus and Vokurka, 1999). SC exists as an idea, however, it should be appropriately overseen, which is known as SC administration (SCM) (Mentzer et al., 2001). SCM has turned into a theme of extensive enthusiasm among instructors and professionals as of late (Larson and Halldorsson, 2002, Phillips-Connolly et al., 2005; Gibson et al., 2005; Burgess et al., 2006). Because of the numerous members of SC, which are turning out to be increasingly scattered the world over, an imperative issue in the tricky of SC is additionally its organisation (Browne and Zhang, 1999). SC could be composed in different ways. Because of the expanded impact of virtuality and virtual configuration on the associations, SC could likewise be sorted out virtual. Along these lines, SC could be sorted out customary towards one side of the continuum and virtual on the flip side of the continuum (Daft, 2000; Daft, 2003; Hatch, 1997; Tsoukas and Knudsen, 2003). Data and correspondence innovation (ICT) has a vital part in the organisation of SC. Thusly ICT is a focal build which makes virtual sorting out of SC conceivable.

A supply chain (SC) is also described to mean a network of facilities and distribution options that function to procure materials, transform these materials into intermediate and finished products, and distribute these finished products to customers. Many authors, including Cooper et al. (1997), Premkumar and Ramammurthy, (1995) have shown that traditional research on supply chains concentrated on the flow of material and information independently. Some writers have recently critically assessed the independent flow of material and information, and through this assessment have identified the need to create a supply chain that makes possible the integration of material and information as they flow along the supply chain. Gunasekaran & Ngai (2004) also indicated that because suppliers are located all over the world, it is essential to integrate the activities both within and outside of an organisation, as this should improve their flexibility

and responsiveness and also lead to their level of competitiveness by changing their operations strategy, methods and technologies. In order to achieve an integrated supply chain that will enable companies to make reliable delivery and present a product to the market, information needs to be shared.

2.8.1 Integrated SCM

Steven 1989 defines SCM as 'a series of interconnected activities which are concerned with planning, coordinating and controlling materials, parts and finished goods from supplier to customers. A supply chain can typically be said to consist of the geographically distributed facilities and transportation links connecting these facilities. The achievement of the supply chain function will, therefore, be based on the activities of the other. An integrated function will lead to a successful supply chain and leads to customer satisfaction.

2.8.2 Better Integrated system

An organized system should be vigilant recognizing and decision-making structure that can do naturally performing various errands usually executed by people, (Gunasekaran, Lai, and Cheng, 2008). One of the major traits of a planned system is that it solidifies separate records relating to the same subject into one related record held in the computer device. Similarly, with an organized system, information having a spot with more than one application can in like manner be updated at the same time. For example, a business trade may redesign both record receivable and stock records. Also, Bourdé and Butner (2004) exhibited that sensible rates of organisations need to place resources into reconciliation: both internal store system joining and external blend with trading accessories. An organisation can concentrate on a more tried and true transport time if its business demand area and collecting programming packs are fused, Mendelson, H. (2000). Information is consolidated when either enter or made data overhauls the data archives used as a piece of more than one system. An ordinary example is the information of a transaction processing system that actually creates shipping reports, assessed bargains receipts, stock issue rules, and all related record postings. Composed plans routinely impact the advantages of having a joined store of information.

Exactly when information is shared within the stock system, a totally joined generation system can be refined, Tan, K. C. (2001). Moreover, where information systems are fused, the continuous process and activities within the store system will be executed by free subsystems in a clever solicitation, and the available information will be powerfully traded beginning with one program then onto the following. Kalakota and Robinson (1999) illuminated that sharing of information within the developed system will assemble the coordination of business strategies and material stream among trading associates, and this can fulfill a gigantic change in the store system. It is clear from the written work and from an advancing exploration coordinated in an FMCG circumstance Ajayi (2009), that the affirmation of the essentialness of a joined structure has incited the headway of an information development establishment that overhauls and sponsorships the sharing of information within the store system.

2.9 Optimized Usage of I.T (Information Technology) Infrastructure

The transparency of information and the use of technology to make "accessibility" (i.e., the limit of organisations to share data "dynamically"), (Gunasekaran, Lai, and Cheng, 2008) within supply chains has been of energy to both specialists and professionals. But present-day information technology devices are available, the costs for setting up and working on an information sharing structure between organisations of a store system are still critical, Zhao, X., Xie, J., and Leung, J. (2002). One of the I.T systems that have been used to fulfill this purpose behind existing is ERP (Enterprise Resource Planning) programming. The ERP wander yields an item game plan planning information and business strategies to engage sharing all through an association, Swartz, D., and Orgill, K. (2001). According to Mendelson, (2000). ERP is an item building that empowers the surge of information among the obvious limits within a stock system. The cooperation among business limits empowers correspondence and information sharing, inciting incredible expansions in productivity and rate. Cisco Systems, for the case, harnessed ERP to offer it some help with turning into the business part pioneer in the overall frameworks organization industry, Mendelson, H. (2000).

2.9.1 Effects of I.T Infrastructure on supply chain

Continuous exploration has found that when data is shared legitimately inside of an inventory network, the ERP programming will be completely streamlined to perform capacities which incorporate Ajayi (2009).

• Easier access to dependable, precise, opportune and coordinated data.
• Elimination of repetitive information and the legitimization of procedures, which bring about considerable cost investment funds.
• Enabling chiefs to have an undertaking wide perspective of the data they require in an auspicious, solid furthermore, reliable design.

• Providing the spine for an undertaking wide data framework on the grounds that with an ERP framework, information should be entered just once, and this gives consistency and over the whole organization.
• Enhancing work process, expanding effectiveness, and lessening dependence on paper.
• Streamlines procedures and facilitates appropriation of best business practices
• Establishing an establishment for new frameworks and incorporates existing frameworks

2.10 Internet connectivity (technologies) and its role in SCM

Web access permits organisations to communicate remotely with information and off-webpage back up (Fraser et al, 2005). Sadegh et al (2014), portrays the Internet as "a set of computers that links together with telephone lines, fiber optics, satellite lines and or another transform environment", has no ownership or managed centrally and serves as the premise for electronic business extension in developed economies.

Sadegh et al (2014), places that there is an expansion utilization of e-commerce on the planet and its acknowledgment by firms, combined with consistent acknowledgment of it by buyers accepts the latent advantages of e-business in both economic and social setting. Auramo et al (2005); Laudon K.C. also, Laudon J. P. (2010); have exhibited that the web gives an avenue for trading, communication, distribution channel, information access and much more. Again, the internet helps in the storage of information and interacts with business customers to their needs.

Lancoini et al (2000), outlines the part that web plays in SCM in the regions of procurement, transportation, order processing, customer service and managing vendor relations. Their discoveries uncovered that the utilization of the web in overseeing transportation was the most widely recognized in SCM followed by order processing, managing vendor relations, purchasing procurement, and customer service. The advance revealed the part of the web in procurement as in communication with suppliers and customers, checking suppliers' price quotation, and purchasing from seller lists, and has decreased staff numbers, streamline transactions cost and procedures and so forth. In the zone of stock management as in communication of stock levels to suppliers, depot management on raw materials to finished goods, shipment information.

2.11 Skilled Workforce/labour in SCM

Managerial Skills as defined earlier, managerial skills represent firms' ability to manage technology strategy alignment, organizational changes, and process redesign to accommodate the use of IT to improve firm performance. Firms achieving technology strategy alignment can attain more value from IT (Clark and Hammond 1997). SCM literature also highlights the importance of adapting supply chain structures and processes in deriving business value. For instance, evidence shows that, in managing buyer-supplier relationships, supply chain restructuring is associated with greater improvements in logistics costs and order cycle time (Kopczak1997). In a study of Electric Data Interchange (EDI), Clark and Hammond (1997) find that SCM involving the adoption of EDI and redesign of procurement pro cesses yield performance improvements more than an order of magnitude greater than adopting EDI alone. Together these studies suggest the critical role of managerial skills in improving the effectiveness of a digital supply chain.

USAID | DELIVER PROJECT, Task Order 1. (2011), states the following "A logistics system can only work if well-trained, efficient, staff monitor stock levels, place orders, and provide products to clients. Health programs assign the appropriate resources to staff (for example, supervision authority and technical knowledge) to complete logistics activities. In fact, some countries have established national logistics management units that analyze logistics data and provide feedback throughout the system. Organization and staffing, therefore, are important parts of the cycle. For a logistics system to work correctly, logistics staff must make the six rights a top priority". The handbook further recommends that staff ought not to be over-burden with extra information accumulation apparatuses which may bring about expanded mistakes and delay report submission which undermines the abilities procured.

Duimering and Safayeni (1991) place that labourers truancy and business related frequencies make serious disturbances in operations which have restricted spare time. They further propose that the significance of the multi-utilitarian workforce in lessening the interferences taking after an unintended non-appearance, for which the wellbeing division is no exemption because of the basic way of drugs in sparing lives in developing countries. Along these lines, in the workplace, for example, in the field of supply chain management, work interruptions and restricted attitudes influence work forms which in the long run have a genuine impact on the strength of patients.

2.12 Theory
The Resource Based View (RBV) on Supply Chain Integration.

As the researcher look to study IT value in digitally empowered supply chains, the researcher focus basically on the RBV on how technology makes values (Zhu and Kraemer 2002, 2005). The RBV attributes the improvement in firms performance to valuable resources or resource bundles (Barney 1991). From the RBV, one lens through which to take a look at IT value creation is "an indirect role for IT in firm performance. The basic logic is that IT affects other resources or processes which, in turn, lead to competitive advantage. In light of this rationale, the researcher will give a careful consideration to the relationship of IT-enabled supply chain integration to a firm process performance.

Income generation and cost reduction are the two major measurements of process performance improvement through supply chain integration (Mukhopadhyay and Kekre 2002). Such improvements, seen from the RBV, stem from resource synergy along the production network. Successful SCM aims to synchronize supply, production, and delivery (Lee et al.2000).

For this to be in existence, firm requirement is to influence the network of the Internet to create an inter-firm digital platform, empowering constant data sharing, and enhancing coordination of distributed resources over the supply chain (Lee 2004). The digital platform helps to establish connections among separate resources owned by supply chain partners, thus, translating them into bundles of coexisting resources responsive to each other (Zhu and Kraemer 2002). This is consistent with the notion of creating resource synergy as advocated by the RBV (Conner 1991). The value in supply chain contexts may be manifested in revenue generation and cost reduction.

A case in point is practiced by Cisco. Although the contract manufacturers and partners are not owned by Cisco, the digital integration enables Cisco to take advantage of their manufacturing equipment, distribution channels, and service networks. This allows it to concentrate on developing new products to cope with changing market demand while outsourcing physical production. The outcome is an advantage of the agile supply chain, leading to revenue growth and market expansion (Kraemer et al. 2006).

More broadly, integration across separate stages of a supply chain allows each supply chain partner to focus on the operation at its own stage. This may eliminate the burden of acquiring duplicate resources (which are required by operations at other stages), thus, increasing resource utilization and decreasing operational costs. Cost reduction can be further achieved through resource synergy among horizontal partners (Lee 2002). For instance, because of the risks of supply disruption, firms often keep safety stocks for key components. Holding excess inventory, however, reduces asset productivity. Alternatively, more effective firms can share safety stocks with other firms that also need the components (Lee 2002).

2.19 Conceptual Framework
Taking into account the above theoretical point of view, the researcher built up a conceptual model as appeared in Figure 2.4. Reliable with the research purpose, the researcher indicated procurement performance as dependent variables and identify key resources for the digitally enable procurement management as independent variables. The model relates these keys resources to procurement performance. At that point, the researcher tries to concentrate on how information technology may improve Procurement performance. Below, the researcher examines these variables in turns and clarify why they have been picked.

The Dependent Variables: Procurement Performance. Following the Resource-Based View theory on IT value creation discussed above, the dependent variables incorporate improvement in both procedure level execution and infrastructure improvement. Several recent papers started to examine IT's relation to firm performance improvement at the business process level (Ray et. al. 2004, Banker et al. 2006).

The Independent Variables: Key Resources Enabling digital procurement. Using the RBV to study IT value, researchers have noted that improving firm performance through IT deployment depends on the combination of IT infrastructure, procurement processes, relevant skills, and supportive relationships in IT management (Armstrong and Sambamurthy 1999). Based on a review of prior studies, a typology of IT-related resources has been proposed (Wade and Hulland, 2004). While it is mostly difficult to find resources that precisely meet these requirements, the researcher has tried to use them as guidelines and have found that three resources procurement processes, partner support and IT infrastructure and managerial skills will be particularly relevant in our research setting.

Digitally enabled Procurement

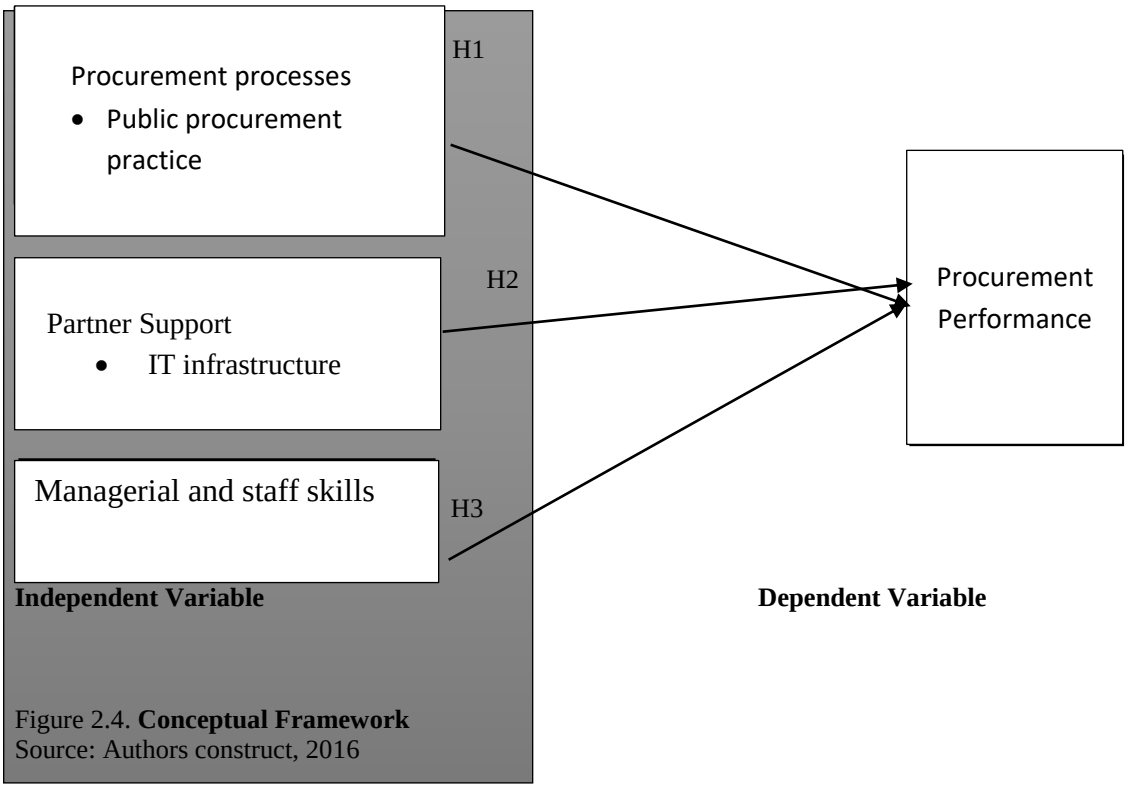


Figure 2.4. **Conceptual Framework**
Source: Authors construct, 2016

IT- Information Technology

Procurement processes and procurement performance
Procurement process requires not only resources inside a firm, but also external resources provided by partners along the supply chain (Bensaou, 1997). As emphasized in prior research, the effectiveness of SCM depends on the support of a cluster of suppliers and procurement processes (Lee et al., 2000). Procurement processes are the means through which effective procurement activities are undertaken therefore when an organisation is able to effectively ensure that all its processes are structured it will lead to procurement performance with the help of technology. Measuring the performance of the purchasing function yields benefits to organisations such as cost reduction, enhanced profitability, assured supplies, quality improvements and competitive advantage as was noted by Batenburg & Versendaal (2006).

According to Lee & Whang (2001), e-business is the use of Internet for computing and communications to execute both front-end and back-end business processes. E-Procurement has developed to become a key enabler in driving supply chain integration, of which e-procurement forms part of improved procurement performance.

The RBV contends that some gains in firms' relative competitive positions may be competed away (Barney 1991). the firm might see efficiency at the process level, but no improvement in its profitability relative to competitors (Hitt and Brynjolfsson1996). Therefore procurement processes in the public sector will lead to procurement Performance. The author proposes the following hypothesis;
H1: Procurement processes is positively related to Procurement performance

Partner Support with IT infrastructure and Procurement Performance
Partner support within the supply chain function leads to efficiency and effectiveness (Kalakota and Robinson, 1999). Miller and Shamsie (1996) also emphasized that a firm's knowledge and skills together with its processes will be more important in a changing environment than in a stable environment. This is because the use of information technology helps to make work easier and increase the accuracy and reliability of information when it is needed. Research has demonstrated that enhancing performance through IT relies upon a mix of variables such as IT foundation, coordination, significant aptitudes and steady relationship

management (Armstrong and Sambamurthy, 1999). Several recent papers started to examine IT's relation to firm performance improvement at the business process level (Ray et al., 2004, Banker et al., 2006). With real-time information about inventory and material requirements, cost-effective transhipment of goods can be performed from one firm with excess inventory to the other with excess demand (Lee, 2002). This benefits the former by reducing inventory holding costs and the latter by fulfilling a growing demand. By streamlining information flow and substituting information for inventory, integration may increase supply chain efficiency and reduce costs (Milgrom and Roberts, 1988), with supportive evidence from the retail industry (Zhu and Kraemer, 2005). These all within the supply chain help increase procurement performance. Therefore, the extent of the strength of the relationship among the players involved has a potential of affecting procurement performance as the dependable variable. The researcher, therefore, the following hypothesis;
H2. Partner support is positively related to performance improvement.

Managerial and staff skills and procurement performance
Procurement Performance requires managerial and staff skills aligning with business strategy and managing transformation in processes and structures (Armstrong and Sambamurthy1999). Such managerial skills are important, because IT applications in SCM may induce changes in the supply chain, for instance, multi-channel coordination and mass customization at the downstream, and continuous replenishment program and vendor managed inventory at the upstream. Firms thus need managerial and staff skills to orchestrate the adaptations in technology, strategy, and business processes to achieve procurement performance. Managerial Skills as defined, represent firms' ability to manage technology strategy alignment, organizational changes, and process redesign to accommodate the use of IT to improve procurement performance. Firms achieving technology strategy alignment can attain more value from IT (Clark and Hammond 1997). Therefore, the researcher proposed the following hypothesis;
H3: Managerial and staff skills are positively related to procurement performance.

CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction
This chapter covers the methods and strategies that were used for the study. It indicates the research paradigms, assumptions and the case study type of the studies adopted, covering the sampling methods, types of data collection and analytical tools that will be used. This work employed a quantitative method of research, following a comprehensive literature review from articles, publications, presented papers and useful websites on the internet. These informed the research objective and questions formulated

3.1 Research Design;
This research follows a phenomenological approach in investigating the effect of information technology on Public sector procurement performance at the Judicial Service. The researcher used an exploratory research approach to collect data, where a purposive sampling technique was used for a sample of 150 respondents from Procurement, Logistics, Finance, Internal Audit, Judicial Reforms and Projects, Monitoring and Evaluation, Works officials and service providers out of a total population of 200. The researcher administered the questionnaire in order to solicit information about information technology in the Judicial Service. Literature review on Resource Base View was gathered for the study to investigate the effect of information technology on public sector procurement performance in the earlier chapter. The researcher ensured that the process of data collection was of a high quality which resulted in a higher quality of research findings by using a structured methodology and triangulation in order to facilitate replication.

Quantitative research approaches were used with case study strategies. In order to ensure commitment to ethics of the profession, the research design made room not to subject the study population to any form of embarrassment or disadvantage; therefore the study ensured adequate sensitisation of the research topic and

sought for concerns first before the administration of the questionnaire. There was a sufficient and appropriate acknowledgment of all sources of information and adequate citation to avoid plagiarism.

3.2 Target Population

The researcher concentrated on a target population of 150 officers and service providers out of the total population of 200 employees at the head office of the Judicial Service who had their working activities involved with procurement.

3.3 Sample and Sampling Procedure

The researcher considered a target population to be made up of officials from the procurement department, finance department, logistics, and transport department, ICT department, works department, service providers and other related officers within the supply chain management function. The staff from the procurement department were mostly used in other to understand the degree to which the application of information technology could help reduce corruption, delays errors and rather increase efficiency and effectiveness in the use of public funds. The researcher also thought that the staff of the procurement department will help identify areas of concern raised and how the application of information technology can help solve the problem. Service providers were also considered to be part of the study due to their involvement the activities of procurement.

The exploration work was finished with the utilization of both probability and non-probability sampling procedures. The sampling strategy utilized was purposive sampling method which is a non-probability sampling procedure to choose the respondents for the study. The departments like finance, works, logistics and the other departments were selected on random basis for easy accessibility, also was their commitment towards the accomplishment of the exploration goals. The researcher selected contractors and supplier to be part of the study through a simple random sampling method. It was considered to be appropriate for the research work because it offered an equivalent, measurable and a non-zero likelihood of the respondents, (Sarantakos,1997:p138). This was done to guarantee genuine representations of respondents.

A sample size of 50 service providers was derived from the database of the Service. Simple random sampling technique was used to determine the sample of 100 officers and 50 suppliers and contractors. According to Saunders et. al., (2009) a sample size of more than 50 of a population of 100 will give a good representation of the population.A representation of the distribution is represented below.

Table 3.1: Distribution of questionnaire

Respondents	**Number of respondents**
Procurement Department	10
Finance Department	20
Judicial Reforms and Projects Department	15
Internal Audit Department	10
Logistics and transport Department	15
Monitoring and evaluation Department	15
ICT Department	15
Service providers	
Contractors	10
General suppliers	15
Goods suppliers	15
Consultants	10
TOTAL	**150**

Source: Field Study (2016)

3.4 Sources of Data

The research work was conducted with the use of both primary and secondary sources of data. The information that was collected with the use of primary data was done through the administration of the questionnaire. The primary data which is the first-hand information provided reliable and accurate information relating to the effect of information technology in public procurement which was obtained from the staff of Procurement, Logistic, Finance, Audit, Budget and Projects departments etc. with the use of a questionnaire. Information obtained from the internet, library, journals articles, newspapers and research reports were done through secondary data collection form. Secondary data was used in other to get all necessary information for the research work.

3. 5 Data Collection Instrument

The administration of questionnaire was used to collect data from a sample of respondents with relationships drawn from their responses to establish the application of information technology in the public sector.

The researcher used Purposive sampling technique in the selection of respondents to avoid bias that was likely to occur. Purposive sampling involves taking a representative of a population and taking their data collected as a research information (Frey et. al., 2000). It is also said to be a sampling method base on which the researcher selects a sample base on his own knowledge of the population, its element and the nature of the research objectives (Babbie, 1990).

The researcher administered questionnaire with the assumption that most of the respondents were literate. This procedure facilitated data collected to be able to match concept with reality.

Out of the 150 questionnaires, 100 were given to Procurement, Logistics, Finance, Internal Audit, Judicial Reforms and Projects, Monitoring and Evaluation, works officials and other officers and the rest were given to suppliers and contractors. Out of the 150 questionnaires issued out only 110 were retrieved. The researcher personally administered the questionnaire to the respondents. Below is the outcome of the questionnaires received.

Table 3.2: Questionnaire received

Respondents	**Number of respondents**
Procurement Department	10
Finance Department	15
Judicial Reforms and Projects Department	10
Internal Audit Department	10
Logistics and transport Department	10
Monitoring and evaluation Department	10
ICT Department	15
Works Department	5
Service providers	30
TOTAL	110

Source: Field Study (2016)

3.5 Questionnaire Design

The study was to a large extent a survey research and thus a suitable communication method was introduced. A comprehensive questionnaire was prepared to gather firsthand information from a sample of respondents. In some instances, the researcher met with the respondents through interactions or call them on phone and also asked specific questions from the prepared questionnaires to find answers to the research problems. This was done in order to establish the usefulness of the variables in the conceptual framework adopted from the Resource Base View (RBV) theory used by the researcher.

3.6 **Validity and Reliability**

In order to test the reliability and validity of the data collection instrument, a pre-test was carried out. Saunders et. al., (2007) proposed that, in other to obtain correct answers to the research problem, the researcher should concentrate on specific areas of validity and reliability. Validity is about the extent to which a text measures a researcher's intended results and that the research variance identified in the measurement tools reveal correct variances amongst the respondents. The hypothesis will be tested to establish the relationship of the independent variables to the dependent variable.

The researcher obtained information from the literature review and the secondary data sources and made sure they were a reflection of the knowledge and understanding of the respondents. The content validity aspect was done to ensure consistency in questionnaire administration. The researcher administered the questionnaire personally to the respondents. Clear, unambiguous and easy to understand questions which were asked, this was to ensure that all respondents knew what they were answering. Also, instructions on how to answer the questionnaire were issued out.

3.7 **Data Analysis and Presentation**

This area manages the techniques for analyzing of the information. Quantitative strategies were utilized to break down the information. Computer information analysis programming, for example, Statistical Programme for Social Sciences (SPSS) and Microsoft Excel were the principle tools utilized to break down the information into means and standard deviations on figures and tables so as to translate results. Correlation and regression analysis were used to test for the relationship between the independent variables and the dependent variable to determine the validity and reliability of the questionnaire used.

3.8 Pre-test

In other to ensure the achievement of the research objectives, twenty questionnaires were tested on a pilot basis to be able to determine the responses and understanding of respondent about the questions used. The researcher after the piloting decided to change some of the questions to be able to get more meaning to the question being answered.

3.9 Distribution of Respondents

The data showed the distribution of respondents among all the departments that are within the supply chain network and the service providers who are actors within the supply chain. Responses can be seen from the analysis tables in data analysis and presentation in the next chapter. The table shows a distribution of the questionnaire.

Table 3.3: Questionnaires distributed

Respondents	**Number of respondents**
Procurement Department	10
Finance Department	20
Judicial Reforms and Projects Department	15
Internal Audit Department	10
Logistics and transport Department	15
Monitoring and evaluation Department	15
ICT Department	15
Service providers	
Contractors	10
General suppliers	15
Goods suppliers	15
Consultants	10
TOTAL	**150**

Source: Field Study (2016)

3.10 Profile of Judicial Service

The need for Judicial systems become evident as far back as 1844 when the bond signed on the 6th March same year between Commander H. Hill with the Fanti Chiefs of Cape Coast was a document that acknowledges the power and jurisdiction which had been de facto exercised in the territories adjacent to the British Forts and settlements. It was agreed in the document that serious crimes should be tried by the Queens's Judicial Officers sitting with the chiefs.

In 1853, the Supreme Court ordinance was passed and that established the supreme court of Her Majesty's forts and settlement on the Gold Coast. (Judicial Service of Ghana 2012 Diary).

Since then the Judicial Systems has been maintained in Ghana even though there has been some form of changes which occurred as a result of changes in constitutions and ordinances. For instance, Article 40 of 1960 constitution (CA) created the inferior Courts consisting of Circuit, District, Juvenile and Local Courts. In addition, Article 42(1) declared the Supreme Court to be the final Court of Appeal.

Again, 1969 constitution made provision for the courts, Judicial Service, the Judicial Council and the Rules of Court Committee. These were retained in paragraph four of the National Redemption Council proclamation 1972 which suspended the 1969 constitution until rectified by the subsequent decrees. These provisions are equally in the 1992 Constitution. The terms Judiciary is often used and this describes the judges of the superior courts namely, the High Court, Court of Appeal and the Supreme Court. However, whenever the term Judicial Service is used, it describes the administration or the administrative staff which renders administrative support to the Judiciary. The term Judicial Service could sometimes be used to also mean the Judicial Institution as a whole.

The staff strength of the Service stood at 5,580 as at 2010 out of which 324 are judges and Magistrates and the remaining 5,256 are administrative staff. (Judicial Service Annual Report, 2009/10). The current staff strength of the Supreme Court at the head office is 200. The Judicial Service and for that matter Judiciary is an independent body which has the Chief Justice as the head and Judicial Secretary as the spending officer.

CHAPTER FOUR:
DATA ANALYSIS, FINDINGS, AND DISCUSSIONS

4.0 Introduction

This chapter focuses on the presentation of results from the analysis performed on the data collected from respondents. The chapter also takes a look at relevant discussions on the findings which are presented in relation to the objectives of the study and literature. The sections of the chapter are mainly about the summary of data collected, the demographic profile of respondents, Procurement processes, compliance with Public procurement practices, effects of partner support and IT infrastructure, managerial and staff skills, and the dependable variable improved performance in procurement management and chapter summary.

4.1 Summary of Data Collected

This work deals with a study that is mainly investigating the effect of information technology in Public sector Procurement and how it can lead to improved procurement performance in Ghana. In achieving the objectives of this study, the researcher focused on seven different departments of the Judicial Service of Ghana. Questionnaires were issued to the departments with consideration to the staff strength of that department. Out of the 150 questionnaires administered, 110 questionnaires were returned.

Table 4:1: Response Rate

	Respondents	Sample Size	Response Rate (100%)	
Departments	Procurement Department	10	10	100.00
	Finance Department	20	15	75.00
	Judicial Reforms and Projects Department	15	10	66.67
	Internal Audit Department	10	10	100.00
	Logistics and transport Department	15	10	66.67
	Monitoring and evaluation Department	15	10	66.67
	ICT Department	15	15	100.00
	Service providers			
Service providers	Contractors	10	5	33.33
	General suppliers	15	10	66.67
	Goods suppliers	15	10	66.67
	Consultants	10	5	50.00
	TOTAL	**150**	**110**	**73.33**

Source: Field Study (2016)

This represents a total of 73.33% of the distribution as per the response rate of each respondent as shown in table 4.1 above. The demographic backgrounds of the respondents are presented as in table 4.2:

4.2 Demographic Profile of Respondents

From table 4.2, a majority (62.50%) of data collected for the study were provided by male employees. The most of (37.50%) of the respondents were made up of employees between 40 to 49 years. This shows that most of the employees of the Judicial Service are matured, people.

Table 4.2: Demographic Breakdown of Respondents

		Frequency	Percent (100%)
Gender	Male	50	62.50
	Female	30	37.50
Age (years)	Below 20	0	0%
	20 – 29	20	25.00
	30 – 39	20	25.00
	40 – 49	30	37.50
	50 or above	10	12.50
Education level	WASSCE/LEVEL	10	12.50
	Diploma/HND	40	50.00
	Bachelor Degree	20	25.00
	Postgraduate	10	12.50
Position	Senior Mgt.	30	37.50
	Middle Mgt.	40	50.00
	Lower Mgt.	10	12.50
Years of service	Less than 1 year	0	0%
	1-3years	10	12.50
	4-6 years	20	25.00
	7-9 years	30	37.50
	10 or above	20	25.00

Source: Field Study (2016)

With respect to the level of education, a majority of (50%) of the respondents hold HND, while 25% hold Bachelor's degrees. The result shows that the majority of the respondent in the Judicial Service are literate and will be able to read and understand the items on the data gathering instrument presented for their response. The information presented to respondents about their position in their respective departments gave a result of 50% to have come from middle-level management and 37.5% at the senior management level while 12.5% were mainly made up of lower level management staff. With respect to the years of service of the respondents, most of them have spent at least 1 year in the Judicial Service. This shows that a majority of them have an understanding of the issues presented before them. The preceding sections present and discusses responses collected from employees with respect to the effect of information technology in Public sector Procurement performance in Ghana.

4.3 Procurement processes

In investigating the effect of information technology in public procurement performance in Ghana, a 7-point Likert scale was developed by the researcher to measure the perspectives of respondents on how the effect of Information Technology can help improve Public Sector Procurement performance. The scale ranges from 1= strongly disagree, 4 = Indifferent/not sure, 7 = strongly agree. Given the average midpoint value of 4 as indicated in table 4.3 with means scores of M=6.63, M=5.25, M=4.88, M=4.25 and Standard deviations SD=0.49, SD=0.72, SD=1.06 and SD=1.21 respectively shows that the staff of the Judicial Service conduct procurement in an effective and efficient manner. With the midpoint of 4, there was an average response rate above 4 which shows there are effective procurement systems to allow for the operation of IT.

Table 4.3: Procurement processes

	N	Mean	Std. Deviation
procurement is conducted in an effective and efficient manner	80	6.63	0.49
there is transparency in the procurement process	80	4.25	1.21
procurement is undertaken in a faster way without delays	80	3.85	1.27
management understands procurement process	80	4.88	1.06
management adhere to all necessary process in procurement management	80	5.25	.72

Note

Scale: 1=storngly disagree; 2=disagree; 3=somehow disagree; 4=indifferent; 5=somehow agree; 6= agree; 7=strongly agree

Source: Field Study (2016)

4.4 Public procurement Processes

The application of public procurement process in the procurement processes of the Judicial Service was considered a variable tool that will aid in the achievement of performance improvement in the overall organisational procurement processes in Ghana and this was represented in figure 4.1. As indicated in figure 4.1, a majority of the respondents with mean scores above the midpoint of 4 were of the view that procurement processes follow the guidelines and procedures of the public procurement Act 663. While a minority score of 3.25 had the perception that procurement practices were influenced by management of the Judicial Service. This shows that there are procedures to ensure procurement was done according to strict policy and implementation of IT which will, therefore, lead to an increased efficiency and effectiveness in procurement management at the Judicial Service.

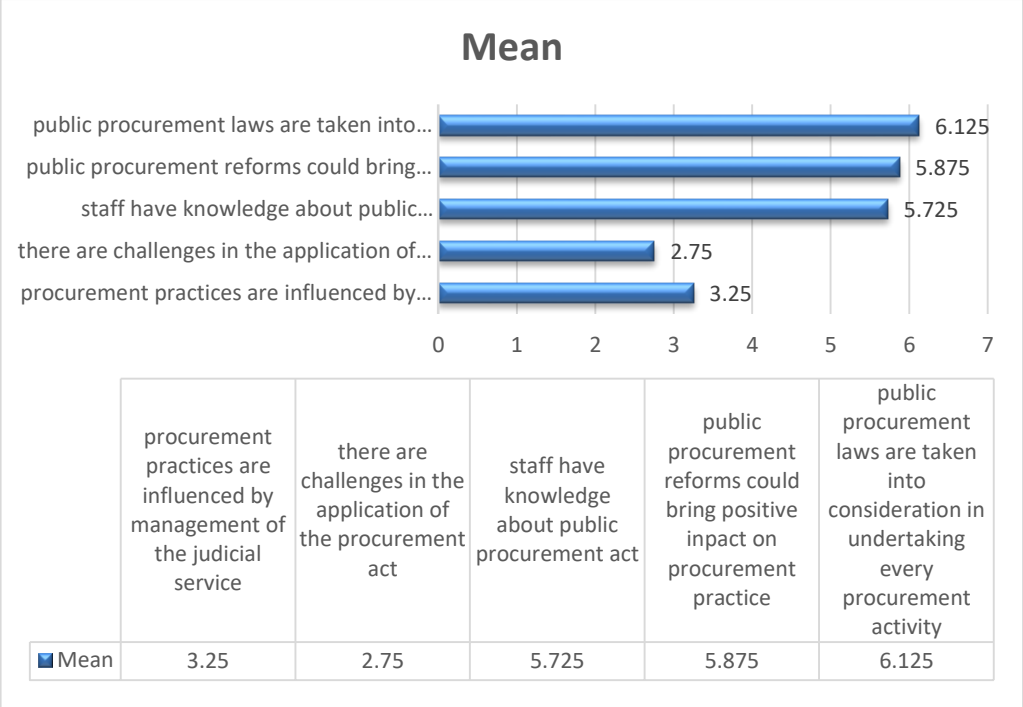
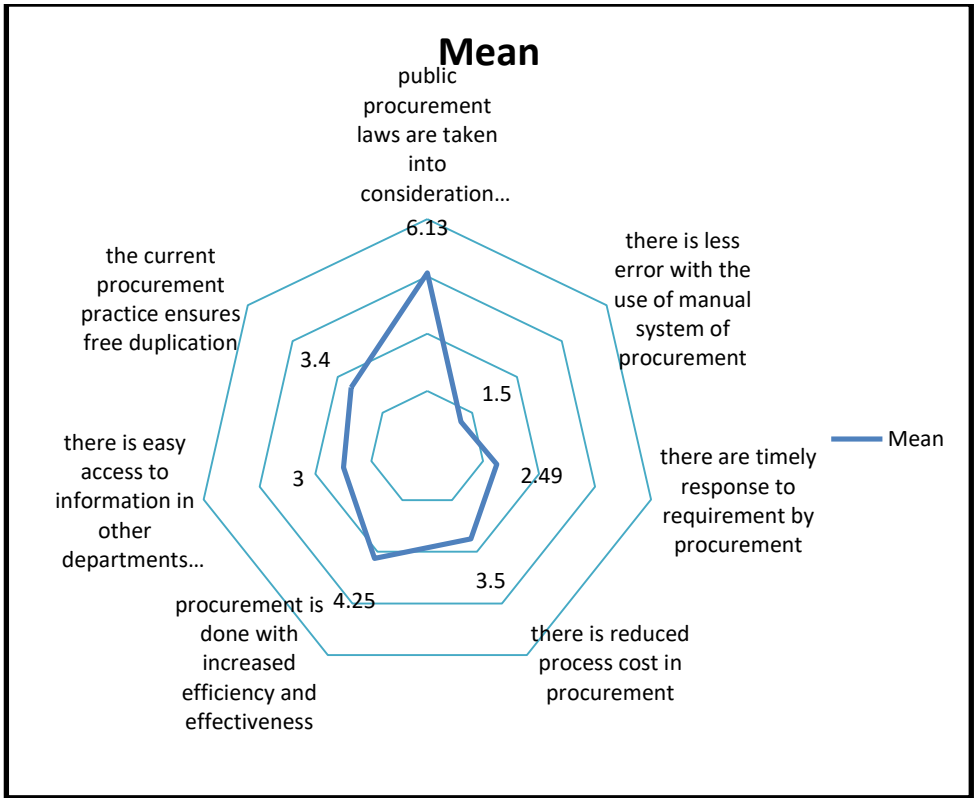


Figure 4.1: Public Procurement practice
Note
Scale: 1=storngly disagree; 2=disagree; 3=somehow disagree; 4=indifferent; 5=somehow agree; 6= agree; 7=strongly agree
Source: Field Study (2016)

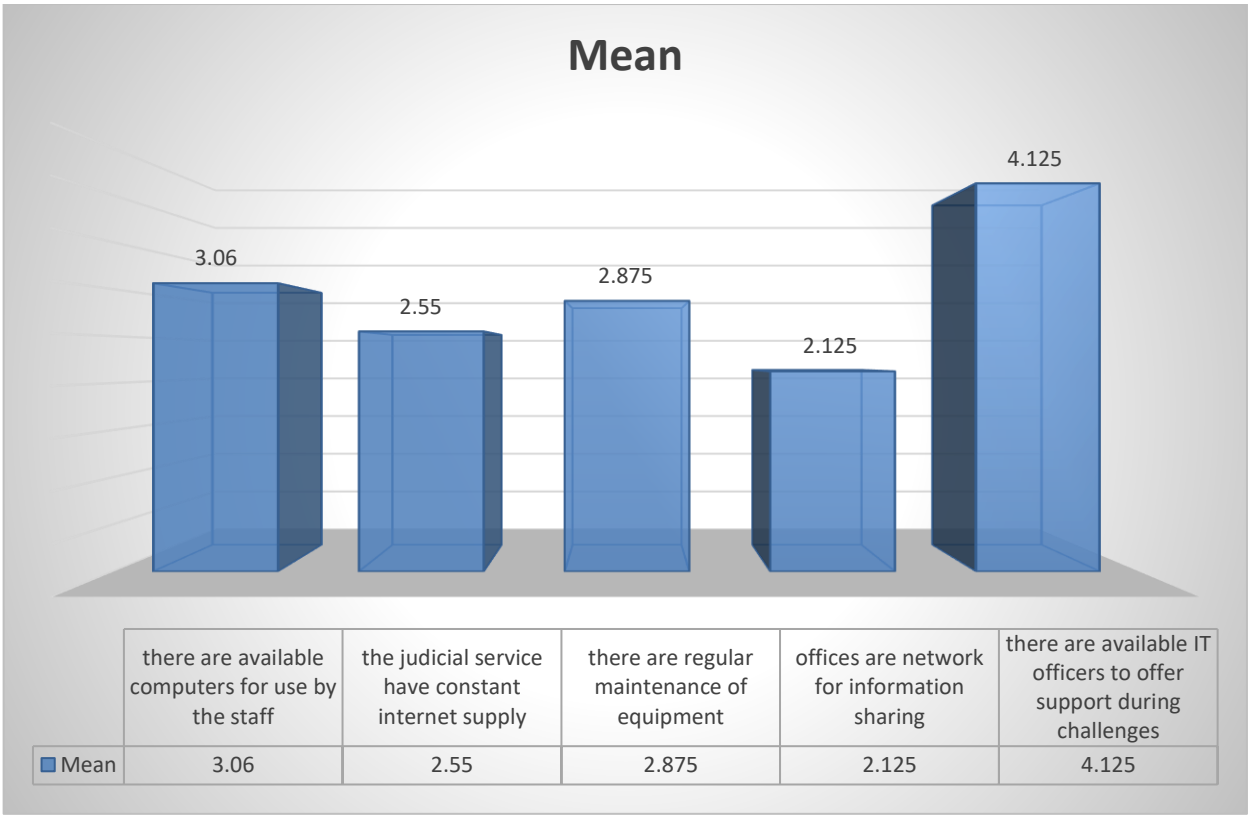
4.5 Partner support

Partner support is an effective tool in achieving success in supply chain management and will, therefore, aid in an effective communication technology in public procurement practice in Ghana. The researcher used 7 determinants with a scale measuring from 1=strongly disagree through to 4=indifferent to 7=strongly agree. Procurement done on transparent basis recorded a high mean of M=6.13 with a standard deviation of SD=0.93 with procurement done with increases efficiency and effectiveness also recording a mean of M=4.25 and a standard deviation of SD=1.097. One of the determinants which recorded the lowest mean of M=1.50 with a standard deviation of SD=0.712 was the question whether there were fewer errors with the use of the manual system of procurement. The result shows that the practice of procurement needs to be improved with the application of information system and technology in Public Procurement.



Source: Field Study (2016)
Figure 4.2: Partner support
Note
Scale: 1=storngly disagree; 2=disagree; 3=somehow disagree; 4=indifferent; 5=somehow agree; 6= agree; 7=strongly agree

4.6 Availability of IT infrastructure
The radar illustration in figure 4.2 with mean scores of M=4.125, M=3.06, M=2.875, M=2.55 and M=2.125 with most of the responses below the midpoint of 4 show that there is no enough available tools and infrastructure for the implementation of IT in the procurement process of the Judicial Service. The results of this assessments are shown in figure 4.3. This shows that, even though there are structures for the operation of procurement, which would have made the usage of IT implementation very feasible in the Judicial Service, the lack of equipment and tools hinder on operational efficiency.



Note:

Scale: 1= strongly disagree; 2=disagree; 3=somehow disagree; 4=indifferent; 5=somehow agree; 6= agree; 7=strongly agree

Source: Field Study (2016)

Figure 4.3: Availability of IT infrastructure

4.7 Managerial and Staff Skills

Table 4.4 with a high mean of M= 5.63 and a standard deviation of SD=0.862 shows that the workers of the Judicial Service believe that the implementation of IT will be able to reduce the workload of workers at the Service even though a less majority of the respondent representing a mean of M=3.14 and a standard deviation of SD=1.375 indicated that staff are trained quarterly. This result shows that IT can be successfully implemented at the Judicial Service and the Public Sector as a whole with more training of staff and management.

Table 4.4 Managerial and Staff Skills

	N	Minimum	Maximum	Mean	Std. Deviation
Staff are trained on IT	80	4	6	5.13	.933
Staff are trained on IT usage	80	3	6	4.63	1.226
Management and staff trained on electronic requisition	80	3	6	3.88	1.060
Implementation of IT will help reduce workload	80	4	7	5.63	.862
Staff trained quarterly on procurement	79	2	6	3.14	1.375

1. Values plotted are mean scores
2. Scale: 1=strongly disagree; 2=disagree; 3=somehow disagree; 4=indifferent; 5=somehow agree; 6= agree; 7=strongly agree

Source: Field study (2016)

4.8 Supplier and contractor's response

Service providers of the Judicial Service were considered an important part of the study since they constitute a major part in determining the success of the application of IT in public procurement. This is so because

they are mainly going to be the recipient of the service. A majority of the suppliers with mean scores and standard deviations of (M=4.33 SD=0.758, M=4.17 SD=0.913, M=4.67 SD=0.758, M=5.67SD=0.479, M=3.17 SD=1.367, M=1.50 SD=0.777, M=4.33 SD=0.758, M=6.10 SD=1.954) show that averagely, the perception of the suppliers and contractors of the Judicial service about the use of IT is significant to the success of the use of IT in the Judicial Service. The result of the data recorded shows that suppliers and contractors have been in business with the Judicial Service for a long time and have enough knowledge of the use of IT to be able to use IT for businesses.

Table 4.5: Suppliers and Contractors Business data

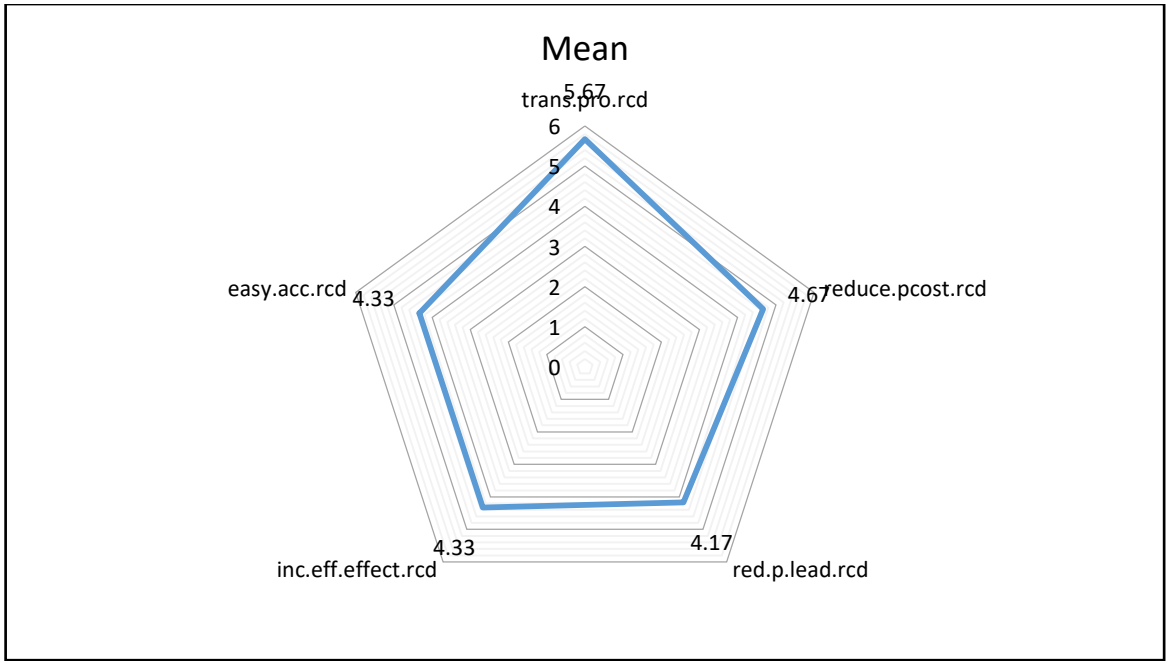
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
						Lower Bound	Upper Bound
Increased efficiency and effectiveness							
		30	4.33	.758	.138	4.05	4.62
Reduce process lead time							
		30	4.17	.913	.167	3.83	4.51
Reduce process cost							
		30	4.67	.758	.138	4.38	4.95
Transparent process							
		30	5.67	.479	.088	5.49	5.85
Challenges in the use of IT							
		30	3.17	1.367	.250	2.66	3.68
Level of knowledge on the use of IS and IT							
		30	1.50	1.777	.142	1.21	1.79
Easy access to information							
		30	4.33	.758	.138	4.05	4.62
how long have you worked with judicial service							
		30	6.10	1.954	.357	5.37	6.83

Scale: 1=strongly disagree; 2=disagree; 3=somehow disagree; 4=indifferent; 5=somehow agree; 6= agree; 7=strongly agree

Source: Field Study (2016)

4.9 Improved Procurement Performance

In other to determine the level of improved performance of the application of information technology it is likely to bring into the practice of public sector procurement performance, the researcher gathered data from respondents with a scale of 1= strongly disagree, 4 =indifference and 7= strongly agree to determine the validity of the variables. Figure 4.3 shows a radar illustration of the responses recorded with mean scores of M=5.67, M=4.67, M=4.33, M=4.17 which shows that averagely, the introduction of IT will lead to the achievement of the variables that were used for the achievement of dependable variable procurement performance. This result shows that the respondents are of the belief that if procurement processes digitalised it will lead to improved procurement performance.



Note

Scale: 1=strongly disagree; 2=disagree; 3=somehow disagree; 4=indifferent; 5=somehow agree; 6= agree; 7=strongly agree

Figure 4.4: Improved performance in procurement management
Source: Field Study (2016)

4.10 Correlation Analysis

An inter-item correlation matrix was conducted to establish the relationship between the various variables. The relationships are shown in table 4.6 which gives an understanding of how the various variables will be able to help in the achievement of the research objectives. The effect of Information Technology on Public sector procurement performance was assessed by the researcher and the results showed that there was a relationship between the various variables that will help achieve the research objective. From the correlation analysis below, variables with correlation coefficient values close to 1 and significant level of 0.000, this means they have a stronger correlation and stronger relationship with the depended variable procurement performance.

Table 4.6 Correlation coefficient of Variables

		Procurement processes.	Public Procurement Practices	Partner Support.	Availability of IT infrastructure.	Managerial and Staff Skills.	Procurement. Performance.
Procurement processes.	Correlation Coefficient	1.000	.956**	.945**	.965**	.948**	.925**
	Sig. (1-tailed)		.000	.000	.000	.000	.000
Public Procurement Practices.	Correlation Coefficient	.956**	1.000	.928**	.958**	.957**	.937**
	Sig. (1-tailed)	.000		.000	.000	.000	.000
Partner Support.	Correlation Coefficient	.945**	.928**	1.000	.918**	.916**	.916**
	Sig. (1-tailed)	.000	.000		.000	.000	.000

Availability of IT infrastructure.	Correlation Coefficient	.965**	.958**	.918**	1.000	.938**	.935**
	Sig. (1-tailed)	.000	.000	.000		.000	.000
Managerial and Staff Skills.	Correlation Coefficient	.948**	.957**	.916**	.938**	1.000	.955**
	Sig. (1-tailed)	.000	.000	.000	.000		.000
procurementPerformance.	Correlation Coefficient	.925**	.937**	.916**	.935**	.955**	1.000
	Sig. (1-tailed)	.000	.000	.000	.000	.000	

Source: Field study (2016)

4.11 Measurements

The researcher used the items under the various variables to measure the model constructs. For the dependent variable the researcher measured procurement performance in process performance with the following items; Transparent Processes, Reduce process Cost, Reduce Process Lead time, Increased Efficiency and effectiveness and Easy access to information**.**

The independent variables were also measured. The researcher measured procurement processes with items as follows; Procurement conducted in an effective and efficient manner, transparency in the procurement process, Management adhere to all necessary process in procurement management, Public procurement Laws took into consideration in undertaking every procurement activity, Public procurement reforms could bring positive impact on procurement practice**.** Public Procurement Practice were measured with items as follows; the practices are influenced by management of the Judicial Service, there are challenges in the application of the Procurement Act, staff have knowledge about Public Procurement Act, public procurement reforms could bring positive impact on procurement practice, Public Procurement Laws are taken into consideration in undertaking every procurement activity.

Partner support was measured with items as follows; procurement is done on transparent basis, less error with the use of manual system of procurement, timely response to response to requirement by procurement, there is reduced process cost in procurement, procurement is done with increased efficiency and effectiveness, easy access to information in other departments practice, the current procurement practice ensures free duplication. Availability of IT infrastructure was also measured with items as follows; Judicial Service has constant internet supply, Offices within the Service re networked for information sharing, Available computers for use by staff, regular maintenance of equipment, availability of IT officers to offer support during challenges**.** Managerial and staff skills were measured with items like; Management and staff are trained on the use of a computer for electronic requisition, Staff is trained every quarter on procurement management and the implementation of IT will help reduce workload**.**

The measurement model was done with the use of the correlation coefficient as indicated in table 4.6 from the data gathered. As indicated above, all measurement items have significant mean scores with the acceptable magnitude of 0.000 as said by Chin (1998). Thus, constructs measured by these items can be used to evaluate the model and associated hypotheses.

4.12 Regression Analysis

The conceptual framework of the researcher for this study was to develop the relationship between the variables procurement processes, partner support, managerial and staff skills and the dependent variable procurement performance. This was done by analyzing the questionnaire received to establish the relationship between the variables.

The result showed that there was a relationship between the variables as shown blow.
From the table 4.7 of the regression analysis, there was a significant relationship between variables managerial and staff skills (0.000), Partner Support (0.000), procurement process (0.016) and public procurement practice (0.000) which were all below the significant level of 0.05 and the dependable variable Procurement performance. Availability of IT infrastructure was detected not to be statistically significant since it is more than 0.05 as indicated in table 4.7 below.

Table 4.7 Regression

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	2.359	.135		17.536	.000
Managerial and Staff Skills.	.288	.050	.299	5.743	.000
Availability of IT infrastructure	.107	.058	.162	1.865	**.063**
Partner Support.	.424	.070	.270	6.049	.000
Public Procurement Practice	.283	.037	.438	7.706	.000
Effective Procurement Processes	-.148	.061	-.182	-2.432	.016

Source: Field study (2016)

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.0 Introduction

This chapter is the final part of the research work and it comprises the summary findings of chapter four which have been presented in sub-sections by the researcher below;

5.1 Summary of Respondents' Demographics

The summary of the study's findings are presented in line with the research objectives as follows;

5.1.1 Summary of Findings

Results from the respondents revealed that majority of the respondents of this study were mostly males and were between the ages of 40-49 years contributing about 37.50% of the sample of respondents. The researcher noted that the dominance of males to females was expected since males are mostly found in such professional areas and since the public sector was noted for its age group of old people from 40-49 years of the staff was expected. The education qualifications of most respondents were HND and first-degree holders with HND having a majority of 30% followed by 20% for degree holders. In relation to their positions, most of the participants fell within the middle management level with the rest fairly distributed among lower and senior management. Most of the participants had experiences from 7-9 years with 37.50% of the sample size. These statistics indicated participants were knowledgeable enough to provide accurate and reliable data necessary to achieve the objective of the research.

5.1.2 To determine the extent of IT usage in Public Procurement processes at the Judicial Service

The first objective of the research was to determine the extent of IT usage in Public Procurement at the Judicial Service. In other to achieve this objective the availability of IT infrastructure was assessed to determine the extent of IT usage in the Judicial Service and what needs to be done to improve upon it. It was revealed that there was no enough available tools and equipment with internet connectivity to enable the implementation of IT with little improvement in infrastructure as shown in table 4.3 with mean scores M=4.125, M=3.06, M=2.875, M=2.55 and M=2.125 which were mostly below the midpoint of 4. A majority of the staff also indicated from figure 4.2 that it will make their work easy. This support the relation that exists between the independent variable and the dependent variable procurement performance.

5.1.3 To examine how IT can lead to improving procurement performance in Public Procurement at the Judicial Service

This second objective of the study was to determine how IT can lead to improving procurement performance at the Judicial Service. The results from table 4.3 and figure 4.1 shows that procurement processes undertaken at the Judicial Service were mostly done in accordance with the Public Procurement Act 2003 (Act 663) with most items tested having a mean score above the midpoint of 4 from a 7 point Likert scales used to determine how the independent variable will help achieve improved procurement performance. It was observed that tools and available equipment for the implementation of IT obtained lower mean scores and it is an area that needs to be given a major priority before IT can be implemented.

5.1.4 To evaluate challenges in the use of IT in Public Procurement at the Judicial Service

The third objective of the study was to evaluate the challenges in the use of IT in Public Procurement at the Judicial Service. In other to achieve this objective consideration was given to various factors as per responses from the study group. It was revealed that most of the staff of the Judicial Service were not trained periodically as required in the use of IT as shown in the table 4.6 with a mean score of M=3.14 and a standard deviation of SD=1.375 and also table 4.3 with a mean score of M=3.88 and a standard deviation SD=1.277 of data recorded from the field study for unavailability of equipment. These findings was not far from that of Armstrong and Sambamurthy, (1999) on how to improve performance through IT.

5.1.5 To evaluate the impact of IT practice in public procurement management

The fourth objective of the study was to evaluate the impact of IT practice in public procurement management. Seven items were employed to find out the impact of IT with most of them recording a mean score more than the midpoint of 4, as shown in figure 4.2. The other items which were used to solicit responses from the respondents recorded mean scores as follows; transparency in procurement (M=6.13, SD=0.933), reduction in errors (M=1.50, SD=1.712, increase efficiency and effectiveness (M=4.25, SD=1.097), reduction in duplication (M=3.38, SD=1.118), reducing response time (M=2.50 SD=1.712), easy access to information (M=3.00, SD=1.125) and reduction in process cost(M=3.50, SD=1.423). These responses show the impact of IT in procurement Performance in the public sector.

5.1.6 Summary of Conceptual Framework on investigating the effect of IT on public sector procurement performance in Ghana.

The researcher developed a conceptual framework to test the relationship between procurement processes, partner support and IT infrastructure and managerial and staff skills for improved procurement performance.

The first hypothesis (H1) states that efficient procurement processes is positively related to improved performance in public procurement management. The findings of the analysis support the hypothesis that procurement processes is positively related to improved performance in public procurement given the midpoint value of 4 and the result from table 4.3 with means scores of M=6.63, M=5.25, M=4.88, M=4.25 from the items used and a regression analysis value from table 4.7 with a significant level of 0.016.

The second hypothesis (H2), partner support and IT infrastructure is positively related to improved procurement performance. Findings from the responses support the hypothesis that partner support and IT infrastructure is positively related to improving Procurement performance given the midpoint value of 4. The mean score of responses from respondents showed that more needs to be done with the use of IT to be able to ensure there is efficiency as indicated in figure 4.2 with average mean scores below the midpoint of 4. Then Partner support and IT infrastructure are positively related to improved procurement performance. This shown a significant level as indicated in table 4.7 with a regression coefficient of 0.000 and 0.000 for partner support and IT availability respectively which was statistically insignificant.

The third hypothesis (H3), Managerial and staff skills are positively related to improved procurement performance. Findings support this hypothesis with respondents responding to the following statements with mean scores in other to obtain results from managerial and staff skills for the study. Staff trained on IT (M=5.13, SD=0.933), Staff trained on IS and IT usage (M=4.63, SD=1.226), Management and staff trained on electronic requisition (M=3.88, SD=1.060), Implementation of IT will help reduce workload (M=5.63, SD=0.862), Staff trained quarterly on procurement (M=3.14, SD=1.375). The average mean score above 5.00 shows that managerial and staff skills is positively related to improved procurement performance and also with reference the regression coefficient of variables as shown in table 4.7 above with a significant level of 0.000. Thus, successful SCM requires a firm to possess not only technological capability but also managerial skills and external resources. This complements previous research that shows the importance of the digitally enabled technological capability (Zhu and Kraemer 2005).

5.2 Conclusion

Business value of IT continues to stimulate interest and debate among both academics and practitioners. The researcher tries to investigate the effect of IT value in the context of digitally enabled procurement system, which has emerged as one of the major areas for companies to leverage IT to improve procurement performance in global operations. On the basis of the findings of the study, conclusions can be drawn that, the effect of IT on public sector procurement performance in Ghana needs to be given much attention. As shown in the empirical results in tables 4.6 and 4.7, all the variables used are significantly associated with procurement performance along the supply chain with only Availability of IT infrastructure which was not statistically significant with a significant level of 0.063. These findings highlights that IT can create value. In particular, the value is generated through effective use of the technology to improve procurement performance. This supports the RBV theory that common technologies can be converted into valuable resources through deployment in specific processes which is not for from the previous work of Zhu and Kraemer (2002). As an implication for the IT value literature, the results suggest the usefulness gauge intermediate firm performance and probe into the specific ways that IT is used to improve business processes.

The theoretical literature has long emphasized the importance of efficient information flows in supply chains (Lee et al. 1997, 2000); the research work provides empirical evidence about how information flow enabled by partner support can improve supply chain performance in the public sector institutions especially the Judicial Service.

More broadly, this paper contributes to the literature on the digitally enabled SCM by developing a resource-based view model of what resources are important to create value in supply chain contexts. The role of tangible IT has been extensively studied and the literature has called for research on value drivers of SCM that go beyond the technology (Rai et al. 2006). This paper identifies intangible resources, especially managerial and staff skills and procurement processes as key value drivers that work together with partner support to improve firm performance, highlighting that integrational, managerial, and relational resources are critical in the global supply chain contexts.

The Judicial Service of Ghana with most of its procurement activities done, in accordance with regulations of the Public Procurement Authority, have not put in enough infrastructure to take care of IT usage. This study was carried out with the use of suitable methodological methods of purposive and convenient sampling of respondents to achieve the objectives of the study.

5.3 Recommendations

The study was conducted to investigate the effect of IT on public sector procurement performance. IT is a new concept that is gaining grounds in the business world. Most organisations, especially in the private sector, have gained a lot of advantages with the use of IT in their operations. It was therefore for the purpose of achieving the same level of advantages that the researcher conducted this study to determine its effect on procurement performance in the Public sector. After the findings, the following recommendations have been suggested to improve procurement performance in the public sector.

1. **Provision of infrastructural equipment for the operation of IT**

The study revealed that there was no enough tools and equipment for the application of IT in the Judicial Service which was shown in table 4.3. There should be adequate infrastructure put in place by the management of the Judicial Service in other to ensure that there is enough computers and internet connectivity to be able to spearhead IT application in procurement management. It can be noted that staff will not be able to apply IT in procurement management only with the availability of equipment to enhance operations. Therefore infrastructure development will ensure the success of IT implementation.

2. **Training and Education of staff about the Use of IT**

The understanding of staff on the use of IT is very key to its implementation. The results from table 4.7 show a significant level 0.00 for the level of training arrangement for both staff and management. It is therefore recommended that quarterly arrangement of training and education of staff and management about the use of IT is made in other to equip them with up to date issues and usage of the systems for operation. This will help increase capacity since they are already somehow knowledgeable with the use of technology. When this is done it will help improve upon performance in the management of procurement in the Judicial Service.

3. **Integrating suppliers in the implementation process**

There should be supplier integration in the implementation of IT since they are among the stakeholders of the system. Procurement normally deals with the supplier and when they are involved it will help achieve a successful implementation. It was revealed from the findings that communication with suppliers was not done with the use of the manual system of procurement with only a few done through electronic means. It is therefore recommended that suppliers be enrolled on the system where most communication will be done electronically. Suppliers should be trained on the use of IT in other to be able to work directly with the procurement department to ensure an improved procurement performance.

4. **Quarterly Maintenance of Electronic Equipment**

There should be the quarterly maintenance of the computer equipment to be used for the application of IT. This will ensure that there is continuous operation without interruption of the activities of procurement and the other departments s will put in confidence and sustainability in the practice of IT.

5.4 Areas for Further Research

The current study conducted by the researcher found out that there were other areas that could be exploited in other to increase the overall performance of public procurement. Some of these areas are as follows;

- Private and Public Sector Procurement, challenges and prospects
- Assessing the application of real time procurement practices in the Public Sector.
- Effective communication in the supply chain and its impact on customer satisfaction.

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APPENDIX

ASSESSING THE APPLICATION OF INFORMATION SYSTEMS AND TECHNOLOGY IN PUBLIC SECTOR PROCUREMENT PRACTICE IN GHANA.

Dear Sir/Madam

Thank you very much for deciding to participate in our research on assessing the application of Information Systems and Technology in Public Sector Procurement practice in Ghana. Accordingly, it is required that only respondents who are involved in the public procurement management in the Judicial Service respond to this survey.

This study is purely for academic purpose, as such, data collected will not be used for any other purposes other than academic works. The success of the project rests on fully completed questionnaires. **Please answer every question by reflecting on your experiences**. Though some questions may appear similar, please answer them anyway as this is deliberately done for statistical analysis purposes.

Further, our questions are largely not sensitive. However, should you find anything sensitive, be assured that your response would be treated with the strictest animosity and confidence of the respondents is greatly assured.

Thank you so much for your willingness to participate in this study.

GUIDELINES FOR COMPLETING THE QUESTIONNAIRE

- This questionnaire is targeted at information system and technology application in the public sector and staff of the Judicial Service. If you feel you are not the right person to complete the questionnaire, we will appreciate you pass it on to a more suitable colleague.
- The questionnaire is organised in sections, please pay attention to the instructions guiding each section.
- **Please answer every question**. For each statement, please select one answer option only.

Once again, thank you very much for your participation in this study.

Yours sincerely,

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Please use the 7 point scale at the right-hand side of each table to provide responses on the following:

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somehow disagree	Indifferent/ not sure	Somehow agree	Agree	Strongly agree

SECTION I – PROCUREMENT PROCESSES

To what extent do you agree with the following statement about Procurement processes at the Judicial Service?	**Strongly disagree**			**Not sure**			**Strongly agree**
	1	**2**	**3**	**4**	**5**	**6**	**7**
1. Procurement is conducted in an effective and efficient manner.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. There is transparency in the procurement process.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. Procurement is undertaken in a faster way without delays.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. Management understand procurement processes.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5. Management adhere to all necessary process in procurement management.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

SECTION II: PUBLIC PROCUREMENT PRACTICE

To what extent do you agree with the following statement about Public Procurement management at the Judicial Service?	**Strongly disagree**			**Not sure**			**Strongly agree**
	1	**2**	**3**	**4**	**5**	**6**	**7**
1. Procurement practices are influenced by management of the Judicial Service	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. There are challenges in the application of the procurement Act	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. Staff have knowledge about public procurement Act	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. Public procurement reforms could bring positive impact on procurement practice?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5. Public procurement Laws are taken into consideration in undertaking every procurement activity.	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

SECTION III A: PARTNER SUPPORT

To what extent do you agree with the following statement about Partner support in Public Procurement management at the Judicial Service?	**Strongly disagree**			**Not sure**			**Strongly agree**
	1	**2**	**3**	**4**	**5**	**6**	**7**
1. Procurement is done on transparent basis	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. There is less error with the use of manual system of procurement	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. There are timely response to requirement by procurement	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. There is reduced process cost in procurement	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

5.	Procurement is done with increased efficiency and effectiveness	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
6.	There is easy access to information in other departments practice	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
7.	The current procurement practice ensures free duplication	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

SECTION III B: AVAILABILITY OF IT INFRASTRUCTURE

To what extent do you agree with the following statement about the available of IT infrastructure in Public Procurement management at the Judicial Service?	**Strongly disagree**		**Not sure**			**Strongly agree**	
	1	**2**	**3**	**4**	**5**	**6**	**7**
1. There are available computers for the use by staff	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. The Judicial Service have constant internet supply	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. There are regular maintenance of equipment	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. Offices are network for information sharing	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5. There are available IT officer to offer support during challenges	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

SECTION IV: MANAGERIAL AND STAFF SKILLS

To what extent do you agree with the following statement about managerial and staff skills in Public Procurement management at the Judicial Service?	**Strongly disagree**		**Not sure**			**Strongly agree**	
	1	**2**	**3**	**4**	**5**	**6**	**7**
1. Staff are trained in information system and technology usage	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
2. Management and staff are trained on the use of computer for electronic requisition	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
3. Staff are trained every quarter on procurement management	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
4. Staff are trained on IT	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
5. The implementation of IT will help reduce work load	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

SECTION V ABOUT YOUSELF

1. Gender [ ] Male [ ] Female

2. Age (years) [ ] Below 20 [ ] 20 – 29 [ ] 30 – 39 [ ] 40 – 49
   [ ] 50 or above

3. Education level
   [ ] WASSCE/O'LEVEL or similar [ ] Diploma/HND [ ] 1st Degree [ ] 2nd Degree
   [ ] PhD

4. Which category of the staff do you belong to?
   [ ] Senior management [ ] Middle management [ ] Lower management

5. How long have you worked in this organisation?
   [ ] Less than 1 year [ ] 1 – 3 years [ ] 4 – 6 years [ ] 7 – 9 years

[ ] 10 years and above

SUPPLIERS AND CONTRACTORS

1. How long have you been doing business with the Judicial Service?

   i. 1-3 years
   ii. 3-5 years,
   iii. 5-8 years,
   iv. 8 years and above

2. What is your level of knowledge in the use of information technology?
   i. Advanced
   ii. Intermediate
   iii. Beginner
   iv. Not at all

3. Will you like to do business with the use of information technology
   i. YES, we are ready now
   ii. Yes, but we well will need to time to train our workers
   iii. No, we are not ready now
   iv. No, it is expensive
   v. Any other comment? ……..

4. To what extent do you agree with the following statement about improved performance in Public Procurement management at the Judicial Service?		**Strongly disagree**			**Not sure**			**Strongly agree**
		1	**2**	**3**	**4**	**5**	**6**	**7**
i.	Transparent Processes	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
ii.	Reduce process Cost	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
iii.	Reduce Process Lead time	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
iv.	Increased Efficiency and effectiveness	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
v.	Easy access to information	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

5. What are some of the challenges you are likely to face in using information technology? Please tick as many as possible.
   i. Set up cost
   ii. Cost of training
   iii. Cost of maintenance
   iv. Change management
   v. Inconsistent power
   vi. Other specify ……